BROWN NICOLLET COTTONWOOD
WATER QUALITY BOARD

Brown-Nicollet-Cottonwood Water Quality Board

Clean Water Partnership Phase II
Work Plan for the Seven Mile Creek Improvement Project

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The Project:
This project is a continuation of the diagnostic work undertaken from 1999 through 2001. This report contains the 3-year budget for the CWP Implementation Phase. A report summarizing the water quality of Seven Mile Creek was compiled in October of 2001 and can be downloaded via the following Internet link. http://mrbdc.mnsu.edu/reports/midminn/sevenmile.html
Chapter 8 of that report provides more detail regarding the work plan of the watershed implementation project. The executive summary of the study can be found in the appendix. This work plan outlines activities designed to provide remediation for water quality problems found during the three-year study.

Format of the Plan:
Each major undertaking is explained as a Program Element. There are six major elements. Activities are listed, as are responsible agencies or departments. Each activity also has a sub-budget. At the end of the Program Element is an overall budget, which summarizes the financial considerations of all activities associated with that element. Program Elements are highlighted with yellow, activities are printed in red, timelines are shown in green, and responsible personnel are listed in blue caps. A spreadsheet containing the entire budget is found at the end of the work plan. The technical and contracts category covers incentives to landowners and producers as well as an agreement between consulting groups like agronomists from Blue Earth Consulting. The $17,000 under 6B tech./contracts covers administrative fees for Brown Nicollet CHS in return for accounting, audits, supervision, and general business management services.

Basis for the Plan:
Within the appendix of this plan figures were added to provide background information about the project, BMP selection reasoning, and implementation plan budget summaries. These figures are included at the end of the work plan. Figure 1 is the executive summary of the water quality study. Figures 2-6 are results of the in depth watershed modeling that was used to estimate the timing of nutrient loadings, sources, and possible Best Management Practice (BMP) reduction scenarios. Lastly, figures 7-9 depict the budget in table, pie chart, and spreadsheet format.
Hydrology is the main factor affecting water quality in the watershed. The analysis indicates most of the sediment is derived from bank erosion. Most of this is attributed from hydrologic changes in the watershed (ditching, tiling, climate, etc.) In addition bacteria, phosphorus and nitrates were all found to be high during much of the time from April through early August. Most of the pollutants are delivered to the Minnesota River during April, May, and June. Major emphasis will be placed on **buffer strips** along riparian corridors, **upgrading septic systems** and **nutrient management.** Realistic watershed goals for the three-year project translate into **10-20% reductions** for sediment, phosphorus and nitrate concentrations and bacteria levels maintained below the fecal coliform standard of 200 col./100 ml.

Personnel:
BNC Staff include Kevin Kuehner, the Project Coordinator; Scott MacLean and Steve Stauff who are Water Quality Technicians; and occasional project interns. Over the three year timeline the project will be able to provide a staff person at seven-tenths time. Brown-Nicollet Environmental Health Staff (BNEH) provide in-kind support and direction. Other in-kind contributors are staff from Nicollet County Public Works, Nicollet County Environmental Services, University of MN-Paired Watershed Study, SWCD and NRCS staff located in Nicollet County, the Minnesota Departments of Agriculture, and Natural Resources, Minnesota Pollution Control Agency, and staff from Northern Plains Dairy. Finally, residents of and producers in the watershed will also be an important part of project personnel.

The Technical Committee:
The committee includes the above-mentioned personnel plus the Minnesota Pollution Control Agency Project Manager Lee Ganske.

Oversight:
Direct oversight and direction is provided by members of the BNC Water Quality Joint Powers Board and the Nicollet County Board of Commissioners.

Financial Considerations:
This project represents a high level of leveraging. In addition to the $196,432 secured from the MPCA, almost $40,000 in additional cash has been secured as a match. With cash supplied from the CWP, and other matching sources over $950,000 has been leveraged for this watershed project. The leveraging translates into a 4:1 match to grant ratio. Cash for the project has been contributed by the Minnesota Pollution Control Agency's Clean Water Partnership Program, Nicollet County Environmental Services, the Nicollet Soil and Water Conservation District, Nicollet County Highway Department (Alliance Pipleline), McKnight Foundation and the Minnesota Department of Natural Resources. In-kind contributions by project co-sponsors are detailed in each program element budget, and summarized at the conclusion of the work plan.

Grant (1):

MPCA Clean Water Partnership	**$196,432**

Cash Matches Used in Budget (2):

Nicollet SWCD	$4,500
Environmental Services	$7,500
MDNR Environmental Partnerships Grant	$7,380
Total	**$215,812**

Additional cash secured but figured as in-kind match (3):

MNDNR Fish Habitat Grant and Shoreline Habitat	$13,000
McKnight Foundation Nitrate Reduction Demonstration	$4,530
Alliance Pipeline Erosion Control (Nicollet Hwy Dept.)	$9,000
In-Kind Match from Septic Loan Program	$550,000
Total	**$576,530**

In-kind match from citizens, labor, equip, etc (4): $165,476

Total Project Funds (Total 2+3+4) $957,818

Project Timeline:

Program Element	2002		2003		2004		2005
	March	Sept	March	Sept	March	Sept	March
1. Introductory Activities	x----------x						
Best Management Practices Activities							
2A. Nutrient Management	x----------x						
2B. Vegetative Practices	x----------x						
2C. Primary Tillage Systems	x----------x						
2D. Structural Practices	x----------x						
3. Monitoring	xxxxxxx	xxxxxxx	xxxxxxx				
4. Education & Outreach	x----------throughout project timeline----------x						
5. Data Management & Eval.	x----------throughout project timeline----------x						
6. Administration	x----------throughout project timeline----------x						

Program Element 1 – Initial Activities

June through November, 2002

Developing relevant plans, coordinating aspects of several projects involving Seven Mile Creek, setting up project systems, and establishing relationships between key agencies are the main emphases of Program Element 1

1A -- Work plan Development

June-August, 2002
BNC STAFF & TECHNICAL COMMITTEE

Complete detailed work plan and budget for the project.
Cash: $ 2,730 labor
In-kind: $ 1,365 labor

1B – Committee Organization

July-Sept, 2002
BNC STAFF & TECHNICAL COMMITTEE

Communicate with all relevant parties regarding project, gathering support and coordinating ideas and activities. Review work plan, schedule, committee member roles and responsibilities. Convene technical committee and establish project direction.
Cash: $ 2,184 labor
In-kind. $ 550 labor

Program Element 1 Overall Expenses

Travel
Cash: 50
In-kind: Total-1,915

Program Element 1 Budget Summary

Budget Category	*Cash*	*In-kind*
Labor	*4,914*	*1,915*
Travel	*50*	
Totals	*4,964*	*1,915*

Program Element 2 – Best Management Practices Promotion & Demonstrations

Long-term adoption and installation of Best Management Practices (hereafter referred to as BMPs) will be by far the most important products of the project. Staff will involve every watershed producer/landowner with opportunities to participate in the installation or demonstration of a variety of land management practices. Although the BNC staff will be the key personnel in implementing this program element, our cooperative co-sponsors will also be important resources.
Selection of BMPs and the amount allocated toward each BMP was determined through the water quality analysis of 2000 and 2001 water quality data.

Program Element 2A – Nutrient Management

2A-1. On-farm Nutrient Planning

throughout project timeline
BNC STAFF, TECHNICAL COMMITTEE, EXTENSION SERVICE

Encourage enrollment of watershed farms in new initiatives involving nutrient plans. Train staff to assist producers. Use local agribusinesses Extension Service and consultants to advance accurate nutrient planning and management through record keeping systems, and management plans. Use new nutrient management CD developed by Extension Service to facilitate plans. Attend appropriate training.
Cash: $ 5,825 labor
In-kind: $ 3,000 citizen time

2A-2. Manure Management

project years 2 & 3
BNC STAFF, NPD, TECH COMMITTEE

Promote approved application levels of manure throughout the watershed. Establish demonstrations; assist with whole-farm planning efforts; and work with Northern Plains Dairy and local government staff to secure widespread acceptance of proper manure application methods, rates, and crediting. Help cost-share soil and manure tests on demonstration fields. Demonstrations will consist of applying manure on one half of an 80-acre field with conventional methods and the other half following University of MN Extension Recommendations. Yields will be checked with GPS and yield monitor and profitability analysis. Information will be interpreted and disseminated to watershed producers.
A goal of at least one field for 2003 and 2004 will be selected.
Cash: $ 2,730 labor + $ 2,000 "calibration" of demonstration projects
In-kind: $ 2,500 labor (NPD) + 2,500 citizen time

2A-3. Nitrogen Rate & Timing Promotion

throughout project timeline
BNC STAFF, BEC, TECH COMMITTEE

Improve nitrogen management decision-making by farmers and crop consultants. Work with Blue Earth Consulting (BEC) and the Center for Agricultural Partnership program to design and implement nitrogen rate demonstration fields to highlight efficient use of nitrogen within the watershed. Program will be modeled after successful St Peter Wellhead Protection Program. Emphasis will be placed on rate, timing, yield and profitability of nitrogen. This program sub-element brings together and leverages the expertise of farmers, consultants, private enterprise, researchers, and farmer-friendly organizations. Staff will assist the consortium by recruiting participants, providing coordination of the various

demonstrations, and geo-referencing fields and plots. Statistically valid data will be collected and managed by BEC. University of MN Precision Ag Center and BEC will conduct analysis of the data. BEC will help market and manage this program element. A goal of 3 fields for 2003 and 2004 will be set. Information will be pooled with similar data collected in the area. Information will be interpreted and disseminated to watershed producers.

Cash: $ 6,825 labor + $ 954 equipment (GPS unit) + 11,500 "calibration" of demonstrations (BEC)

In-kind: $ 3,000 citizen time

2A-4. Innovations in Nutrient and Soil Management

throughout project timeline

BNC STAFF, MDA

Promote "new" techniques to reduce impacts of over-application of nutrients. Introduction of rye as a cover crop may be feasible for some producers; this project could assist with recommendations for introducing this cover crop into a corn-soybean rotation. Cover crops will be especially useful on the growing number of acres being converted to corn silage production because of large-scale dairy feeding operations in the watershed. Cover crops will help hold the soil in place and help reduce nitrate leaching. In addition, during the project timeline, MDA may be the recipient of a grant to introduce Nitrogen Crop Insurance, whereby an agency may purchase insurance on behalf of producers who use lowered rates of fertilizer, so that if yields are lower, the insurance will pay a dividend equal to the profit loss. $2,000 of the budgeted amount in 2A-4 will be used at Red Top Farms in the fall of 2002 to help introduce the above-mentioned concepts on 100+ acres near Red Top Farms in the watershed. In addition, $2,000 will budgeted for Red Top Farm Improvements research initiatives.

Cash: $ 1,994 labor + 2,000 insurance premiums and rye as cover crop + 2,000 for Red Top Improvements

In-kind: $ 500 citizen time

2A-5. Agricultural Practices Surveys

Winter 2002 and 2003

BNC STAFF, TECHNICAL COMMITTEE

Administer a survey developed by MDA and the Paired Watershed Project (10 to 25 random producers) to provide baseline data on current practices regarding cropping, nutrient management, tillage, and other agricultural practices relevant to water quality. It is hoped that a repeat of this survey in five years would show a reduction in detrimental practices. Information will remain confidential and will be used mostly for goal setting, water quality modeling (ADAPT), and tracking overall success of the project. Selection of producers, interview and analysis of the data will be the major tasks in this program element. Coordinate with St Peter Wellhead Protection surveys to maximize efficiency.

Cash: $ 2,146 labor + 1,500 incentive payments for survey participants

In-kind:

Sub-element 2A Overall Expenses

	Travel	Equipment	Supplies	Technical & Contracts	Educational Materials
Cash:	**650**		**240**		**250**

In-kind: Total-11,500

Program Element 2B – Vegetative Practices

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

Throughout Project Timeline

BNC STAFF AND TECH COMMITTEE

Promote enrollment of acres in the federal continuous sign-up Conservation Reserve Program and new Farmed Wetlands Program. Identify eligible landowners and assist interested producers in accessing applications and technical assistance. The selling of these programs will be organized in three tiers. Step I. Send letter to all landowners in the watershed that are eligible to advertise the programs and the staff working with it. Collaborate with county assessors, commissioners, and township officers. Focus on long-term cost/benefits Step II. The mass mailing will be followed by a proposal that estimates what the landowner could receive if enrolled into the program. Using GIS the calculations will provide an air photo with the eligible area outlined. Step III. A follow up phone call and visit will follow the proposals. A significant portion of staff time will be devoted within this phase to accelerate the adoption of these highly successful and cost effective federal programs. In addition, work with MNDOT to establish living snow fences for control of wind erosion in critical areas will take place. Work closely with local NRCS and Farm Services Agency. As part of agreement in 2A-3 BEC will help market and sell filter strips in watershed through one to one contacts and meetings.

Cash: $ 9,380 labor
In-kind:

2B-2. Riparian Strips and Wetlands

Winter 2002 through April 2004

BNC STAFF AND TECH COMMITTEE

Facilitate enrollment of buffers on ditches and areas near the upland cultivated acres and steep ravines or highly erodible areas not eligible through federal CRP program. Participants will sign cost-share contracts to leave 30 to 100 foot strips of warm or cool season grasses along critical areas for 10 years. Landowners will be able to mow in early August, and will receive an up-front payment of $1000/acre. Special incentives could be added onto current CCRP program if an area is deemed eligible and critical. (McKnight Foundation). Help pay for a demonstration on proper seeding and maintenance of a filter strip using a native grass planting company like Prairie Land Management.

Cash: $ 2,730 labor + 6,000 contracts (includes money for signage)
In-kind: $ 3,150 citizen time, $75,000 McKnight Foundation

2B-3. Waterways

Winter 2002 through April 2004

BNC STAFF AND TECH COMMITTEE

Promote continuous CRP waterway program. Additional incentives will be available to those landowners that have critical areas. Identify and inventory critical areas and explain special programs to landowners. Facilitate the installation of grass waterways in erosion-prone areas. The $2,000 in contract money will be added onto to current CCRP rates to increase enrollment on high priority areas.

Cash: $ 4,368 labor + 2,000 contracts
In-kind: $ 1,660 citizen time

Sub-element 2B – Overall Expenses

	Travel	Equipment	Supplies	Technical & Contracts	Educational Materials
Cash:	**500**		**220**		**250**

In-kind: Total-4,810

Program Element 2C – Tillage Systems

2C-1. Conservation Tillage

Throughout Project Timeline
BNC STAFF AND SWCD

Promote conservation tillage practices through establishment of demonstration plots, specifically strip tillage on highly erodible areas. Identify strip tillage units and willing cooperators and conduct tillage demonstrations with yield and profitability analysis. Promote minimum tillage or no tillage of soybean ground, especially on deemed critical areas.
Cash: $ 5,733 labor + 2,139 contracts
In-kind $ 4,660 citizen time

Sub-element 2C – Overall Expenses

	Travel	Equipment	Supplies	Technical & Contracts	Educational Materials
Cash:	**150**		**100**		**100**

In-kind: Total-4,660

Program Element 2D –Structural Practices

2D-1. Tile Intake Alternatives

Sept 2002 through Oct 2004
BNC STAFF, SWCD, NRCS,

Publicize the project's tile intake alternative program; enroll producers; facilitate installation of 25 alternative tile intake structures in the watershed. This will include, replacing a open tile intake with a tile riser and possibly sediment sock, rock inlet, or close-pattern tiling. Project will cost-share 75% of each installation up to $300 with a limit of 3 per person. SWCD and BNC staff will provide project oversight and fiscal management. Priority will be given to those intakes close to drainage ditches and near erodible land.
Cash: $ 2,730 labor + 6,000 in cost-share (SWCD)
In-kind: $ 2,000 citizen contributions to cost-share installations

2D-2. Wetland Restoration *Sept 2002 through Oct 2004*

BNC STAFF, MCKNIGHT PROJECT, SWCD, NRCS

Inventory former wetland areas; contact producers, develop wetland restoration sites. If feasible, coordinate sites so monitoring (upstream/downstream) can take place; then use monitoring results to promote other restorations.

Cash: $ 1,092 labor

In-kind: $ 5,000 citizen time + 2,000 Nic Cty PW labor

2D-3. Stream Diversions *Sept 2002 through Oct 2004*

BNC STAFF, MCKNIGHT PROJECT, NIC CTY PUBLIC WORKS, SWCD, NRCS, MPCA-JOE MAGNER

Applied fluvial geomorphology principles will be used in 2D-3, 2D-4 and 2D-6 to divert high flows from Seven Mile Creek into natural floodplains, protect stream banks from excessive erosion, and help increase trout pool habitat. Work with SWCD/NRCS, consultants, and the county engineer, to inventory areas where stream diversion structures could be installed. Stream diversions would consist of rock placed in a manner where it would direct flows into off channel wetlands thereby increasing the hydraulic residence time (cross vanes). Plan and develop these installations; coordinate construction so before/after and upstream/downstream monitoring (see PE 3) can be used. Promote the use of such structures through demonstration activities and public education. Coordinate with 2D-4.

Cash: $ 4,460 labor

In-kind $ 5,000 Nic Cty PW labor, MPCA Joe Magner

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

Sept 2002 through Oct 2004

BNC STAFF, MCKNIGHT PROJECT, NIC CTY PUBLIC WORKS. NRCS, SWCD, MPCA-JOE MAGNER

Study bank erosion problems and develop stabilization projects such as root wad, J-hook and willow cutting installation. Work will be concentrated near the mouth of the watershed where bank erosion is compromising the integrity of a bridge in the upper portion of the County Park. J-hooks will consist of large diameter rock placed at the bank full or channel forming stage in manner that will redirect flows away from the eroding stream bank. At the same time these J hooks will help create pools conducive for trout fishery and other aquatic organisms. Nicollet County will provide $9,000 from Alliance Pipeline to help fund this program element.

Cash: $ 2,730 labor

In-kind: $ 4,000 Nic Cty PW labor, MPCA Joe Magner -planning and design and on-site inspec.
$ 9,000 Nicollet County (Alliance Pipeline)

2D-5. Fish Habitat *Summer 2003*

BNC STAFF & DNR, MPCA-JOE MAGNER

Cooperative in-stream habitat restorative work will take place with the DNR. The DNR will help match 5,000 from the CWP to enhance trout habitat within the County Park near the mouth of the watershed. Additional pool-riffle-run series will be incorporated into the creek. Natural pools conducive for trout habitat will be enhanced using practices described in 2D-4 and 2D-3. Trees will be planted near the project site to decrease water temperatures through increased shading. The erosion control and fish habitat work will be coordinated together.

Cash: $ 680 labor + $ 5,000 from CWP to match for DNR grant

In-kind: $ 4,000 DNR Stream bank and Fish Habitat , $9,000 shoreline habitat grant

2D-6. Septic Systems *July 2002 through Oct 2004*

NICOLLET ENVIRONMENTAL SERVICES, BNC STAFF

Complete paperwork, bond opinion, and set up criteria, and protocols for processing of individual low-interest loans for improvement of individual sewage treatment. Publicize and market programs to appropriate homeowners; install systems. Allow 1-2 staff people to become certified in septic system installation to accelerate the upgrading process. Approximately 144 of 217 or 66% of the homes are estimated to be non-complying and are considered imminent threats to public health (ITPH) within the watershed. At an average cost of $6500 per household, $936,000 would be needed to upgrade the homes. With the $550,000 in low interest loan money secured, approximately 85 homes or about 60% of the failing septics could be fixed in the watershed. Major emphasis will be placed on this program element with Environmental Services and Steve Stauff coordinating much of the work. Staff will work to contact each homeowner through phone calls, letters, meetings and on-site visits. If possible coordinate demonstration of non-complying system using die tracers for visual effect of connectivity to stream.

Cash: $ 2,685 labor + $ 1,500 bond opinion + $600 staff training

In-kind: $ 550,000 citizen contributions + $ 5,000 county labor = $ 555,000, Environmental Services

Sub-element 2D – Overall Expenses

	Travel	**Equipment**	**Supplies**	**Technical & Contracts**	**Educational Materials**
Cash:	**550**		**465**		**365**

In-kind: Total-593,000

Program Element 2 Budget Summary

Budget Category	***Cash***	***In-kind***
Labor	*56,108*	*18,000*
Travel	*1,850*	
Equipment	*954*	
Supplies	*1,025*	
Technical & Contracts	*42,239*	*560,500*
Citizen Contributions	*965*	*35,470*
Totals	***103,141***	***613,970***

Program Element 3 – Monitoring & Assessment

Monitoring will play a bigger role in this project than in many Clean Water Partnerships. One reason this is true, is that the model developed using SMC diagnostic data is still being calibrated. The installation of structural changes in this small watershed also lead to a greater emphasis on before and after type monitoring- baseline data can be compared to monitoring results after improvements are completed.

3A. Flow Measurements & Water Quality Assessments

throughout the project timeline

BNC STAFF, TECH COMMITTEE

Take storm-related samples, measure field parameters, and flows at three sites with the goal of characterizing the flow weighted mean concentrations and loading rates of selected contaminants. Selected contaminants include: tss, total phosphorus, ortho-phosphorus, and nitrate-nitrogen. Procedures will be consistent and compatible with requirements dictated by MPCA, USGS, MDA, and Met Council. Data will be integrated into the State of the Minnesota River Report and STORET and meet QA/QC conditions . Continue to refine monitoring instrumentation and rating curves periodically. Sampling will include periodic, scheduled runs; storm compositing; and contingency monitoring. Equipment: Purchase two solar panels, temp/DO probe, conductivity meter, maintenance of DO meter and other equipment as needed to keep three monitoring stations running through 2005.

Cash: $ 9,920 labor + 14,000 for laboratory analysis + 3,500 in-stream equipment + 792 for updating rating curves
In-kind: $ 8,500 equipment MET Council, MDA and MPCA

3B. Watershed Assessments

Spring & Fall, 2002 & 2003

BNC STAFF & SWCD

Conduct watershed assessments to track the status of riparian and upland conditions. Periodic land management assessments will take place to determine the status of potential watershed impacts. Assessments include open tile intake surveys, conservation tillage surveys, and stream bank erosion inventories. Data will be integrated into GIS and advanced modeling. Implement volunteer citizen stream monitoring program. Advertise, enroll, train and supervise volunteers. Summarize data.
Cash: $ 4,095 labor
In-kind:

3C. Groundwater Study

Summer 2002 to Summer 2003

BNC STAFF & MPCA

Conduct hydrologic studies to determine the relative component of groundwater to the flow of Seven Mile Creek. Determine groundwater and surface water interactions. MPCA staff (Jim Lundy) will assist with this program element. Take pore water samples periodically during the study.
Cash: $ 1,365 labor + $ 450 for laboratory analysis
In-kind: $ 2,365 labor

3D. Special Assessments *throughout the project timeline, as opportunities arise*
BNC STAFF, RESEARCHERS, TECH COMMITTEE

Opportunities are likely to arise in this watershed based on past history—an E. coli fingerprinting project conducted in 2001 through the University of Minnesota may receive additional funding. Cooperation with emerging research situations will guarantee that the SMC project remains at the forefront of watershed management.
Cash: $ 1,365 labor + 450 for analytics
In-kind: $ 2,365 labor

Sub-element 3 – Overall Expenses

	Travel	**Equipment**	**Supplies**	**Technical & Contracts**	**Educational Materials**
Cash:	**1,750**		**500**		

In-kind: Total 13,230

Program Element 2 Budget Summary

Budget Category	***Cash***	***In-kind***
Labor	*16,745*	*4,730*
Travel	*1,750*	
Equipment	*3,500*	*8,500*
Supplies	*500*	
Technical & Contract	*15,692*	
Citizen Contributions		
Totals	***38,187***	***13,230***

Program Element 4 – Education & Outreach

Education and outreach are critical to the long-term success of the project. Current and future watershed residents must understand the project rationale, project activities, and the roles they can play in creek and land management. This program element also directs collaborative efforts such as basin-wide initiatives, work with students, professional education for staff, and website development.

4A. Newsletter

August 2002, 2003, 2004
BNC STAFF

Publish an annual newsletter for watershed residents and landowners. Newsletters will be in color and inform residents of watershed related activities and issues.
Cash: $ 2,457 labor + 2,400 postage, paper, & publication expenses
In-kind: $ 2,457 labor + 178 equipment

4B. Community Activities

throughout project timeline
BNC STAFF, TECH COMMITTEE

Explain project goals and activities to area residents at community events and town halls as opportunities arise. Explain project while assisting with Township Testing Program planned in the spring of 2003. Host tours and field days showcasing Best Management Practices, erosion control improvements, and on-farm demonstrations. Develop watershed awareness tour using self-guided interpretive trail concept near watershed kiosk in County Park highlighting rare natural features, watershed concepts, history, geology of area, and information regarding activities in 2D-3-5. Update kiosk with watershed activity information. Where appropriate install signs to showcase activities at BMP sites.
Cash: $ 1,229 labor + 300 meeting supplies & materials
In-kind: $ 1,092 labor + 2,428 citizen time

4C. Basin Cooperative Activities

throughout project timeline
BNC STAFF, MIDDLE MN TEAM

Participate in Middle Minnesota Basin Team meetings and activities. Participate in 37 County MRJPB meetings and activities when relevant. Collaborate with other watershed projects and initiatives.
Cash: $ 1,365 labor
In-kind: $ 1,365 labor + 2,730 labor from Md Mn Team

4D. Paired Watershed Activities

throughout project timeline
BNC STAFF, PAIRED WATERSHED STUDY AND STAFF

Participate in Paired Watershed meetings and activities. The paried watershed project is a collaborative effort initiated by local farmers and coordinated by The University of MN along with Nicollet county and other state agencies. The two watersheds are located in Western Nicollet County. The paired watersheds will be compared with the upper two sub watersheds of Seven Mile Creek. Main objectives include:

- Measure how changes in farm practices affect water quality
- Analyze how changes in practices will affect producer costs and profitability
- Enable farmers and agribusiness to be involved in addressing water quality issues
- Enable farmers to showcase their environmental stewardship
- Other questions answered. What level of BMP adoption is needed for measurable improvements in water quality? What is the scientific and economic feasibility of various TMDLs?

The Seven Mile Creek Project will be a part of the project for comparative purposes. Both projects will coordinate with one another to ensure monitoring is conducted similarly. As a result of this collaboration the U of M will provide the use of two solar panels for the project's use. As well ADAPT modeling will be conducted along with other watershed assessments.

Cash: $ 2,457 labor
In-kind: $ 15,000 labor, $2,000 monitoring equipment

4E. Schools & Festivals *throughout project timeline*
BNC STAFF

Work with local schools through relevant school field trips and projects. Participate in Children's Water Festivals and other educational events as opportunities arise. Provide opportunities for high school and college students via internships and apprenticeships. Develop bio monitoring –macro-invert sampling program with St Peter High School Ecology classes. Provide class with training of proper sampling, reporting, and analysis. Provide class with transparency tubes and two additional D nets for bug sampling.
Cash: $ 1,365 labor + 300 promotional supplies and equipment
In-kind: $ 1,365 labor

4F. Professional Education & Development *throughout project timeline*
BNC STAFF

Attend conferences & workshops both to share SMC project results and to learn new techniques and activities from other projects. Continue to grow professionally through relevant magazine/newspaper subscriptions, journals, books, research forums, organizational memberships and conferences.
Cash: $ 1,365 labor
In-kind: $ 1,365 labor

4G. Website *throughout project timeline*
BNC STAFF, MSU WATER RESOURCES CENTER

Develop, produce, and maintain a Seven Mile Creek Website. Website will have a watershed tour theme. Coordinate with Minnesota State University-Water Resources Center, Environmental Health, and county websites as opportunities arise. Develop web-based slide show highlighting landowner/farmer interviews with picture and audio that showcase conservation. Little Cottonwood CWP and McKnight will help provide funding as well for this program element.
Cash: $ 2,184 + 3,500 contract with MSUM+ 228 supplies = 5,684
In-kind: 1,000 McKnight

Sub-element 4 – Overall Expenses

	Travel	Equipment	Supplies	Technical & Contracts	Educational Materials
Cash:	**600**	**500**	**828**		

In-kind: Total 30,980

Program Element 4 Budget Summary

Budget Category	***Cash***	***In-kind***
Labor	*12,422*	*25,374*
Travel	*600*	
Equipment	*500*	*2,178*
Supplies	*1656*	
Technical & Contracts	*3,500*	*1,000*
Citizen Contributions	*2,400*	*2,428*
Totals	***21,078***	***30,980***

Program Element 5 – Data Management and Analysis

Tracking project activities (including monitoring results, installation of BMPs, and educational outcomes) will help with mid-course corrections as well as conclusions about ultimate project effectiveness. Technological analysis and subsequent management advice from the technical committee will strengthen the project throughout its evolution, and will also help shape the conclusions spelled out in the final report. Reporting required by the CWP will be completed semi-annually. In addition, best management practice tracking will be completed through LARS, a BWSR based program, on an annual basis. Water Quality data will be submitted via the EPA based STORET program. The major task in PE 5 will be FLUX calculations in 5B.

5A. GIS Updates

throughout the project timeline
BNC STAFF & TECH COMMITTEE

Since designing BMPs and evaluation of project results will depend on GIS mapping, the project will keep ArcView and Spatial Analyst programs current both through timely data entry, and through updating of programs as needed.
Cash: $ 2,348 labor + $ 767 for computer upgrades & software
In-kind:

5B Modeling/FLUX

throughout project timeline
BNC STAFF, MPCA STAFF, TECH COMMITTEE

Compute nutrient and sediment loads and flow weighted mean concentrations using FLUX computer program in a manner that is consistent with state/federal and MN River Basin data QA/QC procedures. Compute FLUX and associated analysis on three monitoring sites for TSS, TP, Po4, and No3. The Seven Mile Creek diagnostic project along with Jim Klang of the MPCA have pioneered a new GIS model for a small agricultural watershed in southern Minnesota. A substantial amount of time will be devoted to calibration of the model and updating it with monitoring data from subsequent seasonal changes.
Cash: $ 5,460 labor + 1,000 for computer programs
In-kind: $ 5,460 labor

5C Technical Committee Review

throughout project timeline
BNC STAFF, TECH COMMITTEE

Convene the group as needed for project direction, evaluation of activities, and analysis of results and progress toward achievement of goals.
Cash: $ 3,269 labor
In-kind: $ 27,300 labor

5D Reporting

annually & at conclusion of the project
BNC STAFF, TECH COMMITTEE

Complete progress biannual- reports (February 1 and August 1) as required by MPCA project management. Complete LARS and STORET reporting as required. A final report for the project will be compiled and distributed. Funds will be included for the purchase of updated computers and software to aid with the reporting tasks.
Cash: $ 3,249 labor + 2,504 for computer equipment

In-kind: $ 3,000 labor

Sub-element 5– Overall Expenses

	Travel	**Equipment**	**Supplies**	**Technical & Contracts**	**Educational Materials**
Cash:	**477**		**544**	**1,585**	
In-kind: Total-$35,760					

Program Element 5 Budget Summary

Budget Category	***Cash***	***In-kind***
Labor	*14,326*	*35,760*
Travel	*477*	
Equipment	*4,271*	
Supplies	*544*	
Technical & Contracts	*1,585*	
Citizen Contributions	*0*	
Totals	***21,203***	***35,760***

Program Element 6 – Project Administration

This program element covers aspects of everyday operation including financial procedures, internal communications, office management, housing, insurance, supervision, and board oversight. The McKight Foundation will be covering the annual costs of rent ($1500) utilities ($435), phone/internet ($480) and insurance ($1102) for year 2003. In 2004 and 2005 these expenses will be covered in 6B.

6A Communications

throughout project timeline
BNC STAFF & WQ BOARD

Report to the Board via regular meetings and written updates. Report to and within Technical Committee via email and written updates. Participate in agency staff meetings.
Cash: $ 3,000 labor
In-kind: $ 3,276 labor

6B Fiscal Management

throughout project timeline
BNC STAFF, NICOLLET COUNTY

Keep records of time, expenditures, project income as directed by MPCA staff, as required by Nicollet County as the fiscal agent, and as required by the WQ Board. Track in-kind contributions. Pay bills and salaries. Participate in audits by MPCA & State of Minnesota Auditor. Coordinate utilities, rent, insurance, mileage reimbursements, and workers comp as needed.
Cash: $ 3,000 labor +$ 17,000 administration of budgets (CHS)
In-kind: $ 7,372 labor, 6,511 to Nicollet County and State Auditor (CHS)

6C Project Direction

throughout project timeline
BNC STAFF

Project Administrator and Coordinator will provide supervision and support to project staff. Staff will maintain office, laboratory, and field activities as needed. The Water Quality Board will provide oversight for project activities and staff.
Cash: $ 3,000 labor & per diems
In-kind: $ 11,058 labor $1350 (Per diems will be covered by CHS)

6D Office Management

throughout project timeline
BNC STAFF

This activity covers office support for all other program elements as well as day to day management of time and supplies. Production of project materials, purchase of supplies, maintenance of internal systems such as phones, internet and existing office equipment, and contingency planning to cover emergencies will be provided by other agency staff are also included here.
Cash: $ 650 labor
In-kind: $ 2,184 labor

Sub-element 6 – Overall Expenses

	Travel	Equipment	Supplies	Technical & Contracts	Educational Materials
Cash:	**400**		**189**		
In-kind:	**Total-46,151**	**3,000 office**		**5,400 rent** **6,000 utilities**	

Program Element 6 Budget Summary

Budget Category	***Cash***	***In-kind***
Labor	*9,650*	*23,890*
Travel	*400*	
Equipment	*0*	*3,000*
Supplies	*189*	
Technical & Contracts	*17,000*	*19,261*
Citizen Contributions	*0*	
Totals	***27,239***	***46,151***

Attachments

Figure 1

Seven-Mile Creek Watershed Project

Executive Summary

http://mrbdc.mankato.msus.edu/reports/midminn/sevenmile.html

The Seven Mile Creek Watershed Project application is based on three years of intensive monitoring, assessment, modeling, evaluation, and coalition building. The work was undertaken through funding by a MPCA Resource Investigation Grant with contributions from several other local and state agencies from 1999-2001. The 23,551-acre study watershed is located in the Minnesota River Basin, within the Middle MN Major Watershed in South Central Minnesota. The watershed is located between the communities of Nicollet and St. Peter. 86% of the watershed land use is under a corn/soybean cultivation. Seven Mile Creek is Nicollet County's most visible natural resource with a 640-acre county park located at the mouth of the watershed. Since 1985, the creek has been designated as a class 1-D marginal trout stream by the MN DNR.

Cooperators

The coalition interested in improving this watershed includes normal water resource players (SWCD, Environmental Services, etc), as well as an extraordinary roster, which includes two branches of the University of Minnesota (Soils/Ag & Public Health), the MN DNR, the national Center for Agricultural Partnerships, USDA paired watershed study, and the McKnight Foundation. In addition, the watershed's biggest business, 3,000-head proposed Northern Plains Dairy operation, and Red Top Farms, southern Minnesota's longest-running demonstration farm, are both interested in being part of any Phase II project. The Brown-Nicollet-Cottonwood Water Quality Board is the project sponsor; a total of 15 agencies, citizens groups, and private enterprises are involved in this watershed project.

Diagnostic Study Results

Throughout the 2000 and 2001 study period, flow-weighted mean concentrations (FWMC) for sediment at the mouth of the watershed were 5 times higher than the expected values for minimally impacted streams of the same eco-region (western corn-belt plains). Nitrates were 3 times higher and average phosphorus concentrations were 1.2 times higher. Fecal coliform levels were above the 200-col./100ml limit 45% of the tested time. Average FWMC during the two-year study was 227 mg/l, 13.7 mg/l, .340 mg/l and .234 mg/l for total suspended solids, nitrate-nitrogen, total phosphorus and ortho-phosphorus respectively. The watershed yielded an average of 6,712 tons of suspended sediment or 570 lbs./acre or 52 lbs./acre/inch of runoff during the growing season (April-September). The watershed loads approximately 10.7 tons of phosphorus, .912 lbs./acre or .156 lbs./acre/inch of runoff. About 60% of the total phosphorus was found to be in the dissolved reactive form. Considering the size of the drainage area, the watershed contributes high levels of nitrate-nitrogen to the MN River. The two-year average nitrate load measured from the watershed amounts to 320 tons or about 27 lbs./acre or about 3.2 lbs./acre/inch of runoff. Most of the nitrate-nitrogen leaching within the watershed is derived from an over application of commercially applied fertilizers, tile drainage network, soil mineralization, and climatic factors. About 50-70% of the pollutant loads came during the months of April, May, and June. Sediment modeling results indicate that about 42% of the sediment is derived from bank erosion sources, 37% upland, 13% riparian corridor, and 8% from open tile intakes. Phosphorus delivery modeling indicates that 52% of the phosphorus load is from upland sources, 14% bank erosion, 12% non-complying septics and 11% riparian and open tile intakes. Main stem water quality goals will require pollutant reductions of 25% for TSS and 25% for phosphorus and 40% reduction for nitrate-nitrogen. Along with numeric goals, watershed surveys documenting behavioral changes before and after the Clean Water Partnership (CWP) will track project success. Overall, water storage and nutrient management will be the most important BMPs in the watershed restoration effort. The diagnostic study has enabled the watershed technical committee to make informed responses to TMDL recommendations and to target remediative strategies during implementation phases for watersheds like Seven Mile located in the eastern half of the Middle MN Major Watershed.

Implementation Funding

The Water Quality Board is seeking $ 196,432 cash and $ 550,000 in septic improvement loan funds from the CWP program. This will be added to $21,000 local cash (from county agencies and a DNR Environmental

Partners grant) and over $ 650,000 in in-kind contributions from the coalition described above to carry out the proposed implementation plan.

Implementation Action Plan

The three-year plan includes targeted Best Management Practice (BMP) activities based on the two-year water quality study. BMPs are based on agroecoregions of MN (wetter clays and silts). Because nutrient and sediment levels are high relative to the size of the watershed, Nutrient Management will be promoted through nitrogen rate on farm demonstrations, soil testing, record keeping, and follow-up education, and detailed manure management. To reduce further sediment and nutrient levels, the project will promote the adoption of Vegetative Practices, including land enrollment in CREP, the use of rye as a cover crop, new Farmed Wetland Pilot Program, and installation of riparian buffer strips and grass waterways. Primary tillage system conservation techniques such as strip tillage and minimum tillage of soybean residue will be promoted. Structural changes will also be emphasized—to include installation of innovative floodplain rock-cross vanes, wetland restorations, tile outlets to wetlands, upgrades of at least 75 polluting septic systems, and habitat improvements in the creek itself. Monitoring will take place during the project, with special emphasis on "before & after" analysis downstream of the BMP modifications. The SMC County Park will be featured during outreach and education, which will also include basin–wide coordination and regional activities. Nicollet SWCD/NRCS, Env. Services, and BNC Waters Board staff will be key players in the implementation phase.

The leveraging effect of the many activities in place now and planned for this watershed will make this Phase II Project a really outstanding example of effective partnership, and will guarantee new ways of improving water quality—both through assisting citizens in adopting proven, education driven, voluntary BMPs and through exciting new treatment technologies.

Table 29

Average FWMC for 2000 and 2001 (mg/l)

Site	TSS	NO3	TP	Po4
Site 1	73	18.1	0.274	0.154
Site 2	97	14.9	0.312	0.217
Site 3	588	13.7	0.941	0.591

Table 30

Average Yield for 2000 and 2001 (lbs/acre)

Site	TSS	NO3	TP	Po4
Site 1	124	47.0	0.726	0.400
Site 2	164	29.4	0.804	0.540
Site 3	570	26.6	0.912	0.624

Table 31

Average Normalized Yield for 2000 and 2001 (lbs/acre/inch of runoff)

Site	TSS	NO3	TP	Po4
Site 1	16.6	4.2	0.062	0.038
Site 2	24.7	3.6	0.075	0.053
Site 3	51.7	3.2	0.156	0.056

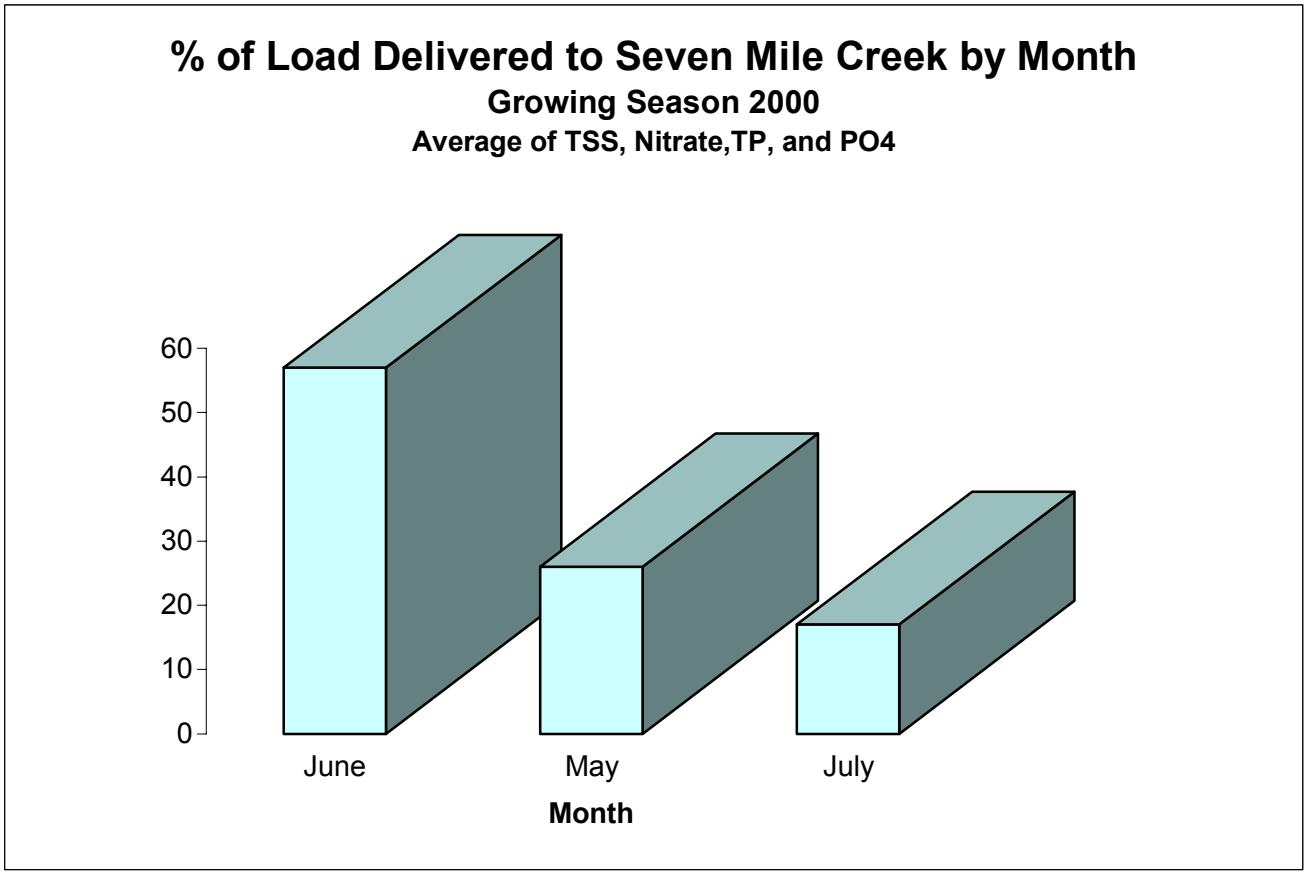


Figure 2: 2000 % of load by month.

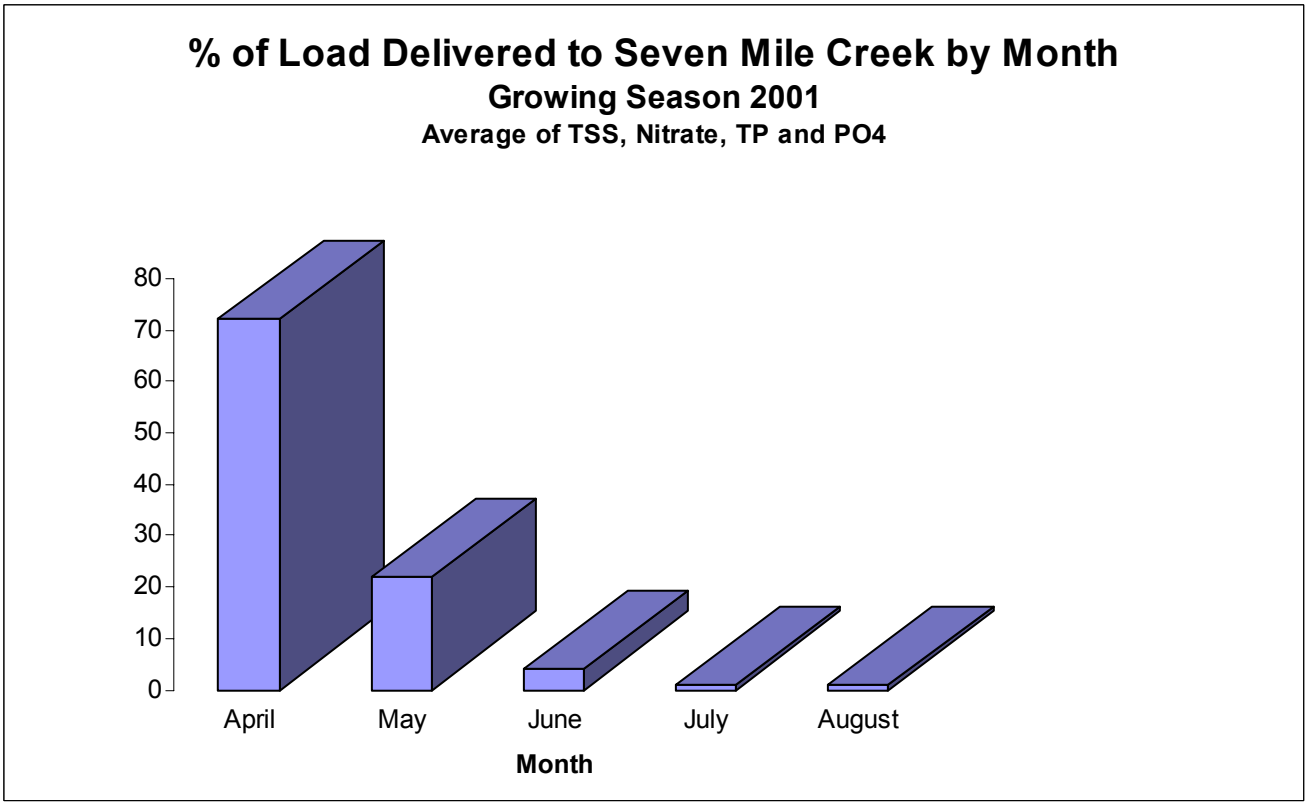


Figure 3: 2001 % of load by month.

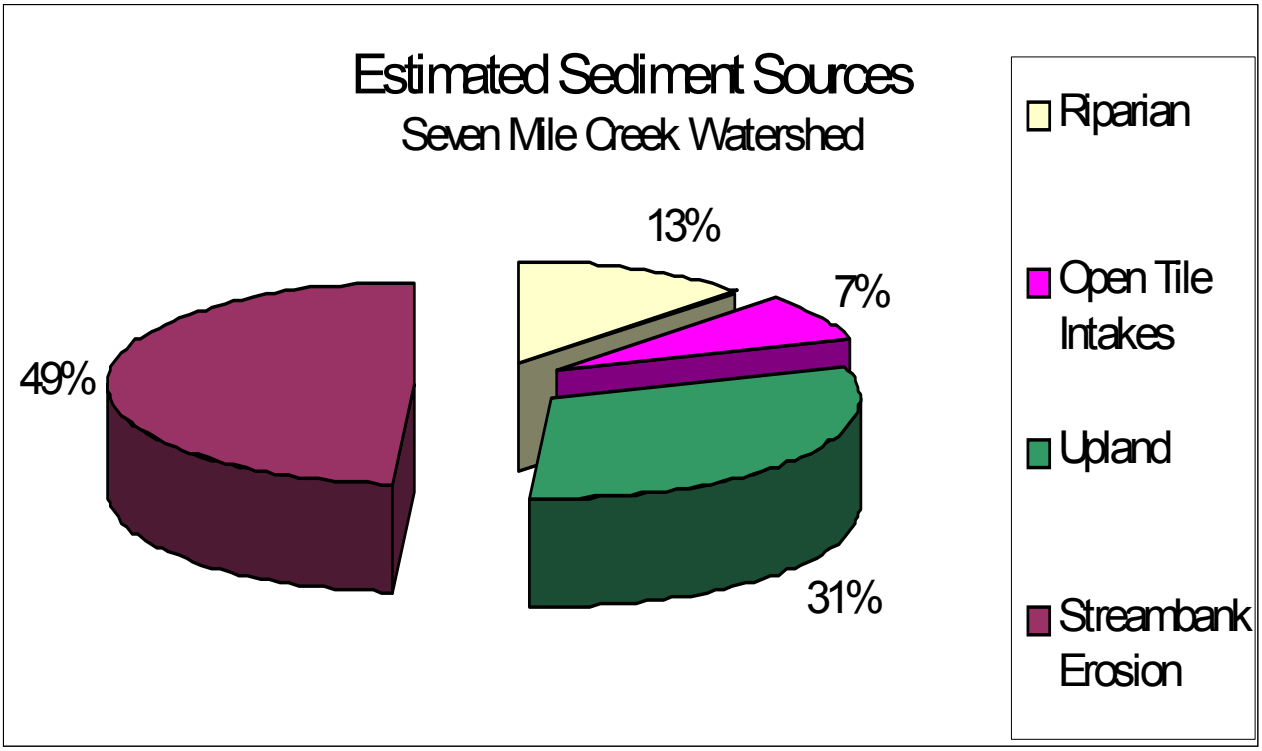


Figure 4: Estimated Sediment Source Contributions. Based on roughly 2000 tons of sediment monitored in growing season 2000.

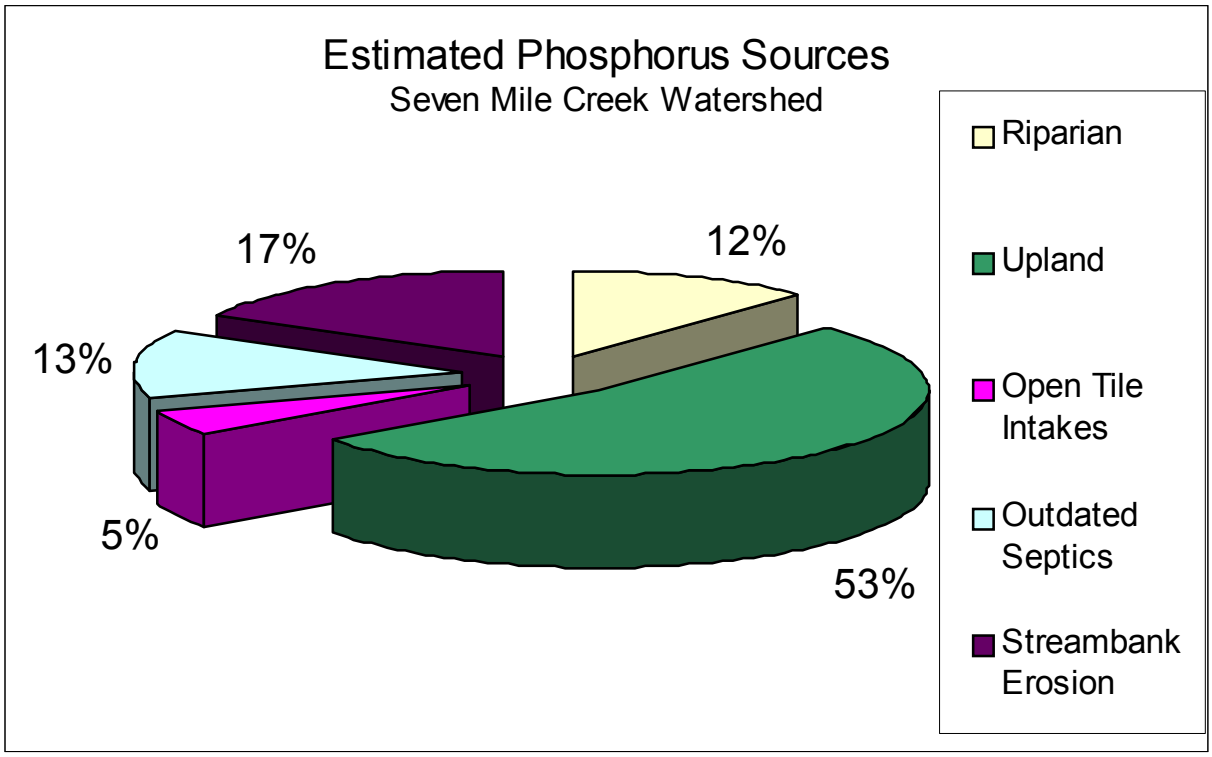


Figure 5: Estimated Phosphorus Source Contributions. Based on roughly 5000 pounds of phosphorus monitored in growing season 2

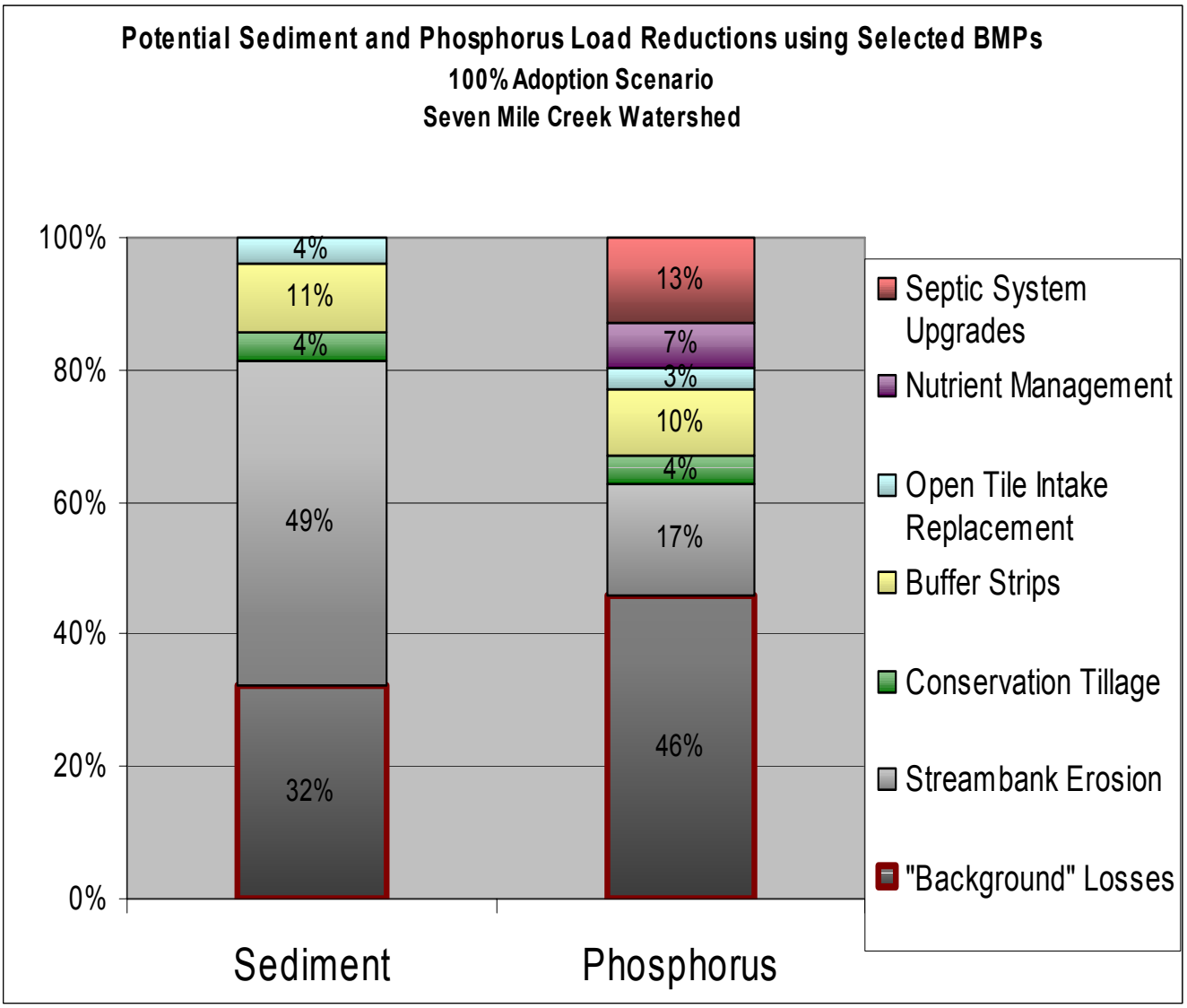


Figure 6: Potential Sediment and Phosphorus Load Reductions using selected BMPs. NOTE- modeling was conducted on year 2000 loads, which ended up being a relatively dry growing season. Reductions could be drastically higher with BMPs if implemented during a high precipitation-growing season.

Figure 7

SEVEN MILE CREEK IMPLEMENTATION PLAN - CASH EXPENDITURES

Program Element	Lbr. Hrs	Labor Total*	Travel	Equip. & Supplies	Tech. & Contract	Educ. Materials	Total
1 Initial Activities	180	4,914	50	0	0	0	4,964
2A. Nutrient Management	715	19,520	650	1,194	19,000	250	40,614
2B. Vegetative Practices	604	16,478	500	220	8,000	250	25,448
2C. Primary Tillage Systems	210	5,733	150	100	2,139	100	8,222
2D. Structural Practices	527	14,377	550	465	13,100	365	28,857
3 Monitoring	613	16745	1,750	4,000	15,692	0	38,187
4 Education & Outreach	455	12422	600	2,156	3,500	2,400	21,078
5 Data & Planning	525	14,326	477	4,815	1,585	0	21,203
6 Admin.	353	9,650	400	189	17,000	0	27,239
Totals	4182	114,165	5,127	13,139	80,016	3,365	215,812

* Labor is calculated at $27.30 per hour salary & fringe benefits averaged over the three-year period. This figure represents professional staff hours devoted to the project. Includes Cost of Living Adjustments, Vacation and Fringe Payouts upon Leave, Insurance, Fringe (Health and Retirement) and Workman's Compensation as required by Nicollet County Policy.

Table 8. SEVEN MILE CREEK IMPLEMENTATION PLAN IN-KIND CONTRIBUTIONS

Program Element	BNC WQB	Nic. County	Colleges & U of MN	Citizens/ Farmers	Businesses	Basin Team	CHS	NRCS SWCD	State Agencies	Totals	Other In-Kind (not counted in CWP Budget)
1	1915									1,915	
2A				9,000	2,500					11,500	$ 10,000 NRCS Vehicle
2B				4,810						4,810	$ 75,000 McKnight Foundation
2C				4,660						4,660	
2D		20,000		557,000					16,000	593,000	
3									13,230	13,230	
4	3,822		17,000	2,428		2,730			5,000	30,980	
5	2,000	4,760	5,000	2,000			2,000	10,000	10,000	35,760	
6		5,000					26,151	15,000		46,151	
Totals	7,737	29,760	22,000	579,898	2,500	2,730	28,151	25,000	44,230	742,006	$ 85,000

Seven Mile Creek Clean Water Partnership
Budget Allocation $215,812

***Does not include McKnight Grant ($4,530), Alliance Pipeline ($9,000), or Septic Loan Money ($550,000)**

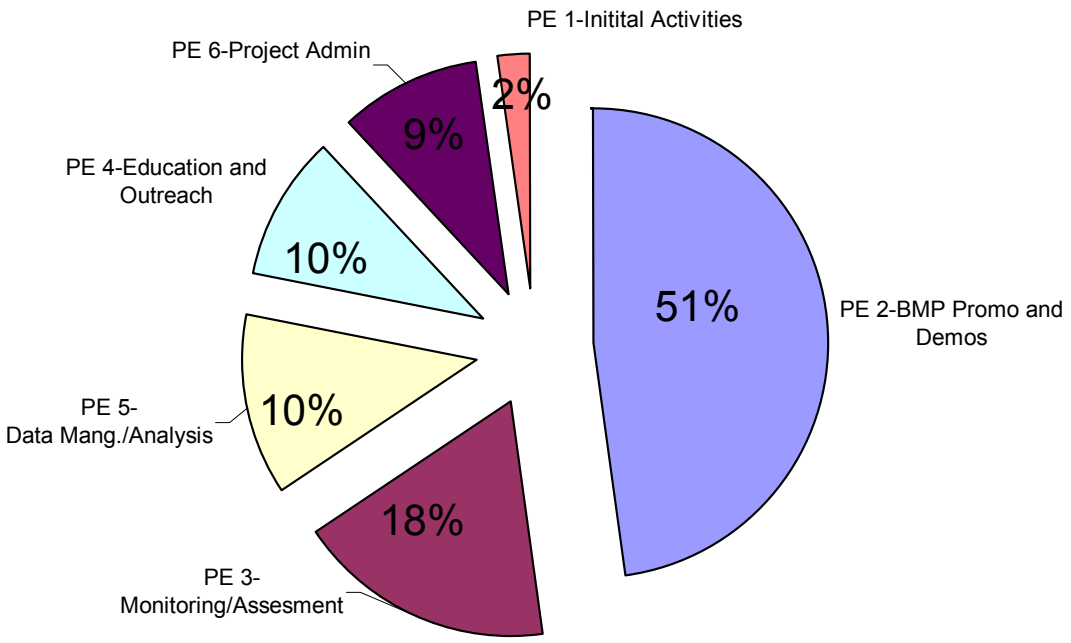


Figure 9: Budget Allocation by Program Element

Figure 10

Seven Mile Creek Watershed Project
Clean Water Partnership Phase II
Three Year Budget (2002-2005)

Program Element 1-Initial Activities

	Labor	Travel	Equipment	Supplies	Tech./Contrac.	Educ. Mater.	Total
1A	2730						$2,730.00
1B	2184						$2,184.00
		50					$50.00
Total	4914	50	0	0	0	0	$4,964.00

Program Element 2-BMP Promotion

Nutrient Management

	Labor	Travel	Equipment	Supplies	Tech./Contrac.	Educ. Mater.	Total
2A-1	5825						$5,825.00
2A-2	2730				2000		$4,730.00
2A-3	6825		954		11500		$19,279.00
2A-4	1994				4000		$5,994.00
2A-5	2146				1500		$3,646.00
		650		240		250	$1,140.00
Total	19520	650	954	240	19000	250	$40,614.00

Vegetative Practices

2B-1	9380						$9,380.00
2B-2	2730				6000		$8,730.00
2B-3	4368				2000		$6,368.00
		500		220		250	$970.00
Total	16478	500	0	220	8000	250	$25,448.00

Tillage Systems

2C-1	5733				2139		$7,872.00
		150		100		100	$350.00
Total	5733	150	0	100	2139	100	$8,222.00

Structural Practices

2D-1	2730				6000		$8,730.00
2D-2	1092						$1,092.00
2D-3	4460						$4,460.00
2D-4	2730						$2,730.00
2D-5	680				5000		$5,680.00
2D-6	2685				2100		$4,785.00
		550		465		365	$1,380.00
Total	14377	550	0	465	13100	365	$28,857.00

	56108	1850	954	1025	42239	965	
						Total	$103,141.00

Program Element 3	Monitoring	Assess.

	Labor	Travel	Equipment	Supplies	Tech./Contrac.	Educ. Mater.	Total
3A	9920		3500		14792		$28,212.00
3B	4095						$4,095.00
3C	1365				450		$1,815.00
3D	1365				450		$1,815.00
		1750		500			$2,250.00
Total	16745	1750	3500	500	15692	0	$38,187.00

Program Element 4	Educ. and	Outreach

	Labor	Travel	Equipment	Supplies	Tech./Contrac.	Educ. Mater.	Total
4A	2457					2400	$4,857.00
4B	1229			300			$1,529.00
4C	1365						$1,365.00
4D	2457						$2,457.00
4E	1365			300			$1,665.00
4F	1365						$1,365.00
4G	2184			228	3500		$5,912.00
		600	500	828			$1,928.00
Total	12422	600	500	1656	3500	2400	$21,078.00

Program Element 5	Data Manag.	Analysis

	Labor	Travel	Equipment	Supplies	Tech./Contrac.	Educ. Mater.	Total
5A	2348		767				$3,115.00
5B	5460		1000				$6,460.00
5C	3269						$3,269.00
5D	3249		2504				$5,753.00
		477		544	1585		$2,606.00
Total	14326	477	4271	544	1585	0	$21,203.00

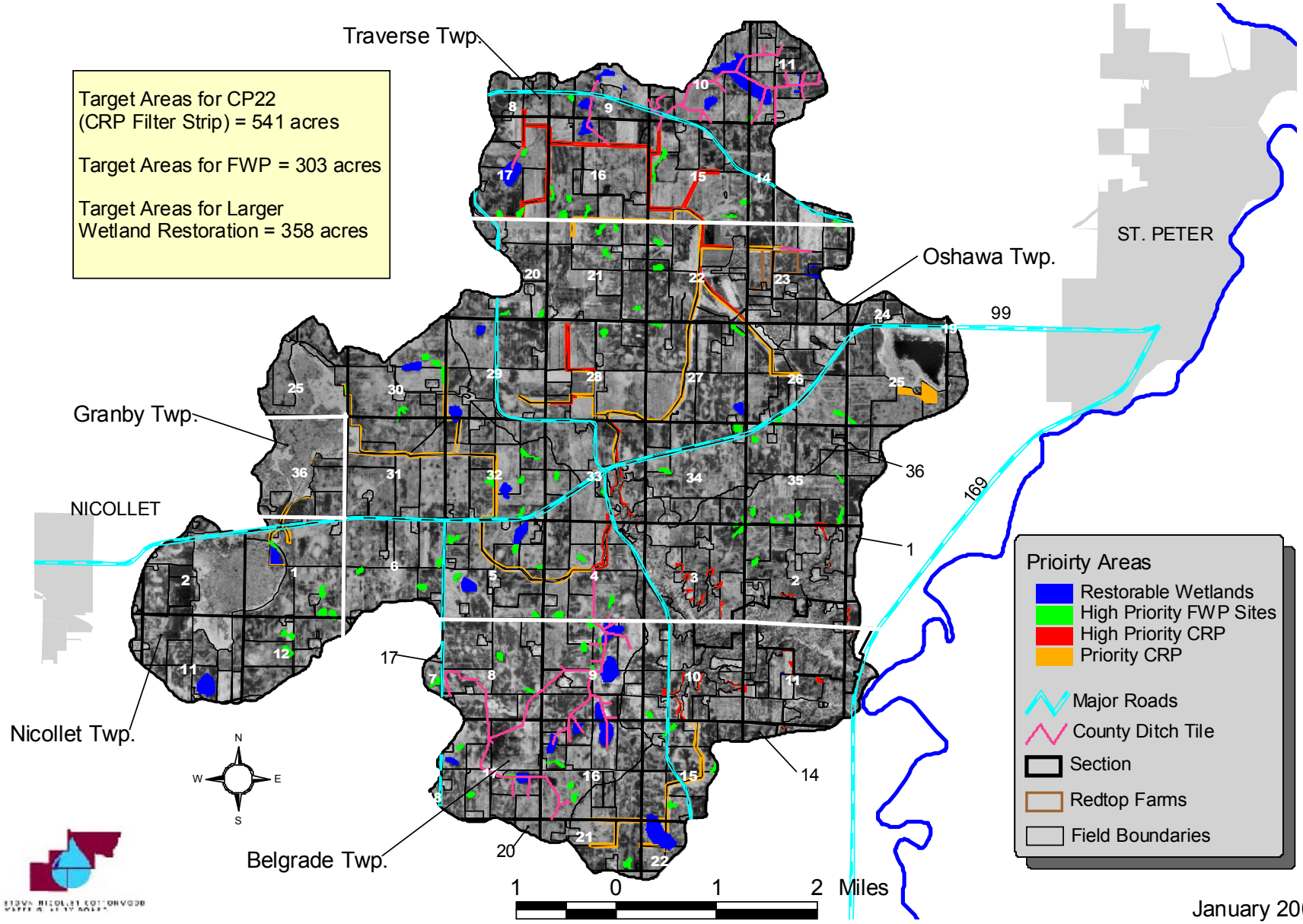
Program Element 6-Project Admin.

	Labor	Travel	Equipment	Supplies	Tech./Contrac.	Educ. Mater.	Total
6A	3000						$3,000.00
6B	3000				17000		$20,000.00
6C	3000						$3,000.00
6D	650						$650.00
		400		189			$589.00
Total	9650	400	0	189	17000	0	$27,239.00

Total	$114,165.00	$5,127.00	$9,225.00	$3,914.00	$80,016.00	$3,365.00	$215,812.00

Priority Areas for Conservation

Seven Mile Creek Watershed



January 2003