MN Coastal Nonpoint Pollution Control Program Response to NOAA/EPA Condition One

(Submitted to EPA/NOAA December 17, 2004)

Applicable Section 6217 Management Measure

EPA-840-B-92-002 January 1993, Chapter 4, Section II. Urban Runoff, A. New Development Management Measure:

1. By design or performance:
    a. After construction has been completed and the site is permanently stabilized, reduce the average annual total suspended solid (TSS) loadings by 80%. For the purposes of this measure, an 80% TSS reduction is to be determined on an average annual basis*, or
    b. Reduce the post-development loadings of TSS so that the average annual TSS loadings are no greater than pre-development loadings, and
2. To the extent practicable, maintain post-development peak runoff rate and average volume at levels that are similar to pre-development levels.

Condition 1)
Within two years, Minnesota will demonstrate that all areas within the Lake Superior Basin not subject to the State Shoreland Management Act (M.S. 103F), or subject to NPDES Phase I or II of the MS4 program, will implement the Section 6217(g) new development management measure via water plans or some other mechanism. Within two years, the State will also demonstrate through a pilot project or further data/information sharing with NOAA/EPA that its management practices taken in combination provide for 80 percent TSS reduction by design or performance.

Spatial Applicability of Condition

Within Minnesota's 6217 management area, acreage from federal, state and local public lands (57%), combined with tribal reservation lands (2%) comprise 59% of the total area. As depicted in Map 1, the majority of the remaining private areas (41%) are concentrated in the Duluth urban area and on the Iron Range. See attached map: Land Ownership Within Minnesota's Lake Superior Watershed.

NPDES Phase I and Phase II, as well as the MS4 program, combine to address BMPs in the urban areas and throughout the basin for all construction sites that disturb one or more acres of land, further reducing the spatial applicability of this condition.

MS4 areas associated with the urban areas of Duluth comprise 16% of the basin area. Additionally, the Minnesota Shoreland Management Act (MSMA) administered by local government units and the DNR, protects riparian lands adjacent to both streams (300') and lakes (1000', or up to the Ordinary High Water Level). On private lands, this accounts for another 18% of the private lands with the basin area. See attached map: Private Lands Under MSMA Designation and MS4 Within Minnesota's Lake Superior Watershed.

Of the total 6,150 sq. mi. in the Lake Superior Basin, Condition One directly applies to 1,078 sq. mi. of land (17.5%) that is not under the jurisdiction of the MSMA, MS4 program, or land designated as public or tribal.

Programs Addressing This Condition

Local Water Plans (BWSR)
Through County Comprehensive Local Water Plans, state agencies and other government units are able to help align objectives of the new development management measure with associated local priorities for water management, including comprehensive plans, zoning and ordinances. In 2004, the BWSR Local Water Plan development and approval process was revised to streamline the program, while maintaining a multiple agency review and comment process. During this coordination process for Lake Superior counties, agencies have recommended specific coastal nonpoint language for inclusion in the plans. Below is an example comment from the MCPA made to Lake and Cook Counties during their current water plan revision process:

> *While our agency concurs with the strategies proposed by the County, the overall approach could be improved by devoting more attention to the watershed approach, and by vigorous pursuit of prevention approaches. One suggestion would be to build on previous water plan updates by expanding upon the watershed approaches taken in the Grand Portage Nonpoint Source Management Plan and Lake Superior and Rainy Basin Plans. We would also strongly encourage use and adoption of a series of nonpoint source pollution control performance standards (Management Measures) promoted by both the Lake Superior Basin Plan and Lake Superior Coastal Nonpoint Program. These performance measures, which are detailed in the report entitled "Guidance Specifying Management Measures for Sources of Nonpoint Source Pollution in Coastal Waters", describe a host of measures which should be implemented at the local level to reduce impacts to the coastal waters of Lake Superior and to stream and lake systems. (Submitted by MPCA, 10/04).*

Both of these counties have agreed to address the implementation of coastal Management Measures in their final water plans.

By statute, the Minnesota Board of Water and Soil Resources (BWSR) must approve county water plans. The BWSR board consists of 17 members representing county government, watershed districts, soil and water conservation districts and the state's five natural resources and environmental agencies.

The status of Lake Superior County Water Plans is as follows:

COMPREHENSIVE LOCAL WATER PLAN STATUS

COUNTY	TIME PERIOD
Cook	2004* - 2009
Lake	2004* - 2009
Carlton	2002 - 2009*
St. Louis	2000 - 2010*

*Indicates update year in which state agencies will recommend coastal nonpoint management measure language be incorporated into the plans and activities.

As an incentive to comply with agency recommendations regarding management measures, BWSR, on behalf of the state, offers $1M annually statewide as Challenge Grants for water management restoration, planning and education opportunities within Minnesota. The 2004 Challenge Grant recipients and the Water Plan Process Update can be found at BWSR's website: http://www.bwsr.state.mn.us/watermgmt/complocalwatermgmt/index.html
(NOTE: Carlton Co. was Lake Superior Basin recipient -$37K- for Education/Information via the Arrowhead Water Quality Team)

Land Use Management
Local level comprehensive planning, zoning and ordinances are key methods in Minnesota to provide for bottom up identification and protection of resources for governmental units, within the framework of state and federal law. Enabling legislation allows for counties (MS 394), municipalities (MS 462) and townships (MS 116) to implement and enforce regionally based management techniques with input from local citizenry. The state supports these efforts and provides assistance in their development and implementation.

The following townships have completed comprehensive plans: Duluth Township, Crystal Bay Township, Lutzen Township and Carrosia Township. Tofte Township, Silver Creek Township and the City of Duluth are in the process of developing comprehensive plans. Both the City of Two Harbors and Grand Marais have completed stormwater plans (2002/2003).

Updated ordinances include: Lake County (2004), Cook County (2002/2003) and Duluth Township (2004).

Shoreland Management
Within the shoreland area along Lake Superior, the North Shore Management Plan (NSMP) serves as a substitute for the state shoreland management regulations that apply to all other lakes and streams in Minnesota. Creation of the North Shore Management Board (NSMB) and the NSMP was authorized by state statute in 1987 after it was agreed that Lake Superior is unique among lakes in Minnesota and was identified as a distinctive shoreland management unit. The purpose of the NSMB was to direct the development of the North Shore Management Plan with strategies for environmental protection and orderly growth along the North Shore of Lake Superior. The NSMB is composed of representatives of local government units along the North Shore. The NSMP area boundary is defined by 40-acre subdivision lines nearest to the landward side of a line 1,000 feet from the shoreline of Lake Superior, or 300 feet landward from the centerline of U.S. Hwy. 61, whichever is greater. This is the most critical zone of development along Lake Superior in Minnesota.

The original NSMP, completed in 1988, was recently updated with the following purposes:

- Recognize emerging land use issues.
- Review and update the shoreland management standards in the plan.
- Create a template for future operations for the North Shore Management Board (NSMB) that is sustainable and provides a benefit to local units of government.
- Provide land use goals, objectives and action steps. These action steps can provide a future framework for NSMB activities.

The plan updates include zoning standards, lot sizes, structure setbacks, highway access control, building height limitations, lot coverage, planned unit development, and vegetation management. NSMP Update at: http://www.ardc.org/projects/nsmb

In addition, there are five sections of the plan that local units of government are required to adopt into their land use ordinances. Local units of government can adopt standards that equal the standards in the NSMP or that are more restrictive. The five areas are zoning, sanitary systems, shoreland alterations, erosion hazard areas and planned unit development guidelines. These areas are outlined in Chapter 3.0 of the plan.

Within the Shoreline Alterations (3.5) discussion, stormwater management is listed as Objective 3 focusing on minimizing the impact of stormwater runoff through professionally developed stormwater management plans. BMPs for this effort are outlined in the text and reference Appendix F: Stormwater Quality and Quantity Best Management Practices. A pertinent excerpt follows:

> Appendix F:
> *WATER QUALITY TREATMENT*
> *Studies have shown that relatively small storms (high frequency, low intensity) account for a considerable proportion of total rainfall. Additionally, smaller storms may tend to produce runoff with higher concentrations of some pollutants because of a "first flush" effect following dry spells. For these reasons, the 2-year, 24-hour storm (which equals 2.6" in Duluth) has been chosen as the water quality design storm for the North Shore Management Area.*
>
> *New Development should achieve, by design or by performance, either:*
> 1. *After construction and permanent site stabilization, the average total suspended solids (TSS) load should be reduced by 80%. This measure is based on the average annual TSS loadings from all storms less than or equal to the water quality design storm. TSS loadings from storms greater than the 2-year, 24-hour storm are not expected to be included in the calculation of average annual TSS loads. Or,*
> 2. *Maintain post-development average annual TSS loads at measurements no greater than pre-development levels.*

While the Minnesota Shoreland Management Act and NSMP are administered by LGUs, involved state regulatory agencies have the opportunity for input regarding all OHWL boundary-adjusting activities. This enables state staff to expose local decision makers to watershed management and erosion control approaches and BMPs being implemented within the basin.

Lake Superior Basin Plan
The Lake Superior Basin Plan is an effort to combine the resources of numerous agencies at the local, state, tribal and federal levels to more effectively address water quality issues. The Lake Superior Basin Plan is not a replacement for local initiatives or plans that already exist, but an extension of these policies and activities. The plan also consists of recommendations for the protection of threatened waters and restoration strategies for impaired waters.

The Lake Superior Basin Plan includes an extensive watershed assessment conducted at the minor watershed scale to define current conditions and vulnerabilities. These assessments help identify priority areas and actions, including erosion control associated with new development. Along with the recommendations made in the plan, the watershed assessments should encourage a watershed framework for land use policy decisions and priorities for joint efforts to preserve and protect Lake Superior.

Basin plan implementation and success will depend on partnerships among resource managers, landowners, industry, agriculture, local, state, federal, and tribal governments, advocacy groups and academia. Thus, all parties must participate in the implementation of the basin plan so they are supportive and comfortable with the process and outcomes.

Lake Superior Basin Plan link:
http://www.pca.state.mn.us/water/basins/superior/lsbasin/basin-planning.html#plan

The Northland NEMO Program
Northland emphasis/establishment 2001: Northland Nonpoint Education for Municipal Officials (NEMO) has had overwhelming interest in this program from the target audiences and the results have been impressive. Already the program is starting to see changes to local water management plans and ordinances and requests for more follow-up information. The momentum for NEMO is building, and with the help of their partner organizations, Northland NEMO will help Minnesota protect its natural resources while facing the pressures of development. With the involvement of the DNR, Minnesota Erosion Control Association (MECA) and MN Sea Grant, model ordinances were developed for shorelands, subdivisions, erosion control, and sediment and stormwater.

Northland NEMO Program link:
http://nemonet.uconn.edu/programs/about_members/northland/northland.htmhttp://nemo.uconn.edu/national/st

As a result of the draft ordinance outreach and assistance effort, the **Duluth Township Ordinance** was established**.** It provides a comprehensive plan identifying sensitive habitats and zoning areas. The ordinance was developed through NEMO and funded by the DNR Coastal Program. The process provides DNR an opportunity to ensure the implementation of management measures, both existing management measures and additional management measures via the development of zoning ordinance standards and criteria. Additional ordinances are being developed in North Shore communities, with assistance from NEMO.

Duluth Township Plan: *http://duluthtownship.org/pdf/DTproposedzoning.pdf*

Additional Programs Addressing This Condition

BWSR eLINK
The Minnesota Board of Water and Soil Resources has developed an electronic grant program application, reporting and tracking system for conservation projects called eLINK. eLINK

allows local government units to track natural resource conservation accomplishments by logging onto the system through an internet interface. A server at the BWSR central office, in St. Paul, stores project and program data for the entire state of Minnesota.

eLINK tracks and reports on a variety of programs, including shoreland management, wetland conservation, and local water management, septic systems, feedlots and soil conservation cost-share practices. eLINK allows data to be compiled and accessed on a watershed basis. The program can also map projects and offers comparative information on project costs and the pollution reduction benefits of projects.

Where local governments are required to submit annual reports, eLINK can be updated regularly to make reporting easier. Other state agencies such as the Minnesota Pollution Control Agency and the Department of Natural Resources, have cooperated in allowing their reports from local government units to also be documented using eLINK.

The web site is available at:
http://www.bwsr.state.mn.us/outreach/eLINK/index.html

Regional Storm Water Protection Team
In an effort to protect coastal waters in northeastern Minnesota and increase citizen awareness about the effects of storm water runoff, eight communities (including one across the border in Wisconsin), St. Louis County, the University of Minnesota Duluth, University of Minnesota Sea Grant, a local county Soil and Water Conservation District, and the Minnesota Department of Transportation teamed up to create a Regional Storm Water Protection Team. The team's short-term goal is to develop and carry out an effective education and outreach program. Outreach efforts include airing a series of public service announcements on television and radio, plus developing a brochure and mailing flyers to educate people about the importance of a watershed approach to storm water management and steps the public can take to protect their local waters. Specific topics address landscaping for watershed protection, maintaining septic systems, identifying and reporting illicit discharges, controlling erosion, and keeping debris out of ditches and streams.

The Regional Storm Water Team has brought government and academic entities together to address nonpoint source pollution problems in a holistic manner. The long-term goal of the coordinated Team effort is to promote better regional planning and regional protection of major watersheds and subwatersheds of the area. In addition, regionalizing the effort allows the Team to develop a cost-effective, innovative program by pooling regional resources to address a shared problem. The Storm Water Protection Team's outreach efforts have been supported in part by a grant from Minnesota's Lake Superior Coastal Program:
http://www.duluthstreams.org/stormwater/rspt.html

Federal/State/Local Joint Application
This application is used for all water and wetland work within the basin. The single application insures consistency for processing and impact evaluation for all agencies. The majority of applicants are requested to meet in the field for additional information exchange and clarification

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Basin plan implementation and success will depend on partnerships among resource managers, landowners, industry, agriculture, local, state, federal, and tribal governments, advocacy groups and academia. Thus, all parties must participate in the implementation of the basin plan so they are supportive and comfortable with the process and outcomes.

Lake Superior Basin Plan link:
http://www.pca.state.mn.us/water/basins/superior/lsbasin/basin-planning.html#plan

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Northland NEMO Program link: *http://nemonet.uconn.edu/programs/about_members/northland/northland.htm*

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Additional Programs Addressing This Condition

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The Project WET program is extremely diverse in the types of educators and facilitators represented. The workshops usually lasts 6 hours. During the workshop, individuals are exposed to the Project WET Curriculum and Activity Guide through hands-on activities.

Project WET Website:
http://www.dnr.state.mn.us/projectwet/minnesota.html

Minnesota Association of Soil and Water Conservation Districts (MASWCD)
The MASWCD represents the Soil and Water Conservation Districts (SWCDs) of Minnesota. The Association serves as a unified voice and advocate for the SWCDs. MASWCD also works on policy development by providing a forum for local issues and direction for legislative and administrative goals.

In the 21st century, SWCDs carry much more responsibility than just soil conservation. Having become, in many cases, the leading local government unit for resource management, SWCDs bridge the gap between the local land users, federal and state authorities, and other natural resource management entities. SWCDs are a key component of the delivery system for financial and technical assistance for water and soil conservation on private lands, as well as active partners in planning, monitoring and enforcement at the local level. Additional information regarding MASWCD can be found on their website: http://www.maswcd.org/

MASWCD's 2003 accomplishments can be viewed at:
http://www.maswcd.org/2003_MASWCD_accomplishments.pdf

Guide to Stormwater BMPs for Lutsen and the Poplar Watershed
This document is intended as a guide for landowners and developers of the Lutsen community who have a vested interest in preserving the water quality of the Poplar River and Lake Superior. This manual presents ways in which stormwater and erosion control BMPs can be implemented at existing and future developments in Lutsen to prevent pollutants from contaminating stormwater runoff and entering the Poplar River and eventually, Lake Superior.

Guide to Stormwater BMPs for Lutsen and the Poplar River Watershed:
http://www.co.cook.mn.us/sw/Lutsenpoplarriver.pdf

Summary of Response

Over half of the Lake Superior Basin in Minnesota (67%) is publicly owned and/or is subject to the Minnesota Shoreland Management Act. This includes the critical zone of greatest development pressure along the North Shore that is within the NSMP boundary. The NSMB and its member local government units have recently adopted the new development management measure essentially as written in the 6217 guidelines. Lake Superior Basin counties have been, or will be, encouraged to adopt this management measure as part of their updates of Comprehensive Local Water Management Plans. In addition, the NPDES Phase II and MS4 programs control erosion on all projects with one or more acres of land disturbance. The NPDES Phase II program is being actively implemented in Minnesota.

Within Minnesota, Local Governmental Units have the enforcement authority to establish comprehensive plans, stormwater plans and ordinances. The majority of new development management measures are addressed at this level.

Also outlined within this response are educational programs, manuals, brochures, model ordinances, a new electronic natural resource project monitoring and outcome reporting system (eLINK), as well as numerous examples of local, state and federal cooperation to control erosion and sedimentation in the Lake Superior Basin. The Lake Superior Basin Plan involves a large and diverse group of stakeholders in the basin. The level of understanding and commitment to natural resource protection in the Lake Superior Basin is high. The individuals who have developed these tools, plans and projects have a deep understanding of the circumstances occurring within the basin and are dedicated to maintaining water quality for all its inhabitants.

The federal, state and local programs and cooperation in Minnesota's 6217 management area provide an effective basis for implementation of the New Development management measure in the Lake Superior Basin. We are confident that these programs, plans and cooperation, taken in combination, will achieve effective implementation of this management measure.

MN Coastal Nonpoint Pollution Control Program
Response to NOAA/EPA Condition Two
(Submitted to EPA/NOAA November 10, 2005)

Condition 2)
Within two years, Minnesota will demonstrate how the State ensures implementation of the watershed protection and site development measures throughout the entire 6217 management area when the LGU does not implement the management measures. Particular emphasis should be provided for those elements of the measures designed to be preventive.

References

Minnesota's Coastal Nonpoint Pollution Control Program, July 2001, Chapter IV. Management Measures, Category 3. Urban/Rural Areas, Subsections B. Watershed Protection, C. Site Development, and D. Construction Site Erosion and Sediment Control

EPA-840-B-92-002 January 1993, Chapter 4, Section II. Urban Runoff, B. Watershed Protection Management Measure

Develop a watershed protection program to:

1) Avoid conversion, to the extent practicable, of areas that are particularly susceptible to erosion and sediment loss;
2) Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; and
3) Site development, including roads, highways, and bridges, to protect to the extent practicable the natural integrity of water bodies and natural drainage systems.

EPA-840-B-92-002 January 1993, Chapter 4, Section II. Urban Runoff, C. Site Development Management Measure

Plan, design and develop sites to:

1) Protect areas that provide important water quality benefits and/or are particularly susceptible to erosion and sediment loss;
2) Limit increases in impervious areas, except where necessary;
3) Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and
4) Limit disturbance of natural drainage features and vegetation.

Overall State and Local Implementation Framework

A combination of regional and local planning efforts, state and federal regulations, incentive grants, grant administration, local and state implementation, and state agency oversight, provide effective measures to ensure watershed protection and management of site development throughout the 6217 management area. Land use authority in Minnesota is vested primarily in local governments, with state requirements for specific public health, safety and welfare

concerns, including environmental protection. State programs and policies provide assistance and incentives for effective planning and implementation of environmental protection, as well as procedures for state oversight and enforcement of key programs and associated requirements.

Regional Planning and Prioritization

Comprehensive Lake Superior Basin Plan
The Lake Superior Basin Plan is an effort to combine the resources of numerous agencies at the local, state, tribal and federal levels to more effectively address water quality issues. The plan includes recommendations for the protection of threatened waters and restoration strategies for impaired waters. Protection and prevention are critical strategies, because the plan recognizes that the water quality of Lake Superior and many of its tributaries are still of high quality.

The Lake Superior Basin Plan includes an extensive watershed assessment conducted at the minor watershed scale to define current conditions and vulnerabilities. These assessments help identify priority areas and actions, including erosion control associated with new development. Along with the recommendations made in the plan, these watershed assessments encourage a watershed framework for land use policy decisions and priorities, and coordinated efforts to preserve, protect and restore Lake Superior Basin waters.

Basin plan implementation and success intends to build on partnerships among resource managers, landowners, industry, agriculture, local, state, federal, and tribal governments, advocacy groups, and academia. The Programmatic Work Group (PWG) established for the Basin Plan includes members from all of the stakeholders identified above. The PWG continues to meet regularly and coordinate implementation efforts. Members of the PWG representing several state, federal, and non-governmental organizations continue to foster program partnerships and grant-leveraging opportunities for watershed protection work.

Lake Superior Basin Plan link:
http://www.pca.state.mn.us/water/basins/superior/lsbasin/basin-planning.html#plan

A multitude of parameters were assessed to determine the relative watershed health at the minor and fifth watershed level within the basin. In late 2004, a Steering Committee was formed to prioritize the watersheds with respect to vulnerability. The watersheds were further analyzed with respect to percent of trout waters, outstanding resource value waters, wild rice sustainability, and percent public ownership. From this further refinement, individual watershed protection strategies are being developed. In its initial stages, the Steering Committee is working closely with the PWG and LGUs to assist in developing the process and format for the strategies.

Chapter 7: Lake Superior Basin Watershed Assessment
http://www.pca.state.mn.us/publications/reports/lsbp-chapter7.pdf

Minnesota Stormwater Steering Committee
In 2004, a statewide Stormwater Design Team created a vision to reduce the adverse environmental effects of stormwater discharge on Minnesota's surface and ground water. Their

vision included long-term environmental and strategic goals, including the creation of the Minnesota Stormwater Steering Committee.
The committee is charged to:

- Oversee and assure completion of a two-year work plan.
- Advise and advance state statutory and rule developments or changes.
- Provide technical expertise and recommendations for education, inspection, enforcement, and training programs.
- Create guidance for coordination between governmental units to reduce regulatory overlap and promote permit simplification.
- Act as liaisons with their respective agencies/organizations in promoting and supporting the statewide stormwater effort.

The Stormwater Steering Committee website is located at:
http://www.pca.state.mn.us/water/stormwater/steeringcommittee/index.html

Local Planning Assistance Center:
The Local Planning Assistance Center (LPAC) offers technical assistance, data and strategic planning advice to local governments and citizens to help them prepare comprehensive plans, address land use, planning, zoning and development issues, and use geographic information system tools and data in decision-making. The LPAC site can be viewed at:
http://www.lpa.state.mn.us/

LPAC provides direct comprehensive planning training and technical assistance to local governments, including sponsorship of American Planning Association's audio conferences, and coordinating assistance from other state and federal agencies.

Staff regularly fields requests and questions from Minnesota's local governments and citizens. LPAC maintains a resource center and APA Planning Advisory Service membership to respond to requests. LPAC has also developed a series of information packets to speed response to commonly asked questions. To see the complete line of packets available through LPAC, click here.

Local Planning Laws can be found at:
http://www.lpa.state.mn.us/laws/index.html

Comprehensive Planning Manual:
http://www.mnplan.state.mn.us/pdf/2002/UnderConstruction.pdf

North Shore Management Plan
The North Shore Management Plan (NSMP) Update was completed June 30, 2004. The first North Shore Management Plan was adopted in 1989. This plan serves as a tailored substitute for statewide shoreland regulations along the North Shore of Lake Superior. The area for which this plan applies includes a boundary as defined by 40-acre subdivision lines nearest to the landward side of a line 1,000 feet from the shoreline of Lake Superior, or 300 feet landward from the centerline of U.S. Hwy. 61, whichever is greater. This is the most critical zone of development

along Lake Superior in Minnesota. The shoreland regulations contained in the North Shore Management Plan provide consistent minimum standards for management of shoreland areas on the North Shore of Lake Superior.

Chapter 4 highlights objectives and actions to be taken to attain goals consistent with the Watershed Protection and Prevention Measures of this condition. The goals highlighted include:

- Residential development density should be structured so high-density development is clustered around existing nodes of development. Areas of low, medium and high-density future development should be clearly delineated in the comprehensive plans of NSMB members.
- Concentrate future high-density non-residential development near existing community centers and infrastructure. New development should reflect the character and scale of North Shore communities.
- Protect the Lake Superior ecosystem by limiting environmental threats and risks from development.
- Maintain the unique character of the North Shore by preserving and enhancing natural resources.
- Infrastructure improvements should first address environmental concerns, and should direct growth near existing nodes of commercial/residential growth.
- Preserve the existing character identified by North Shore communities.

Chapter 4 of the NSMP Update titled: Future Land Use Goals, Objectives and Actions can be found at: http://www.ardc.org/projects/nsmb/.

Local Water Planning

Comprehensive Local Water Management (CLWM) Program
Comprehensive Local Water Plans help enable counties and SWCD's in Minnesota to identify priority issues and opportunities for preservation and improvement of water resources. State agencies provide input in developing goals aligned with state and basin wide objectives. Regular updates allow DNR, PCA and BWSR to provide a consistent message to help ensure that LGUs are addressing basin-wide nonpoint issues, including watershed protection and site development.

All four counties in the Lake Superior Basin have Comprehensive Local Water Plans that are a primary mechanism for defining and addressing priority concerns for coastal nonpoint management. The state agencies approve the plans based on key components and implementation of federal, state and local water management programs. Incentives for LGUs to approve and implement an adequate Comprehensive Local Water Plan are the associated state Natural Resource Block Grants for local water planning, shoreland management and Wetland Conservation Act implementation, as well as state Local Water Management Challenge Grants for implementation projects. An approved Local Water Plan is a requirement for these and other state grants. The BWSR enforces this requirement during annual grant allocations. Local Water Plans in the Lake Superior Basin are encouraged to include Coastal Management Measures, including watershed protection and site development.

Watershed Protection Plans - Sucker River Pilot
The South St. Louis Soil and Water Conservation District is working with the MPCA and others on a watershed project to benefit the Sucker River through preventive measures. The overall goal is to protect the Sucker River into the future by helping citizens evaluate their role in the watershed, ask questions, and take action.

To date, the Sucker River has escaped the fate of other North Shore streams that have exceeded pollution limits. The Sucker River has remained a high-quality trout stream, even though parts of the watershed have undergone many changes. The Sucker River watershed system includes steep sloped areas and has limited groundwater inputs to buffer the stream during low rain periods. Because of these conditions, the potential for sediment and warm-water impacts that could harm the stream and its habitat are a concern.

A primary objective of this effort is to help watershed residents understand the link between their land use and the health of the river, and learn what they can do to help keep the Sucker River in good shape. This is a voluntary, non-regulatory effort. A watershed protection plan will be developed to help communities and individuals adopt stewardship practices that help prevent degradation of the Sucker River. Once completed, the intent is to apply what's learned in this pilot project (i.e., information and methods) to develop and implement watershed protection plans in subsequent years for additional high quality watersheds on the North Shore.

State and Local Regulation

Wetland Conservation Act (WCA)
The Minnesota Wetland Conservation Act (WCA) provides effective authority and processes to avoid, minimize and/or mitigate impacts to wetlands in the Lake Superior Basin, including sensitive wetland areas in the watersheds and floodplains of Lake Superior tributary streams and rivers. Wetlands are a substantial landscape feature in the Lake Superior Basin. Sixteen Local Government Units administer the WCA locally in the Basin.

The WCA includes provisions for technical assistance to LGUs (via Technical Evaluation Panels (TEPs)) and state oversight of LGU decisions (via audits and appeal procedures). TEPs involve local and state government representatives with substantial knowledge of sensitive water resources in the Lake Superior Basin, including areas particularly susceptible to erosion and sediment loss that could impact existing wetlands. The TEPs conduct on-site reviews early in the permitting process. The TEPs in the Basin have gained substantial knowledge, experience and effectiveness, since the WCA was adopted in 1991.

The required submittal of a Joint Notification Form triggers project review by BWSR, DNR, USACE, and the LGU. State agencies can provide recommendations including standards and criteria for land subdivisions and site development to avoid, minimize and/or mitigate effects on jurisdictional wetlands and associated natural drainage systems that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota. Joint review of applications helps ensure that development is sited to protect to the extent practicable the

integrity of natural drainage systems and water bodies. All project plans that involve existing jurisdictional wetlands may be reviewed by the DNR, PCA and BWSR for consistency with 6217 watershed protection requirements and watershed based planning efforts.

The Board of Water and Soil Resources (BWSR), which administers the WCA at the state level, conducts periodic program audits of WCA LGUs to promote continued advancement and maintenance of the effectiveness of local implementation, as well as local accountability. On average, a quarter of the LGUs within the Lake Superior basin are audited annually. The audits to date in the Lake Superior Basin have indicated compliance with the intent of the law with only minor suggestions for program consistency being noted. These audits have proven to be an effective training and accountability process.

The WCA enables any member of the TEP, any organization required to receive notice of an LGU decision, or 100 citizens of the county in which the majority of the associated wetland is located, to appeal LGU decisions. These appeal petitions are made to the BWSR, which has a standing Dispute Resolution Committee that hears appeals for granted petitions and works with the LGU to resolve appeals in accordance with prescribed procedures in Minnesota Rules, Chapter 8420. To date, two appeals have been processed in the Lake Superior Basin. Stipulation agreements were reached during the associated appeal processes. Both yielded beneficial long-term planning efforts leading to a comprehensive wetland plan for Hermantown and education for land use planning staff.

The appeal process and enforcement procedures are outline in Chapter 6 and 7, respectively of the Wetland Conservation Act Manual:
http://www.bwsr.state.mn.us/wetlands/wcamanual/wcamanual02.pdf

Local Comprehensive Wetland Protection and Management Plans (CWPMP):
Section 8420.0650 of WCA deals specifically with local comprehensive planning, protection and management of wetlands. This enables LGUs to customize the WCA for regional flexibility and advanced protection of their most high quality wetlands. The specific rule can be seen at:
http://www.bwsr.state.mn.us/wetlands/wca/chapter8420.pdf

Currently, Lake and St. Louis Counties have a CWPMP, as does the city of Cloquet. The cities of Hermantown and Carlton are currently in the process of developing plans.

Public Waters Work Permit Program
Minnesota Rules Chapter 6115, along with State Statutes, Chapter 103G, is the basis for the Public Waters Work Permits (PWWP) program. Within these laws, public waters are defined and identified. All potential categories of impacts to public waters are addressed including: filling, excavation, structures, drainage, mining and restoration. Each subpart defines goals and prohibited activities for the specified category. The language for structure goals follows:

> 6115.0210 Structures
> Subpart 1. **Goals.** It is the goal of the department to limit the occupation of public waters by offshore navigational facilities, retaining walls, and other structures

in order to:

A. preserve the natural character of public waters and their shorelands;
B. provide a balance between the protection and utilization of public waters; and
C. encourage the removal of existing structures which do not serve the public interest from the beds of public waters at the earliest practicable date.

In each instance, preservation and protection are the primary goals of the law. Chapter 6115 can be found at:
http://www.revisor.leg.state.mn.us/bin/getpub.php?pubtype=RULE_CHAP&year=current&chapter=6115

As a result of the recent (2002) Rule revisions, local governments may accept permit and enforcement authority of their public waters if they desire, as stated in the following:

> Subd. 5. **Delegation of permit authority to local units of government.** (a) The commissioner may delegate public waters work permit authority to the appropriate county or municipality or to watershed districts or watershed management organizations that have elected to assert local authority over protected waters. The public waters work permit authority must be delegated under guidelines of the commissioner and the delegation must be done by agreement with the involved county, municipality, watershed district, or water management organization and in compliance with section 103G.315.

To date, no LGU within the Lake Superior Basin has opted to accept that responsibility, presumably due to workload and staff constraints.

Enforcement of Public Waters Work Permits are a concerted effort involving several state agencies, with the DNR Conservation Officers (CO) serving as the lead enforcement personnel. They are often first to respond to a complaint, will issue citations and follow through the process up to a restoration order if needed. This multi-level agency cooperation is outlined in the following excerpt from State Statute:

> **103G.105 Cooperation with other agencies.**
> Subd. 2. **State and local officials must cooperate in enforcement.** Personnel of the Pollution Control Agency, the Health Department, and county and municipal governments must cooperate with the commissioner in monitoring and enforcing water permits. County attorneys, sheriffs, and other peace officers and other officers having enforcement authority must take all action to the extent of their authority, respectively,

> that may be necessary or proper for the enforcement of the provisions, rules, standards, orders, or permits specified in this chapter and chapter 103F.

State, county and local road authorities continue to meet annually with the regulatory agencies to review proposed projects with respect to avoiding water resources. If unavoidable impacts are warranted, efforts to minimize and mitigate the footprint of the highway improvement are explored and agreed to.

Shoreland Management Act (SMA)
The Shoreland Management Program mandates that all counties and cities enforce land use regulations within 1,000 feet of all lakes and 300 feet of all rivers in the state. It is founded in enforceable Minnesota Statutes, Chapter 103G and Minnesota Rule 6120. The regulations address issues such as preservation of natural areas (6120.3200), lot sizes suitable for development, septic system placement, and types of land uses appropriate for shoreland areas. This program was enacted in 1972 and the Department of Natural Resources rules were revised in 1990.

The Shoreland Management Act required the DNR to establish regulations to be adopted and enforced through county and municipal land use controls (i.e. zoning ordinances). The intent of the act is to provide local units of government with minimum dimensional and performance standards in order to protect and enhance the quality of our surface waters, and conserve the economic and natural resource values of the shoreland of public waters.
Since 1991, the Legislature has provided limited annual financial assistance to counties for program administration. Acceptance of this funding requires compliance with the Shoreland Management Act. Noncompliance is grounds for not awarding a current grant. Since July 2002**,** there have been 16 instances statewide where LGUs (10 SWCDs and 6 Counties) have experienced delays and/or a reduction in funds due to the following infractions: late reports, late plans, expired plans or rules violations.

Environmental Quality Board and State Environmental Review Requirements
The mission of the Environmental Quality Board (EQB) is to lead Minnesota environmental policy by responding to key issues, providing appropriate review and coordination, serving as a public forum and developing long-range strategies to enhance Minnesota's environmental quality. The Environmental Quality Board consists of the Chair (who represents the Governor), 10 state agency commissioners or directors and five citizen members. The Minnesota Legislature, established the EQB in 1973 (Minnesota Statutes, Chapter 116C) to:

- Ensure compliance with state environmental policy
- Oversee the environmental review process
- Regulate the siting of large energy facilities
- Advise the Governor and the Legislature
- Coordinate environmental agencies and programs
- Study environmental issues
- Convene environmental congresses

The Board was also given water planning and coordination duties in 1983. An overview of EQB roles and responsibilities can be found at: http://www.eqb.state.mn.us/about.html

The EQB maintains and administers critical state requirements for environmental review that can affect watershed protection and site development measures. The primary environmental review documentation falls into the following categories: an Environmental Assessment Worksheet (EAW); an Environmental Impact Statement (EIS) or an Alternative Urban Areawide Review (AUAR). The associated applicability and requirements are outlined in the Guide to Environmental Rules on the EQB website:
http://www.eqb.state.mn.us/pdf/rulguid3.pdf

The EAW and EIS are subject to Minnesota Rule 4410, which allows for Declaratory Judgment Action to remedy the situation should the documentation not meet requirements or be challenged by an interested party. The legal process is administered by the district court system and is based on reasonableness. MN Rule 4410 is at:
http://www.revisor.leg.state.mn.us/arule/4410/

The AUAR's key feature is that its focus is on a development scenario or several scenarios for an entire geographical area rather than a specific project. Any LGU considering the AUAR process should consult with the EQB early in the planning stages. An AUAR process is formally initiated by Responsible Government Unit (RGU) order, which must define the review area boundaries and the "anticipated nature, location and intensity" of development (part 4410.3610, subpart 3). Several development scenarios may be designated. At least one scenario must be consistent with the most current locally adopted comprehensive plan.

All AUAR's must contain a mitigation plan, which is a key result of the AUAR process, commanding careful attention by both the RGU and reviewers. This plan must specify not only the physical measures, but also the legal (enforcement) and financial measures and institutional arrangements to ensure mitigation. The plan is not merely a list of ways to avoid significant environmental effects, but an action plan for how effects will be avoided, minimized, and/or mitigated.

Benefits for the LGU in completing an AUAR assessment include:

- An excellent way to assess cumulative impacts over multiple projects
- Enables LGU planners to integrate environmental review into their comprehensive planning process.
- Earlier planning helps anticipate and correct potential problems while project plans are still flexible.
- Eliminates development uncertainties and inconsistencies.
- Proactively protects and preserves naturally significant areas of the region.
- Ensures mitigation efforts are focused on overall needs of the area impacted.

The AUAR process can be challenged by an objecting agency reviewing the document, which leads to direct negotiation with the RGU. If they are unable to resolve any issues, the concerns are elevated to the EQB, which acts as a conditionally adequate moderator to resolve the issues.

Following is an example of comprehensive environmental documentation associated with use of the AUAR within the basin:

Cook County
Caribou Lake Area-wide Alternative Urban Area Review
http://canoe.co.cook.mn.us/zoning/AUAR%20Caribou%20Lake/

Minnesota Environmental Policy Act
The Minnesota Environmental Policy Act (MEPA) provides a foundation for state policy and enforcement of environmental protection, including erosion and sediment control for new development. The purposes of Minnesota Laws 1973, Chapter 412, are (a) to declare a state policy that will encourage productive and enjoyable harmony between human beings and their environment; (b) to promote efforts that will prevent or eliminate damage to the environment and biosphere (water resources) and stimulate the health and welfare of human beings; and (c) to enrich the understanding of the ecological systems and natural resources important to the state and to the nation.

Authorization for the state Environmental Review Program is found in MEPA (Minn. Stat. §116D.04 and 116D.045). MEPA provides further direction concerning protection of natural resources in Minn. Stat. §116D.04, subd. 6, which relates significant environmental impacts disclosed through the Environmental Review Program to permitting and approval decisions. No state action can be allowed or permitted if it is likely to cause pollution, impairment, or destruction of the air, water, land, or other natural resources, if there is a prudent and feasible alternative. Economic considerations alone cannot be used to justify a decision.

In addition, MEPA directs state agencies to:

- Use a systematic, interdisciplinary approach to ensure the integrated use of the natural and social sciences and the environmental arts in planning and in decision making which may have an impact on the environment.
- Identify and develop methods and procedures to ensure that environmental amenities and values, whether quantified or not, will be given at least equal consideration with economic and technical considerations in decision making.
- Study, develop, and describe appropriate alternatives to recommended courses of action for any proposal which involves unresolved conflicts concerning alternative uses of available resources.
- Make available to federal and state government agencies, counties, municipalities, institutions and individuals, information useful in restoring, maintaining, and enhancing the quality of the environment, and in meeting the policies of the state set forth throughout the Environmental Policy Act.
- Initiate the gathering and utilization of ecological information in the planning and development of resource oriented projects.

NPDES Construction Stormwater Permits – Designated Appendix A (Special Waters)
As designated by the MPCA, Special Waters requirements apply when a project will impact one acre or greater and has a stormwater discharge point within 2000 ft. of a Special Water. For the

Lake Superior Basin this includes, Lake Superior, trout lakes, trout streams and Scientific and Natural Areas.

Enhanced protection for these sensitive areas include: additional stabilization requirements, additional water quality volume in detention facilities, buffer zones, enhanced runoff controls, and temperature controls.

An on-line interactive GIS mapping tool, "Special Waters Search", has been developed to assist developers in identifying these Special Waters and the requirements that apply when working in their vicinity. The link can be found at:
http://www.pca.state.mn.us/water/stormwater/stormwater-c.html

NPDES Cooperation Agreements
Under MN Stat. 471.59, subd. 10, the State is empowered to engage such assistance as deemed necessary. The State initiated a pilot demonstration project whereby the MPCA partners with LGUs to perform construction stormwater management, including inspection and enforcement activities in their jurisdiction.

Permits administered by the MPCA regulate ground-disturbing activities within the basin. To strengthen the enforcement aspect of the permitting process, MPCA recently entered into a Joint Powers Agreement with two SWCDs (South St. Louis and Cook) within the 6217 area. The goal is to increase compliance by meeting with the permittee at the beginning of construction.

The LGU and MPCA will cooperatively sponsor a one-day training workshop for the affected/interested parties performing ground-disturbing activities in the local jurisdiction. Municipalities and Tribes will be represented to present their individual requirements, ordinances and contact personnel pertaining to stormwater.

Under the terms of the Agreement, the LGU will identify all existing construction sites within their jurisdiction one acre or greater in size. Also, construction sites that are less than one acre, but are part of a larger common plan of development shall be inspected and tracked. All sites will have a minimum of at least one visit and field inspection data shall be sent to the MPCA electronically.

After exhausting all local authority, owners/general contractors who are subject to, but refuse to obtain stormwater permits will be referred to the MPCA for possible enforcement action. Documentation will be provided to the MPCA by the LGU. The MPCA brings the violation to the statewide Enforcement Forum to review the circumstances and documentation provided. Enforcement action then follows a three-tiered approach starting with a Notice of Violation letter and escalading to a Stipulation Agreement including fines. The process is outlined on the MPCA website at:
http://www.pca.state.mn.us/newscenter/enforcement.html

MPCA may also use underlying enforcement authorities, such as state nuisance law or solid waste laws, to protect water quality and watershed features. Two examples of pertinent

enforcement actions are attached as exhibits (KGM – Nuisance Condition and Cich – Solid Waste).

NEMO Water Quality Management Ordinance Training and Model Ordinances
This local effort, coordinated by Minnesota Sea Grant and working in conjunction with a statewide Nonpoint Education for Municipal Officials (NEMO) effort, produces accessible presentations to LGUs addressing ordinance development, ordinance components, and model ordinance language with explanations to help decision-makers create the best water quality protection tools for their area. Ordinances that address water quality include stormwater, shoreland, erosion control, and subdivision ordinances. They help communities implement components of their comprehensive land use plans by providing enforcement tools pertaining to the enhancement, protection, and preservation of their community's water quality. In addition to addressing local needs, this educational format ties into the state and federal NPDES Phase II permit education requirements. The results have been utilized with three coastal communities and feedback from these communities will be directed into future efforts.

Local Nonpoint Project Implementation

Local Water Management Challenge Grants
This statewide competitive program is administered by the BWSR and provides biennial allocations to local government units to accelerate implementation of their Comprehensive Local Water Management Plans. Types of projects assisted by this program include monitoring, inventories, information/education and implementation of a wide variety of land and water conservation practices.

Challenge Grants are designed to assist LGUs build capacity and achieve water management goals by providing money for priorities they have identified through planning processes. Local water management is combined with natural resource management at the local level. Objectives are based on scientific information and priorities identified by local citizens, which contributes to its success.

Since originating in 1991, approximately $500,000 has been awarded in the Lake Superior Basin through this program. Following is a summary of Local Water Management Challenge Grants in the 6217 management area since 1999:

1999
- Carlton County (AWQT): Groundwater Education for Decision Makers ($23K)

2001
- St. Louis County: ISTS Inventory and Evaluation ($140K)
- Carlton County: Wellhead Protection Plans ($39K)
- St. Louis County: Lake Vermillion Management Plan – Pilot for large inland lakes ($45K)

2003

- Cook County: Inland Lake Sampling ($5K)

2005

- Carlton County: Wetland Technical Items and Education ($37K)
- St. Louis County: Connecting Water Quality and Land Use ($19K)

Minnesota's Lake Superior Coastal Program – Grant Awards:
Since its approval, the Minnesota Coastal Management Program has helped address coastal nonpoint pollution through funding to subgrantees for the implementation of many watershed protection or site development management measures.

Pertinent 2004 awards for nonpoint pollution control include:

- St. Louis County SWCD: Investigation of Potential Wetland Restoration and Creation Sites ($10K)
- Lake Co Forestry: Landscape Level Restoration Forestry to Benefit Lake Superior Water Quality ($21K)
- Duluth-Utilities: Regionalizing Surface water Education and Outreach ($46K) www.DuluthStreams.org
- The Center for Rural Planning: Land Use Planning Tools and Model Zoning and Ordinances for Rural Coastal Communities ($15K)
- City of Two Harbors: Two Harbors Waterfront Planning – Phase II ($15K)
- ARDC: Northshore Cooperative Water Management Opportunities Study ($13K)
- SLC Planning Department: Parcel Layer Development for Canosia and Rice Lake Townships ($50K)
- City of Carlton: GIS Parcel Mapping Project ($15K)
- City of Duluth: Parcel Mapping for Chester Creek and Miller Creek Watersheds ($99K)
- UMD- Natural Resources: Inventory and Classification of North Shore Wetlands for the Coastal GIS Project ($25K)
- St. Louis County: 306A Grant: Acquired 6.5 acres of wetland within the fragmented Miller Creek Watershed to prevent further development pressure and preserve a cold water tributary. The critical Shrub/Scrub wetland was approved in 1996 by the Duluth Planning Commission for a 95,000 sq. ft. development. The area is now in public ownership and a vital link in restoring the Miller Creek watershed.
- In June 2004, South St. Louis SWCD provided stormwater workshops to municipalities and developers showcasing innovative BMPs being used and installed in the region.
- Carlton County: Buffer setback ordinance updates and improvements. 319 Grant initiated a Riparian Buffer Planting in Esko. Tree plantings and reforestation in subwatersheds with greater than 40% open space. Intent is to retain runoff waters and reduce erosion associated with "flashy" run-off conditions. Program established with willing landowners. Outlined in the planning and zoning portion of the Carlton County webpage: http://www.co.carlton.mn.us/

Additional Coastal Program Grants
Examples of how MN Coastal Grant projects are implementing nonpoint source pollution watershed protection and site development Management Measures since 1999 are listed below. The project descriptions are from associated grant applications.

1999
Stormwater Management Plan for the City of Two Harbors
The objective of this study is to develop a stormwater management plan that will allow the City to evaluate and manage stormwater quantity and quality that result from development or other modifications in the subwatersheds within the City limits.

Stormwater Management Plan for Grand Marais Watershed
To facilitate a comprehensive watershed plan, a Stormwater Management Committee will be established. This committee will be a means for city, county, and regional collaborators to work together to target solutions. It will hire and direct a consulting engineer to collect data, perform field verifications, and develop a computer model to examine runoff characteristics under current and future conditions. The committee and consultant will produce a stormwater management plan that will include a prioritized list of recommended projects to the LGUs.

2001
Nonpoint Source Pollution Rates from Four North Shore Streams of Varying Development Pressures
In order to determine how the increasing development pressures are affecting North Shore streams, it is necessary to initiate a thorough monitoring program, which incorporates continuous stream flow monitoring and routine sample collection. The MPCA, with cooperation from MNDNR, the City of Duluth, and Cook County, proposes to initiate this effort. Four streams under varying development pressures will be monitored. Each stream will have stream flow, temperature, and conductivity continuously monitored with automated equipment.

Grand Marais Storm Water Management – Erosion Control in Creechville Area
Above the city of Grand Marais and below the Gunflint Trail, in an area called Creechville, flow patterns have been altered. There is flooding and significant erosion. Some gullies are over four feet deep. Over the last decade this problem area has been studied by NRCS, JPB, the county, and IC Environmental Engineers. The recently developed Storm Water Computer Model provides the data needed to design this project. The solution will be a unique pond design that will discharge to the old streambed with overflow handled by an existing channel. The goal is to create natural habitat around the pond. Also included in the project is replacement and armoring of an undersized culvert. Grading and revegetation will be another important part of this project.

In the same steep area are three blocks of severe roadside erosion. Channels are eroding along and across unpaved road surfaces. Much of the storm water runoff migrates over/across the road and through people's yards. A formal system of vegetated ditches and culverts will be installed. Bedrock is shallow, so the ditches may have to be bermed into people's yards to contain runoff. A small basin will be installed and armored with riprap at the entrance to a culvert.

Creechville has deteriorated during the last decade of storms. Recent annexation in the vicinity may lead to further development and problems if not corrected. Frequent flooding near septic systems is a concern.

Grand Marais and Cook County Storm Water Management Plan – Water Quality and Quantity Monitoring

In bridge-building fashion, the City of Grand Marais and the County of Cook have collaborated to develop a Storm Water Management Plan for the City of Grand Marais' watershed. This was accomplished with grant assistance from the Coastal Program and leadership from a local Storm Water Committee. Digital data on watershed rainfall and storm event runoff rates was collected last year and runoff impacts have been evaluated through computer modeling. A number of stormwater mitigation projects have been identified through the plan process. The design of some of these projects will benefit from further calibration of the SWMM model, requiring additional field data collection. This project will use the equipment purchased last year and a new digital water quality sampler to collect more data. The data will be used to improve the accuracy of the SWMM and provide the community with baseline data on quantity and type of pollutants conveyed from the upper watershed to the harbor outfalls. It will also provide baseline information for a number of LGUs and agencies that are studying water issues in the Grand Marais area.

A program for continued water monitoring will improve the accuracy of the SWMM and give concrete information for evaluating the effectiveness of implemented programs and projects in the Storm Water Management Plan. This grant will provide funding to begin establishing this program. Sampling will provide baseline data, tabulate data and provide a set of parameters of quality by which to compare up-gradient practices to down-gradient water quality in the watershed.

Grand Marais Stream Bank Stabilization and Naturalization Project

The project seeks to restore eroding stream banks within the park to improve water quality. The project will implement a combination of bioengineering stabilizations methods, channel regrading and naturalization methods, and vegetative buffers. The project would decrease erosion and fit in with the aesthetics of the area. Bioengineering will be used instead of hard engineering structures. Soil bioengineering is the use of plant material, living or dead, to prevent slope failures and erosion. Channel banks will be restored to a flatter slope that can sustain vegetation. Vegetation will be planted to create buffer zones that filter runoff sediments and contaminants. Where possible, invasive species will be removed and will be re-planted with native plant species.

2002

Hartley Nature Center Pervious Surface Demonstration Project

This project consists of building a wheel-chair accessible pathway and adding ten new parking spaces to the existing Hartley Nature Center parking area using an innovative surface that is relatively pervious to water. These facilities would be constructed in the Tischer Creek watershed, about 150 feet from the stream. Choosing an environmentally sensitive option for these facilities is consistent with Hartley Nature Center's educational mission and strategy for minimizing the environmental impact of its development and operation. This project is also an

opportunity for City of Duluth staff to gain familiarity with these kinds of surfacing options and to test the feasibility of using them in the northeast Minnesota region.

Detention Pond Design/Bid Specification - Two Harbors Storm Water Management Plan
To begin implementation of the storm water plan provisions, one of the next major steps will be to design and construct a series of storm water detention basins. These multipurpose structures will provide storage for flood water, retain pollutants such as sediment, create wetland wildlife habitat, and generate additional recreational opportunities for residents and visitors. The detention basins will reduce downstream flows, minimize erosion, improve water quality, reduce property damages and increase public safety.

2003

Detention Basin Construction - Two Harbors Storm Water Management Plan
City of Two Harbors
To begin implementation of the storm water plan provisions, the City of Two Harbors requests funding to construct up to three storm water basins and one diversion channel. These multipurpose structures will provide storage for floodwater, retain pollutants such as sediment, create wetland wildlife habitat, reduce downstream flows, minimize erosion, improve water quality, reduce property damages, create recreation site opportunities, and increase public safety. The three site locations identified in the Storm Water Management Plan include: Segog area, North Fork of Skunk Creek, a site located south of the cemetery along Pete's Creek. Construction of the detention basins could occur as soon as the summer of 2002, pending completion of acceptable designs.

Grand Marais Storm Water Management - Erosion Control Restoration on Village Creek
The Village Creek serves a number of purposes. It functions as a storm water diversion for the city and is a safety net during flooding, yet it is a wooded stream traveling over bedrock and cobbles. It is hoped that this restoration will bring attention to the creek as a habitat areas within the city. Future projects could include revegetation projects and debris removal by volunteer groups. The creek begins as intermittent streams which flow southeast to the Gunflint Trail and into is a 35-year old channel which flows due east over the city and joins another natural stream which flows into Lake Superior. This project will perform construction at three sections and will acquire easements on a fourth section that will allow the county to maintain, armor, and revegetate.
Erosion and Flooding Behind School - A high bedrock area will be bermed and vegetated.
Streambank Erosion Downstream from 7th Ave. East - Erosion controlled by armoring the bank. Blasting in the channel will redirect the flow.
Plunge Pool Erosion below Highway 61 - Four-foot diameter riprap will be placed around the culvert outlet. The large pool will be left to help dissipate the energy of flow. Deeper center channels will be created to focus the higher velocity flows away from the creek banks.
Easement Acquisition from County Road 7 to Highway 61 - This section 554 feet long has not been maintained. The banks are primarily gravel deposits on ledge rock and have suffered severe erosion in recent years. The county is upgrading the culvert under County Road 7, which is just above this section. The banks are in need of maintenance and armoring. The easements will allow the highway department to accomplish this.

NEMO Ordinance Presentation - Minnesota Erosion Control Association
This proposal seeks funds to produce an enjoyable and accessible presentation addressing ordinance development, ordinance components, and model ordinance language with explanations to help decision-makers create the best water quality protection tools for their area. Ordinances that address water quality include stormwater, shoreland, erosion control, and subdivision ordinances. The product will be tested with three coastal communities and feedback from these communities will direct changes in the final product.

This project will provide concrete water quality related ordinances for local governments. It will help communities implement components of their comprehensive land use plans by providing enforcement tools pertaining to the enhancement, protection, and preservation of their community's water quality. In addition to addressing local needs, this educational format will tie into the state and federal NPDES Phase II permit education requirements.

Clean Water Partnerships
The MPCA provides financial and technical assistance to local government and other water resource managers to address nonpoint-source water pollution through the Clean Water Partnership (CWP) and Clean Water Act Section 319 programs.
http://www.pca.state.mn.us/water/cwp-319.html

A summary of CWP and 319 projects addressing nonpoint pollution currently occurring within the Lake Superior Basin include:

PROGRAM	PROJECT TITLE	PROJECT SPONSOR	PHASE	GRANT CONTRACT	START DATE	END DATE
319	Knife River Watershed Equip Project	South St. Louis County Soil and Water Conservation District	1	78,322.00	01-Oct-98	31-Mar-04
319	Nemadji River Watershed Project	Carlton County	2	40,000.00	01-Oct-98	31-Mar-04
CWP	Nemadji River Basin Project	Carlton County	2	57,400.00	11-May-99	10-May-04
CWP	Nemadji River Basin Project	Carlton County	2	86,100.00	11-May-99	10-May-04
CWP	Nemadji River Basin Project	Carlton SWCD	2	156,314.00	25-Aug-03	24-Aug-06
319	Nemadji River Basin Project	Carlton County	2	50,450.00	01-Oct-00	30-Sep-04
319	Midway River Watershed Restoration Project	South St. Louis Soil and Water Conservation District	1	35,750.00	01-Oct-99	30-Sep-04
CWP	Lake Superior - Lake County Shoreline Protection Project	Lake County	C	6,000.00	1-Apr-01	31-Mar-05
CWP	Big Lake Partnership Wastewater Alternatives Study	Fond du Lac Reservation Business Committee	1	16,330.00	9-Jul-02	8-Jul-05
CWP	Fond du Lac Nonpoint Source Assessment & Management Plan	Fond du Lac Reservation Business Committee	1	20,000.00	9-Jul-02	8-Jul-05
CWP	Miller Creek Watershed Implementation	City of Duluth	2	30,000.00	16-Oct-02	15-Oct-05
CWP	Lake Superior - Cook County Shoreline Protection Project	Cook County	C	6,000.00	1-Apr-01	31-Mar-04
CWP	Lake Superior - Lake County Shoreline Protection Project	Lake County	C	6,000.00	1-Apr-01	31-Mar-04

Minnesota Clean Water Legacy Act Proposal
A coalition of more than 60 environmental, business and farm groups have proposed a comprehensive program to address impaired waters in Minnesota. This proposal includes both restoration and protection strategies, guided by the principles of central coordination and local leadership of implementation. The proposal would provide for a comprehensive assessment of Minnesota's surface waters every 10 years, prioritize and accelerate TMDL report development and restoration activities and establish a dedicated source of funding for this work ($80 million per year, plus leveraged state and federal programs funds). This effort would build on the existing framework of local, state and federal education, regulation, and financial and technical assistance delivery systems, to the maximum extent practical.

The goal of the restoration component of this program is to "de-list" impaired waters. In conjunction with the TMDL process, it is anticipated that a variety of methods and BMPs will be utilized to restore impaired waters. Effective technical assistance and stakeholder participation are considered essential for water quality restoration efforts that are science-based and broadly supported.

While not as large a component of the proposal as restoration, the goal of the protection component is to enable water bodies to avoid becoming impaired waters (i.e. "listed"). This strategy is considered to be a cost-effective approach to long-term protection of water quality in Minnesota.

The Clean Water Legacy Act is currently being considered by the Minnesota Legislature.

Summary of Condition Response

Local governments are the primary land use authorities in Minnesota. However, in order to assure statewide protection of environmental resources, the state of Minnesota has instituted a number of statewide planning and permitting laws, programs and resources, and has actively adopted associated federal permitting and financial incentive programs. Following is a summary of laws and programs that, collectively, provide assurance of watershed protection and management of site development throughout the 6217 management area.

Summary of Pertinent Laws, Ordinances, Programs, Resources and Implementation		
Federal	**State**	**Local**
	Lake Superior Basin Plan, including coordinated state agency involvement	Active local participation by many LGUs
	North Shore Management Plan	Active local use, including management of land use development
	Comprehensive Local Water Management Plans	Active local implementation (counties and SWCDs), with state input
	Local Planning Assistance Center	Used by local governments
NPDES Stormwater Permitting	State implementation, including Special Waters provisions	Piloting local implementation at this time
	Minnesota Environmental Policy Act, helps coordinate and direct state agencies for environmental protection	LGU involvement, as applicable
	Wetland Conservation Act, including state oversight via local reporting, program audits and appeals	Active local implementation, with state audit and appeal procedures to help ensure quality
	Shoreland Management Act, with associated reporting requirements and implementation grants to LGUs	Active local implementation, with state oversight via reporting and grant management procedures
	Public Waters Work Permit Program	Local involvement in project assessments
	EQB and Environmental Review Requirements (EAW, EIS, AUAR)	Active local participation, as applicable
	Model Ordinances, via NEMO and other programs	Local Ordinances, such as erosion control, septic systems, etc.
	Solid Waste Management and Environmental Nuisance Laws	Local participation in enforcement, as necessary
Clean Water Act, Section 319	Active State implementation	Active local implementation of a variety of nonpoint projects
Coastal Program	MN Lake Superior Coastal Program – Active State implementation	Active local implementation of a variety of coastal nonpoint projects
	Clean Water Partnership Program – Active State management and oversight	Active local implementation of a variety of nonpoint projects
	Local Water Management Challenge Grants	Active local implementation of Comprehensive Local Water Plans
Clean Water Act, TMDLs	Active State implementation	Active local involvement, which is growing
	Minnesota Clean Water Legacy Act (pending) for restoration of impaired waters and protection of unimpaired	Substantial focus on local implementation of restoration and protection strategies

Through ongoing coordination between state, local and federal governments, Minnesota maintains a high standard of environmental protection that has an increasing focus on watershed-based planning and implementation to restore and protect water resources. This includes watershed protection and management of site development throughout the 6217 management area.

Minnesota Coastal Nonpoint Program
Condition 2 Response Supplement
November 2005

Background

This supplement is in response to questions from EPA Headquarters dated October 14, 2005 regarding Minnesota's response to Condition 2 submitted in April 2005, and discussion at an associated teleconference on October 25, 2005 involving NOAA, EPA, BWSR, MPCA, and MDNR. Following are the EPA questions. "Here is some specific feedback that EPA HQ is interested in learning more about: How does MN ensure implementation of the Site Development Management Measure? Toward this end, it would be extremely helpful to provide a couple concrete examples of how the state addresses the Site Development MM. With regard to MN's Wetland Conservation Act, do the LGU protective plans under Section 8420.0650 include elements of the Site Development MM? The NEMO assessments may be helpful in addressing the Site Development MM, but MN's submittal lacked specifics on specific outcomes of these assessments. Were any local ordinances modified to address the elements of the Site Development MM as a result of NEMO, Sea Grant assistance, or any other process?"

During the October 25, 2005 teleconference, it was agreed that MN would submit written documentation regarding the examples presented during the teleconference. Contained within this response are brief program overviews and ten examples demonstrating the state input and cooperation with local units of government used for developing projects.

MN State and Local Government Framework for Land Use Management

MN has a tiered approach to land use management. Authority to develop comprehensive local water management plans, comprehensive wetland protection and management plans and local land use zoning ordinances is delegated to Counties, Municipalities, and Townships. The State Shoreland Management Act, Floodplain Management Act and Wetland Conservation Act are administered at the local level, with requirements for state review and oversight.

The MN Nonpoint Program, like the Coastal Program, is a networked program. State agencies and local government units coordinate to ensure implementation of state and local requirements. These laws, ordinances and plans work together to ensure implementation of the Site Development Management Measure.

Shoreland Management

Example #1 – Update of North Shore Management Plan

Within the shoreland area along Lake Superior, the North Shore Management Plan (NSMP) serves to coordinate implementation of the state shoreland management regulations that apply to all lakes and streams in Minnesota. Creation of the North Shore Management Board (NSMB) and the NSMP was authorized by state statute in 1987, after it was agreed that Lake Superior is unique among lakes in Minnesota and was identified as a distinctive shoreland management unit. The purpose of the NSMB was to direct the development of the North Shore Management Plan with strategies for environmental protection and orderly growth along the North Shore of Lake Superior. The NSMB is comprised of representatives of local government units along the North Shore. The NSMP boundary is defined by 40-acre subdivision lines nearest to the landward side

of a line 1,000 feet from the shoreline of Lake Superior, or 300 feet landward from the centerline of U.S. Hwy. 61, whichever is greater. This is the most critical zone of development along Lake Superior in Minnesota.

Through an outreach effort seeking broad input, the original NSMP, completed in 1988, was recently updated with the following purposes:

- Recognize emerging land use issues.
- Review and update the shoreland management standards in the plan.
- Create a template for future operations for the North Shore Management Board (NSMB) that is sustainable and provides a benefit to local units of government.
- Provide land use goals, objectives and action steps. These action steps can provide a future framework for NSMB activities.

The plan updates were approved by the NSMB on June 22, 2004 and include zoning standards, lot sizes, structure setbacks, highway access control, building height limitations, lot coverage, planned unit developments, and vegetation management. A Memorandum of Understanding regarding the plan update was signed by the Minnesota Department of Natural Resources on February 2, 2005.

There are five sections of the plan that affected local units of government are required to adopt into their land use ordinances by July 2, 2006. Local units of government can adopt standards that equal the standards in the NSMP or that are more restrictive. These five sections of the plan are zoning, sanitary systems, shoreland alterations, erosion hazard areas and planned unit development guidelines. The Site Development Management Measures are addressed in Chapter 3.0 of the plan.

Text for the updated North Shore Management Plan is available at:
http://www.ardc.org/projects/nsmb

While the Minnesota Shoreland Management Act and NSMP are administered by LGUs, involved state regulatory agencies have the opportunity for input regarding all OHWL boundary-adjusting activities. This enables state staff to expose local decision makers to watershed management concepts, erosion control approaches and site development BMPs being implemented within the basin.

The 10 LGU members representing the North Shore Management Board (NSMB) met jointly with the Technical Advisory Committee (13 governmental agencies, including MDNR, MNDOT and County planners) in September 2005 for a coordination meeting regarding adopting and implementing the North Shore Management Plan Update.

Once zoning ordinances are updated and adopted, signed resolutions regarding the adoption, full copies of the updated zoning ordinances, and an updated copy of the zoning maps will be compiled by the Arrowhead Regional Development Commission for inclusion in the NSMP.

The Nonpoint Education for Municipal Officials (NEMO) program is believed to have contributed to approval of the updated NSMP by LGU members of the NSMB. In recent years, the Northland NEMO has provided outreach and nonpoint education to numerous local government unit officials and staff in the Lake Superior Basin, including the North Shore of Lake Superior, which is a critical zone of development.

MDNR Coordination with Local Government Units - Public Waters Work Permit Program

The MDNR administers the Public Waters Work Permit Program in partnership with local government units. The MDNR is a de-centralized agency. Staff are located in regional and area offices to assist the public and LGUs with site development plans. Area staff of the DNR include: professional hydrologists from the Division of Waters; fish and wildlife biologists from the Division of Fisheries and Division of Wildlife; environmental assessment ecologists from the Division of Ecological Services; and specialists from the Divisions of Lands & Minerals, Forestry, Enforcement, and Trails & Waterways.

Each area office is assigned a specific geographic work area. The Division of Waters hydrologists cover a minimum of two counties and provide technical and administrative assistance to all LGU's within the area work boundary.

The Area Hydrologist provides comments on ordinance development, reviews and comments on land subdivision, plats, planned unit developments, and annexations. Part of the Area Hydrologist responsibility is to review notices of hearings for variance requests, conditional use permits and ordinance amendments.

The Area Hydrologist reviews plans for consistency with the BMPs and management measures for Site Development including providing guidance on impervious surface, identifying sensitive areas such as tributary streams and drainage swales. During site reviews the Area Hydrologist assists with the identification of erodible slopes and other features that if disturbed would result in changes to hydrology and hydraulics.

Typically the Area Hydrologist has established a working relationship with all of the local planning directors and zoning staff. The Area Hydrologist will perform site reviews and inspections with the local zoning staff, developer, and consultants. In addition, the Area Hydrologist will provide expert testimony at hearings and comments at Planning Commission meetings, Board of Adjustment meetings and City, Township or County Board Meetings.

The comments of the Area Hydrologist or other DNR professional staff are incorporated into the project designs and are often part of the local decision to approve or deny a land use plan.

The DNR works continuously with LGUs to provide tools for decision-making. The MN Coastal Program has been a steady supporter of the NEMO program and funded MN Sea Grant to implement a NEMO program in the Lake Superior Watershed. The results of that effort include the development of a Comprehensive Plan process and updates to the Town of Duluth Comp Plan and zoning ordinances.

Riparian Protection, Maintaining Native Vegetation and Additional Plantings, Wetland Avoidance, Site Fingerprinting and Establishing Open Space - Example #1 - Keene Creek Townhomes

Keene Creek Townhomes and Stormwater Management, Hermantown, South St. Louis County. In early consultation with the City of Hermantown, the DNR worked with site developers to reduce the footprint of the development, clustering the homes in the northwest section leaving the steep slope and Type 3 wetlands as open space. The results of the coordination effort also ensured site development management measures were incorporated with minimal impervious surface and the installation of 3 stormwater ponds to maintain predevelopment site hydrology. TEP visited site and concurred with DNR input that wetlands were completely avoided

Proposed development: 44 Townhomes

Total Acres: 17 acres

Total Wetland: 8 acres

Wetland Impact Proposed by Plat: After agency coordination effort, there was total avoidance of wetland impacts.

Maintain Native Shoreline Vegetation, Protection of Riparian Zone, Concentrate Lake Access at Proper Location, Deed Restriction Recommendations, BMP Guidelines, Minimize Impervious Surface - Example #2 – Two Harbors Wilderness Acres

Two Harbors Wilderness Acres and Preliminary Plat at King and Little Coyote Lakes, Two Harbors, South Saint Louis County. Working closely with South Saint Louis County, after reviewing the developers preliminary plat the following revisions have been made: The lots and roads were redesigned to minimize impacts to wetland and waterways – an arched bottomless culvert will be installed over a trout stream and the impervious surface minimized by reducing the road width from the proposed 26’ driving surface to 16’. There will be no fill or structures allowed with 150’ from the shoreline OHWL and only boardwalk walkways can be installed to access shoreline. A conservation plat and covenants will identify native vegetation for preservation and restrict or eliminate the size motors to be used on the lakes minimizing shoreline erosion. The plat was redesigned to establish a 300’ conservation buffer around a bald eagles nest.

Proposed Development: Subdivision

Total Acres: 69 acres

Total Wetland: 13 acres

Wetland Impact Proposed by Plat: Anticipated build-out impact, including infrastructure = 0.5 acres.

Wetland Conservation Act (WCA) – Technical Evaluation Panel

The State WCA includes provisions for technical assistance to LGUs (via Technical Evaluation Panels (TEPs)) and state oversight of LGU decisions (via audits and appeal procedures). TEPs involve local and state government representatives with substantial knowledge of sensitive water resources in the Lake Superior Basin, including areas particularly susceptible to erosion and sediment loss that could impact existing wetlands. The TEPs conduct on-site reviews early in the permitting process. The TEPs in the basin have gained substantial knowledge, experience and effectiveness, since the WCA was adopted in 1991. Examples of effective TEP involvement can be seen at the site development level throughout the Lake Superior watershed. Below are 3 examples:

Wetland Avoidance and Resource Protection - Example #1 – Schroeder Place Plat

The Technical Evaluation Panel received a wetland delineation report and proposed plat drawing in June 2005 for the Schroeder Place Plat (Sec. 1+2, T58N, R5W). The TEP included representatives from Cook County, Cook County Soil and Water Conservation District, the State of Minnesota (BWSR), and the U.S. Army Corps of Engineers.

The goal of the field review in July was to examine the wetland delineation and review wetland sequencing of the proposed development. Erosion control and stormwater management issues were also discussed on site.

After walking the proposed Schroeder Place Plat, the TEP agreed with the wetland delineation. The TEP did however recommend a re-route of the access road. Originally, the access road simply ringed the property and would cross the wetland outlet to Fredenberg Creek. The re-route suggested to the developer created two cul-de-sacs and reduced the wetland impact by over an acre. By not ringing the development with a road (from the re-routing process), the out lot has a higher integrity for water quality, aesthetics, and habitat.

Proposed Development: 19 lots

Total acreage: 115 acres

Total wetland: 50+ acres

Wetland Impact Proposed by plat: 1 acre

Wetland Avoidance and Resource Protection - Example #2 - Kingsbury Ridge

Kingsbury Ridge (part of SW ¼, Sec. 10. T49N, R15W). The Proctor TEP met on site (May 5, 2005) prior to any land disturbance. The TEP included the City, the South St. Louis SWCD, the State (BWSR) and the USACE. The wetland delineator also attended the field review. Avoidance of flow through-headwaters wetlands was recommended during the walk through. It was noted that the site is tributary to Kingsbury Creek.

The delineation was agreed to on-site during the field review (May 5, 2005). House "foot prints" that encroached on wetlands were discussed at two meetings to reduce the proposed impact. Ultimately, a plan design was agreed upon by both the city and the USACE.

In October 2005, an additional .036 acres (1,568 sqft) of wetland was requested to be filled due to a child safety issue. This was documented by the LGU and mitigated (again) through the wetland bank. The TEP process was valuable in shaping the final layout of the Kingsbury Ridge development.

Proposed Development: 33 lots

Total Acreage: 21 acres

Total wetlands: 9 acres

Wetland impact proposed by plat: 0.7 acres. Mitigated (as with original proposal) at a 1.5:1 ratio through the Minnesota Wetland Bank.

Wetland Avoidance and Resource Protection - Example #3 – Miller Property

Dirk Miller, landowner in Cook County (Govt. lot 1, Sec. 29, T58N, R5W), requested a single lot development proposed on Lake Superior. The landowner proposed to build as close to Lake Superior as possible but this would have put the house in a forested wetland.

The TEP met on site and requested complete avoidance by moving the house footprint back onto the upland. The DNR and USACE also concurred with this decision.

Comprehensive Wetland Protection and Management Plans (CoWProMP) approved under WCA

Example #1 -St. Louis County CoWProMP. The state approved wetland plan provides for enhanced wetland conservation through a local ordinance. The plan uses a locally derived wetland functional assessment methodology. For example, increased protection is placed on wetlands that are outside the building setback zone in shoreland (no impact allowed). See below: http://www.co.st-louis.mn.us/auditorsoffice/Board/Ordinances/Ord046.pdf

Example #2 - Lake County CoWProMP. Provides a rating of wetland protection based on local function and value priority. Example: wetlands in the coastal area require increased protection and mitigation requirements. See below:
http://www.co.lake.mn.us/vertical/Sites/{A88D6CA0-192C-4EBE-8698-70C44B114E79}/uploads/{E35A1E75-FD3E-4B5A-A576-DC35F5C5E779}.PDF

Northland NEMO Program

The Northland Nonpoint Education for Municipal Officials (Northland NEMO), established in 2001, has had overwhelming interest from the target audiences, and the results have been impressive. Already the program is starting to see changes to local water management plans and ordinances as well as requests for more follow-up information. The momentum for NEMO is

building, and with the help of their partner organizations, Northland NEMO will help Minnesota protect its natural resources while facing the pressures of development. With the involvement of the DNR, Minnesota Erosion Control Association (MECA) and MN Sea Grant, model ordinances were developed for shorelands, subdivisions, erosion control, and sediment and stormwater.

Northland NEMO Program link:
http://nemo.uconn.edu/national/stateprograms/mn_wi.htm

Example #1 – Duluth Township Ordinance
As a result of the draft ordinance outreach and assistance effort, the **Duluth Township Ordinance** was established**.** It provides a comprehensive plan identifying sensitive habitats and zoning areas. The ordinance was developed through NEMO and funded by the Minnesota's Lake Superior Coastal Program. The process provides DNR an opportunity to ensure the implementation of management measures, both existing management measures and additional management measures via the development of zoning ordinance standards and criteria. Additional ordinances are being developed in North Shore communities, with assistance from NEMO.

Duluth Township Plan: http://duluthtownship.org/pdf/DTproposedzoning.pdf

Example #2 – Cook County Ordinances
In addition, NEMO has worked with Cook County regarding two proposed ordinances under pubic review at this time. Both ordinances contain site development management measure practices.

Stormwater Ordinance: http://www.co.cook.mn.us/zoning/zon_prop/stormwater/sw-ordinance-binder.pdf
Subdivision Ordinance:
http://www.co.cook.mn.us/zoning/zon_prop/subdivision_oridnanceAug232005.pdf

Summary

The state and local implementation framework for comprehensive land use management within Minnesota's 6217 management area ensures implementation of the Site Development Management Measure. The examples presented above demonstrate effective relationships between LGUs, county and city planning staff, state agencies, local resource management boards and existing effective programs. Concrete examples of day-to-day coordination are reflected in the developments proposed and established within the Lake Superior watershed. Outreach, education and technical assistance are helping to implement effective land use management ordinances and plans. State agency oversight and appeal procedures for local decisions under state shoreland management and wetland conservation programs, and state review of Public Waters Work Permits, provide for effective implementation of resource protection and management in the 6217 management area, including the Site Development Management Measure.

MN Coastal Nonpoint Pollution Control Program Response to NOAA/EPA Condition Three

(Submitted to NOAA/EPA June 16, 2005)

Condition 3)

Within two years, Minnesota will include in its program, management measures in conformity with the Section 6217(g) guidance for existing development, and demonstrate how the program includes enforceable policies and mechanisms to ensure implementation throughout the 6217 management area. NOAA and EPA request that Minnesota provide, within 2 years, a list of retrofit opportunities in the 6217 management area and a schedule for implementing retrofits. Minnesota should also provide examples of how watershed management programs are addressing the priorities identified in the 6217 management area (through implementation of the existing development management measures).

References

- **Minnesota's Coastal Nonpoint Pollution Control Program, July 2001, Chapter IV. Management Measures, Category 3. Urban/Rural Areas, Subsection F. Existing Development**
- **EPA-840-B-92-002 January 1993, Chapter 4, Section IV. Existing Development, A. Existing Development Management Measure**

Develop and implement watershed management programs to reduce runoff pollutant concentrations and volumes from existing development:

1) Identify priority local and/or regional watershed pollutant reduction opportunities, e.g. improvements to existing urban runoff control structures;
2) Contain a schedule for implementing appropriate controls;
3) Limit destruction of natural conveyance systems; and
4) Where appropriate, preserve, enhance, or establish buffers along surface water bodies and their tributaries.

Overarching Programs and Priorities Addressing Existing Development

Lake Superior Basin Plan

The Lake Superior Basin Plan, which was completed in February 2004, provides comprehensive evaluations and prioritization of water bodies throughout the 6217 management area using a respected watershed assessment protocol developed by the U.S. Forest Service. The MPCA leads state efforts in comprehensive basin planning for water quality restoration and protection, in cooperation with other state and federal agencies, local government units (LGUs), nonprofit groups and industry. As further refinement of watershed assessments progress, opportunities for use of retrofit processes and practices associated with existing development will continue to be identified.

Of the 20 overall recommendations in the Lake Superior Basin Plan, specific recommendations pertaining to existing development, with respect to retrofit opportunities, preservation of natural conveyance systems and riparian buffers include:

Pertinent Lake Superior Basin Plan Recommendations:

1. The maintenance and protection of high quality watersheds shall be a basin–wide priority.

4. Reduce stormwater impacts on lakes, streams and wetlands in the Lake Superior Basin.

5. Develop restoration plans (TMDL) for watersheds on Minnesota's impaired waters or Section 303(d) list.

6. Develop management plans to maintain and enhance threatened basin waters.

9. Protect cold-water habitat (trout streams, trout lakes) on the North Shore and in the Nemadji River basin.

12. Target restoration opportunities and monitoring (land, water, and biological) in watersheds that score lower in relative watershed health. Prioritize by resource value.

14. Bolster efforts to clean up and restore the St. Louis River AOC.

16. Use the Minnesota Lake Superior Coastal Nonpoint Source Pollution Control Program as a foundation for basin nonpoint issues.

Detailed objectives and action steps for each recommendation can be found in Chapter 3 of the Lake Superior Basin Plan: http://www.pca.state.mn.us/publications/reports/lakesuperior-bp-ch1-6.pdf

The Basin Plan also includes an implementation framework (Chapter 12), with guiding principles, a proposed structure for coordination, plans for an Implementation Inventory of current projects, players and funding, and plans for an Implementation Work Plan. The inventory tool has been developed and distributed to a list of more than 350 stakeholders for nonpoint implementation in the Lake Superior Basin. After the inventory is complete, compiled and reviewed, the next step will be development of an Implementation Work Plan. Coordination and cooperation of state, local and federal government units, nonprofit groups and others through the Lake Superior Basin Programmatic Work Group remains strong. The Implementation Work Plan will be coordinated with the TMDL program and projects in the Lake Superior Basin. The Inventory can be found at:
http://www.pca.state.mn.us/water/basins/superior/lsbasin/management-inventory.doc

The Guiding Principles of the implementation framework help define priorities for addressing existing development management measures. These principles are:

- Leverage and augment existing plans and programs
- Focus on the resources (e.g., streams and tributaries, lakes and land in the basin)
- Establish and maintain consensus on priorities
- Emphasize protection and prevention

- Use a watershed approach
- Be based on achieving the maximum extent practicable
- Facilitate stakeholder involvement
- Emphasize clear public communication
- Lead to the annual evaluation of progress and results
- Encourage the acknowledgement, celebration and publication of successes

Chapter 12 of the LSBP: Basin Plan Implementation is located at:
http://www.pca.state.mn.us/publications/reports/lakesuperior-bp-ch10-12.pdf

Total Maximum Daily Loads (TMDL)
The federal Clean Water Act (CWA) requires the states to take specific steps to address impaired waters, including:

- Identify and list surface waters that fail to meet applicable water-quality standards.
- Evaluate impaired waters to determine sources of pollution and the amount of reduction needed to restore the waters.
- Make reasonable progress in cleaning up or restoring these waters.

As the administrator of the TMDL program for the state, MPCA leads the identification of impaired waters and development of TMDL plans, and monitors impaired waters activities. TMDL development within the 6217 management area includes a focus on incorporating the management measures in the TMDL strategies and implementation plans, both within urban areas such as Duluth's Miller Creek watershed and rural areas where numerous watershed projects are in progress.

Following is a summary of the current TMDL projects in the 6217 management area:

Lake Superior Basin TMDL Project Schedule (conventional parameters)

Project Number	Project Name	Reach	Cost Range	Year Listed	Assessment Unit ID	Pollutant or stressor	Start	Target Completion
1	*Knife River, Lake Superior Basin*	Knife River; Headwaters to Lk Superior	H	02	04010102-504	pH	2002	2006
		Knife River; Headwaters to Lk Superior		96	04010102-504	Turbidity	2002	2006
2	Miller Creek, Lake Superior Basin	Miller Creek; Headwaters to mouth	H	02	04010201-512	Impaired biota	2003	2011
		Miller Creek; Headwaters to mouth		02	04010201-512	Temperature	2003	2011
3	Nemadji River and Deer Creek - Turbidity	Nemadji River; Headwaters to State border	H	04	04010301-505	Turbidity	2004	2012
4		Deer Creek; Headwaters to Nemadji R		04	04010301-503	Turbidity	2004	2012
5	North Shore Streams Group-Lester River	Lester River; Headwaters to Lk Superior	L	98	04010102-507	Turbidity	2005	2011
6	North Shore Streams Group-Talmadge River	Talmadge River; Headwaters to Lk Superior	M	96	04010102-508	Low Oxygen	2005	2011
		Talmadge River; Headwaters to Lk Superior		04	04010102-508	Turbidity	2005	2011
7	North Shore Streams Group-Amity Creek	Amity Cr; Unnamed Cr to Lester R	L	04	04010102-501	Turbidity	2005	2011
8	North Shore Streams Group-French River	French River; Headwaters to Lk Superior	L	04	04010102-506	Turbidity	2005	2011
9	North Shore Streams Group-Poplar River	Poplar River; Mistletoe Cr to Footbridge at Lutsen	L	04	04010102-613	Turbidity	2005	2011
10	North Shore Streams Group-Beaver River	Beaver River; Headwaters to Lk Superior	M	02	04010102-501	pH	2005	2011
		Beaver River; Headwaters to Lk Superior		96	04010102-501	Turbidity	2005	2011

Note: Project schedules are subject to funding and staffing capacity.

A map showing the locations of these project reaches is at:
http://www.pca.state.mn.us/publications/maps/tmdl-ls-conv-04.pdf

MPCA TMDL Website: http://www.pca.state.mn.us/water/tmdl/index.html

The TMDL program provides a key framework for planning, implementation, monitoring and oversight for impaired waters, including a process to define watershed “retrofit” practices in both urban and rural watersheds. Existing development retrofit practices are included in the toolbox of BMPs that will be used to implement TMDL plans. Therefore, the TMDL priority schedule also provides a priority schedule for defining and implementing both new and retrofit BMPs.

Lawsuits are a potential outcome if CWA mandates are inadequately addressed. Combining the federal mandate with the value Minnesotans place on water resources and their importance to tourism, economic growth and community growth, the issue of impaired waters clearly is a priority for the state.

Comprehensive Local Water Management Plans
Minnesota's Local Water Management Program is implemented at the local level by counties and Soil and Water Conservation Districts and administered at the state level by the Board of Water and Soil Resources (BWSR). When appropriate, based on the impairment of a water body and its sources, BWSR and MPCA are in agreement that Comprehensive Local Water Management Plans can and should be used as a framework for developing a TMDL implementation plan. Benefits of using a Comprehensive Local Water Plan as a framework for a TMDL plan include:

- Existing and amendable
- Require public notice, involvement and hearing
- Provide for a watershed context
- Required to demonstrate how the plan is coordinated with others
- Have the same basic plan content and requirements that a TMDL must have
- Has an interagency review procedure

Additional authorities include:

- May regulate the use and development of land within incorporated areas under certain conditions
- Can acquire by condemnation real and personal property
- Assess costs of projects to benefited entities
- Charge users for services necessary to implement the plan
- Establish one or more water management tax districts

All of the four counties within the 6217 area have a Comprehensive Local Water Plan. Each plan is based on priority concerns established through the local planning process and state agency review. Prioritizing water resource needs enables urban and rural communities, for both new and existing development, to focus their efforts and resources to be most effective.

Other Local Comprehensive Plans
The enabling legislation for enforcement of nonpoint source pollution is contained in M.S. 394 (Counties and Townships) and M.S. 465 (Municipalities). The Environmental Quality Board oversees the Comprehensive Planning Authority. The law provides State criteria for LGUs to use to develop a local comprehensive plan and directs them to develop enforceable local ordinances to implement their plans. All Comprehensive Plans must be reviewed by state agencies for consistency with the State policy objectives. State natural resource agencies and MnDOT use the local comprehensive plans and policies developed through the comprehensive planning process in making decisions regarding protection of habitat areas and the location and upgrade of roads.

Minnesota Clean Water Legacy Act
The Minnesota Legislature is considering a new impaired waters program for providing financial and technical assistance for planning and implementing TMDLs to restore impaired Minnesota waters and to protect unimpaired waters, including waters in the 6217 management area. This program is to include a nonpoint restoration and protection strategy. It would be implemented through existing state and local delivery systems in Minnesota, with the addition of a Clean Water Council to advise the administration and implementation of the program and to foster

coordination and cooperation of public agencies with authority for local water management, conservation, land use, land management and development. This act reflects the long-standing priorities in Minnesota for clean water and a high quality of life.

NPDES Opportunities to Implement Retrofit Solutions
NPDES permit conditions can recommend retrofit BMPs as sites come up for renewal and updating of their Pollution Prevention Plans. In some cases, the MPCA is currently requesting that applicable retrofit management measures be incorporated into individual industrial NPDES permits as they come up for renewal. NPDES permit violations are addressed in Rule 7050.0210 (13) and Minnesota Statute 115.061. The latter identifies the duty to notify, action to prevent further release and directs the clean-up activities. Sites that lack permit coverage and/or fail to meet permit terms and conditions will be subject to MPCA enforcement action, civil penalties and/or criminal charges.

NPDES – Industrial Stormwater Permits
The Stormwater Program for industrial activity is designed to reduce the amount of pollution that enters surface and ground water from industrial facilities in the form of stormwater runoff. Stormwater discharges associated with 11 categories of industrial activities are regulated through the use of National Pollutant Discharge Elimination System (NPDES) permits. Facilities that need a permit must develop and implement a Stormwater Pollution Prevention Plan (SWPPP) that is designed to eliminate or minimize stormwater contact with significant materials that may result in polluted stormwater discharges from the industrial site. The SWPPP must incorporate specific best management practices (BMPs) applicable to the site.

The NPDES General Stormwater Permit for Industrial Activity can be interpreted to incorporate permanent stormwater devices as a retrofit measure. Such was the case for Minnesota Power as they designed the Laskin Energy Center in Hoyt Lakes. Two retention devices were incorporated into their existing facility to address nonpoint runoff associated with stormwater. A summary of the effort is listed below.

<u>Parking Loop Retention Basin</u>

The parking loop retention basin was designed to collect and retain stormwater runoff from the paved loop parking area at the Laskin Energy Center. It also serves a spill prevention function in the unlikely event of an overflow from the air quality control wet scrubber system located in a nearby building. The valve structure at the outlet end of the retention pond is kept in the closed position. Normally the collected runoff evaporates in the retention pond and there is seldom a need to discharge the treated stormwater runoff to Colby Lake.

<u>West Parking Lot Swale Valve Structure</u>
The west parking lot swale valve structure was installed at the culvert discharge point to Colby Lake from two grass swales. It is designed to take advantage of the retention capacity available within these grass swales. It also serves a spill prevention function in the unlikely event of an overflow from the air quality control wet scrubber system located in a nearby building. The valve is normally kept in the closed position, which results in stormwater runoff being retained within the swales where it evaporates and seeps into the ground. It is only during very heavy

precipitation events that the valve needs to be opened to prevent the flooding of the parking lot area.

When a discharge occurs without a permit, Rule 7001.1030 (1) – Discharge Without a Permit is used as an enforcement mechanism.

Coastal Program Grant Addressing Retrofit Opportunities
For the period extending from June 2005 – July 2006, a Coastal Program Grant (MDNR / NOAA) was awarded to the BWSR to identify NPS retrofit opportunities on drainage ways associated with U.S. Hwy. 61 from Duluth to the Minnesota border with Ontario. Highway 61 is a primary transportation corridor along the North Shore of Lake Superior that crosses numerous tributary rivers and streams. BWSR will partner with MnDOT and LGUs along the North Shore to identify opportunities to retrofit existing conveyance systems.

This grant will also explore situations where townships and municipalities are working to incorporate sound planning practices within the Highway 61 corridor with respect to maintaining water quality by addressing pollutant loading and increased stormwater capacity issues. Sites identified as retrofit opportunities will be conveyed to the municipality, county, and MnDOT for consideration during future road corridor repair or improvement. BWSR will provide literature and plans of similar case studies and propose solutions to be incorporated to best protect and restore water quality while assuring safety for the traveling public with regard to roadway flooding.

Areas that may be considered for retrofitting will also be analyzed to identify priority pollutants and the most appropriate devices will be identified to improve water quality. In areas where stormwater plans already exist, recommendations will pull in the attributes of the local plan to assure measures are compatable from the watershed perspective and best address local needs.

BWSR will act as a facilitator with LGUs and MnDOT through uniting planners at both levels in determining the most effective management measures for maintaining water quality associated with existing and future development on one of the most utilized transporation corridors in the Lake Superior Basin.

Protection of Natural Conveyance Systems and Buffers

Public Waters Work Permits (PWWP)
Minnesota Public Waters Work Permits, administered by the Minnesota Department of Natural Resources, provides an enforceable means to protect natural conveyance systems classified as public waters, including protection of natural buffers. The PWWP program and associated definition of public waters are found in Minnesota Rules Chapter 6115 (http://www.revisor.leg.state.mn.us/arule/6115/), and State Statutes, Chapter 103G (http://www.revisor.leg.state.mn.us/stats/103G/). All categories of potential impacts to public waters are addressed including: filling, excavation, structures, drainage, mining and restoration. Each subpart defines goals and prohibited activities for the specified category.

Enforcement of PWWPs are a concerted effort involving several state agencies, as well as LGUs, with DNR Conservation Officers (COs) serving as lead enforcement personnel. This multi-level cooperation is outlined in the following excerpt from Minnesota Statutes (Note that "commissioner" refers to the DNR.).

> **103G.105 Cooperation with other agencies.**
> Subd. 2. **State and local officials must cooperate in enforcement.**
> Personnel of the Pollution Control Agency, the Health Department, and county and municipal governments, must cooperate with the commissioner in monitoring and enforcing water permits. County attorneys, sheriffs, and other peace officers and other officers having enforcement authority must take all action to the extent of their authority, respectively, that may be necessary or proper for the enforcement of the provisions, rules, standards, orders, or permits specified in this chapter and chapter 103F.

Wetland Conservation Act (WCA)
The Minnesota Wetland Conservation Act (WCA) provides effective authority and processes to avoid, minimize and/or mitigate impacts to wetlands in the Lake Superior Basin, including riparian wetlands that serve as buffers along natural conveyance systems. Wetlands are a substantial landscape feature in the Lake Superior Basin. The Minnesota Board of Water and Soil Resources administers the WCA in cooperation with 16 LGUs in the Lake Superior Basin.

The WCA includes provisions for technical assistance to LGUs (via Technical Evaluation Panels (TEPs)) and state oversight of LGU decisions (via audits and appeal procedures). TEPs involve local and state government representatives with substantial knowledge of sensitive water resources in the Lake Superior Basin, including riparian wetlands along natural conveyance systems. TEPs conduct on-site reviews early in the permitting process. TEPs in the Lake Superior Basin have gained substantial knowledge, experience and effectiveness, since the WCA was adopted in 1991.

The required submittal of a Joint Notification Form triggers project review by BWSR, DNR, USACE, and the LGU. State agencies can provide recommendations to avoid, minimize and/or mitigate effects on jurisdictional riparian wetlands and associated natural drainage systems within existing and new development areas. Joint review of applications helps ensure that development is sited to protect to the extent practicable the integrity of natural conveyance systems and water bodies. All project plans that involve existing jurisdictional wetlands may be reviewed by the DNR, PCA and BWSR for consistency with 6217 management measures and watershed based planning efforts.

The BWSR conducts periodic program audits of WCA LGUs to promote continued advancement and maintenance of the effectiveness of local implementation, as well as local accountability. On average, a quarter of the LGUs within the Lake Superior basin are audited annually. The audits to date in the Lake Superior Basin have indicated compliance with the intent of the law with only minor suggestions for program consistency being noted. These audits have proven to be an effective training and accountability process.

The WCA enables any member of the TEP, any organization required to receive notice of an LGU decision, or 100 citizens of the county in which the majority of the associated wetland is located, to appeal LGU decisions. These appeal petitions are made to the BWSR, which has a standing Dispute Resolution Committee that hears appeals for granted petitions and works with the LGU to resolve appeals in accordance with prescribed procedures in Minnesota Rules, Chapter 8420. To date, two appeals have been processed in the Lake Superior Basin. Stipulation agreements were reached during the associated appeal processes. Both yielded beneficial long-term planning efforts leading to a comprehensive wetland plan for Hermantown and education for land use planning staff.

Shoreland Management Act (SMA)
The Shoreland Management Act mandates that all counties and cities enforce land use regulations within 1,000 feet of all lakes and 300 feet of all rivers in the state. It is founded in enforceable Minnesota Statutes, Chapter 103G and Minnesota Rule 6120. The regulations address issues such as preservation of natural areas (6120.3200), lot sizes suitable for development, septic system placement, and types of land uses appropriate for shoreland areas. This program was enacted in 1972 and the Department of Natural Resources rules were revised in 1990.

The Shoreland Management Act required the DNR to establish regulations to be adopted and enforced through county and municipal land use controls (i.e. zoning ordinances). The intent of the act is to provide local units of government with consistent minimum dimensional and performance standards in order to protect and enhance the quality of our surface waters, and conserve the economic and natural resource values of the shoreland of public waters. Since 1991, the Legislature has provided limited annual financial assistance to counties for program administration. Acceptance of this funding requires compliance with the Shoreland Management Act. Noncompliance is grounds for not awarding a current grant. Since July 2002**,** there have been 16 instances statewide where LGUs (10 SWCDs and 6 Counties) have experienced delays and/or a reduction in funds due to the following infractions: late reports, late plans, expired plans or rules violations.

North Shore Management Plan
The North Shore Management Plan (NSMP) serves as a substitute along the North Shore of Lake Superior for the state shoreland management regulations that apply to all lakes and streams in Minnesota. Creation of the North Shore Management Board (NSMB) and the NSMP was authorized by state statute in 1987 after it was agreed that Lake Superior is unique among lakes in Minnesota and was identified as a distinctive shoreland management unit. The purpose of the NSMB was to direct the development of the North Shore Management Plan with strategies for environmental protection and orderly growth along the North Shore of Lake Superior. The NSMB is composed of representatives of local government units along the North Shore. The NSMP area boundary is defined by 40-acre subdivision lines nearest to the landward side of a line 1,000 feet from the shoreline of Lake Superior, or 300 feet landward from the centerline of U.S. Hwy. 61, whichever is greater. This is a critical zone of development along Lake Superior in Minnesota.

The NSMP was updated in 2004. Updates include: zoning standards, lot sizes, structure setbacks, highway access control, building height limitations, lot coverage, planned unit development, and vegetation management. The NSMB recently voted to expand its area boundary to match up with the Minnesota Lake Superior Coastal Program boundary north of Duluth, providing more opportunities for close collaborations.

The NSMP update is available at: http://www.ardc.org/projects/nsmb

Forest Management Guidelines – Minnesota Forest Resources Council
Using data from the NOAA Coastal Change Analysis Program (C-CAP), and excluding urban areas, forestland accounts for approximately 45 percent of all cover type and land use in the Lake Superior Basin. Due to this large land type component, retrofit opportunities in silviculture practices can positively influence water quality in the majority of watersheds in the basin. Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines encourage retrofit practices when harvesting timber on pre-established logging areas.

The two areas within the guidebook addressing retrofit activities are contained within the General Guidelines and Forest Road chapters. The General Guidelines chapter clearly illustrates methods to manage logging activities associated with wetlands, filter strips and riparian areas for water quality protection.

The Forest Road Guidelines recommend the following:

- Use of existing roads and trails where appropriate and practical.
- Limit new road construction by coordinating with adjoining landowner access
- Development of forest management sites within a harvest unit will be limited to 3% of the total harvest area (i.e. Roads and landings within a 10-acre harvest would utilize 0.3 acres of land).
- On existing roads, assessments are made for stream crossings in regard to:
  - Water crossing approaches, including water diversion bars and ditches.
  - Structure upgrades. Culvert lengthening and bridge installation.
  - Riprap placement on existing banks and culvert ends.
  - Overflow structures incorporated into existing crossings.
  - Road crowns and grading practices focused on long-term maintenance

The Minnesota Forest Resources Council (MFRC) annual audit reports are presented to the Governor and Legislature. Compliance monitoring results are summarized and included as a specific analysis regarding Riparian Forests in Minnesota. Within the MFRC website, is a link to the Guidebook and monitoring reports. Many of the retrofit efforts are contained within the Forest Roads section: http://www.frc.state.mn.us/FMgdline/Guidebook.html

While the site level guidelines and the associated best management practices are voluntary, timber management contracts on public land and on much of the private industrial forestland in Minnesota require operators to adhere to the guidelines.

Example Urban Projects Addressing Existing Development

City of Duluth

The largest urban area in Minnesota's Lake Superior Basin is Duluth, which has many retrofit opportunities associated with its aging existing infrastructure. Funded by a recently established stormwater utility, settling basins, rain gardens and stormwater ponds are being incorporated into problem areas and transportation system upgrades.

Within the approved 2004 – 2008 Capital Improvement Program for the City of Duluth, three sediment traps are proposed to improve existing conditions for Coffee, Clark House and Miller Creeks to be built in 2005. The projects have an estimated construction cost of $200,000. The traps are designed to contain road debris, which currently is detrimental to spawning trout and St. Louis Bay water quality. The Clark House Creek Sediment trap will also contain an oil separator.

Up to a 2-acre stormwater rain garden will be incorporated into the tourist-rich Bayfront Park to treat runoff from Duluth's hillside. The design will feature wetlands, ponds, and aeration over rocks and through native plants. In addition, there will be a demonstration area to show visitors the pollution reduction capabilities of the garden and instructions on creating stormwater gardens for private residences. The City of Duluth is teaming with the Sweetwater Alliance to implement the project. The Sweetwater Alliance website is found at: www.sweetwateralliance.org

Miller Creek Watershed Restoration

Miller Creek is an urban trout stream located within the cities of Duluth and Hermantown. In 1998, the cities of Duluth and Hermantown formed the Miller Creek Joint Powers Board (JPB) to oversee conservation projects in the watershed. The JPB consists of appointed volunteer representatives from both cities, and numerous other partners.

The primary concern is the decline and potential loss of the brook trout fishery in the creek. Related concerns include increased water temperatures, sedimentation, loss of habitat, and high chloride and metals concentrations. The overall goal of the Miller Creek Watershed Restoration Project is to provide for a viable, self-sustaining urban trout fishery, as well as to educate the public regarding watershed health and urban impacts to area trout streams.

The South St. Louis SWCD and project partners recently completed the Miller Creek Diagnostic Study and Implementation Plan. This Clean Water Partnership Phase I Report documents water quality problems and restoration strategies.

Retrofit elements within this plan include: stormwater redesign, underground stormwater retention areas, setting aside vegetative buffers and tree plantings. Future proposals include: construction of an in-stream sediment trap, installation of porous pavement, infiltration pond construction and replacing perched culverts.

 Download Miller Creek Diagnostic Study and Implementation Plan

Miller Trunk Highway
Miller Trunk Highway is Duluth's most retail intensive thoroughfare. MnDOT is reconstructing approximately 5 miles of the highway through the area most closely associated with retail build-out. During the scoping of the project, a diverse group of stakeholders formed an environmental task force to address stormwater runoff. As a result, two businesses are being purchased and replaced with detention ponds, and restoration of the Miller Creek floodplain and natural plantings will implemented. Some existing frontage roads will be removed to minimize overall imperviousness. Two dry drawdown ponds, minimizing thermal shock into Miller Creek, and 3 settling basins, are also incorporated into the design for an adjoining project proposed on Trinity Road to be constructed in 2006.

Glensheen Historic Mansion – University of Minnesota, Duluth
A Great Lakes Commission grant to the BWSR and project partners in 2003 funded Phase 1 of this project. Low-impact development parking lot modifications designed to capture and treat stormwater by running it through vegetated swales, rock check dams and a bioretention pond prior to reaching Lake Superior were successfully completed in November 2004. The planned Phase 2 involves an armor stone revetment to protect an eroding reach of shoreline against wave action. The second stage will be funded by a 2005 Great Lakes Commission grant to the BWSR and project partners.

Because this is a partnership between the University of Minnesota - Duluth, an historic estate, the St. Louis County Soil and Water Conservation District and the MN Board of Water and Soil Resources, dissemination of project results will be visible and widespread. As with the previously completed Phase 1 portion, regional workshops will highlight the combined efforts at Glensheen to implement retrofit BMPs.

Thousands of tourists visit Glensheen Mansion annually and will be exposed to the newly constructed low-impact development measures and shoreline stabilization. A sign explaining nonpoint source pollution associated with stormwater and erosion will be erected at the site overlooking the bioretention basin and shoreline, identifying the project features and participants.

The Glensheen Summary Report is found at the South St. Louis SWCD website:
http://www.southstlouisswcd.org/docs/GLC%20LID%20final%20report.pdf

Midway River Watershed Restoration
The Midway River Watershed is located in the St. Louis River System in the Lake Superior Basin. Approximately two-thirds of the watershed lies within the designated Duluth MS4 area, with the upper reaches located in southwest rural Carlton County. The St. Louis River Remedial Action Plan identified nutrient and sediment loading as problems in the St. Louis Bay Area of Concern. The Midway River watershed has been degraded by nonpoint source pollution, and contributes to this impairment. Private forest stewardship and partnering with the Carlton SWCD are major elements of this project.

These projects consist of three phases.

- Identifying sites in the watershed that are most likely contributing sediment loads to the river system utilizing geographic information system tools.
- Remediation work includes riparian tree planting and conservation plans will be developed for lands that have animal agriculture operations impacting the stream.
- Monitoring water chemistry characteristics and water temperature.

Midway River Watershed Map

Cook County - Grand Marais Storm Water Management (Creechville)
Above the city of Grand Marais and below the Gunflint Trail, in an area called Creechville, flow patterns have been altered. There is flooding and significant erosion. Some gullies are over four feet deep. A recently developed Stormwater Computer Model provides the data needed to design this project. The solution will be a unique pond design that will discharge to the old streambed with overflow handled by an existing channel. The goal is to create natural habitat around the pond. Also included in the project is replacement and armoring of an undersized culvert. Grading and revegetation will be another important part of this project.

In the same steep area, are three blocks of severe roadside erosion. Channels are eroding along and across unpaved road surfaces. Much of the stormwater runoff migrates over/across the road and through people's yards. A formal system of vegetated ditches and culverts will be installed. Bedrock is shallow, so the ditches may have to be bermed into people's yards to contain runoff. A small basin will be installed and armored with riprap at the entrance to a culvert.

Grand Marais Creek Stream Stabilization and Naturalization Project
The project seeks to restore eroding stream banks within the park to improve water quality. The project will implement a combination of retrofit BMPs, including bioengineering stabilization methods, channel regrading and naturalization methods, and vegetative buffers. The project will decrease erosion and fit in with the aesthetics of the area. Channel banks will be restored to a flatter slope that can sustain vegetation. Vegetation will be planted to create buffer zones that filter runoff sediments and contaminants. Where possible, invasive species will be removed and will be re-planted with native plant species.

City of Two Harbors

A municipal Stormwater Utility was established in 2000 providing a mechanism enabling the city to collect funds for nonpoint stormwater projects. In the summer of 2004, the Two Harbors cemetery detention basin was installed for water quality and sediment retention. Prior to the installation, heavy rain events would cause flooding, associated erosion and sediment deposition into Skunk Creek, a direct tributary into Lake Superior.

Detention Pond Design/Bid Specification - Two Harbors Storm Water Management Plan:
To begin implementation of the stormwater plan provisions, one of the next major steps will be to design and construct a series of storm water detention basins. These multipurpose structures will provide storage for flood water, retain pollutants such as sediment, create wetland wildlife habitat, and generate additional recreational opportunities for residents and visitors. The

detention basins will reduce downstream flows, minimize erosion, improve water quality, reduce property damages and increase public safety. Proposed construction summer 2005.

Scheduled projects in the Two Harbors Stormwater Management Plan:
19th Street Road Project (north of Segog) - This new road will cross the mainstem of Skunk Creek and will be constructed in the fall of 2005 or summer of 2006. With the assistance of a Coastal Program grant, the project partners have designed a control structure that will allow the road embankment to serve as a detention basin under high flow conditions. The project will be constructed using these plans.

Segog Diversion - During the summer of 2005, a diversion will be constructed to re-route natural runoff water away from the Segog Addition and back into Skunk Creek. This diversion will decrease flooding, minimize erosion, and alleviate safety issues in the Segog Addition. This is the same watershed that flows into the Two Harbors Cemetery Detention Basin (completed in 2004).

Example Rural Projects Addressing Existing Development

Lake County –
Knife River Watershed
The Knife River system is a unique resource in Minnesota's Lake Superior basin. The river system experiences conditions that are detrimental to fish reproduction and survival. Selected conservation and land management practices can improve water quality and water quantity conditions. An organized effort to improve the conditions of water quality and quantity in the Knife River Watershed began in 1991 with the Forest Stewardship Program. Federal, State and Local government agencies, along with landowners, regularly meet as a committee to direct the stewardship program. The private forest stewardship grant is also a major part of this project. The primary objective is technical assistance for private forest landowners to reestablish the conifer element to slow spring runoff and vegetate riparian buffer areas, reducing erosion.

Key Organizations Involved**:**
This project is overseen by the Knife River Watershed Forest Stewardship Committee which includes representation from the Lake Superior Steelhead Association; Minnesota Department of Natural Resources, Division of Forestry and Division of Fisheries; United States Environmental Protection Agency; Natural Resources Conservation Service; the Board of Water and Soil Resources; Lake County Land Department; St. Louis County Land Department; Lake County SWCD and South St. Louis SWCD.

Project Description:
This project will improve the ecosystem-based management of non-industrial private forest lands (NIPF) to benefit the landowners, economy, fisheries habitat and environment of the Knife River Watershed in Lake and St. Louis Counties by hiring a Stewardship Forester.

The Knife River Watershed encompasses an area of approximately 60,000 acres. This system is unique among Lake Superior/North Shore tributaries, because:

- it is the only North Shore tributary that has no natural barriers preventing fish migration and utilization of the entire system (70+ miles of cold water fisheries habitat.)
- it has a large private ownership of land in the watershed.
- it is in close proximity to a large metropolitan area.
- it is a major sediment source affecting Lake Superior.
- it supports the North Shore's major naturalized wild steelhead population.

According to the Draft North Shore Steelhead Plan (Minnesota Department of Natural Resources), cumulative hydrologic effects have combined over the years to negatively impact the Knife River system's water quality and quantity. Land use changes have resulted in excessive fluctuations of streamflow, changes in water temperature, and acceleration of streambank erosion and sedimentation.

Objectives:
Overall, this project will increase the level of multiple-use management on approximately 4,000 acres of privately owned forestland (covered by 45 management plans), emphasizing hydrologic improvements and watershed health. Specific measurable objectives include:

1) Increase the number of non-timber management practices applied to NIPF land.
2) Increase the number of timber sales prepared with professional forestry assistance by 30%.
3) Increase the acreage of professionally assisted timber stand improvement practices.
4) Increase forest tree planting and seeding in riparian areas (high priority).
5) Educate landowners about forestland use assistance available, i.e., tree farm program and other benefits of forest management.
6) Assist in the development of a comprehensive watershed plan.

Methods:
The strategies to achieve these objectives concentrate on providing professional stewardship assistance in a wide variety of ways. The forester's duties include reaching landowners through the media or individual contacts; visiting the landowners' property; prescribing methods to achieve the landowners' goals and objectives, and assisting the landowners with implementing their management prescriptions.

Sucker River Watershed Protection Pilot Project
The South St. Louis Soil and Water Conservation District, through funding from the MPCA, is working on a watershed protection project to benefit the Sucker River through preventive measures. The overall goal is to protect the Sucker River into the future by helping citizens evaluate their role in the watershed, ask questions, and take action. To date, the Sucker River has escaped the fate of other North Shore streams that have exceeded pollution limits - although monitoring data indicate some degradation. The Sucker River has remained a relatively high-quality trout stream, even though parts of the watershed have undergone many changes.

Through the Sucker Watershed project, the North Shore Community School invited two members of the Sucker Watershed Technical Group to visit with a watershed class. The

watershed class then decided to take action and has initiated a rain garden project to capture and treat stormwater runoff associated with its newly-paved parking area. Working together with volunteers, the school will build the garden and incorporate its function and plants into the school's curriculum.

Although the Sucker River project will continue to take advantage of opportunities for watershed awareness and action, it will also produce an Implementation Plan for use by any group or agency to complete activities that will help protect the watershed. The plan will outline a variety of activities that could minimize nonpoint source pollution within the watershed, and will also include information on time and cost estimates, barriers to implementation, and benefits that could result from the identified activities. The Sucker River Watershed Technical Group, made up of local and state agencies and groups, will be documenting the protection and planning process, in order to assess the applicability of these methods to other Lake Superior watersheds.

Lake County Highway Garage Model Stormwater Control
The purpose of this project and grant application is to retrofit the site with modern stormwater control methods. In addition, it is proposed that margins of the highway garage property be developed into wetland areas (separate from stormwater ponds). Finally, designs will be reviewed for both an upcoming salt-sand storage facility and for a conversion of a paved parking area for innovated storm water control measures. It is anticipated that this effort will serve as a model for larger industrial sites in Lake County for storm water control efforts. As noted above, detailed design and construction will provide for the implementation of modern storm water controls. Given the size of the facility, it is anticipated that storm water can be directed into a series of storm water pools. At least two, and perhaps three, pool series will be constructed and vegetated with wetland grasses so as to collect and treat stormwater leaving the site. Each pool series will be a connection of three small ponds that will progressively help treat the surface water. Wetlands will be provided in areas not directly connected to industrial runoff, but onsite. Additional deliverables will be a design for retrofitting an existing parking lot for an open graded bituminous which will help promote infiltration of water into the ground and a storm water sensitive design for a proposed salt-sand storage facility onsite (green roof). Public informational materials, including a press release, will be made available as a result of this project. Tours of the facility will be made available for interested parties upon request.

Carlton County - Nemadji River Basin
The Nemadji River flows into Superior Bay, which was designated as an “area of concern” by the Great Lakes Water Quality Agreement (WQA) between the US and Canada in 1972. Five impaired uses were recognized at that time: 1) Fish Consumption Advisory, 2) Degradation of Benthos, 3) Restrictions of Dredging, 4) Degradation of Aesthetics and 5) Loss of Fish and Wildlife Habitat. In 1987, Remedial Action Plans (RAP) were developed for implementing provisions of the WQA and restoring beneficial uses of the area.

In 1993, the Citizen’s Advisory Committee of the RAP requested the NRCS to identify methods for reducing sediment in the Nemadji River. Under authority of the Public Law-566 Watershed Protection and Flood Prevention Act, the NRCS began work on the Nemadji River Basin Project in January 1994. The Carlton County Board of Commissioners, several Wisconsin agencies and the Metropolitan Interstate Committee served as sponsors to provide local support.

The long-term goal, as stated in the Nemadji River Basin Project Summary Report (see link below), is to restore beneficial uses to the Nemadji River Basin. Specific hydrologic processes requiring retrofit restoration include stabilizing runoff volumes and peak discharges through coordination of land use activities, "de-channelizing" runoff paths from uplands to main channels and re-establishing healthy riparian corridors.

Short-term goals include prevention of further degradation of hydrologic conditions and natural conveyance systems, maintaining economic viability of the land for landowners, expanding partnerships and coordination to address watershed problems.

Nemadji River Basin Project: http://www.stlouisriver.org/nrbpphaseIIworkplan.pdf

In 2004, MnDOT worked with MDNR Fisheries to retrofit twin box culverts on the Little South Fork of the Nemadji River associated with the Highway 23 crossing in Carlton County. The effort eliminated a hydraulic head cutting situation causing stream erosion of the red clay, ultimately protecting fish habitat. Bank stabilization was completed using bioengineering with live fascines. A failing low head dam was also removed and the natural channel substrate restored as part of this project.

Cook County

Flute Reed River

Using EQIP funds, a field survey has been performed to locate erosion and slump areas on the river. The information has been transferred to GIS maps for decision-making. Project partners are currently in the process of prioritizing areas for landowner contacts and determining the most effective methods to prevent additional erosion. The Cook County Soil and Water Conservation District has proposed using diversion berms, vegetative buffers, tree plantings and preservation of natural conveyance swales to contribute to bank stabilization. A summary of the effort, including a map of the project, can be found at: http://www.co.cook.mn.us/sw/FluteReed.pdf

Summary of Condition Response

Minnesota implements existing development management measures, including both new and retrofit BMPs, throughout the 6217 management area via a number of existing programs and processes. Overarching programs and priorities include:

- The Lake Superior Basin Plan, which provides a comprehensive assessment of watershed conditions and vulnerabilities in relation to water quality, is a basis for more refined watershed prioritization and watershed project implementation. The Implementation Framework outlined in the Basin Plan includes guiding principles that help define priorities for addressing existing development management measures. The Implementation Framework also includes a proposed structure for coordination, plans for an Implementation Inventory of current projects, players and funding, and plans for an Implementation Work Plan. The Implementation Inventory is currently in process. The Implementation Work Plan will be the next step. Cooperation is strong among involved state and federal agencies, LGUs, nonprofit organizations and industry.

- The TMDL program and process is well established in the Lake Superior basin. This is a key focal point for nonpoint pollution control for both new and existing development. TMDL projects in the 6217 management area have been, and will continue to be, prioritized and scheduled. TMDL implementation includes both new and retrofit BMPs.
- Comprehensive Local Water Management Plans have proven to be an existing tool used to implement Management Measures within all counties of the 6217 Management Area. During the plan update period, state agencies have the ability to request that counties assess potential retrofit opportunities and/or align TMDL objectives with plan priorities. The Minnesota Local Water Management Program provides an existing mechanism for integrating state and local priorities for restoration of impaired waters and protection of unimpaired waters. Where appropriate, these existing local water plans will be adapted to implement TMDLs.
- The Minnesota Legislature is considering a Minnesota Clean Water Legacy Act to help integrate and fund planning and implementation for restoration of impaired waters, as well as protection of unimpaired waters.

Minnesota has several existing programs that protect natural conveyance systems and buffers, including:

- Public Waters Work Permits protect natural conveyances, including buffers. These permits, administered by the Department of Natural Resources, are required for a wide array of work in public waters of the state.
- The protection provided by the Minnesota Wetland Conservation Act includes riparian wetlands, which are a common type of natural stream buffer in the Lake Superior Basin.
- The Minnesota Shoreland Management Act requires counties to implement standards for protection of shoreland areas at a minimum within 1,000 feet of a lake and 300 feet of a public watercourse. The North Shore Management Plan serves this function along the North Shore of Lake Superior.
- Minnesota Forest Management Guidelines, and the associated Minnesota Forest Resources Council, provide comprehensive and consistent guidance, compliance monitoring and periodic audits for commercial and private forest management to protect water quality.

Many examples of both urban and rural watershed restoration and protection projects are presented to illustrate the commitment in Minnesota to implement both new and retrofit BMPs to restore and protect water resources throughout the 6217 management area. The Lake Superior Basin Plan and TMDL program are current overarching programs for prioritization and implementation of watershed restoration and protection, including existing development management measures. The very active planning, prioritization and implementation efforts in the Lake Superior Basin demonstrate the commitment of state and local government units in Minnesota to fulfill the Existing Development management measures.

MN Coastal Nonpoint Pollution Control Program Response to NOAA/EPA Condition Four

(Submitted to NOAA/EPA September 23, 2004)

Applicable Section 6217 Management Measure

EPA-840-B-92-002 January 1993, Chapter 4, Section VII. Roads, Highways and Bridges, E. Management Measure for Operation and Maintenance
Incorporate pollution prevention procedures into the operation and maintenance of roads, highways and bridges to reduce pollutant loadings to surface waters.

Condition 4)
Within two years, Minnesota will demonstrate how the MDNR Protected Waters Permit Program, or another State program, ensures implementation of the practices contained within this Section 6217(g) management measure for all local roads, highways and bridges, including roads and highways that do not cross water bodies outside of designated MS4 areas.

Scope of Condition Applicability

The total linear miles of locally funded roads, highways and bridges occurring within the Minnesota 6217 management area is minimal (i.e. those not involving federal or state aid and the associated pollution control requirements). Of the four counties in the Lake Superior Basin, Cook County has the least miles of local roads with a total of 5.09 miles of township roads, while St. Louis County has the greatest number of local roads, at 379 miles. The total length of local roads and bridges in the Lake Superior Basin (6,200 sq. mi.) is 686 miles. Using an average right-of-way width of 66 feet, it's estimated that 0.14% of total area within the basin is used for locally funded roads and bridges. Roads within these counties administered by the USFS and MnDNR are subject to BMPs and environmental standards in conformance with the above management measure, including the Minnesota Forest Resources Council's Forestry Management Guidelines. Therefore, they were not factored into this calculation.

Most county roads in Minnesota involve state aid that requires the use of MnDOT pollution control requirements during construction and maintenance. Township bridge and culvert replacements are eligible for state and federal funding through Federal Bridge Funds (FBF), Minnesota State Transportation Funds-State Bridge Bonding Funds (SBB) and Town Bridge Funds, which all receive MnDOT oversight.

Existing State Programs

Wetland Conservation Act (WCA)
Local government units have the primary responsibility for implementing the act locally, although the MN Board of Water and Soil Resources administers the act statewide and the Department of Natural Resources enforces it.

Due to the landscape of northeastern Minnesota, which has many wetlands, most large local road projects involving dirt work dictate the project be coordinated through the WCA program.

Associated avoid, minimize and mitigate strategies are employed throughout the 6217 management area.

Stormwater Construction Permits (NPDES)

Stormwater discharges associated with construction activities are regulated through the use of NPDES permits. Through this permit, the owner is required to develop a stormwater pollution prevention plan that incorporates specific best management practices applicable to their site.

Permits are required from owners and operators for any construction activity disturbing one acre or more of land. Disturbances of less than one acre also need permit coverage if that activity is part of a "larger common plan of development or sale" that is greater than one acre. In addition, the MPCA may require construction activities disturbing less than one acre to obtain a permit, based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to water resources.

The current annual average of 900 permits statewide is expected to grow to 5,900 under the new Phase II expanded regulations. The old permit expired on September 4, 2003 and the new permit was issued August 1, 2003. The current permit can be found at the MPCA website: http://www.pca.state.mn.us/publications/wq-strm2-51.doc

Public Waters Work Program (PWWP)

Formerly known as the Protected Waters Permit Program, rule revisions of October 2002 replaced the use of "protected waters" terms with "public waters". This change was made to better distinguish the application of the Public Waters Work Permit Program on public waters from the provisions of the Wetland Conservation Act on wetlands.

Local road activities outside the authority of MS4, NPDES and the Minnesota Wetland Conservation Act (WCA) are addressed in annual coordination meetings between the Minnesota Department of Natural Resources (DNR), Minnesota Department of Transportation (MnDOT), counties and road contractors. The DNR's General PWWP Permit with the MnDOT and individual counties within the basin, provides the authority requiring annual meetings focusing on all issues related to construction, erosion control and maintenance measures, including areas not associated with water crossings.

These meetings facilitate communication, understanding and relationship building, with an emphasis on education and impact minimization. The resource professionals and the contractors mutually benefit from the exchange of information and are able to strategize the most effective methods to protect resources. Individual projects are discussed, as well as general concepts relating to biology, fisheries, habitats and water quality protection.

The current DNR General Permit with the MnDOT, applicable from November 30, 2003 through November 30, 2008, is at: http://files.dnr.state.mn.us/waters/watermgmt_section/pwpermits/General_Permit_2004-0001.pdf

New State Programs and Tools Since July 2001

The following programs have been developed since the initial Program Document submittal of July 2001.

Minnesota Department of Transportation

The operation and maintenance management measures for local roads and bridges that do not involve federal and state aid, and the associated MnDOT pollution control requirements, are being accomplished with the assistance of education and certification programs recently established, and functioning effectively, in Minnesota.

The MnDOT provides ongoing support to local road authorities and is readily available for consultation. Since 2001, MNDOT implemented two comprehensive programs to address environmentally sound construction, operation and maintenance of state and local roads, working cooperatively with the state's transportation authorities.

In May of 2002, MnDOT initiated a program for training inspectors and contractors in erosion control installation, inspection and site management, and in 2003, MnDOT required certified inspectors and contractor foremen on MnDOT river crossing and grading projects. Based on communications with District 1 MNDOT staff, most municipalities and counties are following these same protocols with their road projects and operations. Many townships rely on county staff and equipment to perform grading projects.

As written in the MnDOT Technical Memorandum No. 03-SA-04, October 20, 2003: (http://www.dot.state.mn.us/stateaid/techmemo/03-sa-04.pdf)
"Since erosion control has become such an important element of construction and inspection of local highway projects, and since nearly all local agencies have already taken the appropriate training, State Aid will be requiring certified erosion control technicians and contractors on local federal aid and state aid funded projects beginning in 2004."

Working closely with the University of Minnesota (UMN), MnDOT developed a three-tiered Erosion Control Certification Program, which includes: (1) Inspector/Installer, (2) Construction Site Management, and (3) Design certifications. The benefits of partnering with the UMN include administrative processing, educational networking, and continuing education credits. Recertification is required every three years.

The Inspector/Installer one-day course is targeted at construction technicians, contractors and field personnel responsible for performing the hands-on inspection work at the job site. Construction Site Management is a two-day course aimed at project engineers, chief inspectors, contractor foremen and supervisors. The two-day Design certification is focused on design engineers and plan developers who develop BMPs and Stormwater Pollution Prevention Plans (SWPPP). Specifics regarding these courses and certifications can be found at: (www.erosion.umn.edu).

To date, 2,849 individuals have been certified. A summary of attendees is shown in the following table. Most participants are from the private sector or counties, which are often contracted by townships to perform routine operation and maintenance. Local staff members within the four counties associated with the Lake Superior watershed in Minnesota have been certified to perform work on county roads as well as assist townships when asked.

Erosion/Sediment Control Certification
Attendance Summary

2002-2003	MnDOT	Other Agency	City	County	Contractor or Consultant	Total
Inspector/Installer	152	15	79	156	363	765
Site Management	195	8	66	199	395	863
Design Class	105	3	-	38	3	149
TOTAL	452	26	145	393	761	1777

2003-2004	MnDOT	Other Agency	City	County	Contractor or Consultant	Total
Inspector/Installer	19	16	52	71	127	285
Site Management	28	15	29	87	270	429
Design Class	90	19	21	84	144	358
TOTAL	137	50	102	242	541	1072

Source: UMN July 9, 2004

Center For Transportation Studies

The second new educational program is housed within the Center for Transportation Studies (CTS) at the UMN. Funded by FHWA, MnDOT, and the Local Road Research Board (LRRB), the Local Transportation Assistance Program (LTAP) created the Erosion Control Handbook for Local Roads, and associated training.

This 120-page, full-color handbook serves as a resource for local transportation authorities by providing guidelines and methods for effective control of erosion on low-volume roads for construction and maintenance. The handbook illustrates these methods with case studies, outlines best management practices, and offers guidance on cooperating with local watershed districts and other agencies. The manual is available on the MN LTAP web site at:
http://www.mnltap.umn.edu/pdf/erosioncontrolhandbook.pdf

LTAP training workshops available include:

Vegetation Management / Erosion and Sediment Control

This course covers erosion control for local roads, including:

- Integrated Roadside Vegetation Management Plan
- Mowing policies
- Noxious weeds
- Cause and effect of erosion and sedimentation
- NPDES Regulations
- Ditch clean out - when, to what depth, cattails, disposal of material
- BMPs and treatment selection for sensitive areas
- Installation and maintenance of control measures - silt fence, seed, mulch, blanket, rip rap,etc.

- Creating a plan of attack
- Resources, who to call for assistance

The MnDOT seeding manual was updated in 2003:
(http://www.dot.state.mn.us/environment/seeding_manual/SeedingManual2003.pdf)

Asphalt Pavement Maintenance and Preservation
This workshop follows the text laid out in the "Asphalt Pavement Maintenance Field Handbook," which highlights the importance of pavement preservation and preventive maintenance. The course helps workers implement best practices in the field, including the selection of the right treatment on the right road at the right time. Best practices in the placement of materials are also covered.

Three types of treatments are covered:
- Crack Treatments
  - Crack sealing
  - Crack filling
  - Full depth crack repair
- Surface Treatments
  - Fog seal
  - Seal coat
  - Slurry seal
  - Micro-surfacing
  - Thin hot mix overlays
- Pothole Patching and Repair
  - Hot mix
  - Cold mix

Gravel Road Maintenance and Dust Control
This workshop covers best practices including:
- Drainage
  - Maintaining proper shape and crown
  - Maintaining ditches
  - Center line culverts
  - Geotextiles and fabric for material separation
- Aggregate

  Gradation

  The importance of adequate supply
- Dust
  - Causes
  - Problems with dust
  - Dust suppressants/stabilizers
    - Application rates, when and how to apply
    - Potential environmental hazards associated with dust suppressants

Culvert Installation and Maintenance

This course covers:

- the different types of culverts, along with proper installation of each type,
- OSHA trenching regulations,
- the importance of compaction,
- recommended seasonal maintenance,
- best practices for addressing problems such as leakage, open joints, end damage, and scour,
- fish crossing issues, including length, grade, placement and shape of culverts.

Snow and Ice Control, Sensible Material Application

Reducing costs and the environmental effects of de-icers, while maintaining safe roads through the use of pre-wetting, anti-icing, and road weather information systems is the focus of this workshop. The training session covers:

- how freeze-point depressants work and at what temp they quit working,
- the use of salt compared to sand, including the cost of cleanup,
- the environmental effects of sand, salt, and other materials on our air and waters,
- the correct solution concentrations and application rates for the most common materials,
- proper storage of salt and sand/salt piles.

LTAP offers a Circuit Training Assistance Program (CTAP) that enables the instructor to travel statewide giving the courses at local garages, county shops and lunchrooms. This local delivery, low overhead approach keeps the program affordable for local governments, while reaching those most closely tied to operation and maintenance activities. Details pertaining to the available training can be found at: (http://www.cts.umn.edu/).

The CTS also offers spring and fall maintenance expos which are two-day events featuring numerous maintenance vendors. Each expo also offers 21 hours of education and outreach running concurrently in breakout sessions. The focus of the training is erosion control, stormwater control, and environmental issues.

Maintenance expo links:
Minnesota Fall Maintenance Expo
Minnesota Spring Maintenance Expo

St. Louis County

To assist in public outreach, St. Louis County has created the following guidelines (brochure) to assist in setbacks, erosion control and permitting assistance for roads, driveways, and parking areas:
http://www.co.st-louis.mn.us/planning/PhysicalPlanning/RoadsDrivewaysAndParkingWeb.pdf

Additional MnDOT Pollution Prevention Tool

MnDOT is developing an electronic tool that will link standard BMP detail drawings and specifications with examples of specific critical sites where these BMPs can be used. For example, if the designer is replacing a bridge over a trout stream, he/she can find a photo depicting similar natural conditions and then retrieve all BMP details (silt fence, silt curtain, etc.)

and specifications applicable for that circumstance. This guidance tool will serve as a desktop reference connecting the effected field conditions to the appropriate BMPs and standard details and specifications available. The information will be available in an interactive CD format. The guidelines will be pre-approved by the regulatory agencies, allowing users to better determine the resource concerns, proper BMPs, specifications and quantities necessary. The anticipated statewide release date is summer 2005.

Summary of Condition Response

The applicable state regulatory programs and mechanisms are clearly defined and promote interagency coordination, allowing watershed-based decisions that protect water resources. WCA, NPDES and PWWP program staff are able to communicate program objectives to local authorities through the permitting processes, allowing for comprehensive resource protection, avoidance and minimization alternatives assessment, and mitigation solutions.

The Public Waters Work Permit Program enables annual face-to-face meetings between DNR and MnDOT staff, local road authorities and contactors provide the basis for proper identification of potentially affected natural resources and implementation of BMPs to protect those resources. Positive dialog in the development of local road programs is an effective arena to insure adequate management measures are being employed.

Minnesota has taken a firm stance on pollution prevention and control during road construction, as well as for operation and maintenance, including significant program developments since 2001 that address O&M for local roads. This is evidenced by mandatory certifications, in cooperation with the UMN, for all key personnel involved with state and state-aid road construction, as well as by the ongoing education provided by the Local Transportation Assistance Program (LTAP), which includes education for operation and maintenance of local roads in Minnesota. This certification program has already reached many designers and contractors involved in road construction in Minnesota and continues to reach more and more. Many of these practitioners also serve local road authorities. The LTAP takes continuing education directly to the work locations of state and local staff who operate and maintain federal, state and local roads. Standard operating procedures for environmentally sound road construction, operation and maintenance are being further developed and adopted in Minnesota, including the Lake Superior Basin.

The interactive BMP selection and design tool being developed by the MnDOT will provide a substantial new method for proper selection, design and specification of erosion control BMPs, including BMPs for local road operation and maintenance activities. This tool should enable much more effective BMP selection, design and implementation using standard drawings and specifications, many of which have already been developed and approved by involved agencies. Periodic updating of the MnDOT seeding manual, based on ongoing experience, will help support this interactive tool.

The extent of local roads in the Lake Superior Basin for which this condition applies is minimal.

Minnesota is confident that the coastal management measure for operation and maintenance of roads, highways and bridges will be fulfilled by existing policies, programs, tools and cooperation between state and local road authorities and the University of Minnesota.

Minnesota Coastal Nonpoint Pollution Control Program Response to NOAA/EPA Condition Five and Condition Six

(Submitted to NOAA/EPA September 14, 2005)

Condition 5)
Within two years, Minnesota will include methods in its CNP that demonstrate how technical assistance will be provided to local governments and the public for the implementation of additional management measures.

Condition 6)
Within two years, Minnesota's CNP will provide for the identification of additional management measures and the continuing revision of management measures applicable to critical coastal areas in cases where Section 6217(g) measures are fully implemented but water quality threats or impairments persist.

References

- Minnesota's Coastal Nonpoint Pollution Control Program, July 2001, Chapter V. Technical Assistance

- *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, NOAA and EPA, Section III D. Requirements for Implementation of Additional Management Measures

Condition 6

Threatened and Impaired Coastal Waters
Chapter V. Additional Management Measures of Minnesota's Lake Superior Coastal Nonpoint Pollution Control Program document dated July 2001 provides a discussion of water quality monitoring methods and results to date to define threatened and impaired coastal waters in the Lake Superior Basin in Minnesota. This section included a discussion of the methodology and results for the 305(b) and 303(d) lists for Minnesota, as well as identification of the lower St. Louis River as an officially designated Area of Concern (AOC) within the 6217 area. It also contains a discussion of applicable research by USEPA's Mid-Continent Ecology Laboratory in Duluth. Current 305(b) and 303(d) maps and lists for Minnesota, including the Lake Superior Basin, are available at: http://www.pca.state.mn.us/water/basins/305blake.html, http://www.pca.state.mn.us/water/basins/305briver.html, and http://www.pca.state.mn.us/water/tmdl/index.html

Critical Coastal Land Use Areas
As an outgrowth of the Minnesota Shoreland Management Act, the North Shore of Lake Superior was identified as a distinctive shoreland management unit in Minnesota. While much of the land within the Lake Superior Basin in Minnesota is publicly owned, approximately 90% of the land along the North Shore of Lake Superior is privately owned. The North Shore Management Board (NSMB) was created in 1987 to direct the development of the North Shore Management Plan (NSMP) with strategies for environmental protection and orderly growth along the North Shore. The NSMB is composed of representatives of local government units

throughout the North Shore area. The NSMP area boundary was defined by 40-acre subdivision lines nearest to the landward side of a line 1,000 feet from the shoreline of Lake Superior, or 300 feet landward from the centerline of U.S. Hwy. 61, whichever is greater. This is a critical area of development along Lake Superior in Minnesota. The NSMP was updated in 2004, including incorporation of the new development coastal nonpoint management measures. In the spring of 2005, the NSMB voted to use an area boundary corresponding with the Minnesota Lake Superior Coastal Program boundary north of Duluth.

Because much of the Lake Superior Basin in Minnesota is forested, forestland is a critical land use for coastal nonpoint pollution control in the 6217 area. Minnesota conducted a statewide Forestry GEIS during the 1990s. An outgrowth of that effort was creation of the Minnesota Forest Resources Council, which is a public-private partnership for sustainable forest management and associated nonpoint pollution control. Research by the USEPA laboratory in Duluth indicates that forest cover is a critical component in many Lake Superior watersheds for maintaining cold stream temperatures that are critical for lake trout and salmon.

Other critical coastal areas in Minnesota include the St. Louis River AOC, source water protection areas defined by the Minnesota Department of Health, as well as designated trout streams and identified critical nearshore fishery habitat along the North Shore of Lake Superior defined by the Minnesota Department of Natural Resources (MDNR). Additionally, there are 11 Scientific and Natural Areas, 15 State Parks, a National Monument, part of a federal wilderness area (Boundary Waters Canoe Area Wilderness) and numerous colonial waterbird nesting sites in Minnesota's portion of the Lake Superior watershed. The Natural Resources Research Institute located in Duluth has defined shoreline erosion and recession susceptibility along the entire North Shore of Lake Superior. This shoreline stability information is used in the NSMP and by local government units in their land use management.

Determining the Need for Additional Management Measures

TMDLs

TMDL plans in the 6217 area of Minnesota are considering critical coastal areas and land uses when targeting current BMPs and additional management measures, as needed, to achieve water quality standards. The processes in place and in development include broad participation, with a wide range of expertise, to best define causes of water quality impairments and effective BMPs to resolve these impairments.

a) TMDL Technical Panels

TMDL planning in Minnesota has involved the creation of project technical panels with broad expertise to advise the planning process and targeting of effective measures, including education, available BMPs, permits and tailored additional management measures, as appropriate. These panels include technical staff from various local, state and federal government units, the University of Minnesota and other academic institutions, involved businesses and nonprofit organizations. The objective is to be thorough and creative in the development of TMDL plans.

b) Adaptive Management

Minnesota is also developing an adaptive management approach for implementing TMDLs. Adaptive management involves the implementation of activities (BMPs, programs, permits, etc.) with a feedback and evaluation loop that checks on the progress being made in accomplishing the implementation plan and adapts accordingly. There will likely be two evaluations to be made: 1) Are the identified activities being implemented as targeted?; and 2) Is the water quality improving as planned to achieve the applicable water quality standard(s)? If the first evaluation identifies changes needed to improve implementation, the implementation plan should be "adapted" to ensure implementation of the targeted BMPs. If the second step in the evaluation process identifies that standards are not being met, adaptive management is then to be used to determine the next steps toward attaining water quality standards. At that point, there are likely four directions that a project would consider in determining how to proceed:

1) If water quality is improving, hold the course - i.e., keep implementing;

2) If water quality is improving but at a slower than planned rate, reevaluate the BMP goals set in the implementation plan, amend the goals and plan, if needed, (e.g., more or new BMPs and/or a revised implementation schedule) and continue implementation;

3) If water quality is not improving, evaluate whether the current water quality target is appropriate, and if the reduction goals set for BMPs from pollutant source sectors are appropriate. If these are appropriate, adaptive management measures would involve reevaluating the reduction goals set for different pollutant sources, reevaluating BMP and water quality improvement opportunities, amending the TMDL as needed, and implementing a revised implementation plan (which would likely identify the need for new or more BMPs); or

4) If the water quality target is determined to not be attainable, a process for determining a more appropriate target (i.e., water quality standard) would be undertaken. This process could result in the setting of a site-specific standard, the use of a natural background condition as a standard, or some adjustment in the use classification for the water body, if appropriate.

It is expected that implementation of nonpoint source pollution control activities will often take several years and that responses in water quality could take longer. Therefore, the feedback loop for TMDLs should be "appropriately" timed (i.e. potentially longer than established to measure improvements for many projects).

Note that the option for adjusting a water quality standard is meant to be difficult, so that significant effort is made to attain the standards through pollutant control implementation. The primary questions: ”Have all prudent and feasible (i.e. reasonable) BMPs and water quality improvement opportunities been exhausted?” should be answered before considering step 4.

If initial restoration measures are found to be inadequate (e.g. interim targets are missed), alternative measures will be evaluated to meet water-quality goals. The implementation plan may need to be modified to specify these new measures. In some cases, follow-up monitoring may show that the pollutant load allocations in the TMDL also must be modified. If this happens, then the modified TMDL must meet the same public participation and other requirements as the initial TMDL and be resubmitted to EPA for approval.

The MPCA published updated TMDL Work Plan Guidance in June 2005, located at:
http://www.pca.state.mn.us/publications/wq-iw1-01.pdf
It is anticipated that this guidance will be updated periodically, including the addition of guidance regarding the adaptive management process, as the process is further developed.

c) Impaired Waters - Report to the Minnesota Legislature (2003)
Strategies for increasing efficiencies and effectiveness of TMDLs for impaired Minnesota waters include: grouping multiple impairments, regional TMDL studies for lakes, single-entry watershed projects, specialized technical teams and improved coordination with state and federal agencies. Each of these efforts will provide opportunities to determine the types of additional management measures needed for successful TMDL implementation. Details of these and other strategies can be found on pages 11 – 14 of the 2003 MPCA Report to the Legislature at:
http://www.pca.state.mn.us/publications/reports/lrwq-s-lsy03.pdf

The 2003 MPCA Report to the Legislature, Appendix J: Best Management Practices – Definitions and Applications provides 45 Agricultural BMPs, 69 Erosion and Sediment Control BMPs, and 6 Additional Water Quality Protection BMPs to be used as a guideline when assessing TMDL effectiveness and the need for additional BMPs. Appendix J is located at:
http://www.pca.state.mn.us/publications/reports/lrwq-s-lsy03-appendix.pdf

Lake Superior Basin Plan
The Lake Superior Basin Plan has involved numerous representatives of state, federal and local governments, nonprofits and industry to better define the vulnerability of water resources in the basin, as well as water quality protection and improvement priorities and options. The Basin Plan includes an implementation framework that outlines a process to coordinate implementation of existing and new management measures for water quality protection and improvement.
http://www.pca.state.mn.us/water/basins/superior/lsbasin/basin-planning.html#plan

Monitoring
Minnesota will utilize its ongoing monitoring and assessment programs to assess the condition of state waters, as well as to help determine the need for additional management measures for immediate implementation, the effectiveness of management measure implementation and the need for additional management measures based on performance.

In 2002, the MPCA completed a report titled: An Assessment of Representative Lake Superior Basin Tributaries, as a cooperative effort of the USGS, MDNR, Lake Superior Coastal Program, Cook County and the City of Duluth. The effort compared 30-year-old water quality monitoring data from four representative North Shore streams with samples taken in 2001. This study is a detailed diagnostic assessment of North Shore stream water quality. It is helping provide current information to North Shore governmental units about local stream water quality, trends, and watershed management issues. For example, cool and cold-water fish such as trout have a low tolerance for increasing water temperatures and sediment runoff originating from intense land uses such as urban developments. The report provides an assessment of water temperature changes during the past 30 years. The report also illustrates potential impacts from climate

change on North Shore stream fisheries and pollution "loading" in the streams before they flow into Lake Superior.

The study results documented an increase in water quality impairments, especially in the Duluth to Two Harbors corridor and lower Poplar River. Increased monitoring efforts such as these will contribute to focused implementation of existing and additional management measures, as necessary, to achieve water quality standards.

All data collected as part of a TMDL project must go into EPA's STORET database. All monitoring stations will be established in STORET, which means location information is needed for the stations. Project staff will provide the information needed to establish monitoring stations in STORET, and will organize data in a spreadsheet so that it can be entered into STORET. They will work with MPCA project managers and data management staff to organize and submit the data in the appropriate manner.

Processes for Updating BMPs and Developing Additional Management Measures

There are a number of processes in place in Minnesota to update existing conservation and nonpoint pollution control BMPs, and to identify and develop new BMPs / management measures. These processes are generally associated with statewide programs. However, some are specific to types of natural resources and areas of the state.

- Conservation practices used by federal and state programs for conservation and nonpoint pollution control have individual practice standards that are periodically revised. New practices are added as needs are identified, science-based implementation methods are developed and new products become available. These practices apply to agriculture, forestry, wetlands, riparian areas, hydromodification, watershed protection, and urban conservation.
- Forestry BMPs, which are especially important in the northern and southeastern portions of Minnesota, including the Lake Superior 6217 management area, have some specific BMP development and updating processes summarized below.
- Demonstration projects provide another process for updating current BMPs and developing new BMPs.

Following are summaries of key processes for ongoing revision of BMPs in Minnesota, as well as for identification and development of new BMPs / management measures.

a) Conservation Practice Standards

Federal programs including the Environmental Quality Incentive Program, Wetland Reserve Program, Conservation Reserve Program, and Conservation Reserve Enhancement Program, as well as the State Cost-Share Program and Reinvest in Minnesota Reserve conservation easement program, use conservation practice standards as a basis for site investigation, design and implementation. These practice standards reflect current science-based investigation, design and implementation methods and products. The Natural Resources Conservation Service (NRCS) is a primary keeper of these conservation practice standards. NRCS seeks input from involved state and local government units to help develop and maintain these standards. This includes the

Minnesota Board of Water and Soil Resources and Minnesota's Soil and Water Conservation Districts, which administer and/or help implement the above state and federal conservation programs, the University of Minnesota, the Minnesota Pollution Control Agency, and the Minnesota Department of Natural Resources, as appropriate.

These conservation practice standards are based on national standards that are tailored to Minnesota, or interim standards developed for new conservation practices in Minnesota. These standards are updated and/or new standards added, as an ongoing function. Pertinent new or recently updated conservation practice standards in Minnesota include Wastewater and Feedlot Runoff Control, Wetland Restoration, and Stream Crossing standards.

b) Forest Management Practices

The Minnesota Forest Resources Council (MFRC) was developed in the 1990's as an outgrowth of the Minnesota Forestry Generic Environmental Impact Statement (Forestry GEIS). This public-private partnership developed "Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines," including recommendations for many BMPs. Annual audits monitor implementation efforts and periodic reviews of the guidelines provide opportunities for these BMPs to be updated and new BMPs recommended, as science, experience and products evolve. Stream crossing BMPs have been an important forest management measure for reduction of sedimentation and related water quality protection. An emerging area of forestry BMP development includes temporary wetland crossings to minimize impacts of wetland crossings that cannot be avoided during forest management and harvest activities.

c) State Forest Management Audits

Another example, associated with the MDNR Forestry BMP Program, is an audit of forest management practices and policies on all DNR administered lands. Beginning in July 2005, an assessment began, including reviewing state statutes, rules, legislation, operational orders, manuals, and planning procedures identifying how DNR forestry BMPs are implemented.

The full assessment will evaluate MDNR forest management through office inspections, field staff interviews, and examination of onsite forest management activities. An independent consultant was hired to perform the audit and certification process.

It is expected that completing the audit and certifying MDNR forest lands will:

- improve forest management practices and efficiency;
- help protect Minnesota's water resources;
- document professional forest management by MDNR personnel; and
- enhance wildlife, fish and native plant communities.

The MDNR Forestry web site is located at: http://www.dnr.state.mn.us/forestry/index.html

d) Demonstration Projects

Many demonstration projects are conducted in Minnesota, including the 6217 area, to assist in the development of new or improved BMPs. Local, state and federal government units, the

University of Minnesota, and nonprofit organizations in Minnesota cooperate substantially to conduct demonstration projects. Funds from the Section 319 Program, Great Lakes Commission, Minnesota's Lake Superior Coastal Program, State Cost-Share Program, State Clean Water Partnership Program, State Local Water Management Challenge Grants, USDA Environmental Quality Incentives Program, and other programs are used to implement these demonstration projects. Results of demonstration projects typically are documented in project reports and disseminated via regional and statewide conferences, area workshops, and other networking of those involved.

Condition 6 Response Summary

There are a number of processes in place in Minnesota to define the need for additional management measures / BMPs, to develop these additional management measures / BMPs and to periodically update current BMPs. These processes involve strong partnerships between federal, state and local government units, as well as nonprofit organizations and industry. Partnership processes and demonstration projects to develop and periodically update BMPs in Minnesota are ongoing and effective. As TMDL planning and implementation in Minnesota continues to develop, so too are technical committees and adaptive management processes to identify current and additional management measures for immediate implementation, as well as additional management measures based on performance monitoring of TMDL plans. These processes are focused on ensuring that impaired waters throughout Minnesota, including the 6217 management area, are brought into compliance with water quality standards.

Condition 5

Technical Assistance Delivery in Minnesota

The technical assistance delivery systems for conservation and nonpoint pollution control in Minnesota are well established. These systems involve substantial technical assistance to and through local government units (LGUs) from state and federal agencies and the University of Minnesota, as well as information/education assistance to landowners and the general public. These delivery systems will be used to implement additional Management Measures throughout the 6217 management area, as needed. These proven delivery systems will continue to evolve as strategic direction unfolds through implementation of the Lake Superior Basin Plan and TMDLs. Technical and financial assistance will be directed to the identified and prioritized impaired water bodies on Minnesota's 303(d) list.

Technical assistance is provided through a variety of programs and functions administered by federal, state, and local government units. The following table summarizes the programs and functions of different federal, state, and local government units that provide or support technical assistance and education for conservation and nonpoint pollution control in the 6217 management area of Minnesota.

Summary of Agencies, Programs and Functions Providing or Supporting Technical Assistance for Nonpoint BMPs in the Lake Superior Basin		
Federal	**State**	**Local**
NRCS (EQIP, WRP, CRP, FIP, Conservation Operations, associated technical assistance, Technical Service Provider Program, training)	**BWSR** (RIM and CREP technical assistance, State Cost-Share Program, General Services Grants to SWCDs, Nonpoint Engineering Assistance Program grants to SWCDs, Local Water Challenge Grants, MN Wetland Conservation Act Technical Evaluation Panels, training)	**SWCDs** (help provide technical assistance for State Cost-Share, EQIP, Local Water Management, Ag BMP Loans, Clean Water Partnerships, RIM, Forest Stewardship and other BMP programs, as well as the Wetland Conservation Act, NPDES enforcement, and public education)
EPA (Section 319 Program)	**MDNR** (State Forest Management Private Forest Management/Forest Stewardship Planning, Fish and Wildlife technical assistance, Shoreline Management Act, Minnesota's Lake Superior Coastal Program, Public Waters Work Permits, Ecological Assistance to MN Communities)	**Counties** (Planning and Zoning, County Forest Management, Local Comprehensive Water Management Plans, Shoreland Management Act, Wetland Conservation Act, Delegated Feedlot Program, Stormwater Utilities)
NOAA (Sea Grant Program, Coastal Program Funding, Coastal Services Center)	**MPCA** (Beach Monitoring, TMDL planning and implementation assistance, NPDES, AOC-RAP, Basin Planning, Delegated Feedlot Program grants, Clean Water Partnership Program)	**North Shore Management Board** (North Shore Management Plan - Shoreland Management Act substitute for the North Shore)
Great Lakes Commission (Erosion and Sediment Control Grants)	**MDA** (Ag BMP Loan Program, fertilizer and pesticide regulation, Custom Manure Applicator Certification)	**Townships** (Local Planning and Zoning)
US Forest Service (National forest management)	**University of Minnesota** (MN Extension Service information and education, Erosion and Sediment Control Certification Program, Center for Transportation Studies)	**Cities** (Planning and Zoning, Stormwater Utilities)
Corps of Engineers (Section 404, Section 22)		
Note: Many NGOs including: NEMO, Non-Profits, MFRC, and the St. Louis River CAC also provide education and technical assistance to landowners, public officials and private sector business interests.		

Clean Water Legacy Act

The Minnesota Legislature is considering a new impaired waters program for providing financial and technical assistance for planning and implementing TMDLs to restore impaired Minnesota waters and to protect unimpaired waters, including waters in the 6217 management area. This program is to include a nonpoint restoration and protection strategy. It would be implemented through existing, proven state and local delivery systems in Minnesota, with the addition of a Clean Water Council to advise the administration and implementation of the program and to foster coordination and cooperation of public agencies with authority for local water

management, conservation, land use, land management and development. This act reflects the goal to accelerate TMDL implementation in Minnesota and a commitment to support the existing, effective technical assistance delivery systems accordingly.

Federal Agencies and Programs Providing Technical Assistance

USDA Natural Resources Conservation Service (NRCS)

NRCS offices are typically co-located with local SWCD offices across the state and the two work together closely. Their activities include:

- help property owners prepare conservation plans to manage soil, water, plant, and animal resources;
- conduct soil surveys;
- assist landowners with planning and installing small watershed projects, such as watershed protection, erosion and sediment control, agricultural water management;
- regularly inventory natural resources and provide data to be used by organizations and individuals to make program and land use management decisions;
- provide technical assistance to implement a number of federal and state conservation programs.

In addition to providing substantial direct technical assistance for federal and state conservation programs and practices, the NRCS provides training for employee development within its own ranks, as well as for SWCD staff and other partners. For the 2004 and 2005 field seasons, the NRCS area soil scientist in the Lake Superior Basin participated in BWSR's wetland workshops providing hands-on training to over 60 individuals performing wetland delineations, ISTS inspections and associated technical assistance. The course was held in various locations throughout the 6217 area to reach as many practitioners as possible and to highlight the multitude of soils present/encountered. In recent years, NRCS implemented the Technical Service Provider (TSP) Program. This program enables landowners to obtain technical assistance from approved private technical service providers to accelerate implementation of federal conservation programs and associated BMPs.
The Minnesota NRCS website is at: http://www.mn.nrcs.usda.gov/

USEPA - Environmental Research Laboratory

Minnesota is home to EPA's only Federal Freshwater Research Laboratory, located on Lake Superior in Duluth. This laboratory is the nationwide resource center of expertise on freshwater lakes and streams aquatic ecology and toxicology. Many scientific publications on water pollution are available from the lab. Technical assistance is provided to state agencies and LGUs in the Lake Superior Basin upon request. The research conducted by the lab can help develop and apply new management measures for the basin.

Information about the EPA Mid-Continent Ecology Division is found at:
http://www.epa.gov/med/ with technical expertise available at:
http://www.epa.gov/med/Res_Areas/technical_expertise.htm

Corps of Engineers
The Corps of Engineers participates with state and local government units in the implementation of federal Section 404 and the Minnesota Wetland Conservation Act.
Section 22 of the Water Resources Development Act (WRDA) of 1974, as amended, also provides authority for the Corps of Engineers to assist states, local governments, and other non-federal entities in planning for the development, utilization, and conservation of water and related land resources.

Individual States and Tribes determine the needed planning assistance. Each year, States and Tribes can provide the Corps of Engineers requests for studies under the program. The Corps then accommodates as many studies as possible within the funding allotment. Typical studies are at the planning level of detail; they do not include detailed design for project construction. The studies generally involve the analysis of existing data for planning purposes using standard engineering techniques, although some data collection is often necessary. Most studies become a basis for State or Tribal and local planning decisions.

The Section 22 Program can encompass many types of studies dealing with water resources issues. Types of studies conducted in recent years under the program include:

- Water Supply and Demand Studies
- Water Quality Studies
- Environmental Conservation/Restoration Studies
- Wetlands Evaluation Studies
- Dam Safety/Failure Studies
- Flood Damage Reduction Studies
- Flood Plain Management Studies
- Coastal Zone Management/Protection Studies
- Harbor/Port Studies

In 2002, the COE completed a watershed-modeling project on the Nemadji River in the southern portion of Minnesota's 6217 Area.

COE Detroit District Website: http://www.lre.usace.army.mil/who/technicalassistance/

State Agencies and Programs Providing Technical Assistance

Many state agencies prepare guidance documents, manuals, educational materials, training workshops, and provide one-on-one assistance by technical staff. Each agency's primary functions with respect to providing or supporting technical assistance for identifying and implementing additional management measures are outlined below:

Minnesota Pollution Control Agency (MPCA)
The MPCA administers a broad array of programs designed to protect air, water and land for the citizens of Minnesota. These responsibilities include regulatory authorities embodied in state law, as well as federally delegated programs. The agency also administers state and federal programs delegated to local units of government. An example of this arrangement would be the

agency's coastal beach monitoring program, where local governments are partners in the monitoring bacteria counts on Lake Superior beaches. The agency also operates a diverse array of voluntary and incentive based programs to promote everything from product stewardship to water quality protection. These voluntary and incentive based programs were strengthened in 2005 when the Minnesota Legislature combined the Minnesota Office of Environmental Assistance (MOEA) with the MPCA. This merger included staff and program responsibilities in the area of environmental sustainability, education/outreach and solid waste planning. Many of the MOEA staff will be reassigned to work on one of the agency's top priorities, watershed planning and implementation.

What follows is a sampling of the programs administered by the MPCA. These programs are described in more detail in specific sections of *Minnesota's Lake Superior Coastal Nonpoint Pollution Control Program* and in *the Minnesota's Lake Superior Coastal Program Final Environmental Impact Statement.*

Agency Programs:

Clean Water Partnership Projects
Clean Water Act Section 319 Grants and Programs
Clean Water Act Section 401
Total Maximum Daily Load Studies
Water Quality Standards Development
Citizen Stream and Lake Monitoring Programs
Lake Superior Beach Monitoring Program
North Shore Stream Monitoring Program
Stream and Wetlands Bio-criteria Development
Milestone Monitoring Program (routine water quality monitoring sites)
Onsite Septic System Programs
NPDES Permits (point and nonpoint sources)
State Disposal System Permits
Basin and Watershed Management – Lake Superior Basin Plan
RCRA Permits
Voluntary Investigation and Clean Up Program (brown fields)
Superfund
Mercury Free Zone (schools, exchange programs)
Great Lakes Programs – (Lake Superior Binational Program, St. Louis River Remedial Action Plan)
Minnesota Rules 7035 Solid Waste Programs

- Composting Facility Permits
- Transfer Station Permits
- Demolition Landfill Permits
- Mixed Municipal Solid Waste Permits
- Solid Waste Permit by Rule
- Recycling Facility Permits

Air Quality Mobile Source Program
Criteria Pollutants – Air Quality Index

Air Quality Title V Permits
Air Toxics Monitoring
Oil Pollution Control Act and State Spill Prevention Authorities (MS. 115.061)

The MPCA has a regional office in Duluth, Minnesota. MPCA technical assistance link: http://www.pca.state.mn.us/water/technical.html The regional office provides technical assistance throughout the entire Minnesota portion of the Lake Superior Basin.
MPCA publications and fact sheets link regarding water-based technical assistance is found at: http://www.pca.state.mn.us/water/pubs/index.html

MPCA Cooperative Agreements with SWCDs for NPDES Monitoring
Under MN Statute 471.59, Subd. 10, the State is empowered to engage such assistance as deemed necessary. The State initiated a pilot demonstration project whereby the MPCA partners with LGUs to perform construction stormwater management, including inspection and enforcement activities in their jurisdiction. This provides opportunities for the local expertise to insert effective and new management measures into current projects.

Permits administered by the MPCA regulate ground-disturbing activities within the basin. To strengthen the enforcement aspect of the permitting process, MPCA recently entered into a Joint Powers Agreement with two SWCDs (South St. Louis and Cook) within the 6217 area. The goal is to increase compliance and evaluate BMP effectiveness by meeting with the permittee prior to construction to review the proposed Stormwater Pollution Prevention Plan and to provide compliance inspections. This type of partnership is expected to be expanded, as pilot agreements develop state-local partnerships.

Minnesota Department of Natural Resources (MDNR)
Waters
DNR-Waters has a regulatory role but also provides technical and educational assistance to local government units and citizens. It has regulatory jurisdiction over the alteration of protected lakes, rivers, and wetlands, and water use. Shoreland property owners need to contact DNR - Waters prior to altering lakes, rivers, or wetlands below the ordinary high water level to obtain permits, technical assistance, and guidance. Programs include:

- alteration of lakes, rivers, and wetlands
- water use, withdrawal of surface and ground water
- dam safety, water level control structures
- landuse management programs such as shoreland, floodplain, and wild and scenic rivers
- information on stream flow, lake levels, precipitation, and ground water levels
- publications, slide presentations, and displays
- advice on local landuse ordinances
- hydrologic data to provide information for decision making
- grant programs

Division of Fish and Wildlife - Section of Fisheries/Section of Wildlife
The Section of Fisheries works in the area of fish management and water quality as it relates to fish and other aquatic life. It issues permits on aquatic plant management and fish stocking and transportation. Publications are also available.

The Section of Wildlife can provide information on how to improve wetlands for wildlife and the value of wetlands for wildlife. It can also give alternatives for the control of beavers and exotic species.

Division of Ecological Services
The Division of Ecological Services collects, analyzes, and delivers vital ecological information and expertise on Minnesota's ecological resources. Its mission is to collect and link ecological information to wise resource decisions within Minnesota's communities to help citizens create a sustainable future. Technical assistance is provided to citizens and local governments through data delivery and a variety of education and out reach programs, as well as through more regulatory efforts. Programs include:

- Education, Planning, and Communications (including the Ecosystem Education Program)
- Environmental Management Unit (including the Environmental Review, Lake Mapping, Stream Habitat, and Wetlands Review and Conservation Programs)
- Minnesota County Biological Survey
- Monitoring & Control Unit (including the Aquatic Invertebrate Lab, Aquatic Plant Management Program, Biocriteria Development Program, Fish Contaminant Monitoring and Chemical Services Program, Harmful Exotic Species Program, Lake Aeration Program, Lake Ecosystem Monitoring Program, Pathology Lab, and the Pollution Spills Prevention Program)
- Natural Heritage & Nongame Research Unit (including the endangered and threatened species permitting program and Ecological Assistance for Minnesota Communities at http://www.dnr.state.mn.us/ecological_assistance/index.html)
- Nongame Wildlife Program
- Scientific & Natural Areas Program

Division of Forestry
The Division of Forestry provides service to landowners on private forest management through the development of Forest Stewardship plans. Information on tree planting and care is also provided. Although private forest management assistance usually deals with larger stands of trees on an ecosystem basis, staff can give advice about shade tree management on smaller land parcels. This division issues burning and timber harvest permits. Forest Stewardship Plan information is at: http://www.dnr.state.mn.us/grants/forestmgmt/stewardship.html

Partnerships between private and public entities have created The Minnesota Forest Resources Council (MFRC). Annual audit reports are presented to the Governor and Legislature. Compliance monitoring results are summarized and included as a specific analysis regarding Riparian Forests in Minnesota. Within the MFRC website, is a link to the Guidebook and monitoring reports. These monitoring efforts contribute to providing effective technical

assistance for forestry BMPs, as well as identifying additional management measures needed to address reoccurring problems. The forest management guidelines are at: http://www.frc.state.mn.us/FMgdline/Guidebook.html

Minnesota Board of Water and Soil Resources (BWSR)

The BWSR works with and through local government units to implement water and soil conservation planning and BMPs, to implement the state Wetland Conservation Act, and to help develop local resource management capabilities. This includes wetland protection and restoration, erosion and sediment control on private lands, water quality education, feedlot pollution abatement, and local water planning. Publications, presentations, training, and technical assistance are available. BWSR has an office in Duluth, Minnesota.

BWSR outreach and technical services are outlined on the following web page: http://www.bwsr.state.mn.us/outreach/index.html

eLINK

eLINK is a statewide electronic reporting system that provides a mechanism to allow tracking of BMPs being implemented in Minnesota and associated environmental benefits. This is a resource that is shared with local government units and other state agencies. It tracks and reports on a variety of programs, including shoreland management, wetland conservation, local water management, septic systems, feedlots, and soil conservation cost-share practices. eLINK allows BMP data to be compiled and accessed on a watershed basis. The program can also map projects and offers information on project costs and the pollution reduction benefits of projects.

State Nonpoint Engineering Assistance (NPEA) Program

This program was created in 1995 in conjunction with the authorization to use a portion of the State Revolving Loan Fund for nonpoint pollution control practices through the state Ag BMP Loan Program and the Clean Water Partnership Program. Eleven SWCD technical service areas were created statewide to employ engineers and technicians to assist the member SWCDs and their landowner clientele with conservation and nonpoint pollution control practice investigation, design and construction. These engineers and technicians were outfitted with modern electronic surveying equipment, as well as Computer Aided Design (CAD) hardware and software, for high productivity. One of the eleven technical service areas is based in Duluth, Minnesota, and serves nearly all of the area within the Lake Superior Basin. The NPEA engineers and technicians provide technical assistance for a wide variety of state, local and federal conservation programs including, State Cost-Share, Ag BMP Loan Program, Clean Water Partnership Program, Section 319 projects, Coastal Program projects, EQIP, RIM, and others. This program will also provide technical assistance for implementation of additional management measures identified to be needed for TMDL project success.

State Cost-Share Program

This conservation cost-share program allocates approximately $2 million of state funds to SWCDs annually, based on resource management needs and implementation performance. SWCDs work directly with landowners to plan, design, and install a variety of conservation practices. Technical assistance is provided by the SWCD, their NPEA shared engineering staff,

the NRCS and/or private consultants. Up to 20% of State Cost-Share allocations can be used for technical and administrative assistance by, or through, SWCDs.

Wetland Conservation Act (WCA) Grants
Annual grants to counties assist in funding technical assistance at the local level by counties and SWCDs for implementation of the state WCA. SWCDs are a designated member of local Technical Evaluation Panels that provide technical expertise to advise local government units that implement WCA at the local level.

Local Water Management Base Grants and Challenge Grants
These base grants help fund Comprehensive Local Water Planning. The challenge grants help fund a wide variety of projects to implement Comprehensive Local Water Plan priorities. Technical assistance is a qualifying use for these grants.

Minnesota Department of Transportation (MnDOT)
MnDOT, in partnership with the U of M, Department of Biosystems and Agricultural Engineering and the MPCA, established an Erosion and Sediment Control Certification Program in 2002. The program began with training and certification for inspectors and contractors in erosion control installation, inspection and site management. In 2003, MnDOT required certified inspectors and contractor foremen on MnDOT river crossing and grading projects. This essentially became a new management measure to ensure all those working on the state's highways were held to high standards and training with regard to erosion and sediment control during and after construction to protect water resources. An overview of the courses and certifications can be found at: (http://www.erosion.umn.edu).

U of M Center For Transportation Studies
Funded by FHWA, MnDOT, and the Local Road Research Board (LRRB), the Local Transportation Assistance Program (LTAP) created the Erosion Control Handbook for Local Roads, and associated training. This handbook and training will be updated for additional management measures, as needed.

This 120-page, full-color handbook serves as a technical assistance resource for local transportation authorities by providing guidelines and methods for effective control of erosion on low-volume roads for construction and maintenance. The handbook illustrates these methods with case studies, outlines best management practices, and offers guidance on cooperating with local watershed districts and other agencies. The manual is available on the MN LTAP web site at:
http://www.mnltap.umn.edu/pdf/erosioncontrolhandbook.pdf

LTAP offers a Circuit Training Assistance Program (CTAP) that enables the instructor to travel statewide giving the courses at local garages, county shops and lunchrooms. This local delivery, low overhead approach keeps the program affordable for local governments, while reaching those most closely tied to operation and maintenance activities. Details pertaining to the available training can be found at: (http://www.cts.umn.edu/).

University of Minnesota Extension: Shoreland Best Management Practices

The University of Minnesota Extension, in cooperation with federal, state and local government units, has developed a series of 18 fact sheets pertaining to water quality and shoreland BMPs. Fact sheet 16 contains a list of agencies and contacts participating in technical assistance. Following are excerpts consistent with activities in the Lake Superior Basin.

Assistance may be in the form of:

- information and education on water quality issues;
- technical and planning consultation for your parcel of property;
- issuing permits, requirements, guidelines for developing your property;
- enforcement of regulations affecting the water quality of lakes and rivers;
- cost-share assistance and project funding for individual projects;
- testing and monitoring of water.

The fact sheets in this folder are a series designed to assist shoreland property owners to protect and preserve water quality. Additional fact sheets may be added in the future, and/or these sheets updated, as needed.

1. Understanding Shoreland BMPs
2. Maintaining Your Shoreland Septic System
3. Installing a Shoreland Septic System
4. Ensuring a Safe Water Supply
5. Limiting Impact of Recreation on Water Quality
6. Developing Shoreland Landscapes and Construction Activities
7. Stabilizing Your Shoreline to Prevent Erosion
8. Minimizing Runoff from Shoreland Property
9. Caring for Shoreland Lawns and Gardens
10. Managing Your Shoreland Woodlot
11. Valuing Your Shoreland Trees
12. Preserving Wetlands
13. Managing Crops and Animals Near Shorelands
14. Reducing the Use of Hazardous Household Products
15. Preventing the Introduction of Exotic Species
16. Accessing Information to Protect Water Quality
17. Shoreland Stewardship Scorecard
18. Conserving Water
19. Property Management System form
20. Septic System Information form

This series of fact sheets is a cooperative effort of the following agencies:

University of Minnesota Extension Service
College of Natural Resources, University of Minnesota
Water Plan Coordinators of the Arrowhead counties
Minnesota Board of Water and Soil Resources
Minnesota Department of Health
Minnesota Department of Natural Resources, Division of Fish and Wildlife,
Division of Waters, Division of Forestry
Minnesota Pollution Control Agency
Minnesota Sea Grant Extension Program
Mississippi Headwaters Board

St. Louis County Health Department, Environmental Services Division
Soil and Water Conservation Districts of the Arrowhead counties
Natural Resources Conservation Service
Environmental Protection Agency
Western Lake Superior Sanitary District

All fact sheets can be found at:
http://www.extension.umn.edu/distribution/naturalresources/components/DD6946a.html

University of Minnesota Extension Service provides education on protecting our water resources with an emphasis on reaching people with practical, understandable methods. These include:

- displays, publications, demonstrations, AV materials;
- workshops, presentations to groups (may vary by county);
- coordination with other agencies to address water quality issues;
- training on organizational and group process skills to assist groups in reaching their goals.

In June of 2005, the UM-Extension partnered with the Minnesota Sea Grant in Duluth to assess existing stormwater practices taking place in the region. With funding from the MPCA, the program goals proposed by the Extension include:

- Initiate an independent analysis of stormwater treatment practices;
- Develop a stormwater treatment practice assessment approach;
- Develop and test stormwater practice monitoring protocol;
- Establish collaborations with consultants, agencies, LGUs and institutions of higher learning.

Approximately 20 individuals attended the first of three statewide outreach workshops in Duluth.

Minnesota Sea Grant Extension Program, University of Minnesota
Lake Superior and Minnesota water resources are the focus of research and educational programs of the Minnesota Sea Grant Extension Program located on the Duluth and St. Paul campuses of the University of Minnesota. Presentations, workshops, publications, and audiovisual materials are available on research findings and expertise in these areas: fisheries, aquaculture, recreation/tourism, water quality, economic development, coastal management and aquatic exotic species. Minnesota Sea Grant Extension Program website: http://www.seagrant.umn.edu/

Local Government Units Providing Technical Assistance

Many federal, state, and local programs are implemented at the local level in partnership with local units of government. Minnesota has a long history of effective partnerships providing technical assistance to private and public landowners at the local level for conservation and water quality protection and/or improvement. Following are key local government units and programs in the Lake Superior Basin.

Counties

In Minnesota, counties are key land use authorities and partners in implementing a number of state programs and regulations. Key among these are the Shoreland Management Act, Wetland Conservation Act, Delegated Feedlot Program, Comprehensive Local Water Management, and individual sewage treatment system (ISTS) regulations. Implementation of these programs necessitates providing technical assistance and education to private landowners and the general public.

Comprehensive Local Water Plans

Through county Comprehensive Local Water Plans, state agencies and other government units are able to help align objectives and support implementation of BMPs, including additional management measures associated with comprehensive plans, zoning, and ordinances. In 2004, the BWSR Local Water Plan development and approval process was revised to streamline the program, while maintaining a multiple agency review and comment process. During this coordination process for Lake Superior counties, agencies have recommended specific coastal nonpoint pollution control language for inclusion in the plans. Additional management measures can be integrated into these local plans.

Water Plan Coordinators

The county water plan coordinator (may be employed by the SWCD) is a primary contact as (s)he has knowledge of, and access to many other resources. The Water Management Act of 1986 (Minnesota Statutes, Chapter 110B) encouraged counties to develop and implement comprehensive local water management plans. In Minnesota, all non-metro counties have completed and adopted water plans, and are now in the process of implementation. The responsibility for implementation varies by county. The Soil and Water Conservation District (SWCD) often has the primary responsibility, with assistance from the county planning, zoning, or environmental services departments.

County Health, Zoning, Planning, and Solid Waste Departments

County health and environmental services departments enforce public health regulations and assist in areas that affect water resources and shoreland property owners. Many functions deal with wells and individual septic systems for which technical assistance is provided to landowners. The county health department:

- issues permits and inspects the installation of septic systems;
- inspects septic systems for observable failure during point-of-sale inspections;
- licenses and monitors septic system contractors;
- licenses and inspects septic tank pumpers and on-land septic disposal sites;
- tests water from private wells for safety and at the time of property transactions;
- tests surface water at public beaches for fecal contamination.

The planning and zoning department regulates land use to encourage the most appropriate use of land, while preserving economic and environmental values. It also administers and enforces zoning ordinances, except in incorporated cities and townships that have their own zoning administration.

County governments carry out solid waste programs including management of landfills and transfer stations, collection of household hazardous waste, and coordination of recycling activities.

Soil and Water Conservation Districts

The 91 SWCDs across Minnesota provide technical assistance for a variety of BMPs on private lands for a variety of local, state and federal programs implemented at the local level in Minnesota. The 6217 area includes all, or portions of, 8 SWCDs.

Within all of the counties of the Lake Superior Basin, SWCDs are key partners for planning and implementing conservation practices through technical assistance to local landowners and providing access to financial assistance programs. Their key objectives for erosion control and water quality protection and improvement on private lands are critical for implementation of the Minnesota Coastal Nonpoint Program. This is carried out through:

- planning and technical assistance to landowners for conservation practices;
- connection to cost-share assistance (50 to 75%) for erosion control, nutrient management, forest management, wetland protection and restoration, and related conservation practices;
- information and education for landowners, schools, elected officials and others.

The Cook County SWCD website is located at:
http://www.co.cook.mn.us/sw/FLYER%20WEB%20Cook%20SWCD.pdf

The South St. Louis County SWCD website is located at: http://www.southstlouisswcd.org/

Highlights of current technical assistance programs can be found within the approved 2005 Annual Plan: http://www.southstlouisswcd.org/docs/2005PLAN.pdf

The Carlton County SWCD website is located at:
http://www.carltonswcd.org/

The Carlton SWCD technical assistance programs are outlined on the following webpage. They include assistance relating to: the Wetland Conservation Act, federal wetland programs, engineering, tree planting, conservation planning, and project implementation. The Carlton technical assistance website is located at:
http://www.carltonswcd.org/technicalassistance.htm

Nemadji River Basin Project – Clean Water Partnership

A technical committee was created under the NRCS Nemadji River Basin Project and meets quarterly. Today it serves to guide most work in the basin. The committee assists the project manager with input on prioritizing sites for BMP implementation, review of position candidates, and watershed issues identification. Coordination of the committee is the responsibility of the project manager. To determine if additional management measures are required for the basin, the multidisciplinary technical committee examines monitoring data, determines implementation schedules, provides input for new BMPs and priority activities.

Northland NEMO
The Lake Superior Basin Program began with the bi-state Minnesota/Wisconsin Lake Superior watershed, and has begun to spread its efforts to surrounding areas. This portion of the Northland NEMO is particularly interested in working with small, less developed communities, and is working with a variety of partners to provide both educational and technical assistance to these under-served municipalities. Initial and continuing support comes from NOAA Sea Grant's Coastal Community Development Program, Minnesota's Lake Superior Coastal Program, and the Wisconsin Department of Natural Resources.

Northland NEMO has been developing and presenting programs for communities along the North Shore of Lake Superior, both in the Duluth, Minnesota area and in northern Wisconsin communities such as Bayfield and Ashland. Focusing on the Linking Land Use to Water Quality Program, they have developed current and future impervious surface maps of the communities to drive the message home. Northland NEMO partners participated in a recent network hub training session on the Impervious Surface Analysis Tool (ISAT), to help bring customized and accurate assessment of impervious surface and its impacts to their communities. They are also exploring new topical areas by working closely with the timber industry to determine the effects of timber and forest management practices on water quality, as well as working with their Twin Cities colleagues to develop a Lakes NEMO workshop. Northland NEMO website is located at: http://nemo.uconn.edu/national/stateprograms/mn_wi.htm

Technical Assistance - Duluth Websites
Technical assistance to reduce non-point source pollution is also available through several other sources as a result of ongoing cooperation in the region. Funding for these efforts has come from a number of sources, including Minnesota's Lake Superior Coastal Programs.
Duluth Streams: http://www.duluthstreams.org/

University of Minnesota – Duluth (UMD):
http://www.d.umn.edu/outreach/stormwater/public_educ_outreach.html
UMD – Natural Resources Research Institute (NRRI): http://www.nrri.umn.edu/default/
Coastal GIS: http://www.nrri.umn.edu/coastalGIS
Lake Superior Decision Support System: http://oden.nrri.umn.edu/lsgis

Condition 5 Response Summary
Well-established programs, functions, and partnerships between federal, state and local governments units, the University of Minnesota, industry and nonprofit organizations exist in Minnesota to deliver technical assistance for planning and implementation of BMPs to protect and improve water quality. Technical assistance for additional management measures in the Coastal Nonpoint Program planning area of Minnesota will be provided through these programs, functions and partnerships.. Information/education is an integral part of the technical assistance delivery system for conservation and nonpoint pollution control in Minnesota. Minnesota is confident that the Coastal Nonpoint Program requirement for providing technical assistance for additional management measures will be amply fulfilled, as necessary, to achieve restoration of impaired waters in the Lake Superior Watershed of Minnesota.