Chapter 12 Implementation Plan

Introduction

The Watershed Steering Committee utilized the analysis of the water quality data and watershed assessments to develop goals to:

1. reduce stream flows,
2. reduce pollutant loading, especially for nitrate, phosphorus and sediments,
3. meet state water quality standards for fecal coliform bacteria, and
4. maintain stream habitat for fish and other aquatic organisms. Based on these goals, implementation activities were chosen to achieve them.

The process of setting goals, objectives and actions involved several steps. As Phase I entered the final stages, one or two representatives from the Steering Committee met with local elected officials at the city and township level to present information about activities of Phase I and to solicit feedback about land use practices and other options for addressing water quality concerns. Their comments helped form a basis for many of the proposed implementation activities.

During all of Phase I and the planning for Phase II, the Steering Committee has been actively reviewing water quality data and other watershed assessment information. Following a brainstorming session in which committee members produced a list of potential implementation options, representatives from various departments in both counties, including Environmental Health, Feedlots, Extension and the SWCDs, met to review the list. They helped determine the feasibility of each suggestion and which activities could be implemented using existing programs and which would require additional funding through Phase II. Using those suggestions, the list was refined and put into a survey format and sent to the local elected officials, representatives of conservation groups, the Steering Committee and its technical advisors to rank the proposals. (See for a copy of the survey and results.) The Steering Committee then met to work out the details of the proposals, i.e. funding, targeted areas, and contributing sponsors.

The implementation activities that are being proposed are slated for completion in the three-year grant period. However, the Steering Committee is prepared to apply for a continuation of funding for

programs that are deemed successful and could be expanded, to leverage new state or local programs, or to implement additional programs or innovations to meet needs that arise over the next three years.

Priority Management Areas

Since the water chemistry and field tests were done most frequently at the three primary sites, the watershed was divided into the upper, middle and lower subwatersheds in order to do a more detailed evaluation of the data. The evaluation revealed some specific concerns in each area that help to target the implementation activities.

Upper Subwatershed (headwaters to site SB-5A: Co. Road 14 bridge in Mower County)

- Exhibited highest runoff during both 1999 and 2000; 25-65% higher than the lower or middle subwatersheds.
- Nitrate yields of 50 lbs./acre in 1999 and 67 lbs./acre in 2000 represent a significant economic loss; yields are 2-3 times higher than in middle or lower subwatersheds.
- Two-year average fecal coliform concentrations at Judicial Ditch (site JD-1) 2-15 times higher than other primary or secondary sites

Middle Subwatershed (Site SB-5A to site SB-3: Hafner bridge one mile north of Etna)

- Yielded over 600 lbs/acre of sediment in 2000; 2-3 times the amount from the upper or lower subwatersheds probably due to combination of steep topography and high percentage of land in cultivation, both critical factors in erosion.
- Phosphorus yield also highest at about 1.7 lbs/acre in 2000, which is somewhat expected since phosphorus is often attached to sediment; differences with upper and lower subwatersheds not as pronounced indicating soil erosion is not the only source of phosphorus.

Lower Subwatershed (Site SB-3 to SB-1: Historic Forestville bridge in the state park)

- Runoff was lowest here; even though the topography is steeper, more of the land is in permanent vegetative cover of forest, grassland and pasture.
- Two-year average fecal coliform concentrations at Forestville Creek site (F-1) were 2-15 times that of other primary or secondary sites.

- Highest TSS concentration observed on Forestville Creek during May 18, 2000 flood indicating that lack of crop cover or residue is a factor along with flow.

Best Management Practices

Many of the Best Management Practices (BMPs) being proposed are needed throughout the project area. However, some particular concerns in each subwatershed are being addressed by specific BMPs based on the water quality information from Phase I. All BMP activities paid for with grant funding will be administered through the Fillmore and Mower County Soil and Water Conservation Districts. Established District practices and plans to assure quality and maintenance of BMP's will be followed.

Wetland Restoration

Due to the high runoff in the upper watershed, water retention is extremely important here. Historically, this subwatershed, as well as upper portions of the middle subwatershed, had a significant amount of hydric soils making wetland restorations a highly desirable BMP for water retention. The Mower County SWCD has identified a number of landowners who have expressed interest in restoring wetlands, especially in riparian areas which have been frequently flooded and which stay wet significantly longer than other acres. However, due to funding shortages in programs such as Reinvest in Minnesota (RIM) and the Wetland Restoration Program (WRP), these restorations have not been possible. This CWP proposal offers an opportunity to fund a portion of those potential projects. Choosing a site that functions effectively, but is also visible and owned by a well-respected member of the community, can have long-term benefits to encourage future projects through other funding sources or as a continuation of this proposal beyond the three years.

Perennial vegetation

Maintaining perennial vegetation is critical to reducing runoff and increasing water infiltration, especially on steeper topography. This has been a focus of the MPCABasin Alliance for the Lower Mississippi in Minnesota (BALLM) basin plan , which has proposed a pilot project to establish hay as a program crop in the next federal farm bill. To build on this proposal if it becomes part of the farm bill, or to pilot a project on a smaller scale in the event that it is not part of the next farm bill,

this proposal includes a CRP-like program for hay. The landowner would receive a payment at a reduced rate for establishing hay cover that can be harvested once or twice during the period between June 1 and September 1. Landowners could sign up a maximum of 20 acres. This proposal has a target of getting 10 contracts for a total of 200 acres signed up. During the periods of highest precipitation, the hay cover would be well-established and prevent runoff. Riparian areas, headlands, and areas around sinkholes, springs and wetlands that are currently cultivated are priorities. As an example, a 66-foot buffer for one-mile is equal to about 4 acres. U.S. Fish and Wildlife Service GAP data showing land cover is available and can be used to target areas, especially for riparian areas that may connect corridors of permanent vegetation. The program would fill a gap in the existing CRP which turns some landowners away due to limitations on using the land for haying or grazing.

Another BMP in this proposal that will help maintain permanent vegetation is helping landowners maintain healthy pastures. Grazing schools have been held successfully in this region and around the state to encourage better pasture management. Local and state staff have made a commitment to hold at least one grazing school for landowners over the next three years in the project area.

The management plan for Forestville/Mystery Cave State Park has recognized the need to maintain vegetative cover in the watershed, especially along the river corridor, not only for sustaining or improving current water quality conditions, but also for preserving the unique natural communities that add to the diversity and aesthetic value of the landscape. The MN Land Trust, as well as other conservation organizations, have the expertise to guide landowners in making decisions about how some of these unique and beautiful parts of the landscape can be protected. The MN Land Trust has made a commitment to this project to help inform landowners about conservation easements and other options for protecting their land. For those who wish to pursue creating easements or other land protection measures, staff from MN Land Trust can also guide this process. In exchange for their commitment of staff time and educational materials, an equal amount of funding is being requested to offset some of the legal and processing costs to encourage these types of land protection measures.

Both the Mower and Fillmore SWCDs have successful cover crop programs in place which could benefit from better promotion. This need to promote existing programs is being addressed in this proposal by hiring a coordinator/educator who can make more one-to-one contacts with owners and

assist local, state and federal agencies in disseminating information about those programs. Other established BMPs that deserve promotion and are equally important in reducing soil loss are residue management, contour planting and contour strips.

Buffers

There are existing programs to establish buffers that landowners may be willing to participate in if they are aware of the benefits. CRP (both the regular and continuous programs), the Farmable Wetlands program, the NRCS filter strip program, DNR Aquatic Plant Restoration program are all programs that help landowners establish buffers and other practices that enhance buffers. The coordinator/educator again can help to raise awareness of these programs.

Buffers by themselves have many water quality benefits, but can be even more effective when used with other established BMPs. This proposal includes funding for bonus payments for maintaining crop residue and practicing nutrient BMPs in conjunction with buffers. The bonus payments would be set at current NRCS rates of $4.50/acre for nutrient management and $7.00/acre for residue management with a target of 500 acres to be enrolled.

The need for research to determine the extent of the benefits of different BMPs has been raised by those on the Steering Committee. In conjunction with the buffer bonus program above, research is planned to monitor the effectiveness of the combination of BMPs using sediment boxes above and below the practice. The SWCDs and Extension will coordinate this effort.

These buffer initiatives also help fulfill a basin-wide proposal from the BALMM organization "to capitalize on the proven popularity of buffer strips while providing incentives for the implementation of buffer strips as part of an integrated, multi-BMP system to reduce runoff from cropland."

Streambank stabilization

Eroding streambanks not only add to the sediment loading in a stream, especially during high flow events, but also degrade habitat for fish and other aquatic life. In cooperation with the MN DNR Division of Fisheries, funding is being requested to provide materials to install streambank stabilization practices on approximately 300 feet of stream. The involvement of the DNR Fisheries

staff provides the technical expertise in choosing the sites and methods that will be most beneficial while also providing a large portion of the labor and equipment costs. These sites can also serve as demonstrations for private landowners who may wish to install these practices on their own or with the help of funding through other sources.

Feedlot BMPs

Livestock production is prevalent throughout the project area and are probably a significant source of fecal coliform bacterial in some of the streams. Both Mower and Fillmore counties are making concerted efforts to assist feedlot owners with coming into compliance with the new feedlot rules. For those operations between 100 and 300 animal units which have open lots, the operators have the option of signing an Open Lot Agreement which allows them five years to reduce the pollution potential from their lots by 50% and ten years to attain a 100% reduction. Based on a popular program in Fillmore County, this proposal includes a program offering 50% cost-share up to $1000 for non-engineered practices, such as rain gutters, buffers, etc. to help meet the 50% reduction with a goal of assisting 10 feedlot operators per year over the next three years. Forestville Creek watershed has a significant concentration of feedlots and fecal coliform concentrations in the lower watershed indicate that this will be an area to target initially.

Another need identified for dairy operations is adequate treatment of milkhouse waste, which oftentimes is not adequately treated and can contribute to decreased dissolved oxygen levels in streams. Low-interest loans funds have been requested for this practice. Each system consists of a tank and pump for holding the wastes until they can be pumped and land-applied.

Nutrient management

Nutrient management can extend into the discussion of other BMPs, such as the buffer initiative mentioned above, as well as manure management and commercial fertilizer use. In order to encompass all these aspects of how to manage nutrients so impacts to water quality are minimized, landowners and their crop nutrient advisors need to be informed about BMPs for nutrient management. In this proposal, methods for fostering better communication between ag advisors in the private sector and local staff in Extension, the SWCD and county feedlot offices will be put into practice. Commodity groups and others in the ag industry will be asked to participate in the process.

Although this is important throughout the watershed, landowners in the upper subwatershed where nitrate losses are greatest should be a focus.

Residue management

This BMP is also addressed with the buffer initiative above. The Steering Committee determined that existing loan funds in each county are already available for conservation tillage equipment. By promoting of this existing program in the project area, the Steering Committee set a goal of having at least two landowners in the project area purchase tillage equipment each year that would increase crop residue cover. Education about the benefits of this practice will also be emphasized.

Wastewater treatment

Non-complying septic systems and inadequate treatment of the wastewater from the city of Ostrander are potentially another cause for fecal coliform bacteria in the streams. Loan funds are available through existing programs in each county to upgrade individual sewage treatment systems (ISTS). The goal of this proposal is to upgrade at least ten systems per year in the project area over the next three years utilizing these existing funds. Promoting this program would be the responsibility of the coordinator/educator hired for this project. County ISTS staff will help to identify systems for upgrading.

Phase I of this project produced information that enhanced the city of Ostrander's application for funds to upgrade its wastewater treatment plant. The identification of a state threatened mussel species in the river and other water quality data collected for the project added to the number of points they received on their funding application. MPCA staff have recently indicated that Ostrander will receive funding through a supplementary federal program. The project will continue to stay informed about this process and assist Ostrander however possible.

Private well testing

Probably one of the most effective educational methods for understanding water quality is knowing what is in one's own drinking water. Following the flooding in 2000, 23 private wells were tested in the project area for fecal coliform bacteria due to the amount of runoff and the high number of sinkholes which funnel that runoff to ground water and residents' drinking water supplies. Of the 23

samples tested, 20 had bacteria present and 16 of those had *E. coli*. This raised concerns with several residents about the need for more testing of private wells. It is the goal of this proposal to test half of the private wells in the project area for nitrate and bacteria over the next three years. Tests will be provided at a reduced cost to the well owner, and the samples will be collected by trained staff. Follow-up education will be provided to those well owners whose wells show contamination.

Education and Information

Hiring a Watershed Educator

As mentioned above with several of the BMPs, education about and promotion of existing and new programs will be key to this project. Many of the objectives can be attained simply by informing people about what they can do to address water quality concerns in the project area and the programs that can be of assistance to them. Other educational activities will include, but are not limited to:

1. promoting the region's karst education exhibit,
2. developing programs and materials to address specific topics, such as woodland BMPs, ISTS operation and maintenance, zoning and land use issues, wetlands, land protection options, sources of bacteria, etc. utilizing community education and other methods,
3. coordinating publication of the watershed newsletter,
4. coordinating watershed open houses, informational meetings and other promotional activities,
5. assisting with grazing school(s), ag advisor meetings, commodity group presentations, etc.,
6. initiating a letter box project to encourage residents to learn about unique features and landmarks in the watershed.

Watershed kiosk

A watershed kiosk will be designed and installed by the DNR at the new Forestville/Mystery Cave Interpretive Center. The cost for this will be incurred by the DNR. It will complement existing interpretive signs already in place in the park that explain the watershed and its unique characteristics.

Monitoring and Data Management

Citizen Stream Monitoring

Citizen volunteers who have been using the MPCA Citizen Stream Monitoring Program protocol will continue to be encouraged to monitor existing and/or new sites in the watershed. New volunteers will be encouraged as well.

Maintaining a permanent monitoring station

Throughout Phase II, the permanent monitoring station at the Historic Forestville bridge in Forestville State Park will be maintained to record stream stage and as a collection site for water chemistry samples. Additional monitoring probes (e.g. turbidity, nitrate) may be added to allow a more complete understanding of on-going stream conditions. A monitoring schedule similar to that during Phase I will be maintained with monthly sample collections from April to November plus samples from runoff events. A follow-up macroinvertebrate survey and algae analyses are also planned. Funds from the Fillmore County Water Planning Base Grant are dedicated to on-going monitoring for the project over the next three years.

GIS support and data management

The Mower and Fillmore SWCDs are committing staff time to assisting with maintaining databases related to the project and providing mapping services when needed.

Project Administration

Coordination/administration

A coordinator/educator position will be created to oversee project activities, seek additional funding, assess future project needs and coordinate Steering Committee meetings and activities. The Steering Committee will continue to provide guidance for project activities and future planning with citizen members as the core of the committee. Recruitment of new members will also continue. The goal is to hold at least four meetings per year.

Milestone Schedule

Project Activity	2003		2004		2005	
	By 6/03	By 12/03	By 6/04	By 12/04	By 6/05	By 12/05
Hire coordinator/educator	X					
Wetland Restoration		X	X			
Buffers: bonus payments		X	X	X	X	X
Research		X	X	X	X	X
Streambank stabilization		X	X	X	X	X
River corridor protection		X	X	X	X	X
Feedlot cost-share	X	X	X	X	X	X
Milkhouse waste systems		X	X	X	X	X
Newsletter (2/year)	X	X	X	X	X	X
Private well testing		X		X		X
Monitoring/data mgmt	X	X	X	X	X	X

Table 1: SBRR Clean Water Partnership Phase II Implementation/319 Activities and Budget

Activity	CWP Grant	319 Loan Funds	In-kind		Total In-kind	Total
Best Management Practices			**Hrs**	**x$/hr**		
1. Funding for riparian water storage area in JD # 1 (approx. 14 acres)	27,900					32,100
Mower SWCD staff			80	30	2,400	
JD #1 Maintenance Project			60	30	1,800	
2.CRP-like program allowing limited hay harvest from June 1 to September 1 in riparian areas, headlands, and around sinkholes, springs and wetlands (20-acre max. x 10 landowners) 200 acres x $50/acre x 3 yrs	30,000					30,720
Mower SWCD staff			8	30	240	
Fillmore SWCD staff			16	30	480	
3. Buffer initiative: Bonus payments for conservation tillage ($7/A) and nutrient mgmt practices ($4.50/A) (BALMM Initiative) 500 acres x $11.50/acre x 3 yrs	17,250					21,390
Research: buffers, etc.						
Mower SWCD staff 24 hrs x $30/hr			24	30	720	
Fillmore SWCD staff 24 hrs x $30/hr			24	30	720	
Extension staff 90 hrs x $30/hr			90	30	2,700	
4. Stabilization of streambanks in cooperation with MN DNR on approx. 300 feet of stream at a total cost of $100/foot	15,000					30,000
MN DNR staff and equipment $50/foot					15,000	

5. Blufflands and river corridor protection through easements, land trust agreements, etc. in cooperation with MN Land Trust	10,500					21,000
MN Land Trust facilitate process					10,500	
6. 50% cost-share up to $1000 for non-engineered feedlot pollution abatement practices (gutters, buffers, etc.) 10/year x 3 years	30,000					69,000
Landowners share					30,000	
Mower SWCD staff			75	30	2,250	
Fillmore SWCD staff			75	30	2,250	
Mower Feedlot Officer			75	30	2,250	
Fillmore Feedlot Officer			75	30	2,250	
7. Low-interest loans for milkhouse waste systems 25 systems x $2000/system		50,000				53,000
Fillmore Feedlot Officer 4 hrs/system			100	30	3,000	
Education and Information						
1. Hire a Watershed Educator (0.5 FTE) to promote existing and new practices and programs	57,950					328,910
1040 hrs/yr x $14.4809/hr + benefits x 3 yrs						

Promote cover crop program, residue management, contour planting and strips, Farmable Wetlands Program, NRCS filter strip program, DNR Aquatic Plant Restoration program, ISTS low-interest loans, the karst exhibit; facilitate cooperation with private sector on nutrient management planning; coordinate publishing newsletter; meet with commodity groups; help organize grazing schools; develop focused educational programs, letter box project, community education topics, and information on zoning issues and sources of bacteria, etc.						
ISTS low-interest loans 10/yr x 3 yrs x $5000/system					150,000	
Conservation Tillage Equipment low-interest loans 2/yr x 3 yrs x $20,000/implement					120,000	
Grazing Schools/Private sector mtgs, etc. NRCS/BWSR staff			8	30	240	
Extension			16	30	480	
Mower CFO			4	30	120	
Fillmore CFO			4	30	120	
2. Watershed Kiosk at Forestville State Park adjacent to Mystery Cave Interpretive Center – MN DNR Parks					2,000	2,000
3. Watershed Newsletter published 2x/year, open houses, informational meetings ($2000/year x 3 yrs)	6,000				0	7,500
Volunteers 5 x 20 hrs/yr x 3 yrs			100	15	1,500	
4. Subsidize private well water tests and follow up with well owners 434 rural households x 50% = 200 households x $15/test	3,000				0	5,000
Well owners' share $10/test					2,000	

Monitoring and Data Management					0	
1. Maintain stream monitoring station at Historic Forestville bridge	4,500				0	20,460
Monthly samples (April- Nov.) +					0	
runoff events for nutrients, turbidity , TSS, and bacteria (11 x $ 117/analysis) + additional probes for datalogger, macroinvertebrate follow-up, etc.					0	
Mower SWCD: GIS support			72	30	2,160	
Fillmore SWCD: GIS support			150	30	4,500	
Water Plan Base Grant ($1000/yr)					3,000	
CSMP volunteers 140 hrs/ yr x 3 yrs x $15/hr			420	15	6,300	
Project Administration						
1. Hire a project coordinator (0.5 FTE) to oversee project activities, facilitate committee meetings, seek additional funding for such things as grazing systems (fencing, alternative watering), and other potential projects. Probably combine with educator position	57,950				0	67,130
1040 hrs x $ 14.4809/hr + benefits x 3 yrs					0	
Fillmore SWCD: Office space and overhead					2,700	
Fillmore Water Plan Coord. (report prep. + other asst)			60	30	1,800	
Steering Committee:					0	
Citizen volunteers 5 x 4 mtgs/yr x 2 hrs/mtg x 3 yrs			120	15	1,800	
County, state staff 4 x 4 mtgs/yr x 2 hrs/mtg x 3 yrs			96	30	2,880	
TOTALS	$ 260,050	$ 50,000			$ 378,160	$ 688,210