



# Seven Mile Creek Watershed Project

## Clean Water Partnership

### Phase II Implementation

### Interim Report

June 2002-June 2005



April, 2005

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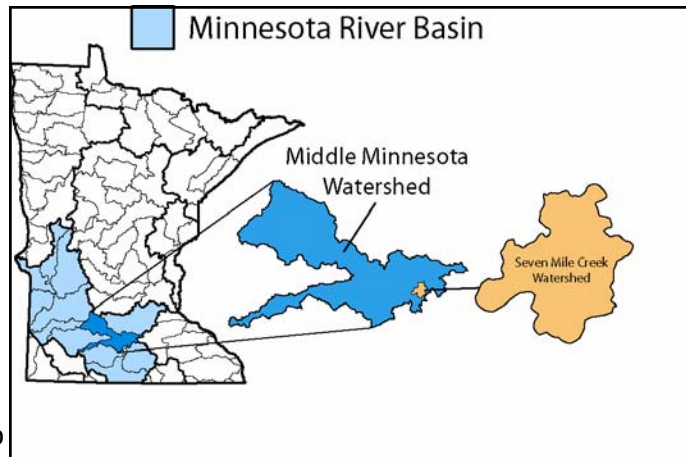
## Introduction

This document serves as an interim report for a Phase II Clean Water Partnership granted to the Seven Mile Creek Watershed Project in June of 2002. This report identifies work plan objectives and initiatives accomplished from 2002 through 2004. A summary of the budget and respective expenditures by program element is included. Project highlights are also included. A more detailed final report will be submitted at the end of the Phase II continuation. The Brown, Nicollet, Cottonwood Water Quality Joint Powers Board is the coordinating organization for this project with assistance and in-kind provided by MPCA, MDA, MDNR, SWCD, NRCS, Environmental Services and FSA Offices.

## Project Background

The Seven Mile Creek Watershed project is a collaborative effort to help protect and enhance the water quality of Seven Mile Creek. Seven Mile Creek is one of Nicollet County's most visible natural resources with a 630-acre county park located at the mouth of the watershed. The park and designated trout stream is used by thousands of visitors every year. On going efforts in the late 1980's to help protect the drinking water for the city of St. Peter sparked local interest to investigate the water quality of unique streams like Seven Mile.

- In 1996 water quality monitoring began in the watershed and was funded through a Resource Investigation grant by the MPCA for the Middle Minnesota Major Watershed. Brown Nicollet Environmental Health also helped fund this project.
- In 1997 Red Top Farms, a field-scale drainage research project, was installed in the northern portion of the watershed.
- Monitoring and educational outreach continued through 2002 with assistance from a DNR Environmental Partnership Grant.
- A detailed water quality study was completed in the fall of 2001.
- In 2002, a Clean Water Partnership was formed and additional technical and financial support was made available to watershed farmers, landowners and homeowners.
- Special programs included low-interest loans for outdated septic systems, vegetated filter strips along drainage ditches, wetland restorations, nutrient management, on-farm nitrogen rate demonstrations, open-tile intake replacements, and Conservation Security Program promotion.



Additional information relating to the watershed project or other similar projects can be found at <http://mrbdc.mnsu.edu/org/bnc/> or contact Kevin Kuehner at 507-934-4140.

## Water Quality Study Review

Results from water quality studies within the watershed have shown impairments for:

- Turbidity (TSS)
- Nitrate-Nitrogen
- Dissolved Oxygen
- Fecal Coliform and E. Coli Bacteria
- Total Phosphorus
- Detection of Pesticides (Metolachlor, Acetochlor, Dicamba, Atrazine, Desethyl Atrazine, Deisopropyl Atrazine, Metribuzine, Dimethanamid, Alachlor, 2,4-D)

Table 1 shows the 5-year average flow weighted mean concentrations (FWMC) and yields for sediment and nutrients in the watershed from 2000-2004.

	<u>FWMC (mg/l)</u>	<u>Yield (lbs./ac)</u>
TSS	<b>271</b>	<b>402</b>
Total Phosphorus	<b>.351</b>	<b>.581</b>
Nitrate-N	<b>16</b>	<b>21</b>

TABLE 1: Watershed Flow Weighted Averages and Yields

*Using detailed watershed surveys, water quality/quantity monitoring, and watershed modeling techniques the following conclusions were made:*

The vast majority of sediment, phosphorus, and nitrate losses from the watershed take place in the spring and early summer months. More than 60 percent of the growing season load carried by Seven Mile Creek to the Minnesota River occurs during the months of April, May and June.

### Sediments

Research estimates that around 50% of the sediment in the watershed is derived from bank erosion. Most of the accelerated stream bank erosion was found to be located in the lower portion of the watershed. Although stream bank erosion is a natural process, changes in watershed hydrology (more efficient drainage system and changes in vegetation cover and climate) have likely accelerated the amount of erosion. The other half is derived from upland areas (31%), erosion prone areas closest to the drainage ditches (riparian areas 13%), and open tile intakes (7%).

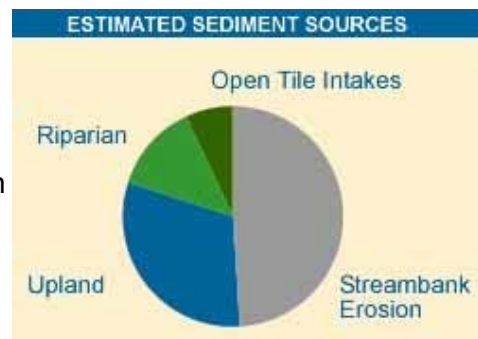


FIGURE 1: Relative Sediment Sources

### Nitrates

For its size, Seven Mile Creek Watershed has particularly high nitrate loads. It had the highest loads overall when compared to nine other watersheds

in the Minnesota River Basin (2000 data). There are many sources of this potential water contaminate in the watershed, but the largest source is likely derived from excess nitrate leaching through the soil profile and into the dense network of agricultural drainage tile systems. Figure 1 illustrates the dense network of artificial drainage that has been installed in the watershed. These hydrologic changes decrease the opportunity for nitrate-nitrogen to de-nitrify.

### Bacteria (Fecal, E.Coli)

The presence of Escherichia Coli during both low and high flow conditions suggests that human and/or animal wastes are entering Seven Mile Creek. The concentration of these bacteria is an indicator of the probability of contamination of water by microbial pathogens that could pose a threat to public health. The main sources of fecal bacteria in the watershed can include non-complying septic systems, and direct runoff from feedlots and manure applied to fields.

### Phosphorus

Using calibrated watershed modeling, it is estimated that over 50 percent of the phosphorus load is derived from upland cultivated lands (53%), streambank erosion (17%), outdated septic systems (13%), riparian areas (12%), and open tile intakes (5%).

### Implementation

Using information collected from water quality studies, watershed staff developed a list of practices and programs to help address the water quality impairments. Special consideration was given to cost, effectiveness, and practical adoption of the practice within the project time frame. Advanced modeling in the watershed has shown that if a majority of watershed landowners and farmers would adopt these practices, long-term sediment and nutrient loadings could be reduced by at least 20%.

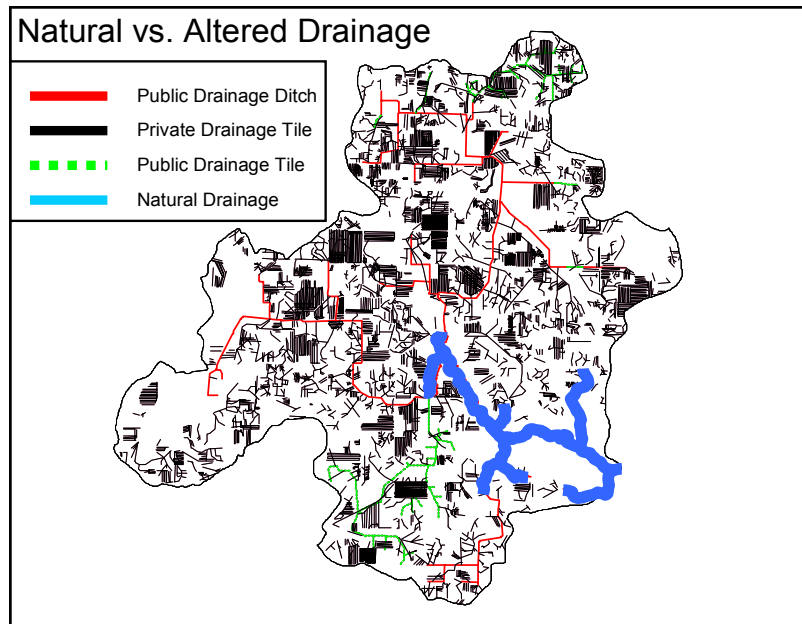


FIGURE 2: Hydrologic Changes—Over 600 miles of artificial drainage systems have been installed in the watershed since the early 1900s.

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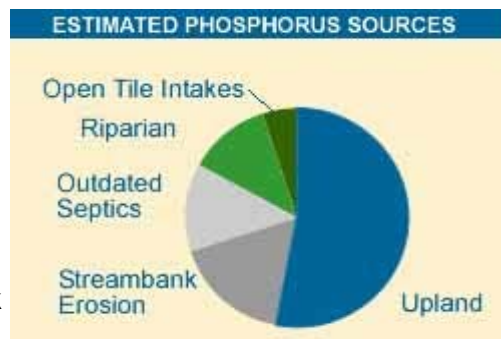


FIGURE 3: Relative Phosphorus Sources

### **Primary Best Management Practices (BMPs)**

1. Accelerate the adoption of environmentally sensitive cropland into set aside programs. (i.e CRP filter strips along drainage ditches)
2. Restore wetlands in strategic locations to intercept tile drainage and surface runoff. Demonstrate conservation drainage techniques.
3. Increase watershed acres enrolled in federal EQIP program for *nutrient management*, and *reduced tillage systems*.
4. Upgrade non-complying septic systems using low-interest loan funding.
5. Conduct on-farm nitrogen rate demonstrations to validate University of MN Recommendations and increase awareness of nutrient management concepts with individual producers.
6. Demonstrate soil bio-engineering and natural stream channel design for stabilizing eroding stream banks.

	Prior 2002	2002-2004
<b>RIM-Perm Easement</b>	<b>60</b>	<b>0</b>
<b>WRP-Perm. Wetland</b>	<b>0</b>	<b>0</b>
<b>CREP-Perm. Wetland</b>	<b>20</b>	<b>0</b>
<b>CP 21-Filter Strip</b>	<b>5</b>	<b>36</b>
<b>CP 27-Wetland</b>	<b>0</b>	<b>20</b>
<b>CP 28-Wetland Buffer</b>	<b>0</b>	<b>60</b>
<b>General CP 25 Buffer</b>	<b>0</b>	<b>8</b>
<b>General CRP Wetland</b>	<b>0</b>	<b>27</b>
<b>Non Program Buffer</b>	<b>1</b>	<b>5</b>
<b>Conservation Easements (acres)</b>	<b>86</b>	<b>156</b>
<b>Rock Inlets</b>	<b>0</b>	<b>12</b>
<b>EQIP Conservation Tillage (acres)</b>	<b>0</b>	<b>110</b>
<b>EQIP Nutrient Management (acres)</b>	<b>100</b>	<b>0</b>
<b>On Farm Nitrogen Rate Demonstrations (acres)</b>	<b>0</b>	<b>550</b>
<b>Non-Complying Septics</b>	<b>146</b>	<b>113</b>

TABLE 2: Status of BMP implementation from 2002-2004 .

Table 2 and Map 1 show the results of the focused effort to increase these selected BMPs within the watershed. In just two years, dedicated watershed staff increased the amount of these BMPs significantly. The results show that an additional 156 acres of environmentally sensitive cropland was taken out of production, 12 open intakes were replaced with rock inlets, an additional 660 acres of land enrolled into a nutrient management program, and 33 failing septic systems were upgraded within the watershed.

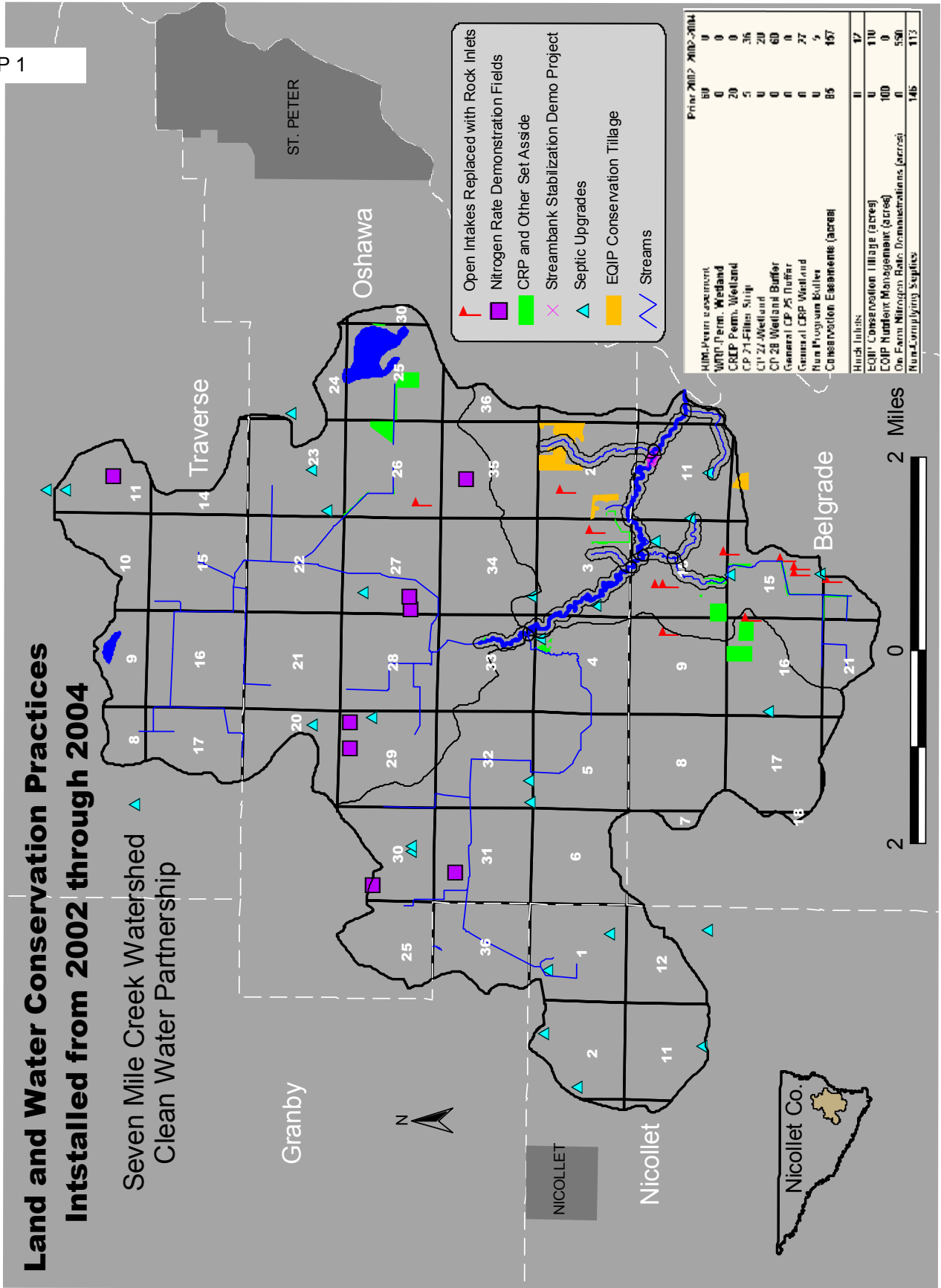
#### **Filter Strips**

Major emphasis during the implementation phase involved the accelerated enrollment of the Continuous Sign-up Conservation Reserve Program. Two popular practices that were promoted included filter strips (grass buffers-CP-21) and restored wetlands (CP23a/CP27/28). Table 3 compares the percent of buffered stream miles before and after the project began. Before the CWP began about 85% of the streams were not adequately buffered and only 5 acres of agricultural land was enrolled into the CRP filter strip program. (An adequate buffer is defined as greater than 30 feet of vegetation between the perennial



# Land and Water Conservation Practices Installed from 2002 through 2004

Seven Mile Creek Watershed  
Clean Water Partnership



- Open Intakes Replaced with Rock Inlets
- Nitrogen Rate Demonstration Fields
- CRP and Other Set Aside
- Streambank Stabilization Demo Project
- Septic Upgrades
- EQIP Conservation Tillage
- Streams

	Prior 2002	2002-2004
High-Priority Assessment	0	0
WQIP Permit Wetland	0	0
CRP Farm Wetland	20	0
CRP 21 Filter Strip	5	36
CRP 22 Wetland	0	20
CRP 28 Wetland Buffer	0	60
General CRP 25 Buffer	0	0
General CRP Wetland	0	27
Rural Program Buffer	0	5
Conservation Easements (acres)	0	157
Hard Intakes	11	17
EQIP Conservation Tillage (acres)	0	110
EQIP Nutrient Management (acres)	100	0
On-Farm Nitrogen Rate Demonstrations (acres)	0	500
Non-Complying Segments	146	113

stream and crop edge). After the project began, an additional 36 acres or 7 times more filter strips were added in the watershed. In just two years CWP efforts to increase CRP resulted in a net riparian corridor buffer increase from 16% to 31%.

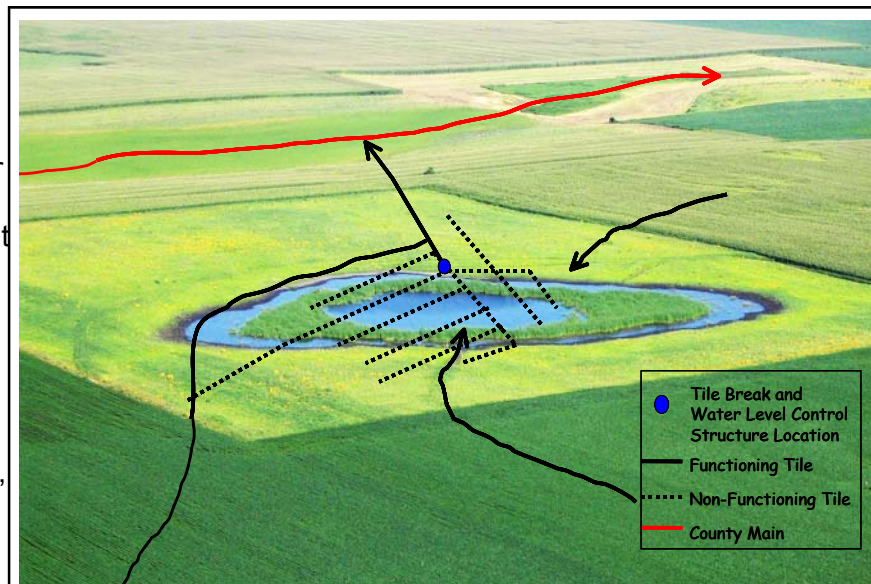
Map 2 identifies the spatial distribution of buffers within the watershed. Tributaries coded green have a buffer on both sides, orange one side, and red no buffer. The map on page 9 shows that most of the filter strips were installed on CD 24 in the southern portion of the watershed. The large extent of red and orange shows that there are still tremendous opportunities for filter strips in this watershed and promotion of this BMP will continue through 2008.

<b>Stream Buffer Status Table (miles)</b>	<b>Prior 2002</b>		<b>2002-2004</b>	
<b>No Buffer</b>	<b>22.3</b>	<b>84%</b>	<b>18.4</b>	<b>69%</b>
<b>One Side Buffered</b>	<b>3.1</b>	<b>12%</b>	<b>5.2</b>	<b>20%</b>
<b>Both Sides Buffered</b>	<b>1.1</b>	<b>4%</b>	<b>2.9</b>	<b>11%</b>

TABLE 3: Stream Buffer Status

**Wetland Restorations**

Wetlands were once a dominant feature of the prairie landscape in the watershed. Today, fewer than 10% of the original wetlands exist as a result of intensive efforts to drain the fertile land for agricultural production. To help offset concerns related to water quality degradation, peak flow intensity along the creek, and loss of critical habitat for wildlife, restored wetlands were used to intercept public and private tile systems.



Wetland Restoration: Five wetlands like the one pictured above were restored in the watershed in 2003 and 2004. This picture was taken one year after it was restored.

A total of 5 wetlands consisting of 150 acres were restored from

2002-2004. In one project, a 12-inch public ditch tile (CD 58) draining 200 acres of cropland was petitioned by the Brown-Nicollet-Cottonwood Water Quality Board and Nicollet Soil and Water Conservation District through Minnesota Drainage Law 103e.227 to be routed into a newly restored 50-acre wetland. The wetland is expected to remove 4,400 lbs. of nitrate-N per year and act as downstream flood control by storing up to 55-acre feet of water during a 100-year, 24-hour storm. Monitoring of this wetland will continue through 2007 to document the environmental benefits.

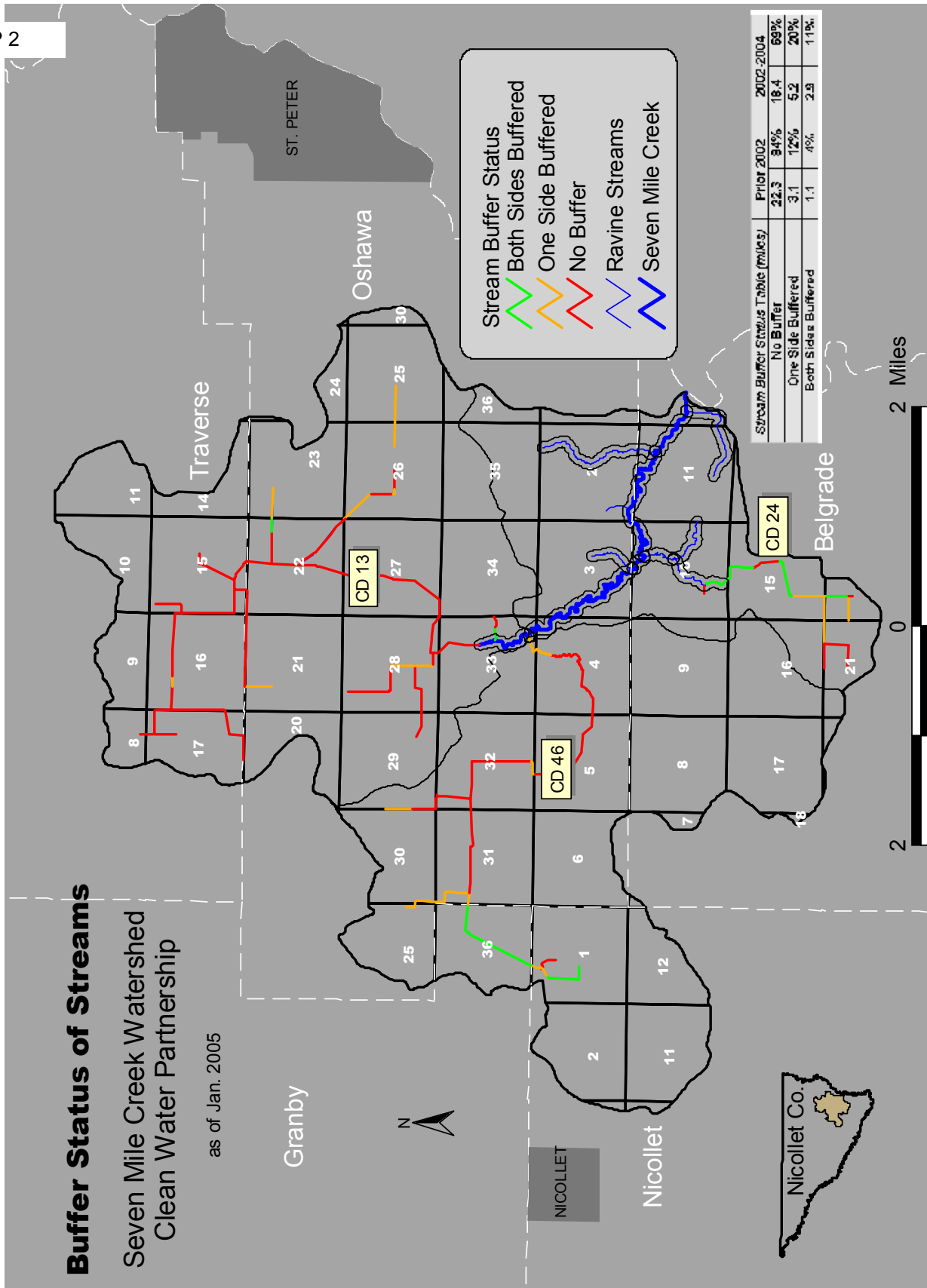
**Successful Strategies for increasing CRP Enrollment:**



# Buffer Status of Streams

## Seven Mile Creek Watershed Clean Water Partnership

as of Jan. 2005



**Stream Buffer Status**

- ▶ Both Sides Buffered
- ▶ One Side Buffered
- ▶ No Buffer
- ▶ Ravine Streams
- ▶ Seven Mile Creek

Stream Buffer Status Table (miles)		Prior 2002		2002-2004	
No Buffer		22.3	34%	18.4	69%
One Side Buffered		3.1	12%	5.2	20%
Both Sides Buffered		1.1	4%	2.9	11%



- \*\*\*Technical staff with abilities to directly market programs while at the same time building personal relationships with landowners, agencies, and organizations. *This was perhaps the most important strategy for getting Best Management Practices on the ground.*
- Direct marketing of the programs through detailed proposals clearly showing how much landowners could receive if they enrolled into the program.
- Follow up one-to-one visits to help explain the program and how it works.
- Helping streamline the CRP sign-up process with Farm Service Agency and NRCS Staff.
- Coordinating installation and maintenance. i.e. seedbed preparation, seeding, mowing, prescribed burning, etc.
- Follow up visits to help build relationships with landowners.
- Incentive payments to help increase Soil Rental Rates or fill gaps the program does not meet.

## Grant Leveraging

The Seven Mile Creek CWP is a great example of coalition building and leveraging of additional grant sources.

- McKnight Foundation Wetlands Project.
- Conservation Innovations Grant for Demonstrating Conservation Drainage.
- Farm Bill Assistance through a partnership between MDNR, BWSR, and Pheasants Forever, Farm Service Agency, and Brown/ Nicollet SWCD. Provides funding for one full-time staff person.
- Paired Watershed Study with the University of Minnesota in Western Nicollet County.
- It is estimated that about 2000 hours were leveraged from the Gustavus Adolphus College Internship Program to help with CWP projects.

## Major Accomplishments from 2002-2004

- First-of-its kind petition to modify public drainage tile through a restored wetland in Nicollet County. The project routed two, 12" tiles into a newly restored 50 acre wetland.
- Development of Conservation Innovations Grant to demonstrate controlled/conservation drainage in collaboration with NRCS and MDA.
- Development of Nutrient Management and Field Record Spreadsheet tool for watershed producers and agribusinesses.
- Use of ADAPT modeling to model field scale and watershed scales.
- Hosting meetings to bring together drainage experts from Iowa and MN, in effort to increase coloration and joint research opportunities.
- Development of a county-wide policy relating to ditch spoil and land in the conservation reserve program.
- Installation of "Entering Seven Mile Creek Watershed" signs.
- Multi-state approach to address over-application of nitrogen fertilizer through the use of on-farm nitrogen rate research.

## Challenges and Lessons Learned

- A large gap continues to exist between the many conservation programs that are available through the Farm Service Agency and Natural Resources Conservation Service and the landowners and farmers which could benefit from them. We have found that many landowners simply do not understand the programs and get frustrated if they do not have someone helping them during the entire process.
- Landowners need one to one assistance from highly trained staff with planning, planting, and maintenance of Continuous CRP practices.
- Dichotomy between federal farm bill subsidies and conservation. Since commodity subsidies are based on the amount of acres and bushels produced, landowners can be penalized if they convert cropland to CRP.
- Soil Rental Rates often lag by \$10-\$30/acre or more making the CRP program a difficult sell.
- Landowners are concerned with maintenance and operation associated with CRP based programs.
- Without full time staff from the watershed project, many projects like the wetland restoration project on CD-58 would not happen due to the extensive time, legal bottlenecks, and expense associated with 103e.227. The 150 acres of new wetland restorations within the watershed would not be possible if it were not for the funding support of the McKnight Foundation and CWP funding.
- Need better knowledge of the location, condition, and extent of subsurface tile in our watersheds. The use of GIS, GPS, LIDAR, rectified historical air photos, color infrared, and ground penetrating radar could be used to help with this issue.
- Farmers can get frustrated with conservation programs since program policies and funding changes occur so often. For example, if a landowner signs up for CRP today there may be a better program next year. Or conversely the threat of a program being eliminated.
- Most people that farm the land do not own it. More absentee farmers offers greater tendency for less land stewardship and sustainability.
- Need to educate county auditors, drainage inspectors/county engineers and county attorneys on drainage related issues. They often times are the most influential on drainage related projects.
- Need better management and maintenance of the wetlands after they are restored. Invasive species, and weed control, prescribed burns, etc.
- Some farmers don't have the time to sign up for CRP. FSA and NRCS are understaffed. Need additional technical people at the local level to assist with sign up procedures.
- Need more watershed based staff with sustainable funding for long-term employment.
- Still a large need for nutrient management education and among crop consultants, Coops and farmers.

## Future Implementation Plans

- Continue promotion of EQIP, Continuous CRP and help prepare watershed residents for Conservation Security Program.
- Prepare nutrient management plans for watershed producers using new field record and nutrient management planning computer program developed by project staff.
- Continue the acceleration of filter strips and wetland restorations.
- Continue to expand on-farm Nitrogen Rate studies

## **Seven Mile Creek Work Plan Summary Accomplishments**

### **Program Element 1 – Initial Activities**

#### **1A. Work plan Development**

- August 2002. Developed work plan.

#### **1B. Hiring**

- August 2002. Developed technical and administrative committee.

### **Program Element 2 – Best Management Practices Promotion & Demonstrations**

#### **Program Element 2A – Nutrient Management**

##### **2A-1. On-Farm Nutrient Planning**

- Sponsored workshop for Nutrient Management Planner Software training.
- While working with many of the watershed producers it was quickly realized that there was a large need to help simplify record keeping and nutrient management. An Excel workbook was created to help fit this need. It is currently under review and testing and will be used to simplify record keeping and nutrient management. Ultimately this program will help farmers increase their eligibility for the Conservation Security Program.

##### **2A-2. Manure Management**

- Identified point source feedlot contributing to high bacteria counts.
- Manure demonstration plot at Red Top Farms.

##### **2A-3. Nitrogen Rate & Timing Promotion**

- Established 550 acres of demonstrations with 6 different producers. Five more plots have been set up for 2005.
- Nitrogen rate validation plots are set up using GPS, GIS, and yield monitor technologies. Certified crop consultant or agronomist is contracted to set up the plots. The results are analyzed by the University of Minnesota-Precision Ag Center. Results are interpreted for producers to help them fine-tune their nitrogen management based on economics and environment.
- Results from the on-farm demonstrations along with data from similar watersheds in Iowa and Minnesota were compiled into a one page report for farmers and agribusinesses. Similar work conducted by the Iowa Soybean Association was also included for reference. Documents can be attained at the following web site, <http://mrbdc.mnsu.edu/org/bnc/nitrogenrate.html>
- Results from program element 2A-3 validate the UM Extension Recommendations and show the Economically Optimum Nitrogen Rate across all farms to be around 109 pounds/acre in a corn/soybean rotation. This is well within University of MN Recommendations. It was found during the study that most farmers could reduce their N fertilizer by 30 or more lbs./acre and have no effect on yield.

#### **2A-4. Innovations in Nutrient and Soil Management**

- Variable rate nitrogen and phosphorus application demonstration at Red Top Farms in 2003.

#### **2A-5. Agricultural Practices Surveys**

- In the spring of 2002 a MDA FANMAP survey was conducted with 20 watershed producers. Over 60% of the watershed acres were surveyed. The detailed farm practice survey was perhaps one of the most important program elements during the project. The survey helped set a benchmark of practices before the project began, and helped us develop a relationship with the farmers, and helped us set realistic water quality goals. The report can be downloaded at: [http://mrbdc.mnsu.edu/org/bnc/pdf/smc\\_fanmap.pdf](http://mrbdc.mnsu.edu/org/bnc/pdf/smc_fanmap.pdf)

### **Program Element 2B – Vegetative Practices**

#### **2B-1. CRP Filter Strips, Farmed Wetland Programs, Living Snow Fences**

- Using GIS and remote sensing, identified areas eligible for continuous signup CRP program. A mailing list and GIS database was then developed identifying CP 21 and CP27/28 eligible land. Targeted areas included environmentally sensitive and marginal agricultural lands. CRP proposals with payment estimates were sent to every landowner. A follow up phone call and/or visit was conducted with most landowners. Farm visits followed by phone calls were the most effective strategies for increasing CRP participation. A total of 156 acres of CRP was secured through this successful method. Additionally, the project helped facilitate the sign up process by providing technical assistance to the landowners and agencies involved with CRP application procedures

#### **2B-2. Riparian Strips and Wetlands**

- 2004: Coordinated and completed restoration of 50 acre wetland site in Belgrade Township. County tile was brought to the surface and wetland will be monitored at inlet and outlet to determine benefits to water quality.
- 2003: Coordinated and completed restoration of two wetlands comprising 40 acres in Belgrade Township. Private tile was brought to the surface at both sites. Water samples taken to determine effectiveness of wetlands at reducing nitrate-nitrogen.
- 2002: Two areas comprising 40 acres enrolled in Farmable Wetlands Program.

#### **2B-3. Waterways**

- No waterways were installed from 2002-2004.

### **Program Element 2C – Tillage Systems**

#### **2C-1. Conservation Tillage**

- 250 acres of no-till soybeans following corn was secured through an EQIP practice for three years. 110 acres were located within the watershed.
- Conservation tillage surveys performed in the watershed every year since 2000. Information was used to develop watershed 'C' factors for use in RUSLE2.



## Program Element 2D –Structural Practices

### 2D-1. Tile Intake Alternatives

- In 2004, twelve open intakes were replaced with rock inlets for six different landowners.

### 2D-2. Wetland Restoration

- See item 2B-2.

### 2D-3. Stream Diversions

- No stream diversions were completed during this reporting cycle

### 2D-4. Stream bank Stabilization through the use of J Hooks, Root Wads, and Willow Cuttings

- About 1,000 feet of stream bank within Seven Mile Creek Park was stabilized using soil bio-engineering and fluvial geo-morphology techniques in the fall of 2002. Over 400 live willow stakes were planted along the stream banks.

### 2D-5. Fish Habitat

- Three additional pools were created using j-hook vanes and cross vanes.
- Colored brochures were created to showcase the innovative project for the park kiosk.  
[http://mrbdc.mnsu.edu/org/bnc/pdf/smc\\_brochure04.pdf](http://mrbdc.mnsu.edu/org/bnc/pdf/smc_brochure04.pdf)

### 2D-6. Septic Systems

- A total of 33 septic systems were upgraded, of which 28 used the low-interest loan program.
- It is estimated that there are about 146 failing septic systems in the watershed. That leaves about 113 more systems in need of upgrade. We hope to upgrade an additional 50 more systems or an average of about 17 per year from 2005-2008. In summary, if we meet our goals by 2008, 60% of the non-complying septic systems would be upgraded as a result of the CWP program.



## Program Element 3 –Monitoring and Assessment

### 3A. Flow Measurement and Water Quality Assessments

- Flow data and water quality samples were collected between 1996 and 2004 at sites 1 and 3, and between 2000 and 2004 at site 2. Data collected is used to estimate pollutant loads.
- Over 2,000 water quality tests were conducted from 2002-2004. Tests include: Total Phosphorus, Ortho-phosphorus, Total Suspended Solids, Fecal Bacteria, E. Coli Bacteria, Nitrate-Nitrogen, Dissolved Oxygen, pH, Temperature, Turbidity, and

Transparency.

- Grab samples taken from two restored wetlands in the watershed. Samples taken from tiles entering and leaving wetlands to determine effectiveness at removing nitrate-nitrogen.

Site	TSS	Nitrate	Total P	Ortho P
1	74.4	19.9	.235	.132
2	97.6	15.4	.297	.173
3	270.8	16.1	.351	.184

TABLE 4: Average FWMC by site within the Seven Mile Creek Watershed.

### 3B. Watershed Assessments

- Open tile intake survey. Through road surveys and landowner interviews there are about 7 open intakes per sq. mile.
- RUSLE2 Modeling
- In collaboration with Dept. of Soil, Water and Climate, ADAPT modeling on Red Top Farms and SMC Watershed were completed. Results will be available in 2005.
- 2002-2003. Electro fishing and macro invert surveys conducted with MDNR.

### 3C. Groundwater Study

- In cooperation with the MPCA groundwater unit and Gustavus Adolphus College, seven groundwater monitoring wells were installed in the park. These wells will be tested periodically and compared to surface water test results.

### 3D. Special Assessments

- Quarterly monitoring of tile lines at Northern Plains Dairy as a part of their NPDES permit.
- Tile inflow and outflow of restored wetlands

## Program Element 4 –Education and Outreach

### 4A. Newsletter

- A total of 5 newsletters were mailed to watershed residents. These can be found on our website; <http://mrbdc.mnsu.edu/org/bnc/pubs.html>



### 4B. Community Activities

- 2005: Hosting of a CSP informational meeting; approximately 160 attendees.
- 2004: Coordinated day long Seven Mile Creek Watershed tour in cooperation with South Central Corn Economics Group. Approximately 120 people participated in tour. Participants included farmers, students, agency personnel and agri-businesses. Tour included visit to local restored wetland and Northern Plains Dairy. Participants were provided with information on the Conservation Security Program, CRP, and nutrient application rates.
- 2003, Watershed information meeting
- 2002 Farmbill meeting for watershed and county residents.

- Cooperative project with MDNR fisheries to produce educational brochure of stream bank erosion demonstration project
- Coordinated citizen stream monitoring program for Seven Mile Creek.
- Development of a Internship Program with Gustavus Adolphus College.

#### **4C. Basin Cooperative Activities**

- Worked with farmers and engineers in CD 29 Ditch Improvement project. Coordinated alternative designs to help offset increase in drainage volume through the use of detention basins and wetland restorations. This led to the leveraging of a Conservation Innovations Grant for demonstrating conservation drainage techniques.

#### **4D. Paired Watershed Activities**

- Assisted with identifying and setting up monitoring sites.
- Attended four meetings and technical assistance to Dave Mulla and Adam Birr.

#### **4E. Schools & Festivals**

- Three presentations at Gustavus Adolphus College
- Administered four Children's Water Festivals with outreach to over 4,000 fourth graders. The day long educational event provides classes and activities focusing on water science and conservation.

#### **4F. Professional Education & Development**

- Presented watershed information at various state and national conferences. National Soil and Water Conservation, National Agricultural Engineers, MN GIS, Farm Bureau's National Watershed Hero's Conference, Minnesota Environmental Health Association Conference.
- 30"x40" poster created to showcase the watershed project.

#### **4G. Website**

- Contracted with Minnesota State Water Resources Center to develop watershed-based website.
- The interactive website can be found at the following address: <http://mrbdc.mnsu.edu/org/bnc/.html>

## **Program Element 5 – Data Management and Analysis**

### **5A. GIS Updates**

- Inventory of buffers along streams, ditches and main stem in the watershed. Used to target landowners eligible for filter strips.
- GIS used to identify potential wetland restoration sites in the watershed.
- Used historical air photos, land surveyor records and GIS to estimate loss of wetlands in the watershed dating back to the 1850's. Can be used to target areas for potential wetland restorations and as an educational tool.

## 5B. Modeling/FLUX

- Used Flux program to estimate pollutant loads from data collected at each monitoring site.
- Developed model to quantify relative loading sources from the watershed using RUSLE , CREAMS, GIS, and Water Quality Data.

## 5C. Technical Committee Review

## 5D. Reporting

- All Seven Mile monitoring sites have been established in STORET.
- Activities for 2004 reported in eLINK. Prior to 2004, activities in watershed reported in LARS.
- Semi-annual reports.
- Estimated pollutant loads from 2002-2004. Provided to PCA for inclusion in the annual State of the Minnesota River Report.

## Program Element 6 – Project Administration

### 6A. Communications

- Frequent meetings among technical committee, Board members and conferences.
- Speaking engagements at the following, MSU Research Forum-2005, National SWCD conference-2004, National American Society of Ag Engineers conf.-2004, GIS/LIS-2004, National Farm Bureau Watershed Heroes Conf.-2002,2003.

### 6B. Fiscal Management

### 6C. Project Direction



Modifying Public Tile to be routed through a recently restored wetland for water quality, flood reduction and habitat.



33 septic system were upgraded from 2002-2004.

Final Seven Mile Creek Clean Water Partnership Grant Expenditures 2001-2004

Seven Mile Creek CWP		Cash				In-Kind			
		Budget	Monthly	YTD	Bal-	Budget	Monthly	YTD	Balance
Final Cash and In-Kind	Budget Expenditures	Cash				In-Kind			
		Budget	Monthly	YTD	Balance	Budget	Monthly	YTD	Balance
		Expnd.	Expense	Expense	Balance	Expnd.	Expenses	Expenses	Balance
<b>Program Element 1 - Initial Activities</b>									
<b>IA</b>	<b>Workplan Dev.</b>								
	Labor	2730.00	109.20	1665.30	1064.70	1365.00		1413.00	-48.00
<b>1B - Committee Organization</b>									
	Labor	2184.00		2129.40	54.60	550.00		480.00	70.00
<b>1 Overall Expenses</b>									
	Travel	50.00		111.69	-61.69				
<b>Program Element 1 Subtotals</b>		<b>4964.00</b>	<b>109.20</b>	<b>3906.39</b>	<b>1057.61</b>	<b>1915.00</b>	<b>0.00</b>	<b>1893.00</b>	<b>22.00</b>
<b>Program Element 2 - Nutrient Management</b>									
<b>2A-1</b>	<b>On-Farm Nutrient Planning</b>								
	Labor	5825.00		3180.46	2644.54				0.00
	Citizen Time					3000.00		95.00	2905.00
<b>2A-2</b>	<b>Manure Management</b>								
	Labor	2730.00		300.30	2429.70	2500.00		3268.00	-768.00
	Calibration of demo	2000.00			2000.00				
	Citizen Time					2500.00			2500.00
<b>2A-3</b>	<b>Nitrogen Rate &amp; Timing Promo</b>								
	Labor	6825.00		2133.70	4691.30			2295.00	-2295.00
	Equipment	954.00		1338.70	-384.70				
	Calibration of demo	11500.00		11532.80	-32.80				
	Citizen Time					3000.00		1440.00	1560.00
<b>2A-4</b>	<b>Innovations in Nutrient Mgmt.</b>								
	Labor	1994.00		532.35	1461.65				
	Ins. Premiums & rye Cover crop	2000.00			2000.00				
	Red Top	2000.00		1263.00	737.00				
	Citizen time					500.00		800.00	-300.00
<b>2A-5</b>	<b>Agricultural Practices Survey</b>								
	Labor	2146.00		1638.00	508.00			565.00	-565.00
	Incentive payments time on survey	1500.00		1800.00	-300.00				
<b>2A Overall Expenses</b>									



## Final Seven Mile Creek Clean Water Partnership Grant Expenditures 2001-2004

		Cash				In-Kind			
		Budget	Monthly	YTD	Bal-	Budget	Monthly	YTD	Balance
<b>2B Overall Expenses</b>									
	Travel	500.00		173.80	326.20				
	Supplies	220.00		221.67	-1.67				
	Ed. Materials	250.00			250.00				
<b>Program Element 2B - Subtotals</b>		<b>25448.00</b>	<b>641.55</b>	<b>13638.85</b>	<b>11809.15</b>	<b>4810.00</b>	<b>0.00</b>	<b>28156.68</b>	<b>-23346.68</b>
<b>Program Element 2C - Tillage Systems</b>									
<b>2C-1</b>	<b>Conservation Tillage</b>								
	Labor	5733.00		832.95	4900.05			190.00	-190.00
	Contracts	2139.00			2139.00				
	Citizen Time					4660.00			4660.00
<b>2C Overall Expenses</b>									
	Travel	150.00		118.11	31.89				
	Supplies	100.00		70.00	30.00				
	Ed. Materials	100.00			100.00				
<b>Program Element 2C - Subtotals</b>		<b>8222.00</b>	<b>0.00</b>	<b>1021.06</b>	<b>7200.94</b>	<b>4660.00</b>		<b>190.00</b>	<b>4470.00</b>
<b>2D - Structural Practices</b>									
<b>2D-1</b>	<b>Tile Intake Alternatives</b>								
	Labor	2730.00		573.30	2156.70				
	Cost Share	6000.00		1312.50	4687.50				
	Citizens Contribution					2000.00		1879.50	120.50
<b>2D-2</b>	<b>Wetland Restoration</b>								
	Labor	1092.00		2201.78	-1109.78			392.00	-392.00
	Citizen Time					5000.00		11260.00	-6260.00
	Nic. Co. PW Labor					2000.00		160.00	1840.00
<b>2D-3</b>	<b>Stream Diversions</b>								
	Labor	4460.00		464.40	3995.60				
	Nic. Co. PW Labor					5000.00		5580.00	-580.00
	McKnight planning construction					1000.00		7156.00	-6156.00
<b>2D-4</b>	<b>Streambank Stabilization &amp; Rock Veins</b>								
	Labor	2730.00		5022.90	-2292.90			0.00	0.00
	Planning/Construction McKnight					3530.00		6840.00	-3310.00
	Nic. Co. PW Labor					2000.00		4274.00	-2274.00
<b>2D-5</b>	<b>Fish Habitat</b>								
	Labor	680.00		1556.10	-876.10			220.00	-220.00
	DNR Grant	5000.00		5000.00	0.00	4000.00		4000.00	0.00
	Nic. Co. Alliance Pipeline					9000.00		10240.00	-1240.00
<b>2D-6</b>	<b>Septic Systems</b>								

## Final Seven Mile Creek Clean Water Partnership Grant Expenditures 2001-2004

			Cash				In-Kind			
Program Element 3 - Monitoring & Assessment			Budget	Monthly	YTD	Bal-	Budget	Monthly	YTD	Balance
<b>3A</b>	<b>Flow Measurements/WQ Assess</b>									
	Labor		9920.00	109.20	17622.17	-7702.17			9726.30	-9726.30
	Lab Analysis		14000.00		14940.88	-940.88				
	In stream Equip		3500.00		4071.78	-571.78				
	Equipment						8500.00		6596.83	1903.17
	Updating Rating Curve		792.00		107.02	684.98				
	Contracts								300.00	-300.00
<b>3B</b>	<b>Watershed Assessments</b>									
	Labor		4095.00		518.70	3576.30				
<b>3C</b>	<b>Groundwater Study</b>									
	Labor		1365.00	54.60	1262.63	102.37	2365.00		3370.00	-1005.00
	Lab Analysis		450.00	207.90	1426.56	-976.56				
<b>3D</b>	<b>Special Assessments</b>									
	Labor		1365.00		2238.60	-873.60	2365.00		480.00	1885.00
	Lab Analysis		450.00		8.87	441.13				
<b>3-2 Overall Expenses</b>										
	Travel		1750.00	12.96	2264.84	-514.84				
	Supplies		500.00		379.30	120.70				
<b>Program Element 3 - Subtotals</b>			<b>38187.00</b>	<b>384.66</b>	<b>44841.35</b>	<b>-6654.35</b>	<b>13230.00</b>	<b>0.00</b>	<b>20473.13</b>	<b>-7243.13</b>
<b>Program Element 4 - Education &amp; Outreach</b>										
<b>4A</b>	<b>Newsletters</b>									
	Labor		2457.00		2675.41	-218.41	2457.00		1903.00	554.00
	Postage/Paper/Supplies		2400.00		1974.28	425.72				
	Equipment						178.00		430.92	-252.92
<b>4B</b>	<b>Community Activities</b>									
	Labor		1229.00	313.95	4770.67	-3541.67	1092.00		1138.00	-46.00
	Supplies		300.00		251.28	48.72				
	Citizen time						2428.00		600.00	1828.00
<b>4C</b>	<b>Basin Cooperative Activities</b>									
	Labor		1365.00	177.45	1992.90	-627.90	1365.00		1675.00	-310.00
	Md MN Team						2730.00		2274.00	456.00
<b>4D</b>	<b>Paired Watershed Activities</b>									
	Labor		2457.00		1521.97	935.03	15000.00		896.00	14104.00
	Monitor Equip						2000.00		2000.00	0.00
<b>4E</b>	<b>Schools &amp; Festivals</b>									
	Labor		1365.00	54.60	3016.65	-1651.65	1365.00		1370.00	-5.00

## Final Seven Mile Creek Clean Water Partnership Grant Expenditures 2001-2004

		Cash				In-Kind			
		Budget	Monthly	YTD	Bal-	Budget	Monthly	YTD	Balance
<b>4 Overall Expenses</b>									
	Mileage	600.00		481.57	118.43				
	Equipment	500.00		558.70	-58.70				
	Supplies	828.00		575.09	252.91				
<b>Program Element 4 - Subtotals</b>		<b>21078.00</b>	<b>764.40</b>	<b>28826.35</b>	<b>-7748.35</b>	<b>30980.00</b>	<b>0.00</b>	<b>16401.06</b>	<b>14578.94</b>
<b>Program Element 5 - Data Mgmt &amp; Eval</b>									
<b>5-1</b>	<b>GIS Projects</b>								
	Labor	2348.00	122.85	8695.05	-6347.05		610.00	12990.00	-12990.00
	Comp upgrades software	767.00		478.58	288.42				
	Conference			800.00	-800.00				
<b>5B</b>	<b>Modeling</b>								
	Labor	5460.00	150.15	4593.21	866.79	5460.00		1086.00	4374.00
	Comp programs	1000.00		1000.00	0.00				
<b>5C</b>	<b>Technical Committee</b>								
	Labor	3269.00		900.90	2368.10	27300.00		13520.00	13780.00
<b>5D</b>	<b>Reporting</b>								
	Labor	3249.00	4115.47	15663.36	-12414.36	3000.00		288.00	2712.00
	Comp Equipment	2504.00		3173.05	-669.05				
<b>5 Overall Expenses</b>									
	Mileage	477.00		831.09	-354.09				
	Supplies	544.00		419.91	124.09				
	Tech Contracts	1585.00		494.83	1090.17				
<b>Program Element 5 - Subtotals</b>		<b>21203.00</b>	<b>4388.47</b>	<b>37049.98</b>	<b>-15846.98</b>	<b>35760.00</b>	<b>610.00</b>	<b>27884.00</b>	<b>7876.00</b>
<b>Program Element 6 - Administration</b>									
<b>6A</b>	<b>Communications</b>								
	Labor	3000.00	341.25	9568.68	-6568.68	3276.00		1409.00	1867.00
<b>6B</b>	<b>Fiscal Management</b>								
	Labor	3000.00	634.72	3862.86	-862.86	7372.00	145.00	4808.00	2564.00
	Auditor/Contract/Admin	17000.00		1148.61	15851.39	6511.00			6511.00
	Rent								
	Util								
	Phone								
	Admin								
<b>6C</b>	<b>Project Direction</b>								
	Labor	3000.00	218.40	750.73	2249.27	11058.00		3338.00	7720.00
	Per Diem					1350.00	360.00	1440.00	-90.00

## Final Seven Mile Creek Clean Water Partnership Grant Expenditures 2001-2004

	Cash				In-Kind			
	Budget	Monthly Expend.	YTD Expend.	Balance	Budget	Monthly Expend.	YTD Expend.	Balance
Program Element 1	4964.00	109.20	3906.39	1057.61	1915.00		1893.00	22.00
Program Element 2A	40614.00		25371.36	15242.64	11500.00		8463.00	3037.00
Program Element 2B	25448.00	641.55	13638.85	11809.15	4810.00		28156.68	-23346.68
Program Element 2C	8222.00		1021.06	7200.94	4660.00		190.00	4470.00
Program Element 2D	28857.00		26088.29	2768.71	588530.00	42256.76	234834.80	353695.20
Program Element 3	38187.00	384.66	44841.35	-6654.35	13230.00	0.00	20473.13	-7243.13
Program Element 4	21078.00	764.40	28826.35	-7748.35	30980.00		16401.06	14578.94
Program Element 5	21203.00	4388.47	37049.98	-15846.98	35760.00	610.00	27884.00	7876.00
Program Element 6	27239.00	3522.52	39649.50	-12410.50	46151.00	1240.00	38157.73	7993.27
TOTALS:	<b>\$215,812.00</b>	<b>\$9,810.80</b>	<b>\$220,393.13</b>	<b>(\$4,581.13)</b>	<b>\$737,536.00</b>	<b>\$44,106.76</b>	<b>\$376,453.40</b>	<b>\$361,082.60</b>

### Special Notation:

- Seven Mile Creek Watershed Project staff are funded entirely by grant sources. The \$4581.13 located under the cash balance is a running deficit resulting from staff continuing to work on the project after the grant expired in December 2004. This deficit will be erased when grant funds are dispersed for the continuation phase.
- The in-kind budget assumed we would use all the low-interest loan money (\$550,000) during the grant period. Instead about 45% of this was used which explains the discrepancy between the \$737,536 budgeted and the \$376,453.40 spent. Despite this gap the project exceeded the minimum in-kind cash match requirement of \$215,812 by \$157,641. (\$376,453-\$215,812)







**Brown-Nicollet-Cottonwood Water Quality Board**  
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