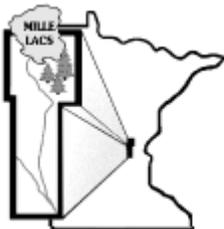
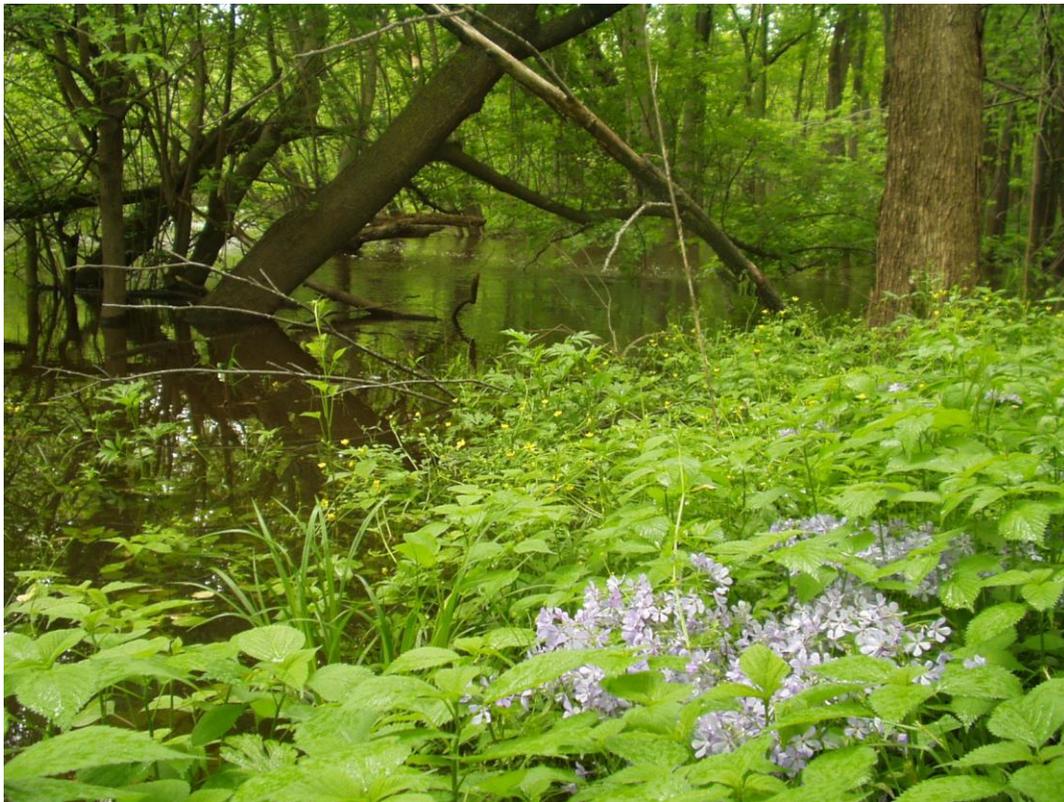


Mille Lacs County Local Water Resource Management Plan

January 1, 2006 – December 31, 2016

2012 Amendments



Prepared by the Mille Lacs Soil and Water Conservation District
and the Mille Lacs County Local Water Planning Advisory Committee

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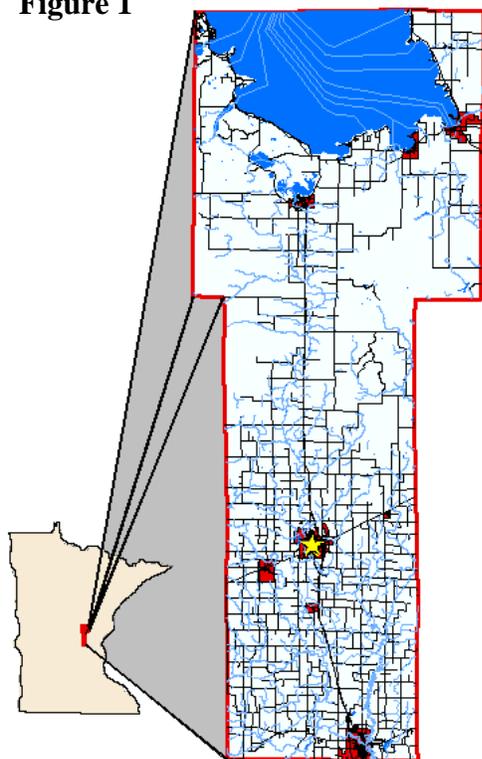
A. EXECUTIVE SUMMARY:

Introduction

Mille Lacs County is located in east central Minnesota 70 miles north of St. Paul, 115 miles southwest of Duluth and 29 miles east of St. Cloud. Sherburne to the south, Aitkin to the north, Benton and Morrison to the west, and Kanabec and Isanti counties on the east border it. Mille Lacs County has a total area of 574 sq miles (367,360 acres). **Figure 1** shows the location of Milaca, the County seat, and the geographic location of the County in Minnesota.

Mille Lacs County

Figure 1



Local Water Resource Management Plan Background

The Mille Lacs County water management planning process began in the fall of 1989 when the Mille Lacs County Board of Commissioners voted unanimously to begin the process of creating a Comprehensive Water Management Plan for the county.

This event was the first purposeful comprehensive planning, preparation and designing done for the protection for all types of water to all residents in Mille Lacs County.

From that time forward, the lakes, streams, rivers, public and private well water, all groundwater, wetlands, precipitation and even run-off were recognized for the significance and meaning they provided to the quality of life in the county.

The Mille Lacs Soil & Water Conservation District has been charged with development and implementation of the Local Water Management Plan with the assistance of other county departments since its inception.

By February of 1990, the Mille Lacs Comprehensive Water Management Task Force was established with 39 members representing townships, municipalities, industry, private sector, farming and single family home ownership. Federal, state and county employees were ad hoc members to the committee. An aggressive 24 month timeline from March, 1990 through March, 1992 was established to develop the county wide plan. The first update of the Comprehensive Water Management Plan was completed in 1995.

The 2006 update was the second update and the third Water Management Plan for Mille Lacs County. This plan continues the tradition of promoting good planning and management of shared resources and will serve as a guide for resource protection through the year 2016.

2012 Executive Summary Amendment

In 2011, the mid-point in this 10 year plan, the Mille Lacs County Local Water Management Advisory Committee reviewed the entire Water Management Plan to identify any issues that may have changed our priority concerns. The Advisory Committee determined that the priority concerns continue to be appropriate even given changes to the fiscal environment. Additional resource information applicable to

the Background and Assessments chapters of this plan has become available since 2006 and has been included as a January 2012 amendment summary following each discussion. Amendments to action steps within the Priority Concerns list and Implementation Schedule have been italicized within those sections.

Purpose

The Rum River Watershed and significant tributaries of the Snake River Watershed begin in Mille Lacs County. What occurs in these watersheds not only affects the water resources used by the citizens of Mille Lacs County, but also affects the water resources of other Minnesotans living downstream in the Mississippi and St. Croix River corridors.

Mille Lacs County recognizes that without a long term mechanism for managing water resources, the opportunity will be lost to make intelligent local choices that anticipate or prevent water resource problems before the costs escalate and options are limited.

The Mille Lacs County Local Water Management Plan is a plan for the entire County and covers all municipalities within Mille Lacs County.

The Mille Lacs County Local Water Management Plan (LWMP) is developed and written under the legislative authority of the “Comprehensive Local Water Management Act” (M.S. 103B.301-103B.355) and is meant to function as a long term planning document. The plan seeks to identify existing and potential problems, opportunities for protection, management and development of water and related land resources in the County. Problems or opportunities identified through the planning process are prioritized and addressed within the context of watershed units and groundwater systems. Objectives and action steps to address identified priorities are based upon principles of sound hydrologic management of water, effective environmental protection, and efficient management of activities that impact these resources.

The Mille Lacs Soil & Water Conservation District’s role in the development and implementation of the Local Water Management Plan is to act as the catalyst for the water management planning process, and the integration of local initiatives with funding sources. Through involvement with the Water Management Plan Advisory Committee, local citizens, representatives from local organizations, associations and agency staff, work together to achieve efficient management and local ownership of water management initiatives.

Accomplishments from the 1995 Water Management Plan

Since the adoption of the Mille Lacs County Local Water Management Plan many local resource projects have been implemented. The plan has sponsored annual private well water nitrate testing clinics, and many land and water treatment projects and educational activities.

One notable educational activity was a project partnering with Mille Lacs Academy students to rear Purple Loosestrife leaf eating beetles. Purple Loosestrife had been a major natural threat to wetlands in the county. An aggressive biological control program using the Purple Loosestrife leaf-eating beetles (*Galerucella* spp.) was very successful. The project was accomplished through cooperative efforts between the Minnesota Department of Natural Resources (DNR), Mille Lacs Band of Ojibwe, Mille Lacs County Agricultural Inspector, and volunteers. The Mille Lacs Band of Ojibwe began a biological control effort using the leaf-eating beetles provided by the Minnesota DNR. Once the loosestrife on Whitefish Lake was successfully controlled by the beetles they were harvested and shared with the Mille Lacs County Agricultural Inspector student volunteer group and released onto Purple Loosestrife infestations throughout Mille Lacs County.

Other successful educational programs sponsored through the water management plan have been the Area III Envirothon and 5th Grade Education Days. Both events provide an opportunity for students to participate in outdoor educational learning experiences.

Many local resource concerns have received attention following identification through the water planning process. A large water quality improvement project was undertaken with assistance from the Resource Conservation & Development to address the City of Bock's failing, 1930's era, wastewater treatment system. Discharge from that failing system was impacting Bogus Brook, a tributary of the Rum River. The improvement was completed in 2003 by piping waste water from the City of Bock to the City of Milaca's treatment facility.

Funding assistance was received through a Clean Water Partnership grant to do a three year water quality study of Mille Lacs Lake. Mille Lacs County has also partnered with the Snake River Watershed Management Board to implement land and water projects within that watershed. Additional information on the results of the Mille Lacs Lake water quality study and Snake River watershed activities are included in the surface water assessments.

Summary Description of Priority Concerns, Goals and Objectives

As Mille Lacs County began the process of updating the Local Water Management Plan, input was sought from the public. A public input survey was made available to citizens through the Mille Lacs SWCD website and advertised in the local papers to be returned to the SWCD. Three public input meetings were conducted during the Local Water Management Plan update process. They were held near Princeton, Milaca and Onamia, the three main geographic areas of Mille Lacs County. An example of surveys used and a summary of the responses received have been included in the Priority Concerns Scoping Document found in the **Appendix H**.

Priority Concern 1: The Cumulative Effects of Development on Surface and Groundwater

Mille Lacs County is experiencing increased development pressure on the County's lakes, rivers and agricultural resources. To respond to this development pressure, the County has established the following goals:

- 1) To seek the protection of surface and groundwater quality in Mille Lacs County, and
- 2) Enhance surface and groundwater quality where degradation has already occurred.

To achieve these goals, three objectives have been identified:

Objective A Encourage development patterns that protect, enhance, maintain or restore surface and groundwater quality.

Objective B Improve stormwater runoff quality throughout the county.

Objective C Maintain or improve groundwater quality throughout the county.

Priority Concern 2: Development of TMDLs for Impaired Waters

Total Maximum Daily Loads (TMDLs) determine if water resources can meet their designated uses. The goal of the water plan is to determine the status of TMDLs of the various water resources and protect those that currently support their designated uses, and where needed, improve those that do not.

To achieve this goal two objectives have been identified.

Objective A Assess the ability of water resources in Mille Lacs County to meet their designated uses.

Objective B Work with land managers, land owners and operators in Mille Lacs County, regardless of land use, to encourage best management practices.

Action steps identified to achieve these Objectives are found within this document under **Section B, Priority Concerns.**

Organizations and Associations

There are a number of organizations and associations in Mille Lacs County working to protect, preserve, repair or enhance water quality. Some of these entities and the assistance programs they provide include:

<u>ORGANIZATION</u>	<u>CONTACT INFORMATION</u>
DNR Wildlife Division Private Lands Program	Tim Pharis-Private Lands Specialist
▪ Wildlife habitat, native grassland development, wetland restoration	(763) 689-7110
U.S. Fish and Wildlife Service	Lori Wolff-Wildlife Biologist
▪ Wetland Restoration - Partners for Fish and Wildlife Program	(320) 253-4682
Friends of the Rum River.....	RumRiverWatershedNews-owner@yahoo.com
Lake Mille Lacs Association	www.mnlakes.org/SubAssociations
Mille Lacs Band of Ojibwe.....	www.millelacsjibwe.org
Mille Lacs County Zoning/Environmental Services.....	www.co.mille-lacs.mn.us
Mille Lacs County Public Health.....	(320) 983-8318
Mille Lacs Lake Watershed Management Group	www.millelacswatershed.com
Mille Lacs Soil & Water Conservation District (SWCD).....	www.millelacsSWCD.org
▪ Erosion & water quality – State Cost Share Program	(320) 983-2160
▪ Low interest financing for water quality improvement – Agricultural Best Management Practices Loan Program (AgBMP)	
Natural Resources Conservation Service (NRCS)	(320) 983-2154
Soil & Water Quality Assistance for Agricultural Producers	
▪ Environmental Quality Incentive Program (EQIP)	
▪ Conservation Security Program (CSP)	
▪ Grassland Reserve Program (GRP)	
▪ Continuous Conservation Reserve Program (CCRP)	
Soil & Water Quality Assistance for Ag & Non-Ag Landowners	
▪ Wildlife Habitat Incentive Program (WHIP)	
Snake River Watershed Management Board	(320) 679-6310

Consistency with Other Plans

During development of the original comprehensive local water management plan, previous updates, and now the 2006 update, the most recent plans available from surrounding counties and watershed management organizations were examined to ensure consistency with their goals and objectives. Every attempt has been made to ensure that the plans were compatible with all existing local, state and regional plans and controls, and no conflicts or problems were identified.

Plans reviewed were the Mille Lacs County Comprehensive Plan of 1990, Rum River Management Plan of 1978, Wetland Guidance for the Anoka Sand Plain of September 2000, Snake River Watershed Annual Plan for 2002, Mille Lacs Lake Clean Water Partnership Report of 2003, Forest Resource Management Plan of 2005 and Water Management Plans from adjacent Counties.

Recommendations to Other Plans and Controls

Mille Lacs County is currently starting the process to revise several county ordinances and update its development code. Action items in this document encourage ordinance changes that would address issues of development impacts, stormwater management and sensitive ground and surface water concerns.

Improved protection of wetland resources could occur through a Local Comprehensive Wetland Management Plan. A community-based revision of the 1978 Rum River Management Plan which acknowledges current development pressures and patterns may improve the protection of the Rum River corridor while balancing the need for economic development in the County.

B. PRIORITY CONCERNS

Mille Lacs County is experiencing increasing development, especially on lakes and rivers. Through the planning process, public, local government and state agency input received pointed toward two key priority concerns. These concerns were identified as the cumulative effects of development on surface and groundwater, and the development of total maximum daily load (TMDL) information to identify potential impairment of waters.

Areas of Priority Concern

Assessments of the vulnerability of water resources in Mille Lacs County led to the identification of the Rum River Watershed as an area of high priority, with specific concern in the Mille Lacs Lake sub-watershed, West Branch of the Rum River and Anoka Sand Plain areas.

The following is an outline of the Objectives and Action Steps identified to address the two priority concerns.

Priority Concern 1: The Cumulative Effects of Development on Surface and Groundwater

Mille Lacs County is experiencing increased development pressure on the County's lakes, rivers and agricultural resources. To respond to this development pressure, the County has established the following goals: 1) To seek the protection of surface and groundwater quality in Mille Lacs County, and 2) Enhance surface and groundwater quality where degradation has already occurred.

To achieve these goals, three objectives with action steps have been identified.

Objective A Encourage development patterns that protect, enhance, maintain or restore surface and groundwater quality.

Action steps to implement Objective A include:

1. Develop a process that provides a coordinated approach to resource management as it relates to development. The process would address natural resource issues that overlap the scope of individual efforts by planning & zoning entities, Wetland Conservation Act (WCA) technical evaluation panel (TEP), Soil & Water Conservation District (SWCD), and others. This process will provide decision makers and land use planners with the information they need to make informed land use decisions by providing technical expertise. Specifically, best management practices (BMPs), focusing in the areas of erosion, sedimentation, and stormwater control.
2. Educate residents on restoring and preserving natural shoreline areas.
3. Assist landowners with shoreland and riparian best management practices and provide cost-share assistance through existing programs.
4. Educate and provide developers and communities with guidance and incentives to incorporate the use of innovative waste treatment alternatives such as cluster septic systems where appropriate.
5. Encourage the use of buffers around wetlands to ensure that wetland function is somewhat protected from direct encroachment of development and human activity within this designated buffer area. This buffer area can provide space between which human activities such as recreation, lawns, parking, storage, agriculture, etc. and wetland functions like runoff filtration, wildlife habitat, etc can coexist.
6. Develop a Geographic Information System (GIS) to assist in mapping natural resources and development activities for improved analysis of impacts. GIS is a means of electronically mapping information at the County level. Utilizing a parcel map in electronic format, a variety of information can be "layered" for the purpose of analysis. For example, a map of tax forfeited

parcels can be layered with wetland information to identify parcels that might be suitable for wetland restoration purposes.

Objective B Improve stormwater runoff quality throughout the county.

Action steps to implement Objective B include:

1. Develop a coordinated approach with local planning and zoning authorities to minimize stormwater impacts by encouraging good site design, especially by utilizing low impact development technologies; encouraging stormwater best management practices in all development plans; and identifying sites where increased storm water discharge has a high potential for adversely impacting surface and groundwater resources.
2. Work with contractors to understand and implement the NPDES permitting program and its requirements for controlling stormwater runoff during construction.
3. Educate and provide developers with guidance and incentives to incorporate the use of innovative stormwater runoff treatment alternatives, such as rainwater gardens, and impervious surface alternatives, such as porous asphalt or geogrid type surfaces, where appropriate.
4. Educate the public about the impacts of stormwater runoff on water resources through cooperative programs with communities, using public awareness tools such as storm drain stenciling.
5. Work with communities regarding management of stormwater inputs, such as storage of highway salt & sand, or storage of snow in winter where melt can run directly to water resources like rivers or lakes.
6. Educate communities and homeowners about stormwater inputs they can control and improve.

Objective C. Maintain or improve groundwater quality throughout the county.

Action steps to implement Objective C include:

1. Continue to inspect new and upgraded Individual Sewage Treatment Systems (ISTS) or undertake a random inspection program to check compliance, performance and acceptable construction practices.
2. Continue to check older septic systems for compliance in the shoreland and wild and scenic river districts.
3. Consider the implementation of a county-wide “point of sale” ISTS inspection program as part of the development code update.
4. Continue to make available well water testing opportunities to individuals in Mille Lacs County and provide free well water testing clinics for Nitrates annually in cooperation with the Minnesota Department of Agriculture.
5. Educate landowners through news articles, news letters, brochures, website, workshops, radio spots, etc. on the importance of properly sealing abandoned wells.
6. Assist landowners with the sealing of abandoned wells and provide cost-share assistance through existing programs
7. Update the County’s local ordinance regulating ISTS once the revised State rules are adopted.

Priority Concern 2: Development of TMDLs for Impaired Waters

Total Maximum Daily Loads (TMDLs) determine if water resources can meet their designated uses. The goal of the water plan is to determine the status of TMDLs of the various water resources and protect those that currently support their designated uses, and where needed, improve those that do not.

To achieve this goal two objectives with action steps have been identified.

Objective A Assess the ability of water resources in Mille Lacs County to meet their designated uses.

Action steps to implement Objective A include:

1. Prioritize impaired waters in need of TMDL studies as time and funding become available.
2. Create monitoring plans of waters for a more comprehensive assessment of waters in Mille Lacs County.
3. Participate in the development and implementation of TMDL projects. Establish funding sources for implementation plans.
4. Coordinate data sharing between agencies and entities collecting information for TMDL monitoring.
5. Monitor water quality on the Groundhouse and Knife Rivers (Snake River Watershed) within Mille Lacs County.

Objective B Work with land managers, land owners and operators in Mille Lacs County, regardless of land use to encourage best management practices.

Action steps to implement Objective B include:

1. Continue farm planning followed by implementation of recommended best management practices.
2. Assist with the registration and inspection of all feedlot sites in Mille Lacs County.
3. Educate feedlot owners about the importance of protecting surface waters from animal waste runoff.
4. Provide information and technical assistance to operators regarding the appropriate management of animal waste.
5. Provide technical and financial assistance to feedlot owners wishing/desiring to comply with local and state requirements.
6. Educate forest owners and loggers about the impacts of harvest damage and provide information on best management practices (BMP), and industry BMP certifications.
7. Educate landowners about proper forest management and sustainable forestry opportunities and available programs.
8. Support the efforts of the Snake River Watershed Management Board in encouraging best management practices to improve water quality and wise stewardship during forestry, grazing & agricultural crop activities.
9. Work with cities local government units or state agencies to improve riverside recreation areas that will meet both water quality and community recreation needs.

C. BACKGROUND

This section provides a more detailed examination of Mille Lacs County in terms of its physical and demographic characteristics. This foundation will provide an understanding of the relationship between natural resources and their protection from human impacts.

Demographics: (see 2012 Amendments to Background information on page 31)

Mille Lacs County is unique in its physical and demographic composition as well as its development trends. The County can be divided into three tiers: southern, middle and northern (lake). The southern tier is adjacent to Sherburne County, the fastest growing county in Minnesota. Princeton, in fact straddles two counties, Sherburne and Mille Lacs. As a result, the southern portion of the County is experiencing growth from Sherburne County.

The middle tier of the County is still predominantly agriculture, however, the number of agricultural uses in the County continues to decline. In 1968, agriculture comprised over 75% of total County acreage. By 1974, however, that number had dropped to 50%. The 2002 NASS Census of Agriculture - Mille Lacs County profile, shows 132,369 acres, or approximately 36% of the County’s land area in agriculture. This remaining Agricultural land is converting to rural, large lot subdivisions with individual sewage treatment systems (ISTS). About half of the county’s gravel pits are located in this tier.

The northern tier surrounds the lake and historically has been home to “mom and pop” resorts, RV parks, and family cabins. In recent years, the resorts and RV parks have converted to owner-occupied residential planned unit developments, and many property owners are reconstructing the family cabin to suburban-style year-round homes. In addition, the Mille Lacs Band of Ojibwe own, in fee or trust, approximately 4,000 acres in this area. The other half of the County’s gravel pits are also located within this tier.

Over the last five years, permits to construct new dwellings have increased annually, except for 2004 (**Table 1**). In 2005, the majority of County permitted activities occurred in Bogus Brook, Borgholm, Milaca, and Milo Townships.

Year	# ISTS
2000	195
2001	203
2002	213
2003	250
2004	200
2005	202

Table 1

Population trends and projections in Mille Lacs County are shown in **Table 2**. The data in Table 2 was taken from the Minnesota Department of Administration website and shows projected population growth to the year 2030. Detailed population projections for Townships and Cities in Mille Lacs County are shown in **Appendix C**.

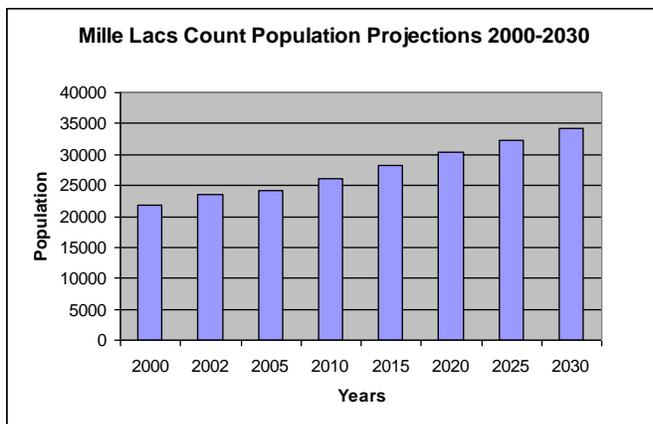


Table 2

Information from Minnesota Dept. of Administration:
<http://www.demography.state.mn.us/projections.html>

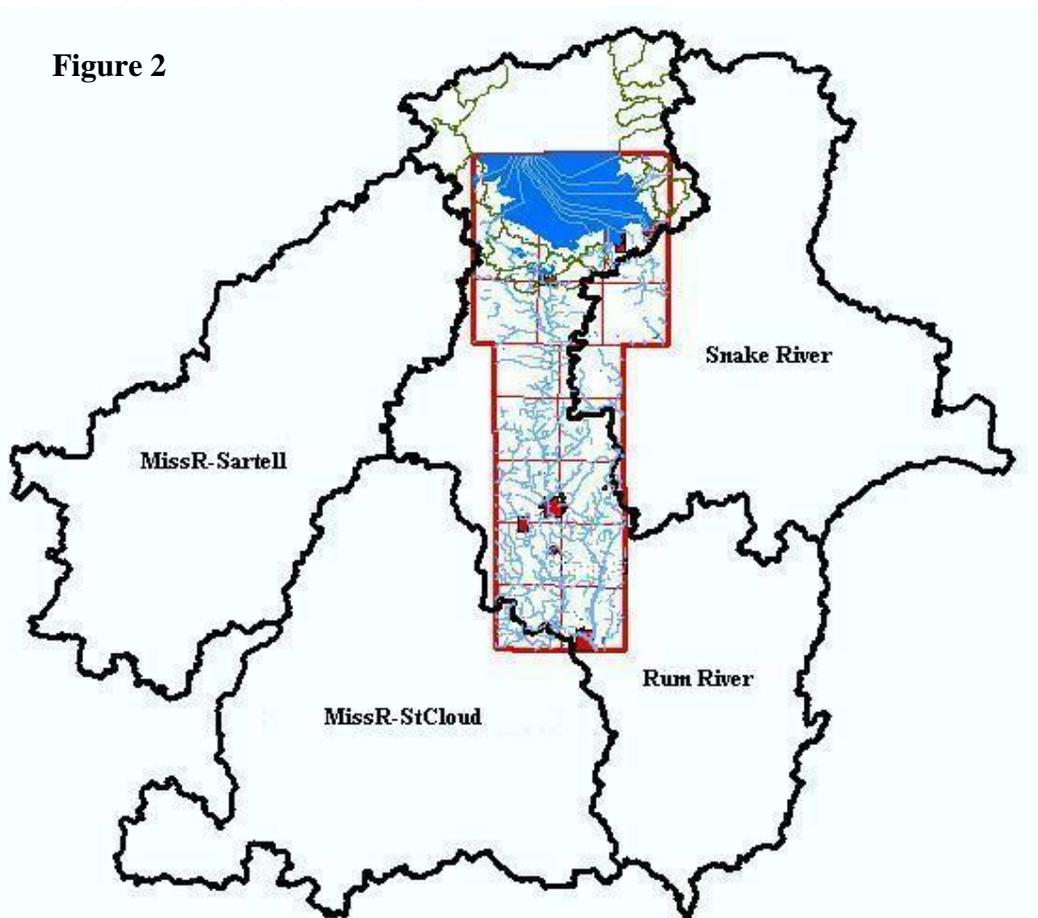
Surface Waters:

Mille Lacs County lakes, rivers and streams provide natural beauty, habitat for upland & aquatic life, make it possible to maintain industry, and agriculture, as well as provide opportunity for recreation. Maintaining and improving water quality is a major concern, since loss of water quality could significantly affect the County's economy, and quality of life.

Watersheds

Mille Lacs County covers portions of four major watersheds (see **Figure 2**). What follows is a description of each watershed. Of these, the Rum River Watershed is the major drainage area in Mille Lacs County. It begins in Mille Lacs Lake and flows southward out of the county. This watershed encompasses 80 percent of the county's surface water. The Mille Lacs Lake Watershed falls within the Rum River Watershed and is its headwaters.

Figure 2



A very small portion of the Mississippi-Sartell watershed is located within Kathio Township and flows westward out of Mille Lacs County. The Mississippi-St. Cloud watershed also encompasses a portion of Mille Lacs County, within Greenbush and Princeton Townships, and flows southwest out of the county. It is located within highly permeable soil, making the groundwater more susceptible to pollution from improper land uses. All three of these watersheds are part of the Upper Mississippi River Basin. The Snake River Watershed is part of the St. Croix River Basin and flows in a southeasterly direction (out of the county) through the Knife, Groundhouse, and Little Ann Rivers to the Snake River and then to the St. Croix River.

Rum River Watershed

The Rum River is designated as one of Minnesota's 'Wild and Scenic Rivers,' and is a designated canoeing and boating route. It is currently considered to have high water quality with the exception of a mercury impairment. See the **Impaired Waters Assessment** under **section D** for details on the mercury impairment. The Rum River was added to Minnesota's Wild & Scenic Rivers Program in 1978 because the river and its adjacent lands possessed outstanding scenic, recreational, natural, historical, or scientific values. A Management Plan for its use and development was adopted in 1978 so as to preserve and protect the values which qualified it for the designation of Wild and Scenic. The Rum River has segments in all three "wild", "recreational", and "scenic" classifications (**Figure 3**). (see 2012 Amendments to Assessments information on page 41)

- **Classification: Wild**
Wild rivers are those that exist in a free-flowing state with excellent water quality and with adjacent lands that are essentially primitive. Wild rivers should not be paralleled by conspicuous and well-traveled roads or railroads.
- **Classification: Recreational**
Recreational rivers are those rivers that may have undergone some impoundment or diversion in the past and that may have adjacent lands which are considerably developed, but that are still capable of being managed so as to further the purposes of this act. This means that bordering lands may have already been developed for a full range of agricultural or other land uses, and may also be readily accessible by pre-existing roads or railroads.
- **Classification: Scenic**
Scenic rivers are those rivers that exist in a free-flowing state and with adjacent lands that are largely undeveloped (i.e., adjacent lands still present an overall natural character, but in places may have been developed for agricultural, residential, or other land uses.)

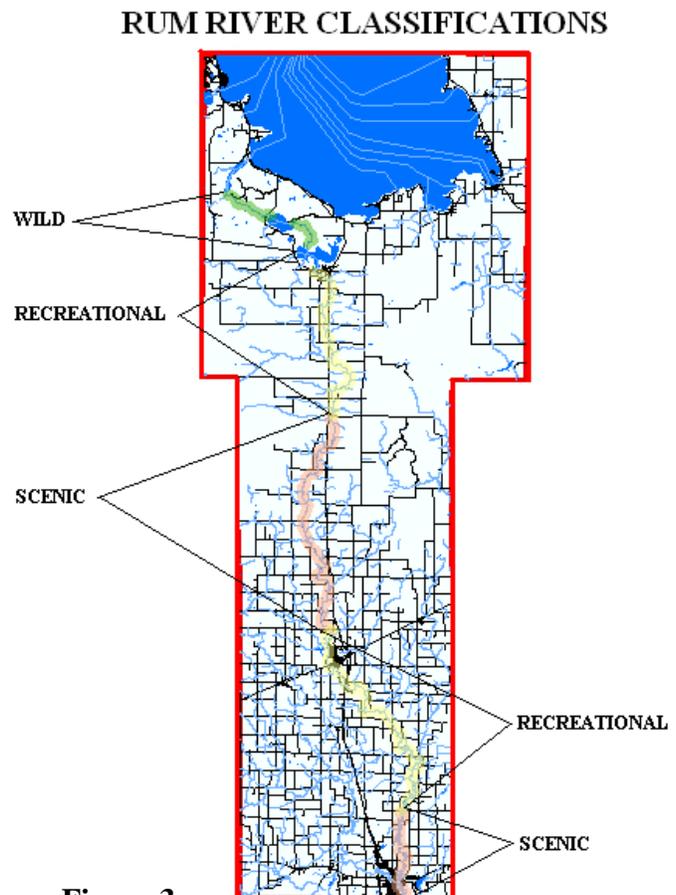


Figure 3

Mille Lacs Lake Sub-Watershed

Mille Lacs Lake is the headwaters of the Rum River, and its watershed is a subwatershed of the larger Rum River watershed. It is the second largest lake in Minnesota with a surface area of 207 square miles. The lake is shallow, with a maximum depth of 43 feet and a mean depth of 21 feet. This means the lake does not stratify (polymictic). The lake's sandy shores and good water quality make it ideally suited for walleye production. MPCA (1982) indicates land use in the watershed is 20% agricultural and 80% hardwood-coniferous forest and marsh. The lake has one surface outlet, the Rum River.

Development around Mille Lacs Lake is continuing at a rapid pace. The shore length is 76 miles with more than 70% developed with seasonal and year-round homes, businesses and other commercial interests. The majority of these parcels use on-site sewage treatment systems.

It has been estimated the lake contributes \$150 to \$200 million dollars to the regional and state economies each year. More than 2,000 recreational-based jobs are maintained by the continued excellence of the area's resources. There is a local desire to promote the further development of this recreation-based economy. Long-term sustainable development of the lake will only be possible if local units of government create a cohesive watershed development plan detailing issues of management such as setbacks, septic regulation, and wetland protection. (Mille Lacs Lake Watershed Plan, April 2003)

(see 2012 Amendments to Background information on page 31)

(see 2012 Amendments to Assessments information on page 41)

Snake River Watershed

The Snake River Watershed covers a total of 986 square miles in parts of Aitkin, Chisago, Isanti, Kanabec, Mille Lacs, and Pine counties. Nine percent of this area (88.74 square miles) is found in Mille Lacs County. The headwaters for three major tributaries of the Snake River Watershed are found in Mille Lacs County. They are the Knife, Little Ann, and Groundhouse Rivers.

The Snake River Watershed Management Board (SRWMB) is a four county non-regulatory joint powers organization working to develop and implement plans for the Snake River Watershed. The goals of the SRWMB are to:

- Protect property, streams and lakes from sedimentation and pollution
- Maintain and improve the quality of water in streams, lakes, and ground water
- Protect property from flood damages
- Control erosion of land
- Improve recreational and wildlife opportunities

Knife River - The Knife River has its origins in Isle Harbor Township and at the Ernst pool (located to the southwest of the lake in the boundaries of the Mille Lacs Wildlife Management Area (WMA)). The Knife River Watershed totals approximately 19,000 acres in Mille Lacs County. Ten percent, or approximately 1,900 acres, is agricultural land of which 75% is hay with row crops making up the other 25%. The remaining 90% of the land cover in the Knife River Watershed in Mille Lacs County is forested, bog, or swamp area. The surrounding bog area acts as a filter to remove sediment and nutrients as polluted water moves through it.

Fourteen animal agricultural uses have been identified in the Knife River Watershed in Mille Lacs County. Animal waste from several of these uses is treated by Ag-waste systems. Potential runoff from feedlots in Isle Harbor Township Sections 19, 20, 21, 28, 29, and 30 of Mille Lacs County must flow a minimum of a mile and a half to reach the Ernst pool. (USGS topographic maps indicate this situation.) The flow from Sections 13, 14, 15, 22, 23, 24, 25, 26, 27, 34, 35, and 36, of Isle Harbor Township, and Sections 1, 2, 3, and 12 of Lewis Township has a more direct route to the Knife River. Swamp and bog areas along this flowage are not as numerous before it reaches the Knife River. These areas still act as a partial treatment system of nutrients and sediments.

There are no cities completely within the boundaries of the Snake River Watershed in Mille Lacs County; however, Isle and Wahkon are close to the watershed border. Wahkon has sewage

treatment ponds located within the Knife River Watershed that previously did not discharge into the watershed, but recently underwent a major system upgrade and discharge has now been redirected toward the Knife River Watershed. The watershed line between the Knife River and Mille Lacs Lake watersheds runs roughly down the middle of the Isle sewage ponds. Discharge from the Isle sewage ponds drains into an unnamed wetland of the Knife River Watershed.

Little Ann - The Little Ann River has its origin at the Dewitt Pool located within the boundaries of the Mille Lacs WMA. The minor watersheds of the Little Ann River are entirely forest and swamp areas in Mille Lacs County. There is very little if any human disturbance which would be considered a pollution source in this watershed.

Groundhouse - The Groundhouse and South Fork of the Groundhouse Rivers have their origin in the Mille Lacs WMA and the Rum River State Forest. The Groundhouse Watershed totals approximately 23,680 acres. Agricultural activities along the rivers consist of crops and livestock. The entire Groundhouse watershed is approximately 85% forest and swamp land cover with the remaining 15% land cover agricultural. The crop rotation is mainly corn and hay with each being approximately 50% of the agricultural land cover. The number and location of animal agricultural uses in this watershed are unknown. An earlier assessment addressed the need to do an inventory of animal agricultural uses and determine the possible pollution potential from these in the watershed. (Excerpts taken from the 2002 Work plan - Neuman)

Currently the Snake River Watershed is participating with PCA in a study to determine the Total Maximum Daily Loading (TMDL) for the Groundhouse River. Additional information on this TMDL study and Groundhouse impairments are included in the Impaired Waters Assessment. (see 2012 Amendments to Assessments information on page 41)

Mississippi-St.Cloud Watershed

This watershed covers portions of Greenbush and Princeton Townships, and flows southwest out of the county. It is located within the Anoka Sand Plain, which is composed of highly permeable soil, making the groundwater more susceptible to pollution from improper land uses. State Highway 95 runs through this watershed between St. Cloud and the city of Princeton, where it also intersects with Highway 169. These factors contribute to the business and residential growth the area is currently experiencing.

(see 2012 Amendments to Assessments information on page 41)

Wetlands

Wetlands in Mille Lacs County serve many purposes that benefit water quality and the environment. The benefits these wetlands provide include but are not limited to: sediment and nutrient filtration, groundwater recharge, flood retention, wildlife and fisheries habitat, and recreational opportunities.

A wetland may be defined as the transitional area between terrestrial and aquatic systems where the water table is usually at or near the surface or is covered with shallow water. A wetland must also have a majority of hydric soils (soils that develop in wet conditions), water either above the ground or within 12 inches of the ground surface during all or part of the growing season, and a higher proportion of vegetation adapted to wet soil conditions.

Mille Lacs County retains up to 80 % of its pre-settlement wetland acreage. These wetlands and wetland basins are scattered throughout the county. Most draining of wetlands has taken place in the southern one-third of the county with very little draining taking place in the northern forested two-thirds of the county.

However an increase in development in the southern third has resulted in an increase of fill impacts associated with driveway placement; spoil removal, and related residential use. (see 2012 Amendments to Background information on page 31)

Types

There are two different systems commonly used in Minnesota to classify wetlands; Circular 39, and the Cowardin Classification System. Information describing these classification systems is included in **Appendix D**.

All wetland Types 1 through 8, from Circular 39, USFWS, exist in Mille Lacs County. No information is available to determine acreage for each wetland type. The northern part of the county is predominantly Types 6, 7, and 8 with Types 3, 4, and 5 wetlands being primarily man made. The southern half of Mille Lacs County is mainly naturally-occurring Type 2, 3, and 4 wetlands with Type 1, 6, and 7 bordering stream areas.

Wetlands provide many benefits dependent upon the type and location. Types 3 and 4 wetlands are highly valued for wildlife habitat, water quality protection. Type 1 & 6 wetlands are often found along sluggish streams and rivers and help prevent flood damage, provide water quality protection, and wildlife habitat. Type 7 wetlands are forested areas and are often used for timber harvest while providing habitat for wildlife. Type 8 are bog areas and provide protection to water quality and the shore line of surface waters like lakes and rivers. The Type 2 wetland is likely the most numerous wetland type in Mille Lacs County, and may provide waterfowl and wildlife habitat, water quality benefits, and well water recharge pools.

Protections

Jurisdiction over the protection of wetlands is covered by Local Units of Government (LGUs), the Department of Natural Resources (DNR), Army Corp of Engineers and the Natural Resources Conservation Service (NRCS).

Wetland Conservation Act (WCA)

The Wetland Conservation Act is currently enforced in Mille Lacs County by the Zoning & Environmental Services Office acting as the Local Unit of Government (LGU). The Wetland Conservation Act is a comprehensive wetland protection program designed to fill the gaps in existing state and certain federal laws. It regulates draining and filling, and in some cases excavation, in nearly all sizes and types of wetlands except for wetlands regulated by the DNR under the protected waters program (MS.103G - Section 2.3).

There are five basic components of the Wetland Conservation Act: boundary determinations, type determinations, no loss determinations, exemptions decisions, and replacement plans. These parts may require a permit from the Local Government Unit. A boundary determination defines the wetland edge using the 1987 COE manual. A type determination explains what type (1-8) of wetland exists using the USFWS Circular 39 system. The no loss determination results if no impacts to the wetland occur. Only the exemption and replacement plan components are related to actual wetland impacts.

Wetland impacts may be allowed under the exemption or replacement categories dependant upon size, location and wetland type. Impacts are defined as fill, drainage, or excavation that results in the loss in amount, quality, or natural diversity of the wetland. Some wetland impacts may be allowed with or without replacement. The impacts that do not require replacement are termed exemptions or “exempt from replacement”. Exemptions may be allowed for a certain amount of impact, a certain type of impact, forestry, or wildlife improvement projects. Impacts that are not exempt will require

replacement. Replacement means that the impact must be replaced by creating or restoring a wetland area in another location. However, replacement is not guaranteed like the exemption.

Impacts to wetland are spread throughout the Mille Lacs County but the greatest wetland impact likely occurs within the Type 2 wetland areas in the southern third of the County. This is due to the increase in development and its associated impacts. One of the impacts to this wetland type is that it may become choked with Reed Canary grass, an invasive species, causing the wetland to lack the quality wildlife habitat it once provided. However these wetlands do provide other function and values critical to our environment such as filtering pollutants, well water recharge, and education and recreational areas. Under the Wetland Conservation Act, some Reed Canary wetlands may be altered through an approved modification to the vegetation, water depth and shape, to improve the wildlife habitat benefit.

Department of Natural Resources (DNR)

Any type of commercial, residential, or agricultural development that requires the drainage of Types 3, 4, and 5 wetlands is under the jurisdiction of the Department of Natural Resources. Wetlands ten acres and larger in rural areas, and two and a half acres and larger in incorporated areas, are protected and require a DNR permit when working in the basin. Permits from the DNR are required for any excavation, filling or drainage of a state protected wetland.

Army Corp of Engineers (ACOE)

Any type of activity that places fill into a wetland basin, requires a United States Army Corps of Engineers 404 permit. These types of control measures have helped protect valuable wetlands within the County. However, each of these activities still contributes to the loss of wetlands within the County.

Natural Resources Conservation Service (NRCS)

United States Department of Agriculture (U.S.D.A.) farm programs have become increasingly protective of wetlands. The 1985 Food Security Act was the legislation that stated if an agricultural producer wanted to participate in Farm Programs they could not manipulate any wetlands to produce a commodity crop. The Natural Resource Conservation Service (NRCS) is the technical USDA agency that regulates the rules under the 1985 Food Security Act.

Mille Lacs Band of Ojibwe (MLBO)

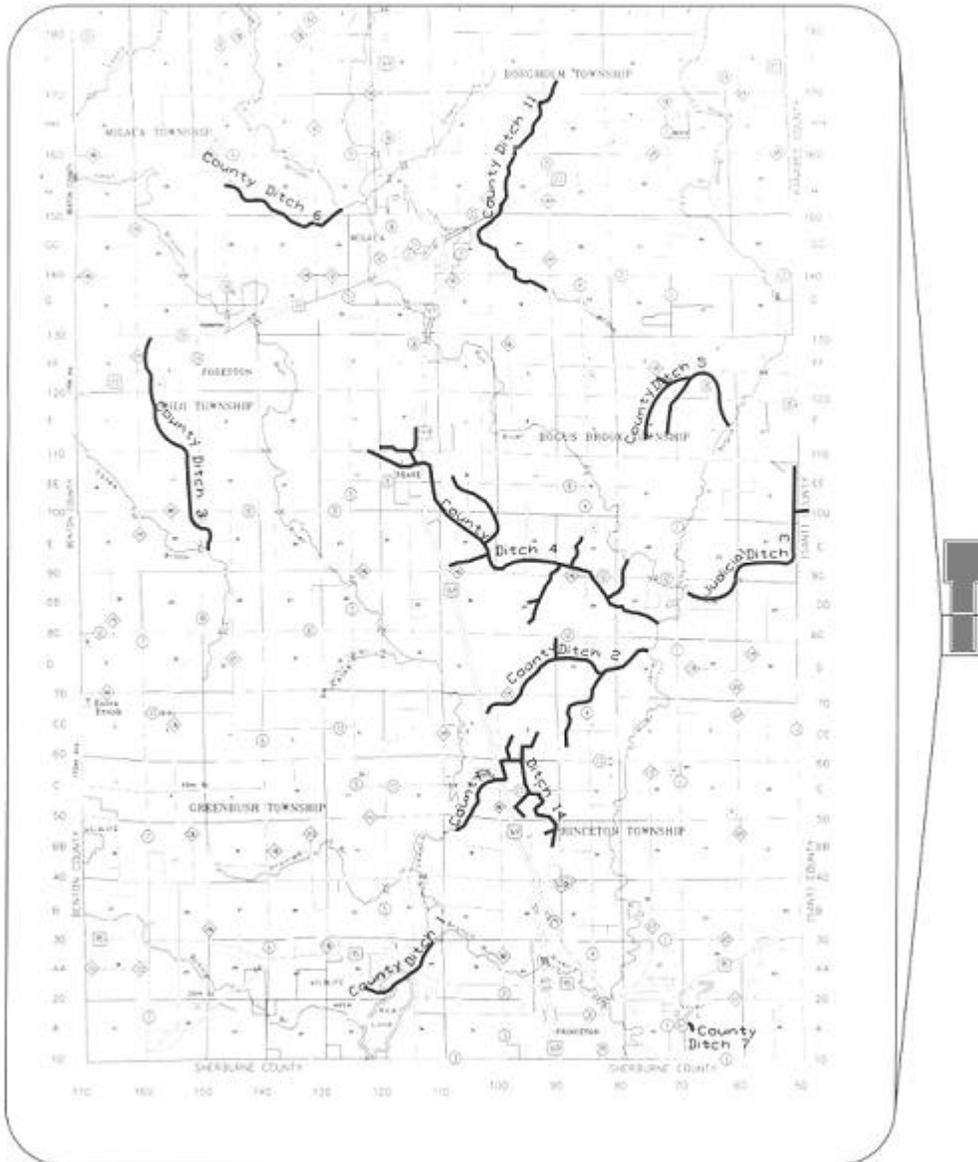
The Mille Lacs Band's Department of Natural Resources and Environment is developing a wetlands protection program. This program will include wetland protection management plans and respective tribal ordinances. There is a strong interest by the department to integrate the wetland management plan with functions and values of wetlands. This protection program and tribal ordinances will apply to lands held in trust by the U.S. Government on behalf of the MLBO and regulated by the MLBO.

C County Ditches

In the early 1900s a significant program of County Drainage systems, and ditch construction was undertaken in Mille Lacs County. Nine Mille Lacs County managed ditches and one jurisdictional ditch shared with Isanti County were constructed in the southern half of the County (**Figure 4**) and serve an area of approximately 33 square miles. These ditches were created to provide a benefit to residential and farming areas but have drained many wetlands. The last ditch was constructed in 1945. The County continues to manage and clean these drainage ditch systems on a by request basis. All ditches remain in service at this time. There are some ditches the county has not worked on in 20 years and therefore can be reviewed for possible abandonment.

Figure 4

Mille Lacs County Ditches



Forestry

Forestry activities are an important component of the local economy. Mille Lacs County is fortunate to have healthy, diverse, and productive forests. Approximately 139,016 acres, or 38% of Mille Lacs County is forested in Timberland. Timberland is defined as forest land that is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. Areas qualifying as timberland are capable of producing in excess of 20 cubic feet per acre per year of industrial wood in natural stands. The Timberland in Mille Lacs County is approximately 30 % State owned and 70% privately owned (**See Appendix E**). These forests are a tremendous asset to our environment and economy, providing wood products, recreation, wildlife habitat, and water.

Soils – Surface Water

NRCS Soil Survey

The Natural Resources Conservation Service (NRCS) soil survey of Mille Lacs County has a wealth of information that landowners can use to make more informed decisions on their land. The Mille Lacs County Soil Survey can be accessed on the web: <http://websoilsurvey.nrcs.gov>. Tabular data (soil reports) and spatial data (soil lines) can be generated or downloaded at the Soil Data Mart: <http://soildatamart.nrcs.usda.gov/>. For questions regarding the soils information developed for Mille Lacs County please contact the NRCS District Conservationist.

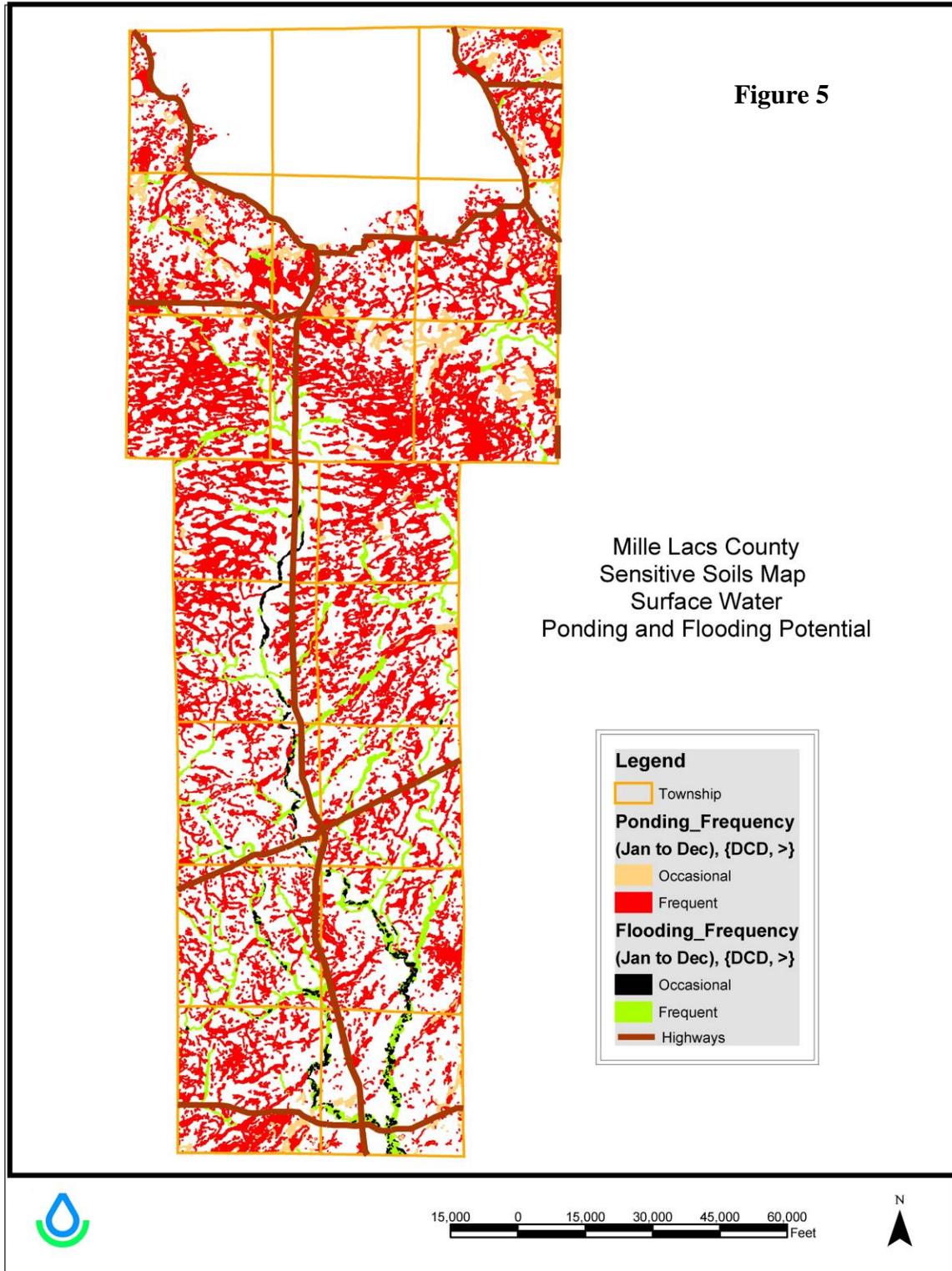
The soil survey provides information on sensitive soils within the county. Five sensitive features are identified in the soil survey and have the following characteristics: ponding, flooding, wet soil moisture status, coarse texture soil profile, and slope. Within Mille Lacs County 83.3% of the soils have been classified as having one or more of the five sensitive features; leaving only 16.7% of the land identified as not having sensitive soils (**see Figure 5**).

Soil Properties As They Relate To Surface Water

Surface Water concerns are correlated with the sensitive features of ponding and flooding. Ponding is standing water in a closed depression. The water is removed only by deep percolation (ground water recharge), transpiration, or evaporation or by a combination of these processes. Frequently ponded soils have an average occurrence of more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding. Frequently flooded soils have an average occurrence of more than once in 2 years (the chance of flooding is more than 50 percent in any year). Within Mille Lacs County 51% of the soils have been identified as being frequently ponded, 2.8% are identified as frequently flooded.

Figure 5 Mille Lacs County has a large portion land that is affected by ponding and flooding.



Ground Water:

Aquifers

Aquifers are defined as water-bearing porous soil or rock strata that yield significant amounts of water to wells. In order for the material in which the ground water is moving to be considered an aquifer, there must be sufficient porosity and permeability (e.g., sand and gravel or cracks and fractures in more solid rock) for water to flow through and out of in quantities large enough to supply water to wells to satisfy human needs.

Underground formations like clay do not permit water to flow through them and prevent upward and downward movement of ground water. These formations are known as aquitards or confining layers.

Two broad geologic categories of aquifers have been defined: surficial and bedrock. Surficial aquifers are composed of sand and gravel outwash, which is the material that was washed out of glaciers. Surficial aquifers do not have an impermeable layer of rock or clay above them to protect them from pollution events that occur on the surface. Because of this, contaminants and pollution on the surface are easily carried down into the aquifer.

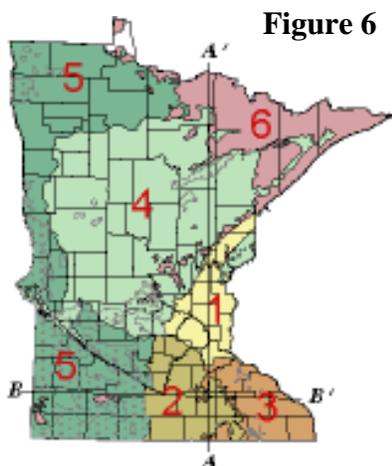


Figure 6

Information from the Minnesota Department of Natural Resources found at www.dnr.state.mn.us/groundwater/provinces/index.html shows that the availability of ground water in Minnesota is divided into six provinces. Groundwater provinces are based on bedrock and glacial geology. Within each province, ground-water sources and the availability of ground water for drinking water, industrial, and agricultural uses are similar (Figure 6). Mille Lacs County falls within Province 4 (central) is characterized by buried sand aquifers and relatively extensive surficial sand plains as part of a thick layer of unconsolidated sediments deposited by glaciers overlying the bedrock. In Province 4 glacial sediments of thick, sand and gravel aquifers are common, and the deeper fractured bedrock is rarely used as an aquifer.

Each of the provinces has a unique combination of aquifer characteristics that affect water availability. **Table 3** illustrates general ground water availability by province for different ground water sources. The table shows that some parts of the state have several ground water resources to choose from, while other

parts of the state may have only limited ground water resources available.

Table 3

Area	General Availability of Ground Water by Source		
	Surficial Sands	Buried Sands	Bedrock
1	Moderate	Moderate	Good
2	Limited	Moderate	Good
3	Limited	Limited	Good
4	Good	Moderate	Limited
5	Moderate	Limited	Limited
6	Limited	Limited	Limited

In 1990 the U.S. Environmental Protection Agency (EPA) Region 5 designated the Mille Lacs Lake Confined Drift Aquifer as a sole-source aquifer under the Safe Drinking Water Act. A Sole Source Aquifer (SSA) is an aquifer which is needed to supply 50% or more of the drinking water for that area and for which there are no reasonably available alternative sources should the aquifer become contaminated. (see 2012 Amendments to Background information on page 31)

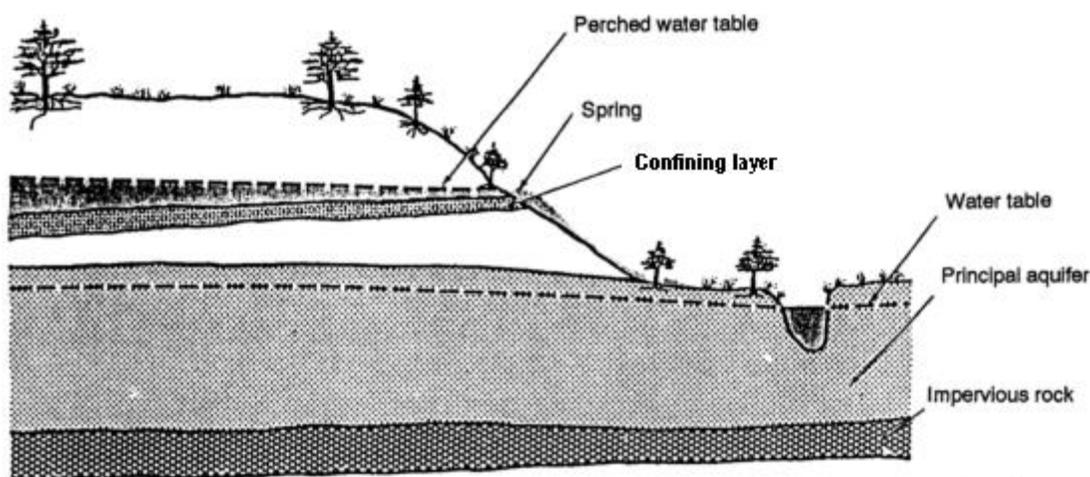
This aquifer is within the Rum River and Mille Lacs Lake watersheds and is the sole or principal source of drinking water for approximately 6,500 residents of Mille Lacs and Aitkin Counties. More than 95 percent of the drinking water in this area (about 450,000 gallons per day) is drawn from the aquifer. There is no other cost effective potential source that could replace the drinking water that communities now get from the aquifer; and the moderate-to-high permeability of the aquifer makes it vulnerable to contamination. (see 2012 Amendments to Background information on page 31)

Soils – Ground Water

Soil Properties As They Relate To Ground Water

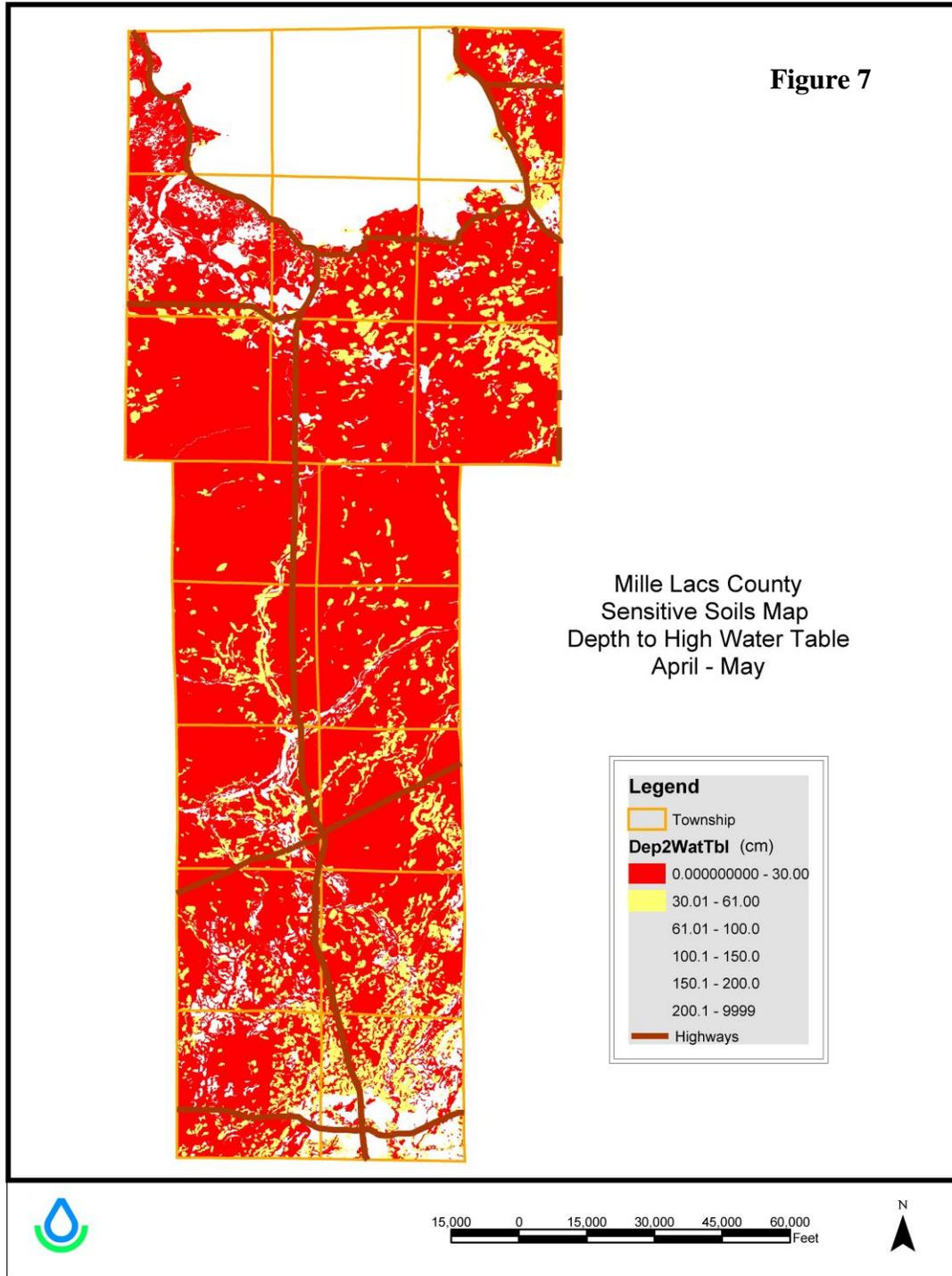
In regards to ground water, the NRCS soil survey reveals information about soil texture (percent of sand, silt, clay), Saturated Hydraulic Conductivity (the rate of water flow through a soil profile), and depth to the zone of saturation or high water table. Some areas of Mille Lacs County may have a perched water table or an apparent water table. Zones of saturation and water table fluctuations are indicated by the redoximorphic features (red to gray mottling within the soil profile).

Figure 6.5 Groundwater



Ground water is that portion of the water below the surface of the ground at a pressure equal to or greater than atmospheric. Water table refers to the upper surface of ground water or that level in the ground where the water is at atmospheric pressure. Water tables can be perched, which would refer to a saturated layer of soil which is separated from any underlying saturated layers by an unsaturated layer.

Figure 7 represents the distribution of the depth to the high water table, based on soil types, between the months of April and May. The legend is displaying the units in centimeters (1 foot = 30.48 centimeters). In Mille Lacs County 90% of the land has a high water table that falls within 2 feet of the ground surface between the months of April and May. Estimates of the upper limit are based mainly on observations of redoximorphic features (red to gray mottling within the soil profile, also where iron reduction and oxidation occurs) and the monitoring of shallow wells at selected sites indicating a zone of saturation.



Soil texture is the mineral portion of soil. Sand, silt, and clay are the three mineral particles that make up the greatest percentage of the soil profile. Sand has a particle size of 0.06 to 2.0 mm, silt has a particle size of 0.002 to 0.06 mm, clay has a particle size of less than 0.002 mm, and these particle sizes show that water will flow faster through a soil profile that has a higher percentage of sand particles.

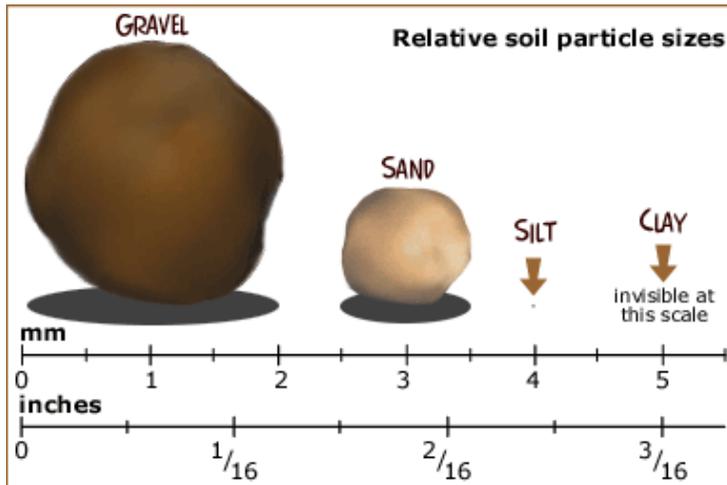
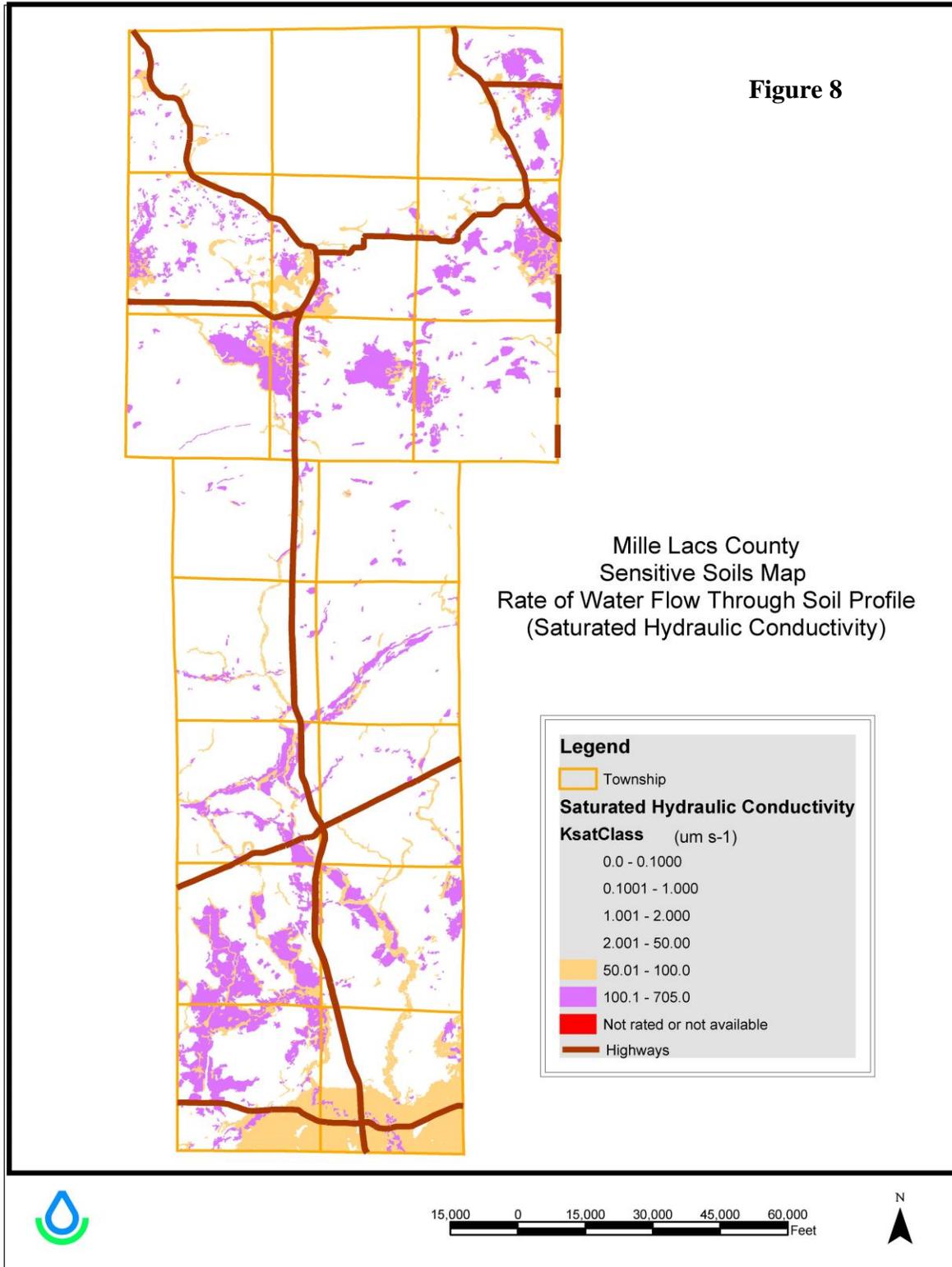
Figure 7.5

Figure 8 illustrates Saturated Hydraulic Conductivity; also known as K_{sat} , or rate of water flow through the soil profile. Saturated hydraulic conductivity (K_{sat}) refers to the ease with which pores in a saturated soil will transmit water. The estimates are expressed in terms of micrometers per second. The soil properties that affect saturated hydraulic conductivity are distribution, continuity, size, and shape of pores. Since the pore geometry of a soil is not readily observable or measurable, observable properties related to pore geometry are used to make estimates of saturated hydraulic conductivity. They are based on soil characteristics or properties observed in the field, which are texture, structure, pore size, density, organic matter, and mineralogy.

The map in **Figure 8** shows the soil types that have a high percentage of sand particles, also known as coarse soils, within 3 feet of the soil surface.



2012 Amendments to Background Information

Demographics:

Since the adoption of the plan in 2006, Mille Lacs County has experienced an economic downturn in the development market. The following table illustrates the number of septic permits issued since 2005, the date included in the adopted plan:

Year	#ISTS
2006	225
2007	163
2008	92
2009	79
2010	47
2011	74

In addition, requests to subdivide parcels and subdivisions are down. Large residential subdivisions were not requested during the noted period. Most administrative subdivision requests were for mortgage and refinancing purposes. Foreclosures increased during the noted period as well.

The adopted plan’s population projection indicated that the County’s population would be 26,180 persons in 2010. The actual census count for 2010 was 26,097, a 16.9 percent increase over the 2000 census number. The Minnesota State Demographic Center projects that the County’s population will increase by 28.4 percent by the year 2035. This is higher than the adopted plan’s projected population increase when comparing the total population projected for the year 2025:

Adopted plan 2025 projected population:	32,310
2012 projected population for 2025:	38,540

While subdivision activity is currently down, development to accommodate the projected population will be a future concern.

Surface Waters:

Watersheds

Mille Lacs Lake Sub-Watershed

The Garrison, Kathio, West Mille Lacs Lake Sanitary Sewer District has been established to discharge sewage formerly served by subsurface sewage treatment systems (SSTS’s) to the new wastewater treatment facility (WWTF), owned and operated by ML Waste Management (MLWM).

Wetlands

Changes in the economy occurring in 2008 have ceased the development boom experienced in the 1990’s and first portion of the 21st century. The fill impacts associated with driveway placement, spoil removal, and related residential development have slowed considerably with most wetland impacts since 2008 occurring as the result of government road projects.

Ground Water:

Aquifers

In 1998 a report titled Ground Water Resource of the Mille Lacs Lake Area, East-Central Minnesota, by L.C. Trotta and T.K. Cowdery, U.S. Geological Survey Water-Resources Investigation Report 97-4116 was prepared in cooperation with the Mille Lacs Band of Chippewa Indians. The report summarizes available groundwater and susceptibility to contamination from land use surrounding Mille Lacs Lake. The report is available for review at www.millelacsSWCD.org.

County Geologic Atlas.

A County Geologic Atlas is a systematic study of a county's geologic and groundwater resources. Geologic studies include both near-surface deposits and bedrock. Groundwater studies include flow systems, aquifer capacity, groundwater chemistry, and sensitivity to pollution. In some areas sand and gravel deposits, sinkholes, or other features are studied. The information is organized, analyzed, and displayed using GIS technology.

Atlas information is used in planning and environmental protection efforts at all levels of government. Source water protection and well sealing programs are examples of local programs that need geologic and groundwater information. Other typical uses include providing information for permit applications and plans and emergency response to contaminant releases. The information is also used by businesses and the general public.

Mille Lacs County does not yet have a County Geologic Atlas. Program funding to create an Atlas comes from the DNR Waters budget as appropriated by the legislature. Additional information is available on the DNR website at http://www.dnr.state.mn.us/waters/groundwater_section/mapping/index.html#atlas.

Wellhead Protection efforts in Mille Lacs County

Wellhead Protection is a method of preventing contamination of a public water supply well by effectively managing potential contaminant sources in the area which contributes water to a public water supply well. Public health is protected and the expense of treating polluted water or drilling new wells is avoided through wellhead protection efforts. The Wellhead Protection Program is administered by the Minnesota Department of Health (MDH). In Mille Lacs County, the communities of Bock, Pease and Princeton currently have State approved Wellhead Protection (WHP) Plans and are in the process of implementing them to reduce the likelihood of groundwater contamination in the recharge area of their wells. In 2012, the City of Milaca will have a completed a WHP Plan, while the City of Pease is in the process of updating their plan that has been in effect since 2003. SWCD staff support WHP efforts by participating in community plan development, groundwater education activities and helping promote a variety of conservation practices and programs needed to provide long term protection of community drinking water supplies in Mille Lacs County. Maps of the State approved WHP areas in Mille Lacs County are found in Appendix J.

D. ASSESSMENTS

As noted in the Background, Mille Lacs County is experiencing changes in its land use, and the physical characteristics of the county creates disadvantages to protecting the surface and ground water resources within the County.

While the County does benefit in many ways through development and growth in the local economy, there is reason for concern about the effects of how and where development occurs. Lakes, streams, rivers and their associated floodplains are particularly vulnerable to encroachment. With development comes more buildings, yards, roads, and parking lots. The increase in impervious surfaces forces water that might otherwise be absorbed by the ground to run off into streams and ditches that are not capable of handling the increased volumes. The result is more flooding along the overburdened streams and problems for everyone downstream in the watershed. Sometimes wetland areas are seen by people as little more than “worthless” swamp. However, often a “worthless” swamp is priceless when it comes to protecting wildlife habitat or preventing downstream flooding.

This section will detail, where available, the assessments of surface and groundwater resources that have occurred or are occurring to evaluate human impacts to water resources within the County. In addition, it will identify protective measures that have been implemented to protect water resources from specific impacts.

Surface Water Assessment:

Mille Lacs Lake Sub-Watershed (see 2012 Amendments to Assessments information on page 41)

A three year field study, begun in 1999, monitored and evaluated tributary pollution inputs and lake water quality. Phosphorus was the main focus of the diagnostic study to measure runoff entering Mille Lacs Lake, as well as lake water quality and lake bottom sediment.

Results showed that during a normal year, 6,348 kilograms of phosphorus (about 13,967 pounds) enter the lake via runoff. There are other sources of phosphorus too. Rainfall contributes 10,891 kg (23,960 pounds), septic systems contribute 1,500 kg (3,300 pounds) and minor sources contribute 628 kg (1,382 pounds). The total input is 19,367 kg (42,607 pounds).

Lake water quality was also measured during this study. The current condition of Mille Lacs Lake is ‘mesotrophic,’ meaning it has yet to show significant signs of degradation. This condition falls in an optimal range for walleye production.

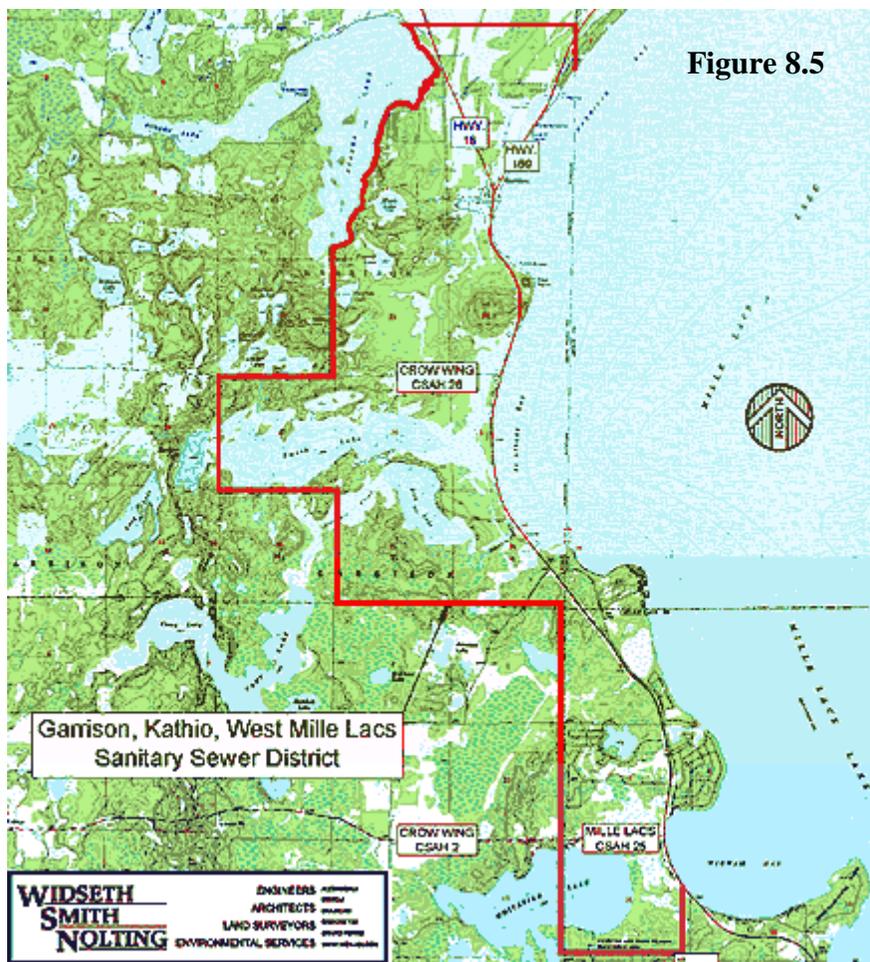
A sediment core was taken from the lake bottom in the winter of 2002. Because lake sediments are deposited in layers, the core can be evaluated for historic water quality indicator information. The procedure is much like evaluating tree rings. From this evaluation, it was determined that phosphorus inputs to Mille Lacs Lake have actually been increasing over the past five decades.

On the basis of this study, it was concluded that the current good water quality in Mille Lacs Lake cannot be assured in the future. The trend of increasing phosphorus inputs continues and at some point, the lake’s quality will degrade. (Mille Lacs Lake Watershed Plan, April 2003)

A significant attempt to address pollution input into the lake due to development and growth was the creation of a new Mille Lacs Waste Water Treatment Plant. The new treatment plant began operating in 2004 to service the west side of Mille Lacs Lake and handles 625,000 gallons of sewage per day collected from a 30-square-mile area. See **Figure 8.5** for a map of the service area. The treatment plant was

needed because the majority of the area residents and businesses were utilizing individual septic treatment systems. These systems are particularly susceptible to failure due to the high water table in the area. Additionally, discharge from the Mille Lacs Band of Ojibwe (MLBO) settling lagoon system was flowing into Mille Lacs Lake.

From the perspective of Mille Lacs Lake, this treatment plant reduces the loading of pollutants such as phosphorus, total suspended solids and biological oxygen demand to the lake. Waste from the MLBO system and the surrounding area is now treated and sent to a wetland complex upstream from the Rum River. However, there is concern that the added hydrology and pollutant loadings will negatively impact the wetland complex and ultimately the Rum River.



Wetlands

Development

Development in the County is impacting wetlands. The term “development” can include residential subdivisions, driveway installations, or agricultural activities. Wetlands are filled within regulatory limits for driveway or street crossings, and may receive storm water from sedimentation ponds as part of a development. Federal and state regulations protect wetlands, but there are loopholes and “gray” areas that do not fully protect wetlands in Mille Lacs County. A local wetland protection ordinance would close these loopholes and promote the wetland protection values of the county.

(see 2012 Amendments to Assessments information on page 41)

Forestry

Forestry activities can cause soil to move into streams and wetlands. Implementing Best Management Practices (BMPs) is an effective way to protect forest water quality. Forestry BMPs are important practices, which prevent or reduce the amount of erosion generated through forest management.

The State follows and provides BMP guidelines to landowners about how to protect the functions and values of forest resources during forest management activities. The publication "Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers and Resource Managers, MFRC Report SI-1298, Feb. 1999" outlines these guidelines. The plan seeks to protect water quality and wetlands during forestry operations by avoiding activity in wetlands. Where avoidance is not practical, the plan seeks to minimize impacts by limiting the extent of wetland activities, even if these activities are exempt under State and Federal wetland regulations. The plan recommends managing land to control nonpoint source pollution near surface water and wetlands that can often be created through timber harvesting activities, mechanical site preparation, prescribed burning and road. Maintaining riparian areas or filter strips between water bodies and the forest disturbance can minimize the runoff of sediment, debris, nutrients and pesticides into these water bodies.

Invasive Species

(see 2012 Amendments to Assessments information on page 41)

Mille Lacs County wetlands are also threatened by invasive vegetation. In the past, Purple Loosestrife was a major natural threat to wetlands in the county. However, an aggressive biological control program using the Purple Loosestrife leaf-eating beetles (*Galerucella* spp.) has been very successful. Currently, invasive Reed canary grass is limiting the diversity of plant and wildlife species found in many wetlands. Preventing its spread to un-infested wetland areas is important for both wildlife habitat and water quality.

Reed canary grass is established in many wetlands throughout Mille Lacs County and is a concern because of its ability to overrun a marshy area, thereby depleting the habitat and creating a monoculture. It has little value for wildlife and is very persistent and hard to control. Few species eat the grass, and the stems grow too densely to provide adequate cover for small mammals and waterfowl (Maia 1994). The species is considered a serious weed along irrigation banks and ditches because infestations can increase siltation (Marten and Heath 1973). Although Reed canary grass is planted as a forage crop in some areas, the species poses a significant threat to the state's wetlands. Reed canary grass is extremely aggressive and often forms persistent, monocultures in wetlands and riparian areas. Infestations threaten the diversity of these areas, since the plant chokes out native plants and grows too densely to provide adequate cover for small mammals and waterfowl. The grass can also lead to increased siltation along drainage ditches and streams. Once established, Reed canary grass is difficult to control because it spreads rapidly by rhizomes.

Eurasian water milfoil (*Myriophyllum spicatum*) is an invasive submerged aquatic plant that was first discovered in Minnesota in 1987. Eurasian water milfoil is currently known to occur in 177 water bodies in Minnesota. Mille Lacs lake has Eurasian water milfoil growing in a number of harbors. The DNR is actively working to control the plant in these harbors and signs have been placed at all public and private accesses. Curly leaf pondweed (*Potamogeton crispus*) is a submerged perennial aquatic plant that was found in Minnesota in the early 1900's. This plant is known to occur over a large number of lakes in Minnesota including Mille Lacs county. Curly leaf pondweed can form dense mats that interfere with recreation. The plant lives underneath the ice and dies back in mid summer. Turions or winter buds form on curly leaf pondweed in the spring and the plant sprouts from these turions in the fall. The DNR Invasive Species Program uses watercraft inspections, informational materials, and public speaking engagements to prevent the spread of curly-leaf pondweed, Eurasian water milfoil, and other invasive aquatic species.

Four adult Zebra mussels (*Dreissena polymorpha*) were found by DNR Fisheries divers in Mille Lacs lake in 2005. News releases were sent out to newspapers and radio stations. DNR watercraft inspections increased on Mille Lacs in 2005. More diving and sampling will take place on Mille Lacs lake in 2006 to determine the extent of the infestation.

County Roadway Influences

The Mille Lacs County Public Works Department faces wetland issues associated with two general categories, County Ditches, and Roadways. Wetland issues associated with roadways can be linked to new construction and maintenance. Under current law, road projects need to be evaluated for their impacts to wetlands. As part of the evaluation any area in an existing road ditch that holds water or exhibits characteristics of a wetland is counted as a wetland, even if the adjacent surrounding property is not classified as a wetland. The current rules require wetland replacement at rates over 1:1 for transportation projects. Wetland created from the reconstruction of the road is not credited as replacement. Consequently, the department is mitigating more than it displaces.

Water quality issues relating to road maintenance are related primarily to vehicle wear, and the use of chemicals as de-icing agents. Currently the department, in the reconstruction process, creates siltation basins for chemicals or erosive materials to settle out prior to discharge into wetlands or streams. (see 2012 Amendments to Assessments information on page 41)

How Soil Type Affects Surface water

Soil types with slope as a sensitive feature are of great concern due to runoff in the spring or from rainfall that can carry contaminants with it into surface waters. Surface waters are important to fish, small game, waterfowl, large game, and non game habitat. When degrading surface water quality, local economics can and will be effected. As is illustrated in **Figure 5** Mille Lacs County has a large portion of land that is affected by ponding and flooding. Soil types that have ponding and flooding capabilities are also classified as sensitive soil types because they may be direct links to shallow aquifers. If a shallow aquifer is being used as a source for drinking water it may be more susceptible to contamination if the surface water is being polluted.

Ground Water Assessment:

How Soil Type Affects Groundwater

Soil characteristics are very important in determining how a contaminant breaks down into harmless compounds or moves through soil and into the groundwater. Groundwater can be highly vulnerable to contamination in areas with coarse soils as identified in **Figure 8**. Depending on the soil texture and Saturated Hydraulic Conductivity throughout the soil profile, there is a greater potential for groundwater contamination in areas where contaminants are able to move quickly through the soil. For example:

Coarse- textured sandy and gravelly soils, which have large spaces between individual soil particles, and the particles provide relatively little surface area for attachment of most contaminants. Large amounts of rainfall can move through these soils and cause dissolved contaminants to move more rapidly through the soil and into groundwater. The sandy soils of the Anoka Sand Plain which occur in the southern part of Mille Lacs County are an area of high priority concern for possible groundwater contamination. Areas with coarse soils as indicated in **Figure 8** are also of concern, especially if high water tables occur in the same areas.

Clayey soils, on the other hand, are made up of extremely small particles that slow the movement of water and slow contaminants through the soil profile. Some contaminants also stick tightly to clay surfaces. While held securely to soil particles, contaminants are broken down by bacteria, other soil organisms, and reactions

with minerals and natural chemicals in the soil. Most chemical and biological breakdown takes place in the loose, cultivated surface layers, where the soil tends to be warm, moist, well-aerated, and high in organic matter. Soil organic matter is also important in holding contaminants. Soils high in organic matter provide an excellent environment for chemical and biological breakdown of these contaminants.

Septic system suitability, waste water sludge disposal, and animal agricultural uses are a few land use activities that have specific rules and regulations in regard to soil type and high water tables.

Aquifers

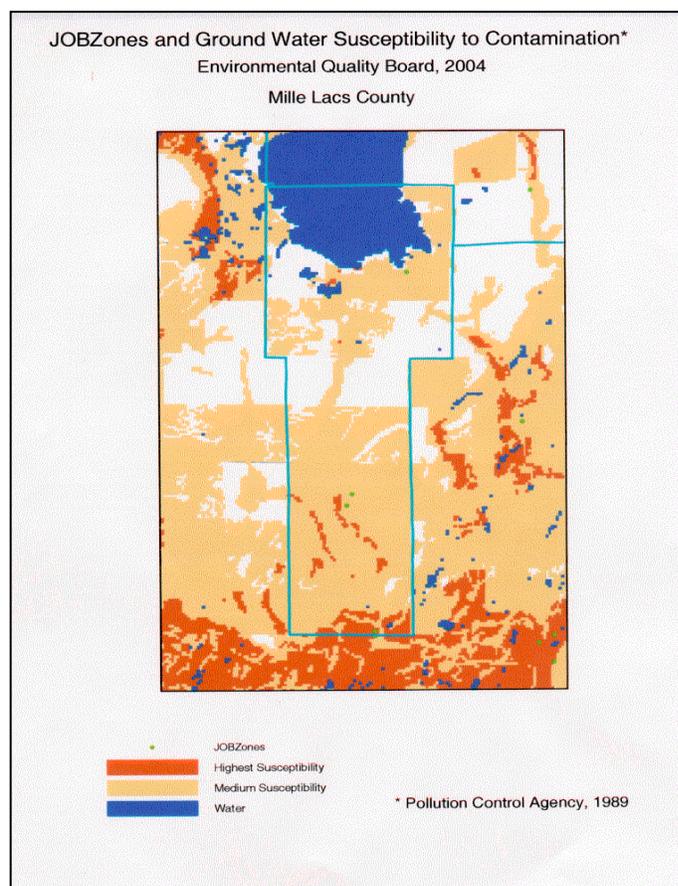
Land use effects on aquifers and surface water are of special concern around Mille Lacs Lake, in the sand plains at the southern end of the county, the shoreland areas of lakes and streams, and the outwash areas of sands and gravels along streams and rivers.

Groundwater Contamination Susceptibility

(see 2012 Amendments to Assessments information on page 41)

Figure 9

As noted on Page 23, the aquifer in Mille Lacs County is comprised of primarily surficial sands and secondarily of buried sands. Given the permeability of sandy soils, the ease of which the aquifer could be contaminated is of great concern. Information provided by the Environmental Quality Board (EQB) indicates that throughout most of Mille Lacs County there are areas of medium to high ground water contamination susceptibility (See **Figure 9**). Passed into law by the 2003 Legislature and launched on January 1, 2004, the Job Opportunity Building Zone (JOBZ) initiative is a Minnesota rural economic development stimulus program. The program provides substantial tax relief to companies that start up or expand in targeted areas of Greater Minnesota. The program targets areas hit by economic distress, promotes development in places that are already poised for business growth and have adequate infrastructure in place, or seeks out places where favorable conditions exist for restoring productivity to under-used and unproductive properties through development, redevelopment, reclamation or recycling.



The four designated JOBZones (Wahkon, Princeton, & two within Milaca) in the County appear to be located in ground water sensitive areas. Increased commercial and industrial development for the purpose of job creation has the potential to increase the opportunity for water contamination by spills. Minnesota Pollution Control Agency spill reports for Mille Lacs County locations were reviewed for the years 1996 to 2005. Most spills reported were related to fuels or sewage. Other miscellaneous spills included pesticide, fertilizer, propane, anti-freeze, kerosene, waste oil, hydraulic fluid and

asphalt sealer. Locations of spills varied and included city-owned facilities, business locations, private residences and roadway or right-of-way ditch locations. The County’s soils and water table level combine to increase the chance that contamination from spill could occur.

The Mille Lacs County Water Management Citizen Advisory Committee supports ongoing education to promote safe management of hazardous materials and supports ongoing training for local emergency “first” responders.

Impaired Waters Assessment:

(see 2012 Amendments to Assessments information on page 41)

The federal Clean Water Act requires states to develop water-quality standards to protect the designated uses of their waters, and to monitor their waters to ensure they meet the standards. Surface waters not meeting the standards are considered impaired for the pollutants causing the violations and are required to be listed by the states as impaired waters. For each impairment, the Act requires a pollutant-reduction study called a Total Maximum Daily Load, or “TMDL”.

A TMDL study identifies both “point” and “nonpoint” sources of each pollutant. Water quality sampling and computer modeling determine how much each pollutant source must reduce its contribution to assure the water quality standard is met.

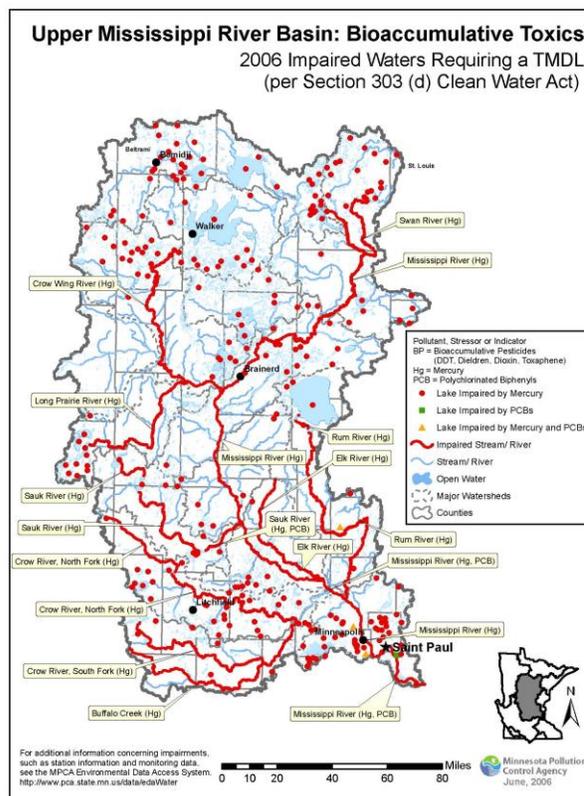
The 2006 proposed list of Minnesota’s impaired waters includes streams throughout the state, including segments of the Mississippi, Red, Long Prairie, Minnesota, Chippewa, Grindstone and Whitewater rivers. It also includes a number of lakes in Minnesota affected by excess mercury.

Figure 10

Mille Lacs County Mercury Impairments

For Mille Lacs County, the entire length of the Rum River from its headwaters at Mille Lacs Lake, and beyond the county border, is listed as impaired. The contaminant of concern is mercury which is exceeded in fish tissue concentrations and some water column samples. See **Appendix F** for PCA list of mercury impairments in Mille Lacs County. The maps in **Figures 10 & 11** illustrate lakes and streams within Mile Lacs County which are designated as impaired based on 2006 draft information.

A statewide plan, identifying two broad regions to address mercury reduction was developed in 2005. Mille Lacs County straddles the two regions.



The long-term goal of the mercury TMDL is for fish to meet water quality standards. The approach for Minnesota’s share is mass reductions from state mercury sources. General strategies are described for mercury reductions to Minnesota water and air. A summary of the target reductions for various sources of mercury can be found on the MPCA website (www.pca.state.mn.us/water/tmdl/tmdl-

mercuryplan.html). A shorter fact sheet describes the load allocation plan along with some proposed implementation strategies.

PCA and MDH Limits for Mercury

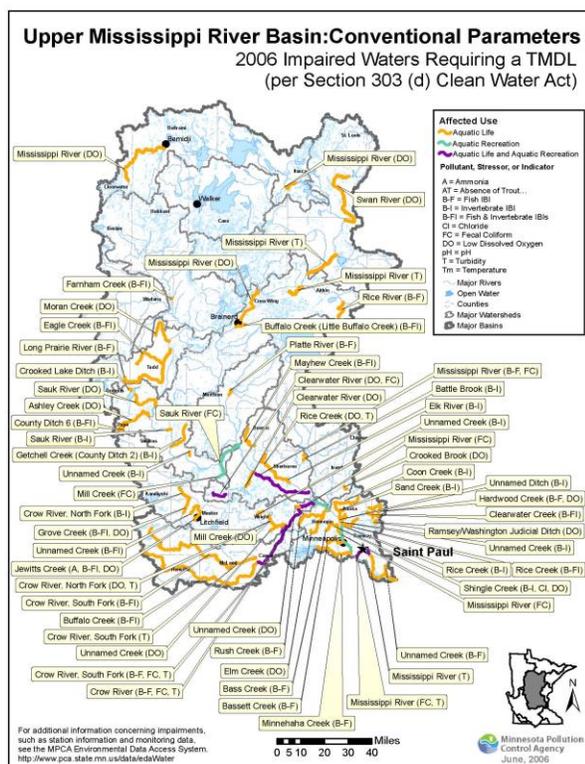
(see 2012 Amendments to Assessments information on page 41)

Three water quality standards are involved in mercury contamination:

- the statewide fish-tissue criterion of 0.2 milligrams mercury per kilogram (mg/kg)
- the Lake Superior Basin water-column standard of 1.3 nanograms per liter (ng/l)
- the non-Lake Superior Basin water-column standard of 6.9 ng/l

Excess mercury in fish can cause serious human health problems. According to the Minnesota Department of Health’s Fish Consumption Advisory program, “Young children, developing fetuses and breast-fed babies are at most risk, because small amounts of mercury can damage a brain that is just starting to form or grow. Too much mercury may affect a child’s behavior and lead to learning problems later in life. The first symptoms of adult mercury poisoning include uncoordination and burning or tingling sensation in the fingers and toes. As mercury levels increase, your ability to walk, talk, see, and hear may all be affected in subtle ways.”

Figure 11



Because mercury accumulates as it moves up the biological food web, when the mercury content of top predator fish such as northern pike and walleye meets the standard, so will the rest of the food web and the water column. Using 1990 as the baseline, the 90th percentile mercury concentration in a standard-length walleye was 0.57 mg/kg in the NE region and 0.41 mg/kg in the SW region. To achieve the numeric target, 0.2 mg/kg, mercury levels must drop 65 percent in the NE region and 51 percent in the SW region.

Implications of Mercury Impairments

The mercury TMDL report establishes the need for a 93% reduction in state emissions from the 1990 base. Water “point” sources will be required to stay below one percent of the total load to the state and all but the smallest discharges will be required to develop mercury minimization plans. Air resources of mercury will have a 93% emission reduction goal from the 1990 levels. Businesses and industries in every county will be affected by these reduction needs.

Need For Additional Monitoring Of Other County Waters

As monitoring of surface waters continues to evolve, new impairments may be discovered. MPCA has monitored and assessed about 22% of state waters. Mille Lacs County needs to develop a broader monitoring plan to fully assess county waters. Currently, Mille Lacs Lake is the most monitored lake in the county, with scant information existing for the others. Some portions of the Rum River are well

monitored, but most tributaries lack monitoring data. Future monitoring plans will address these deficiencies. The Mille Lacs County Baseline Water Quality Monitoring Plan identified 3 lakes and 8 streams in need of monitoring. They are Ogechie, Shakopee and Onamia Lakes and Peterson Creek, Peterson Creek, Cedar Creek, Thaines/Malone Creek, Outlet of Mille Lacs Lake, Rum River, West Branch Rum River, Knife River and the Groundhouse River. (see 2012 Amendments to Assessments information on page 41)

The St. Croix basin, including the Snake River Watershed was designated by the EPA and MPCA as a priority basin for assessment of impairments. The St. Croix basin is a high quality national recreational resource. The Snake River Watershed Management Board (SRWMB) has a water quality monitoring plan that was implemented in 1996. That plan included the Knife and Groundhouse Rivers. Water Quality data is available for the Knife and Groundhouse River. The SRWMB and the MPCA is in the process of completing a \$165,000.00 TMDL study of the Groundhouse River and we are preparing to put together an approximately \$150,000 - \$200,000 work plan and grant request for a comprehensive TMDL study on the Knife River. The SRWMB is also putting together a 319/CWP grant continuation proposal for our existing \$600,000 319/CWP grant program. The current 319/CWP grant has provided funding for improvement projects in the Groundhouse and Knife River sub-watersheds and the continuation proposal needs to identify additional improvement projects.

Summary of Assessments:

Impacts to surface and ground water resources in the County can be summarized as follows:

Surface Waters

- Phosphorus impacts from individual sewage treatment systems, run off from animal agriculture practices, application of fertilizers.
- Erosion from development, forestry activities, row crop agricultural activities.
- Invasive species encroachment into wetlands.
- Incremental filling of wetlands.
- Mercury impairments.
- Nitrogen
- Ecoli

Ground Water

- Lack of more than one aquifer in the county.
- Soil characteristics that have high water table and coarseness which allows contaminants to reach ground water sources easily.

2012 Amendments to Assessment Information

Surface Water Assessments: Updated information can be found at <http://www.pca.state.mn.us>.

Rum River Watershed

Since 2007, the MPCA and its partners have begun implementing a 10-year rotation for watershed restoration plans to address Minnesota's waters at the major watershed level. The Rum River watershed is scheduled for intensive monitoring beginning 2013.

In 2008 and 2009 the Mille Lacs Soil & Water Conservation District in partnership with Isanti County conducted monitoring at several locations on the Rum River and its tributaries as part of a Surface Water Assessment Grant. Sampling sites included locations on the Rum River in both counties as well as the tributaries Bradbury Brook and Bogus Brook in Mille Lacs County and Stanchfield Creek in Isanti County. The Rum River Watershed 2008-2009 Surface Water Assessment Grant final report is available for review at www.millelacsSWCD.org.

The MN Department of Natural Resources, Division of Fish and Wildlife conducted an Index of Biotic Integrity survey (IBI) on the Rum River Basin streams in 2009. This report is also available for review at www.millelacsSWCD.org.

Mille Lacs Lake Sub-Watershed

Detailed water quality monitoring on 12 tributary streams to Mille Lacs Lake, and the outlet of the lake was conducted as part of a Surface Water Assessment Grant done in partnership with the Mille Lacs Lake Watershed Management Group. Samples were collected during 2007 and 2008, data is stored with the MPCA and a detailed report was compiled by S.E.H. in 2009.

In 2010 priority projects were identified by the Mille Lacs Lake Watershed Group partners, Aitkin and Mille Lacs SWCDs, in an effort to preserve water quality. Support for these projects was provided by a \$73,543 grant from the Clean Water Fund. In 2010, partners began implementing the projects. Five rain gardens were installed at two separate sites near Mille Lacs Lake. These gardens were designed to catch rain water in order to reduce direct runoff and trap sediment before it reaches the lake. Installation at one site was combined with an educational workshop that taught members of the public how to design and implement their own rain gardens. Also installed in 2010 were 150 feet of rock rip rap on the shoreline of an upstream lake. This fragile lakeshore had been experiencing erosion from overland runoff and wave action for years. Protection of the slope has eliminated the soil erosion and input to the lake. The remaining two projects will be installed in 2011-2012. These include a bioretention basin in the City of Garrison and a shoreline stabilization project that will utilize deep rooted native shrubs, sedges, flowers, and ferns.

In 2011 soil sampling was done around Mille Lacs Lake and tested to identify phosphorus levels with the differing soils around Mille Lacs Lake in order to assist with identification of phosphorous loading potential. When this study is complete results will be available through the Mille Lacs Lake Watershed Management Group at www.Millelacswatershed.org or Aitkin SWCD at www.aitkincountyswcd.org.

Snake River Watershed

The Snake River Watershed Restoration and Protection Study is a project that is addressing all the impairments (2008) within the Snake River Watershed to create a complete Restoration and Protection Plan for the entire Snake River Watershed. The Snake River Watershed is an 8 digit Hydrologic Unit (HUC) located in the St. Croix River Basin. The watershed is approximately 1006 square miles or

643,534 acres in extent and overlies four counties including Aitkin, Kanabec, Mille Lacs, and Pine. The headwaters of the Snake River are located in southeastern Aitkin County.

Land use and Land cover data for the Snake River Watershed has a large variation of cover ranging from largely agriculture and urban in the south to largely forest and wetland in the north.

This project is going to address all the remaining impaired waters in the Snake River Watershed and will result in a Four Lakes TMDL and a Streams TMDL which will address all of the Biota, pH, and Bacteria impairments. While restoration of impaired waters is important, it is also important to protect the unimpaired water bodies as well. When complete the watershed will have a plan that will address not just the impaired waters but the unimpaired waters as well.

The local sponsor of this project is the Snake River Watershed Management Board (SRWMB), which is a four county non-regulatory joint powers organization. The SRWMB also has representation from the Aitkin, Kanabec, Mille Lacs, and Pine County Soil and Water Conservation Districts, Local Lake Associations, and other local groups.

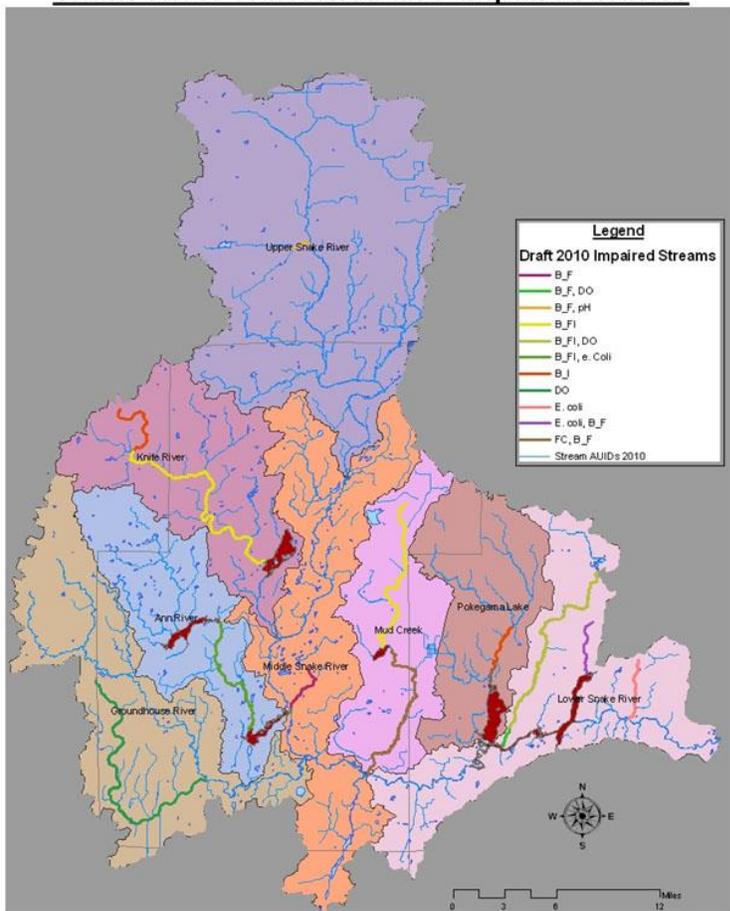
The Knife and Ann rivers are currently being assessed under this study. The Groundhouse river TMDL assessment is complete and an implementation plan is underway.

2008 303(d) listed streams within the Snake River Watershed

<u>Reach</u>	<u>Description</u>	<u>Affected Use</u>	<u>Pollutant/Stressor</u>
Ann River*	Headwaters to Snake River	Aquatic Life/Aquatic Recreation	Fish, Macro-invertebrates, and Bacteria
Groundhouse River*	Headwaters to Snake River	Aquatic Life/Aquatic Recreation	Fish, Macro-invertebrates, and Bacteria
Groundhouse River, South Fork*	Headwaters to Groundhouse River	Aquatic Life/Aquatic Recreation	Fish, Macro-invertebrates, and Bacteria
Knife River	Dry Run to Knife Lake	Aquatic Life	Fish and Macro-invertebrates IBI

* TMDL underway or complete

Snake River Watershed and Impaired Waters



Mississippi-St.Cloud Watershed

Intensive watershed monitoring (IWM) began in the spring of 2009 for the Mississippi River - St. Cloud watershed. An assessment report summarizing the biological monitoring and field data collected during the IWM process is scheduled to be completed in the spring of 2011. In 2010, major watershed restoration protection project work began to conduct a watershed-wide assessment and monitoring effort that will result in an implementation plan that will prescribe restoration and protection strategies for the surface water resources within the watershed.

Ongoing Total Maximum Daily Load (TMDL) projects within the watershed (e.g. Elk River Watershed Association TMDL and the Upper Mississippi River Bacteria TMDL) are continuing in accordance with their existing specific project work plans. The Elk River Watershed TMDL is scheduled for completion June 30, 2011. A watershed-wide assessment report of selected lakes will be completed in the spring of 2011. In addition, stream data within the watershed is currently being assessed with the assessment process scheduled to be completed in June 2011.

Wetlands

Development

Wetlands are filled within regulatory limits for driveway or street crossings, but may no longer receive primary storm water impacts for sedimentation collection.

Invasive Species

As of 2010 invasive animal species include zebra mussel, Chinese mystery-snail, banded mystery-snail, and spiny water flea. Curlyleaf pondweed and Eurasian watermilfoil are well established in the lake. Invasive Species Zebra mussel density increased to 14/ft², which was about 3 times higher than in 2009 and 175,000 times higher than in 2005. Veliger (larval zebra mussels) densities were up to 30 times higher in 2010 than in the previous two years. The counts of adult zebra mussels in 2011 are expected to increase substantially.

The abundance of spiny water flea also increased in 2010. Spiny water flea was found in Mille Lacs for the first time in 2009. September density increased from 0.3/liter in 2009 to 10.3/liter in 2010. Abundance was highest in September, and spiny water fleas were observed in every September sample in 2010. More detailed reports including The Large Lake Sampling Program Assessment Report for Mille Lacs Lake – 2010 by Thomas S. Jones, Aitkin Area Fisheries, are available at <http://www.dnr.state.mn.us/areas/fisheries/aitkin/index.html>.

County Roadway Influences

The Mille Lacs County Public Works Department faces wetland issues associated with two general categories, County Ditches, and Roadways. Wetland impacts associated with roadway construction can be linked to new construction and maintenance. Under the amended WCA regulations, road projects need to be evaluated for their impacts to natural wetlands only. All incidental wetlands, or wetlands created other than for the purpose of wetland creation, are no longer regulated. For all road project impact to wetlands, the current rules require wetland replacement at rates of at least 1:1. Wetlands created from the reconstruction of the road are not credited as replacement. These rule change have reduced the amount of mitigation required by the State for road projects and subsequently the overall displacement of wetlands is closer to a 1:1 ratio.

Ground Water Assessment:

Groundwater Contamination Susceptibility

Study information regarding the presence of pesticides in groundwater is available at <http://www.usgs.gov> and <http://mn.water.usgs.gov/publications/pubs/97-21.pdf> “Hydrogeologic and Water-Quality Data Used to Evaluate the Effects of Focused Recharge on Ground-Water Quality Near Princeton, Minnesota, 1991-95.”

Additional information provided by the MN Department of Agriculture on water table sensitivity can be found in Appendix K.

Impaired Waters Assessment: The Rum River watershed is scheduled for MPCA intensive monitoring beginning 2013. Updated information can be found at <http://www.pca.state.mn.us>.

PCA and MDH Limits for Mercury

The U.S. Environmental Protection Agency approved Minnesota's Statewide Mercury Total Maximum Daily Load study in March 2007. Since then, the MPCA has worked with stakeholders representing a broad range of interests to identify strategies and timelines that would be included in an implementation plan. The stakeholders' recommendations, completed in June 2008, are contained in the Strategy Framework for Implementing Minnesota's Statewide Mercury TMDL.

The impaired waters TMDL process consists of data collection and assessment, listing those waters not meeting water quality standards, developing a pollution reduction plan, implementing the plan, and then evaluating the implementation by collecting more data.

Mercury impairments make up two-thirds of the 2004 list of impaired waters for Minnesota. The mercury impairments on the list are mainly for fish tissue concentration exceedences, but also include water column mercury concentration exceedences.

Need For Additional Monitoring Of Other County Waters

The Rum River watershed is scheduled for MPCA intensive monitoring beginning 2013.

E. IMPLEMENTATION SCHEDULE AND ACTIVITIES

The Implementation Schedule identifies assumed costs to implement the action steps (see **section B. Priority Concerns** for details) that were identified through the water management planning process. The action steps will help to improve or protect surface and ground water resources in the County. The dollar amounts noted reflect the number of years identified in the timeframe column.

The organizations that have partnered to develop this Local Water Management Plan are already working to protect the water resources in Mille Lacs County. The objectives that have a cost of “absorbed” are those that are currently occurring to a limited extent. Examples of these activities include:

- Requiring developers to comply with the National Pollution Discharge Elimination System
- Enforce maintenance of shoreland vegetation by pursuing violators
- Provide educational opportunities to students and resident (5th Grade Education Day, attend Princeton Business Expo)
- Enforce provisions of the Wetland Conservation Act

However, these efforts are barely “scratching the surface” of what is likely needed to improve and protect surface and ground water resources in Mille Lacs County. Current activities could be improved with additional staffing and some are threatened by funding cuts.

Of the two portions of the Implementation Schedule, Priority 2 generates the greatest need for funding. Development of Total Maximum Daily Loads (TMDLs) for Impaired Waters requires detailed scientific studies. A TMDL study is currently ongoing for the Groundhouse River and provides a basis for the budget estimates for Action Items 1 and 2 under Objective A for the eight surface waters that would need to be evaluated. The TMDL study, guided by the Minnesota Pollution Control Agency, requires two parts: preparation of a Request for Proposal (RFP) and the actual study itself. Under Objective B, Action Items 1, 4 & 5 identify continued funding levels from EQIP and Cost Share funds that are administered by NRCS and SWCD. Currently those funds total \$159,000 annually; if those funding sources cease to exist, replacement funds would need to be identified in order to continue the activities identified under the Action Items at the current level of staffing.

Most current activities are funded through general property tax levies (County) or Federal/State funding sources. Newly identified action items will likely need funding from a variety of sources including public/private partnerships, grants from State and Federal agencies, or the establishment of a permanent new funding source like the establishment of a watershed district for the Rum River and its tributaries. A watershed district would have its own levy authority and could raise funds independent of the general fund levy. An additional tax on County residents, the benefit of establishing another taxing authority would need to be carefully weighed against the benefits of protected and improved water resources.

Sponsored by Governor Pawlenty, new legislation, titled “Clean Water Legacy” was adopted in 2006 with the following funding amounts:

Clean Water Legacy 2006 Funding

1. Supplemental Budget Bill (HF 4162): \$15 million General Fund

- **Pollution Control Agency: \$5.03 million**, with \$1.86 million for assessment and \$3.17 million for total maximum daily load development and implementation plans

- **Public Finance Authority: \$100,000** for administration of the small community wastewater treatment program
- **Agriculture: \$2.4 million**, with \$1.2 million for the Agricultural Best Management Practices loan program and \$400,000 for technical assistance
- **Board of Water and Soil Resources: \$5.84 million**, with \$1.5 million for nonpoint restoration cost-share & incentive payments; \$2 million for nonpoint restoration assistance; \$200,000 reporting on and evaluating soil and water conservation practices; \$730,000 for county individual sewage treatment system programs; and \$1.41 million for grants to support local nonpoint source protection activities
- **Department of Natural Resources: \$1.63 million**, with \$280,000 for statewide assessment of surface water quality and trends; \$500,000 to acquire high priority, sensitive riparian lands; and \$850,000 for forest stewardship activities and technical assistance to local units of government

2. Bonding Bill (HF 2959): \$9.31 million General Obligation Bonds

- **Public Finance Authority: \$8.31 million**, with \$5 million for TMDL grants; \$2.31 million for the phosphorus reduction grant program; and \$1 million for the small community wastewater treatment program
- **Board of Water and Soil Resources: \$1 million** for grants to SWCDs for streambank, stream channel, lakeshore and roadside protection and restoration projects

3. Legislative Commission on Minnesota Resources Reform Bill (SF 2814): \$640,000-Environment & Natural Resources Trust Fund

- **Department of Natural Resources: \$640,000** for acquisition and easements on high-priority, sensitive riparian lands that provide high value for watershed protection

This legislative action provides funding opportunities that the County can take advantage of for specific projects.

Clean Water Fund (Amendment) Funding

On November 4, 2008, Minnesota voters approved the Clean Water, Land & Legacy Amendment to the constitution to:

- protect drinking water sources;
- protect, enhance, and restore wetlands, prairies, forests, and fish, game, and wildlife habitat;
- preserve arts and cultural heritage;
- support parks and trails;
- and protect, enhance, and restore lakes, rivers, streams, and groundwater.

The Amendment increases the sales and use tax rate by three-eighths of one percent on taxable sales, starting July 1, 2009, continuing through 2034. Those dollars are dedicated to four funds: Outdoor Heritage Fund, Clean Water Fund, Parks and Trails Fund, and Arts and Cultural Heritage Fund. BWSR has received appropriations from the Outdoor Heritage Fund and the Clean Water Fund. Specifics about projects funded through BWSR are available at our Clean Water Stories page. Additionally, the Legislative Coordinating Commission (LCC) maintains the website Minnesota's Legacy, Watch the progress [🔗](#), to help Minnesotans monitor how these dollars are spent.

Implementation Schedule	Primary Responsibility	Annual Cost (cash and/or time @ \$35/hr)	Potential Funding Sources	Timeframe	Target Watershed or priority area	Status:
Priority 1 - The Cumulative Effects of Development on Surface and Groundwater (This concern remains appropriate in spite of changes in the rate of development and land use demographic as a response to the economic climate.)						
Objective A: Encourage development patterns that protect, enhance, maintain or restore water quality.						
Actions						
1. Develop a process that provides a coordinated approach to resource management as it relates to development. The process would address natural resource issues that overlap the scope of individual efforts by planning & zoning entities, Wetland Conservation Act (WCA) technical evaluation panel (TEP), Soil & Water Conservation District (SWCD), and others. This process will provide decision makers and land use planners with the information they need to make informed land use decisions by providing technical expertise. Specifically, best management practices (BMPs), focusing in the areas of erosion, sedimentation, and stormwater control.	County Land Services, SWCD, County Public Works Dept.	Absorbed	Change in internal procedure	2012-2016	All	Co-location of SWCD into County Courthouse Campus 2012 will aid in facilitating coordinated services.
a. Encourage a preplanning meeting for highway projects a few years in advance of projects to allow adequate time to add BMP recommendations into the design plans.	County Public Works Dept., SWCD, County Land Services, Townships	Absorbed	Change in internal procedures	2012-2016	All	
b. Create a list of BMPs for road authorities.	SWCD, County Land Services	\$1,750	NRBG,C WF, CWP	2012-2016	All	
c. Establish County jurisdictional ditch records modernization and pre-planning for maintenance.	County Public Works Dept., SWCD, County Land Services	\$35,000	NRBG, CWF, Dedicated funding	2012-2016	Mille Lacs Lake, Rum River	

Implementation Schedule	Primary Responsibility	Annual Cost (cash and/or time @ \$35/hr)	Potential Funding Sources	Timeframe	Target Watershed or priority area	Status:
d. Request assistance from DNR to prevent and curb aquatic invasive species, including technical and financial assistance.	DNR		DNR	2012-2016	Mille Lacs Lake, Rum River	
2. Provide outreach to residents on restoring and preserving natural shoreline areas.	SWCD, MLWVG, DNR, MLBO, FWS	\$ 7,000	DNR, PFWP, CWP, NRBG, Existing staff time	2012-2016	Mille Lacs Lake, Rum River	Ongoing
a. Provide two to three articles annually to local outlets on the effects of impervious surfaces.	SWCD, County Land Services	\$2,120	DNR, NRBG, CWF, CWP	2012-2016	All	
3. Assist landowners with shoreland and riparian best management practices and provide cost-share assistance through existing programs.	SWCD, County Land Services, NRCS, SRWMB, FWS	\$1,750	State Cost Share, EQIP, DNR, PFWP, Existing staff time	2012-2016	All	Ongoing
4. Educate and provide developers and communities with guidance and incentives to incorporate the use of innovative waste treatment alternatives such as cluster septic systems where appropriate.	County Land Services, SWCD	Absorbed	Change in internal procedure	Ongoing	All	
5. Encourage the use of buffers around wetlands to ensure that wetland function is somewhat protected from direct encroachment of development and human activity within this designated buffer area. This buffer area can provide space between which human activities such as recreation, lawns, parking, storage, agriculture, etc. and wetland functions like runoff filtration, wildlife habitat, etc can coexist.	County Land Services, SWCD, NRCS	Absorbed	Change in internal procedure	2012-2016	All	Ongoing

Implementation Schedule	Primary Responsibility	Annual Cost (cash and/or time @ \$35/hr)	Potential Funding Sources	Timeframe	Target Watershed or priority area	Status:
6. Develop a Geographic Information System (GIS) to assist in mapping natural resources and development activities for improved analysis of impacts. GIS is a means of electronically mapping information at the County level. Utilizing a parcel map in electronic format, a variety of information can be “layered” for the purpose of analysis. For example, a map of tax forfeited parcels can be layered with wetland information to identify parcels that might be suitable for wetland restoration purposes.	County Land Services	\$189,000 base map creation; maintenance and further development absorbed	Land office fund as established by statute	2012-2014	All	The County has entered into a contract with Pro-West beginning Nov. 2011 to create a GIS system. This is planned as a two year project.
a. Utilize GIS to identify opportunities to protect and restore wetlands in conjunction with the preplanning action identified under 1a.	SWCD, County Land Services	unknown	FWS, NRCS, CWF	2012-2016	All	
b. Identify development and land use changes around the County for comprehensive planning: Mille Lacs lake, small acreage farming, resorts, mining, farming, etc.	SWCD, County Land Services	unknown	CWF	2012-2016	All	
Objective B: Improve stormwater runoff quality to water resources throughout the county.						
1. Develop a coordinated approach with local planning and zoning authorities to minimize stormwater impacts by encouraging good site design, especially by utilizing low minimal impact design standards; encouraging stormwater best management practices in all development plans; and identifying sites where increased storm water discharge has a high potential for adversely impacting surface and groundwater resources.	County Land Services, SWCD, MPCA	Absorbed	Change in internal procedure	Ongoing	All	
a. Address variance requests near water resources by encouraging the installation of practices that either reduce runoff or decrease erosion.	County Land Services	Absorbed		2012-2016	Mille Lacs Lake	
2. Work with contractors to understand and implement the NPDES permitting program and its requirements for controlling stormwater runoff during construction.	County Land Services, SWCD, MPCA	Absorbed	Change in internal procedure	Ongoing	All	Workshops hosted 2007

Implementation Schedule	Primary Responsibility	Annual Cost (cash and/or time @ \$35/hr)	Potential Funding Sources	Timeframe	Target Watershed or priority area	Status:
3. Educate and provide developers with guidance and incentives to incorporate the use of innovative stormwater runoff treatment alternatives, such as rainwater gardens, and impervious surface alternatives, such as porous asphalt or geogrid type surfaces, where appropriate.	County Land Services, SWCD	Absorbed	Change in internal procedure	Ongoing	All	
4. Provide outreach to the public about the impacts of stormwater runoff on water resources through cooperative programs with communities, using public awareness tools such as storm drain stenciling, by providing workshops.	SWCD, NRCS, MLWGM, DNR	\$2,450	Existing staff time	2012-2016	Rum	
5. Work with communities regarding management of stormwater inputs, such as storage of highway salt & sand, or storage of snow in winter where melt can run directly to water resources like rivers or lakes.	SWCD, MPCA, County Land Services	\$700	Existing staff time	2012-2016	All	2010 City of Milaca changes to snow storage away from the Rum River; 2011 MNDOT changes to snow storage away from the Lake Onamia
6. Provide outreach to communities and homeowners about stormwater inputs they can control and improve by meeting with municipalities and presenting information at civic meetings.	SWCD, NRCS	\$700	Current program	2006-2016	All	
Objective C: Maintain or improve groundwater quality throughout the county.						
1. Stay in compliance with MN State Septic Rule 7080.	County Land Services, MPCA	Absorbed	Existing staff time	2012-2016	All	
2. Seek funding to assist bringing older septic systems into compliance.	County Land Services, MPCA	\$21,000	CWF, AgBMP loans	2012-2016	All	
3. Consider the implementation of a county-wide “point of sale” ISTS inspection program as part of the development code update.	County Land Services	-	Absorbed	Change in internal procedure	2011	All Done - adopted Dec. 2010

Implementation Schedule	Primary Responsibility	Annual Cost (cash and/or time @ \$35/hr)	Potential Funding Sources	Timeframe	Target Watershed or priority area	Status:
a. Continue to require county wide point of sale inspections.	County Land Services	Absorbed	Dedicated funding	2012-2016	All	
4. Continue to make available well water testing opportunities to individuals in Mille Lacs County and provide free well water testing clinics for Nitrates annually in cooperation with the Minnesota Department of Agriculture.	Community and Veterans Services, SWCD, MDA	\$350	NRBG, Existing staff time	2012-2016	All	
5. Educate Provide outreach to landowners through news articles, news letters, brochures, website, workshops, radio spots, etc. on the importance of properly sealing abandoned wells.	SWCD, NRCS, MDH	\$350	Existing staff time	Ongoing	All	
a. Explore and develop groundwater education and outreach in Mille Lacs County that includes community WHP education and outreach efforts.						
6. Assist landowners with the sealing of abandoned wells and provide cost-share assistance through existing programs.	SWCD, NRCS	\$15,000	State Cost Share, EQIP, CWF	2012-2016	All	
a. Prioritize sealing of wells located in a State approved WHP areas.						
7. Update the County's local ordinance regulating ISTS once the revised State rules are adopted.	County Land Services	Absorbed	Change in internal procedure	2011	All	Done 2011
a. Continue to maintain local SSTS ordinances.	County Land Services	Absorbed	Intermittent grant funds via PCA	2012-2016	All	
8. Participate in Drinking Water Supply Management Area (DWSMA) or Community wellhead protection implementation efforts.	County Land Services, SWCD	\$350	SCS, CWF, AgBMP, NRBG	2012-2016	Highly vulnerable DWSMAs	

Implementation Schedule	Primary Responsibility	Annual Cost (cash and/or time @ \$35/hr)	Potential Funding Sources	Timeframe	Target Watershed or priority area	Status:
9. Complete a Geologic Atlas for Mille Lacs County.	County Land Services	\$70,000	DNR	2013-2016	All	
a. Ask MPCA for assistance in identifying the contribution of groundwater to surface water volume.	MPCA		MPCA	2012-2016	All	
Total Annual Projected Cost		\$277,520				

Implementation Schedule	Primary Responsibility	Annual Cost (cash and/or time @ \$35/hr)	Potential Funding Sources	Timeframe	Target Watershed or priority area	Status:
Priority 2 – Development of Total Maximum Daily Loads (TMDLs) for Impaired Waters (The new MPCA watershed approach will address the entire Rum River Watershed as a whole and is scheduled to begin 2013. The watershed approach is a 10-year rotation for assessing waters of the state on the level of Minnesota’s major watersheds.)						
Objective A: Assess the status of water resources in Mille Lacs County to meet their designated uses.						
Actions						
1. Prioritize impaired waters in need of TMDL studies as time and funding become available.	MPCA, SWCD	Absorbed	Change in internal procedures	2008-Ongoing	All	
2. Create monitoring plans of waters for a more comprehensive assessment of waters in Mille Lacs County.	MPCA, SWCD, SRWMB	\$5,000	MPCA, Clean Water Fund	2012-2016	All	
3. Participate in the development and implementation of TMDL projects. Establish funding sources for implementation plans.	MPCA, SWCD, NRCS	\$40,000	MPCA, Clean Water Legacy Fund	2012-2016	All	

Implementation Schedule	Primary Responsibility	Annual Cost (cash and/or time @ \$35/hr)	Absorbed	Potential Funding Sources	Timeframe	Target Watershed or priority area	Status:
4. Coordinate data sharing between agencies and entities collecting information for TMDL monitoring.	MPCA, DNR, MDH, SWCD	-	Absorbed	Change in internal procedures	Ongoing	All	MPCA/DNR have taken steps to coordinate biological monitoring schedules; new EQUIS (Environmental Quality Information System) stores data; volunteer citizen stream monitors
5. Monitor water quality on the Groundhouse and Knife Rivers (Snake River Watershed) within Mille Lacs County.	SRWMB, SWCD			Currently established project	2011-2013	Snake Rvr	Groundhouse TMDL completed. Knife & Ann River TMDLs in progress.
Objective B: Work with land managers, land owners and operators in Mille Lacs County, whether land is arable, forested, or urban to encourage best management practices.							
1. Continue farm planning followed by implementation of recommended best management practices.	NRCS, SWCD	\$50,000		EQIP, State Cost Share, AgBMP	2012-2016	All	
2. Assist with the registration and inspection of all feedlot sites in Mille Lacs County.	County Land Services, NRCS, SWCD, MPCA		Absorbed	Current program	N/A	All	Failed to implement: Mille Lacs County is no longer delegated

Implementation Schedule	Primary Responsibility	Annual Cost (cash and/or time @ \$35/hr)	Potential Funding Sources	Timeframe	Target Watershed or priority area	Status:
3. Educate feedlot owners about the importance of protecting surface waters from animal waste runoff.	County Land Services, NRCS, SWCD, MPCA, SRWMB	Absorbed	Current program	2012-2016	All	
4. Provide information and technical assistant to operators regarding the appropriate management of animal waste.	NRCS, TSA 3, SWCD	\$50,000	EQIP, State Cost Share, AgBMP	2012-2016	All	
5. Provide technical and financial assistance to feedlot owners wishing/desiring to comply with local and state requirements.	NRCS, TSA 3, SWCD	\$50,000	EQIP, State Cost Share, AgBMP	2012-2016	All	
6. Educate forest owners and loggers about the impacts of harvest damage and provide information on best management practices (BMP), and industry BMP certifications.	SWCD, NRCS, DNR,		Existing staff time	2012-2016	All	Adequately addressed through MLEP
7. Educate landowners about proper forest management and sustainable forestry opportunities and available programs.	SWCD, NRCS, DNR	\$1,050	Existing staff time	2012-2016	All	
8. Support the efforts of the Snake River Watershed Management Board in encouraging best management practices to improve water quality and wise stewardship during forestry, grazing & agricultural crop activities.	SWCD, NRCS	-	Absorbed	Current program	Ongoing	Snake
9. Work with cities local government units or state agencies to improve riverside recreation areas that will meet both water quality and community recreation needs.	SWCD, TSA 3	\$3,500	LCMR, DNR, Community Donations, AgBMP	2012-2016	All	
Total Annual Projected Cost		\$199,550				

F. APPENDICES

Appendix A - List of Acronyms Used In This Plan

BMP	Best Management Practices
CRP	Conservation Reserve Program
CSP	Conservation Security Program
DNR	Department of Natural Resources
DWSMA	Drinking Water Safety Management Area
EQIP	Environmental Quality Incentives Program
FWS	US Fish and Wildlife Service
GIS	Geographic Information System
GKWMLLSD	Garrison, Kathio, West Mille Lacs Lake Sanitary District
GRP	Grassland Reserve Program
ISTS	Individual Septic Treatment Systems
SSTS	Subsurface Sewage Treatment Systems
LMLA	Lake Mille Lacs Association
CLWMP	County Local Water Management Plan
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MLBO	Mille Lacs Band of Ojibwe
MLCCVS	Mille Lacs County Community and Veterans Services
MLCPW	Public Works Department
MLCZES	Mille Lacs County Land Services
MLEP	MN Loggers Education Program
MLWMG	Mille Lacs Watershed Management Group
MLWWTP	Mille Lacs Waste Water Treatment Plant
MPCA	Minnesota Pollution Control Agency
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
P&Z	Planning & Zoning Entities (city, township, county, tribal)
PFWP	Partners for Fish and Wildlife Program (US Fish & Wildlife Service)
RC&D	Resource Conservation & Development
SCS	State Cost Share
SRWMB	Snake River Watershed Management Board
SWCD	Soil & Water Conservation District
TEP	Technical Evaluation Panel (WCA)
TMDL	Total Maximum Daily Load
TSA 3	Technical Service Area 3
WCA	Wetland Conservation Act
WHIP	Wildlife Habitat Incentive Program

Appendix B - Glossary of Terms

aquifers - a body of permeable rock that is capable of storing significant quantities of water, that is underlain by impermeable material, and through which groundwater moves.

best management practices - methods, measures, or practices designed to prevent or reduce water pollution. Usually, BMPs are applied as a system of practices rather than a single practice.

cost-share - programs that partially reimburse landowners for implementing best management practices

erosion - the wearing away of the land surface by rain, running water, wind, ice, gravity, or other natural or man-made agents

filter strip – an area of land adjacent to a water body that acts to trap and filter out suspended sediment and chemicals attached to sediment before it reaches the surface water.

forestland - includes all timberland, reserved forestland and other forest land.

timberland - forest land that is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. (Note: Areas qualifying as timberland are capable of producing in excess of 20 cubic feet per acre per year of industrial wood in natural stands.)

reserved forestland - land that is reserved from harvest activity by policy or law (such as the BWCA).

other forest land - forest land other than timberland and reserved forest land. It includes available forest land, which is incapable of annually producing 20 cubic feet per acre of industrial wood under natural conditions because of adverse site conditions such as sterile soils, dry climate, poor drainage, high elevation, steepness, or rockiness.

floodplain - a part of a river valley that is made of unconsolidated, river-borne sediment and is periodically flooded.

geographic information system - an information system that deals with spatial information. Often called "mapping software," it links attributes and characteristics of an area to its geographic location. It is used in a variety of applications, including exploration, demographics, dispatching, tracking and map making. Using satellites and aerial photography, the U.S. Geological Survey and other organizations have developed digital maps of most of the world. Unlike paper maps, digital maps can be combined with layers of information.

groundwater - the water that moves down into the soil and underlying geological strata from the upper soil layers following rainfall. Groundwater is stored in aquifers and may move underground by streams or seepage.

impervious surfaces - surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops.

infiltration - the movement of surface water into soil or rock through cracks and pores

intermittent - ceases to flow in very dry periods.

invasive - tending to spread.

mitigation - compensation for damage done.

native - those species that occur naturally in an area and have not been introduced, accidentally or otherwise, by humans.

non-point - pollutants discharged over a large area or from a number of small inputs rather than from one distinct identifiable source (point source).

noxious - undesirable, troublesome, difficult to control or eradicate.

nutrient - any element or compound that an organism must take in from its environment either because it cannot produce it at all or fast enough to meet its needs. In aquatic systems, nutrients can also be pollutants especially when they are excessive and contain phosphorus or nitrogen that permits high organic growth.

point source - pollution originating from a single identifiable point such as pipes, ditches, wells, channels, sewers and containers.

stormwater retention ponds - ponds that hold stormwater allowing sediment and pollutants to settle.

redoximorphic features - colors in the soil that indicate water is seasonally present at the level the features are found

riparian - anything connected with or immediately adjacent to the banks of a stream or other body of water.

riparian forest buffer - the area from the streambank in the floodplain to, and including, an area of trees, shrubs, and herbaceous vegetation located upslope from the body of water.

sediment - fragmented material that originated from the weathering of rocks and decomposition of organic material that is transported in suspension by water, air, or ice, to be subsequently deposited at a new location.

sustainability - meeting the needs of the present without compromising the ability of future generations to meet their own needs.

sustainable forestry - sustainable forestry is a proactive form of management that provides for the multiple uses of the forests by balancing a diversity of both present and future needs. It is a process of informed decision-making that takes into account resource needs, landowner objectives, site capabilities, existing regulations, economics, and the best information available at any given time.

tributary - a stream feeding, joining, or flowing into a larger stream.

watershed - a region or land area drained by a single stream, river or drainage network.

wetlands - an area inundated by surface or groundwater at a frequency sufficient to support, and under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soils.

Appendix C – Mille Lacs County Population Projections

MCD	Adjusted 2000 Census	2002 total population	2005	2010	2015	2020	2025	2030
Mille Lacs County	21815	23531	24260	26180	28270	30320	32310	34160
Bock city	106	103	101	98	96	93	91	88
Bogus Brook township	1038	1154	1198	1308	1427	1543	1654	1758
Borgholm township	1140	1288	1328	1433	1548	1660	1770	1871
Bradbury township	203	218	230	260	291	322	353	381
Dailey township	246	268	280	310	342	373	404	433
East Side township	731	748	781	862	950	1036	1120	1199
Foreston city	389	401	406	425	445	465	485	502
Greenbush township	1135	1211	1235	1308	1388	1466	1541	1611
Hayland township	490	530	571	665	764	863	959	1050
Isle city	707	740	767	836	909	981	1049	1113
Isle Harbor township	590	611	643	721	804	886	966	1041
Kathio township	1309	1349	1418	1585	1763	1939	2111	2272
Lewis township	51	53	54	58	63	67	71	75
Milaca city	2581	2606	2662	2823	3001	3175	3344	3500
Milaca township	1188	1302	1354	1483	1622	1759	1893	2018
Milo township	1076	1187	1213	1286	1368	1447	1525	1596
Mudgett township	85	85	84	83	83	82	82	81
Onamia city	847	859	886	957	1035	1111	1185	1253
Onamia township	583	622	637	678	723	768	811	851
Page township	600	657	693	779	872	963	1052	1135
Pease city	163	165	162	159	157	154	152	149
Princeton city (part)	3931	4122	4159	4310	4483	4650	4810	4955
Princeton township	1942	2016	2079	2247	2428	2607	2781	2942
South Harbor township	885	914	974	1114	1263	1410	1554	1689
Wahkon city	314	322	344	393	446	499	550	598

Information from Minnesota Dept. of Administration website:

<http://www.demography.state.mn.us/projections.html>

Appendix D - Circular 39, USFWS Wetland Types

TYPE 1: Seasonally flooded basins or flats. Soil is covered with water or is waterlogged during variable seasonal periods but usually is well-drained during much of the growing season. Vegetation varies greatly according to season and duration of flooding: from bottom-land hardwoods to herbaceous growths.

TYPE 2: Inland fresh meadows. Soil is usually without standing water during most of the growing season but is waterlogged within at least a few inches of the surface. Vegetation includes grasses, sedges, rushes and various broadleaved plants. Meadows may fill shallow basins, sloughs, or farmland sags that may border shallow marshes on the landward side.

TYPE 3: Inland shallow fresh marshes. Soil is usually waterlogged early during the growing season and is often covered with as much as 6 inches or more of water. Vegetation includes grasses, bulrushes, spikerushes, cattails, arrowheads, pickerelweed and smartweeds. These marshes may nearly fill shallow lake basins or sloughs, or may border deep marshes on landward side, also common as seep areas on irrigated lands.

TYPE 4: Inland deep fresh marshes. Soil is usually covered with 6 inches to 3 feet or more of water during the growing season. Vegetation includes cattails, reeds, bulrushes, spikerushes, and wild rice. In open areas pondweeds, naiads, coontail, water milfoils, waterweeds, duckweeds, water lilies or spatterdocks may occur. These deep marshes may completely fill shallow lake basins, potholes, limestone sinks and sloughs, or they may border open water in such depressions.

TYPE 5: Inland open fresh water. Shallow ponds and reservoirs are included in this type. Water is usually less than 10 feet deep and fringed by a border of emergent vegetation similar to open areas of Type 4.

TYPE 6: Shrub swamps. Soil is usually waterlogged during growing season and is often covered with as much as 6 inches of water. Vegetation of shrub swamps includes alders, willows, buttonbush, dogwoods, and swamp-privet that occur mostly along sluggish streams and occasionally on flood plains.

TYPE 7: Wooded swamps. Soil is waterlogged at least to within a few inches of the surface during growing season and is often covered with as much as 1 foot of water and occur mostly along sluggish streams, flood plains, flat uplands and in shallow basins. Trees associated with wooded swamps include tamarack, arborvitae, black spruce, balsam, red maple and black ash. Northern evergreen swamps usually have a thick ground cover of mosses. Deciduous swamps frequently support beds of duckweeds, and smartweeds.

TYPE 8: Bogs: Soil associated with bogs usually waterlogged and supports a spongy covering of mosses and occur mostly in shallow basins, on flat uplands and along sluggish streams. Vegetation is woody or herbaceous or both. Typical plants are heath shrubs, sphagnum moss, and sedges. In the north, leather-leaf, labrador-tea, cranberries, carex and cottongrass are often present. Scattered, often stunted, black spruce and tamarack may occur.

Appendix E – Forest Inventory for Mille Lacs County

Forest Inventory Mapmaker version 2.1

Geographic area of interest is Minnesota 2004 (Annual 100% 2000-2004 current volume 20% growth removals and mortality): Mille Lacs.
 The attribute of interest is Area of forestland (acres).

Pages are None. Filters: .

Rows are Ownership class.

Columns are Forest Type MnDNR.

Ownership class	Forest Type MnDNR									
	Total	Jack pine	Black spruce	Tamarack	Oak	Northern hardwoods	Lowland hardwoods	Aspen	Birch	Non stocked
State	45,202	0	0	3,240	9,386	13,768	13,011	5,798	0	0
Private	97,053	2,930	3,255	0	2,441	49,232	15,778	16,759	5,843	814
Total	142,255	2,930	3,255	3,240	11,827	63,001	28,789	22,557	5,843	814

3/28/2006 13:07

Web citation: Miles, Patrick D. Mar-28-2006. Forest inventory mapmaker web-application version 2.1. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. [Available only on internet: www.ncrs2.fs.fed.us/4801/fiadb/index.htm]

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Pages are None. Filters: .

Rows are Ownership class.

Columns are Forest Type MnDNR.

Ownership class	Forest Type MnDNR									
	Total	Jack pine	Black spruce	Tamarack	Oak	Northern hardwoods	Lowland hardwoods	Aspen	Birch	Non stocked
State	41,963	0	0	3,240	9,386	10,529	13,011	5,798	0	0
Private	97,053	2,930	3,255	0	2,441	49,232	15,778	16,759	5,843	814
Total	139,016	2,930	3,255	3,240	11,827	59,761	28,789	22,557	5,843	814

3/28/2006 13:09

Web citation: Miles, Patrick D. Mar-28-2006. Forest inventory mapmaker web-application version 2.1. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. [Available only on internet: www.ncrs2.fs.fed.us/4801/fiadb/index.htm]

Appendix F – Impaired Waters List for Mille Lacs County

Rum River	Headwaters (Mille Lacs Lk) to Ogechie Lk	Aquatic consumption	Mercury1FCA
Rum River	Ogechie Lk to Shakopee Lk	Aquatic consumption	Mercury1FCA
Rum River	Shakopee Lk to Lk Onamia	Aquatic consumption	Mercury1FCA
Rum River	Lk Onamia to Tibbetts Bk	Aquatic consumption	Mercury1FCA
Rum River	Tibbetts Bk to Bogus Bk	Aquatic consumption	Mercury1FCA
Rum River	Bogus Bk to W Br Rum R	Aquatic consumption	Mercury1FCA
Rum River	W Br Rum R to Stanchfield Cr	Aquatic consumption	Mercury1FCA
Rum River	Stanchfield Cr to Seelye Bk		
Rum River	Seelye Bk to Cedar Cr	Aquatic consumption	Mercury1FCA
Rum River	Cedar Cr to Trott Bk	Aquatic consumption	Mercury1FCA
Rum River	Trott Cr to Madison/Rice St in Anoka	Aquatic consumption	Mercury1FCA
Rum River	Madison/Rice St in Anoka to Mississippi R	Aquatic consumption	Mercury1FCA
Mille Lacs	Lake or Reservoir	Aquatic consumption	Mercury1FCA
Shakopee	Lake or Reservoir	Aquatic consumption	Mercury1FCA

Appendix G - References

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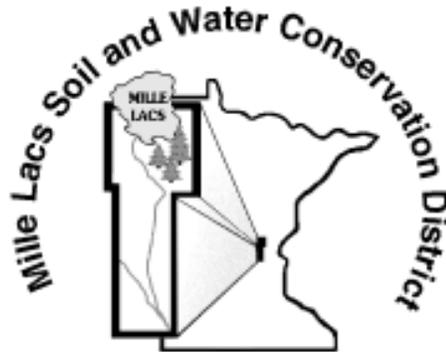
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Rum River Management Plan, MN DNR, 1978

Wetland Guidance for the Anoka Sand Plain, MN DNR, Sept. 2000

Appendix H - Priority Concerns Scoping Document

Priority Concerns Scoping Document



**900 5th St. SW • Milaca, Minnesota 56353
Telephone: (320) 983-2160 • Fax (320)983-2107**

For the Mille Lacs County Local Water Resource Management Plan

Priority Concerns Scoping Document

Introduction:

Mille Lacs County is located in east central Minnesota 70 miles north of St. Paul, 115 miles southwest of Duluth and 29 miles east of St. Cloud. Sherburne County to the south, Aitkin to the north, Benton and Morrison to the west, and Kanabec and Isanti on the east borders it. Mille Lacs County has a total area of 574 sq miles (367,360 acres). *Figure 1* shows the location of Milaca, the county seat and the geographic location of the County in Minnesota.

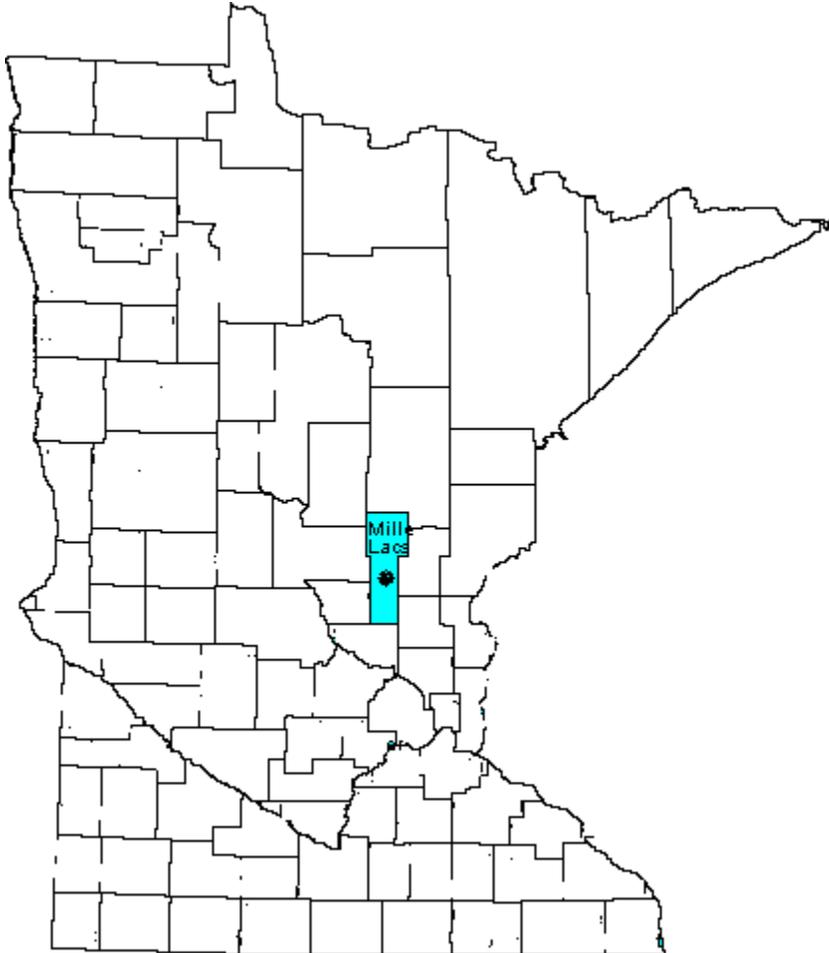


Figure 1

The Rum River Watershed is the major drainage in Mille Lacs County. This watershed starts at the north end within the Mille Lacs moraine. In the northern end, the Rum River runs mainly through forested areas. The Rum and West Branch of the Rum River run through heavier agricultural areas in the southern half of the county.

The Snake River Watershed area of Mille Lacs County has a general southeast flow. Eighty percent of the Snake River Watershed is forest and has very little agricultural land near the Knife, Little Ann, Groundhouse, and West Branch of the Groundhouse Rivers.

Information provided by the Environmental Quality Board (EQB) indicates that throughout most of Mille Lacs County there are areas of medium to high ground water contamination susceptibility (*See Figure 2*). The four designated JOB Zones in the county appear to be located in sensitive areas. Ground water contamination susceptibility analysis focuses on four parameters: aquifer material, recharge potential, soil material and vadose zone material.¹

Also provided is a map that illustrates lakes and streams within Mile Lacs County which were designated as impaired in 2004.² (*See Figure 3*). The four designated JOB Zones appear to be located in impaired watersheds. Total maximum daily load or TMDL studies identify both point and non-point sources of each pollutant that contributes to the impairment of waters restricting certain types of development.

¹http://www.dnr.state.mn.us/waters/groundwater_section/mapping/sensitivity.html#references

²<http://www.pca.state.mn.us/water/tmdl/index.html>

Figure 2

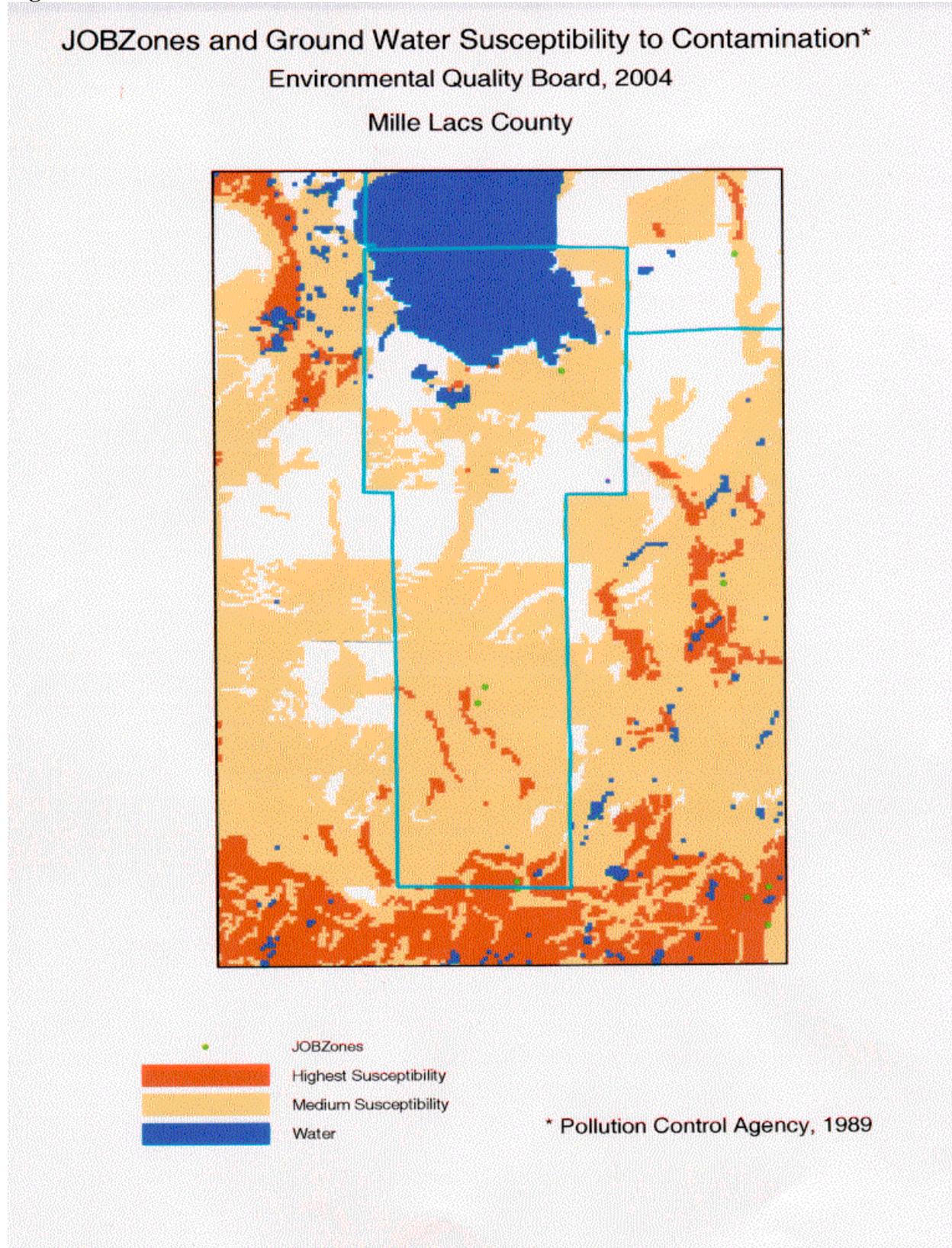
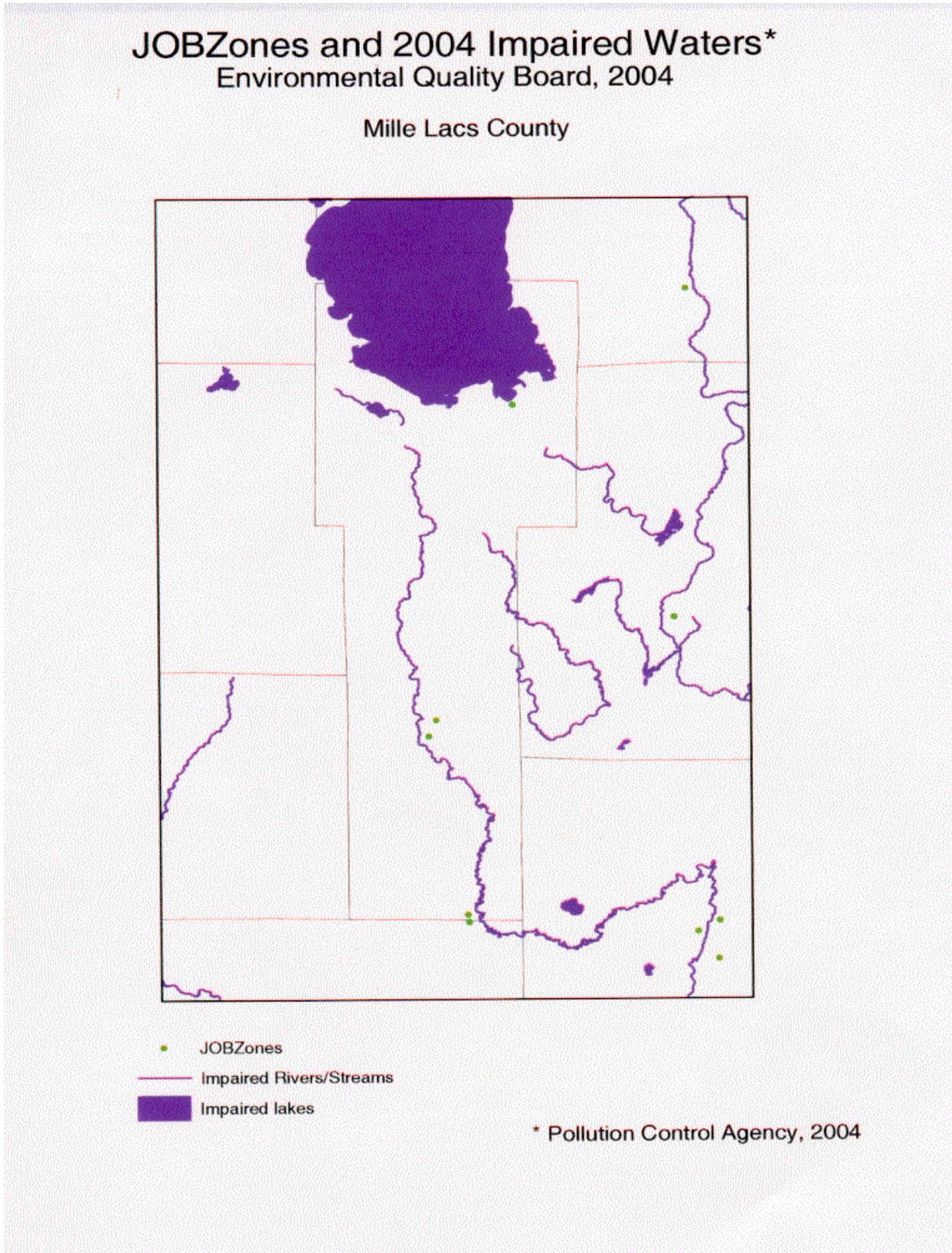


Figure 3



Mille Lacs County Demographics:

- Population Trends** – Population trends in Mille Lacs County show that in 2003 the population had grown to a number comparable to the projected 2005 population level. *Figure 4* data show population data from 2000 and 2003. *Figure 3* data shows projected population growth to the year 2030. Data for both *Figures 4 & 5* were taken from the Minnesota State Census Bureau's website.

Figure 4

	2000 Total Population	2003 Total Population
Bock city	106	108
Bogus Brook township	1,038	1,212
Borgholm township	1,140	1,371
Bradbury township	203	231
Dailey township	246	267
East Side township	731	745
Foreston city	389	442
Greenbush township	1,135	1,252
Hayland township	490	543
Isle city	707	769
Isle Harbor township	590	602
Kathio township	1,309	1,356
Lewis township	51	53
Milaca city	2,580	2,652
Milaca township	1,189	1,392
Milo township	1,076	1,280
Mudgett township	85	83
Onamia city	847	866
Onamia township	583	652
Page township	600	695
Pease city	163	168
Princeton city	3,926	4,199
Princeton township	1,947	2,075
South Harbor township	885	917
Wahkon city	314	324
Mille Lacs County Total	22,330	24,254

Figure 5

MCD extrapolated population, based on State Demographic Center county projections. Based on 2 middle values of 4 extrapolation methods

Incorporates CQR corrections for 2000

COUNTY	MCD	Adjusted 2000 Census	2002 total population	Extrapolated 2005	2010	2015	2020	2025	2030
Mille Lacs	Total		23531	24260	26180	28270	30320	32310	34160
Mille Lacs	Bock city	106	103	101	98	96	93	91	88
Mille Lacs	Bogus Brook township	1038	1154	1198	1308	1427	1543	1654	1758
Mille Lacs	Borgholm township	1140	1288	1328	1433	1548	1660	1770	1871
Mille Lacs	Bradbury township	203	218	230	260	291	322	353	381
Mille Lacs	Dailey township	246	268	280	310	342	373	404	433
Mille Lacs	East Side township	731	748	781	862	950	1036	1120	1199
Mille Lacs	Foreston city	389	401	406	425	445	465	485	502
Mille Lacs	Greenbush township	1135	1211	1235	1308	1388	1466	1541	1611
Mille Lacs	Hayland township	490	530	571	665	764	863	959	1050
Mille Lacs	Isle city	707	740	767	836	909	981	1049	1113
Mille Lacs	Isle Harbor township	590	611	643	721	804	886	966	1041
Mille Lacs	Kathio township	1309	1349	1418	1585	1763	1939	2111	2272
Mille Lacs	Lewis township	51	53	54	58	63	67	71	75
Mille Lacs	Milaca city	2581	2606	2662	2823	3001	3175	3344	3500
Mille Lacs	Milaca township	1188	1302	1354	1483	1622	1759	1893	2018
Mille Lacs	Milo township	1076	1187	1213	1286	1368	1447	1525	1596
Mille Lacs	Mudgett township	85	85	84	83	83	82	82	81
Mille Lacs	Onamia city	847	859	886	957	1035	1111	1185	1253
Mille Lacs	Onamia township	583	622	637	678	723	768	811	851
Mille Lacs	Page township	600	657	693	779	872	963	1052	1135
Mille Lacs	Pease city	163	165	162	159	157	154	152	149
Mille Lacs	Princeton city (part)	3931	4122	4159	4310	4483	4650	4810	4955
Mille Lacs	Princeton township	1942	2016	2079	2247	2428	2607	2781	2942
Mille Lacs	South Harbor township	885	914	974	1114	1263	1410	1554	1689
Mille Lacs	Wahkon city	314	322	344	393	446	499	550	598

- Land Use** - Historically, production agriculture was one of the major land uses in Mille Lacs County, however, currently there is a growing trend toward residential and commercial land use. Census information shows that the total land in farms in Mille Lacs County in 1992 was approximately 142,432 acres, and in 1997 had decreased to 134,622 acres. Rapid growth and development was noted as a concern to water quality in many of the comments received during the input process for this document.

Local Water Resource Management Plan Background:

In the fall of 1989, the Mille Lacs County Board of Commissioners voted unanimously to begin the process of creating a comprehensive water management plan for the county. This event although minimal in effort, was monumental as the first indication in history of purposeful comprehensive planning, preparation and designing for protecting for all types of water to all residents in Mille Lacs County. From this time forward, the lakes, streams, rivers, public an private well water, all groundwater, wetlands, precipitation and even run-off will have significance and meaning to the quality of life in the county.

By February of 1990, the Mille Lacs Comprehensive Water Management Task Force was established with 39 members representing: townships, municipalities, industry, private sector, forming and single family home ownership. Federal, state and county employees were ad hoc members to the committee.

An aggressive 24 month timeline from March, 1990 through March, 1992 was established to develop the county wide plan. The Mille Lacs Soil & Water Conservation District has been charged with development and implementation of the Local Water Management Plan with the assistance of other county department since its inception.

The first update of the Comprehensive Water Management Plan was completed in 1995 and expires December 31, 2005.

January 21, 2003 the Mille Lacs Board of Commissioners signed a resolution to again update the Local Water Management Plan.

The Mille Lacs County Local Water Management planning process of addressing water management priorities has included the following actions:

- January 2004: The Advisory Committee initiated the process to develop by-laws for guidelines in updating the Water Management Plan, using Aitkin County by-laws as an example.
- April 8, 2004: Letter was sent to agencies required by statute to receive notification of the update process. Response was requested to be returned by June 15, 2004.
- March 2004: Written notice was sent out on March 30, 2004 to all interested parties informing them of the intent to update the Water Management Plan and offer membership on the Advisory Committee. The request and agency input survey was sent to County Boards of adjacent counties, all townships, municipalities, DNR, MPCA, MDH, MDA, BWSR, and EQB. See Appendix 1 for a copy of the mailing list.
- April 2004: Local government units were sent an invitation to send a representative to the Advisory Committee meetings, particularly during the update process. Committee reviewed by-law draft and suggested changes.
- May 2004: The Water Plan Coordinator communicated with the State agency contact persons to obtain the State Agency comments as soon as possible for consideration in the planning process.
- June 2004: On June 24, 2004, the invitation to the local government units and interested parties included another request for input, representative attendance at Advisory Committee meetings, and information about further meetings.
- July 2004: At the July 14, 2004 Advisory Committee meeting, minor changes were suggested to the by-laws. One township had submitted concerns. No State Agency comments had yet been received. The Coordinator contacted the agencies again.
- Summer 2004: Agency comments arrived periodically throughout the summer and early fall. A few townships also responded with comments on issues.
- On September 28, another invitation was sent to all municipalities and townships to designate a representative to attend the Advisory Committee meetings, particularly during the update process. With the invitation, the Coordinator also assembled and distributed the examples of comments received to date from townships and State Agencies in an effort to spur ideas and discussion about input from the organizations.

- October 2004: The Coordinator presented a follow-up request for input, concerns, and issues to township officials at the Mille Lacs Association of Townships meeting on October 28, 2004, using the examples of comments already submitted by State Agencies and other townships.
- November 2004: Staff followed up the Township Association meeting with telephone contacts to attendees as another follow-up for input and encouragement to provide any pertinent information and comments through discussion. Some concerns/comments were obtained and more discussion was proposed by township officials.
- February/March/April 2005: Articles were run three times in local newspapers (Mille Lacs County Times, Mille Lacs Messenger, and Princeton Union Eagle, Shopper) inviting public input discussion at input meetings. Legal notice was given of public input meetings in the Mille Lacs County Times on Feb. 17, 2005.

A public input survey was made available to citizens through the Mille Lacs SWCD website and advertised in the local papers to be returned to the SWCD. A copy of the survey can be reviewed below with response totals.

Public Input Meetings were held; February 17th, 7PM in Longsiding at the Princeton Township Hall, March 7th, 7PM at the SWCD office in Milaca, and Saturday, April 2nd, 10 AM, at the American Legion in Onamia. Locations in the three main geographic areas of Mille Lacs County were chosen to accommodate citizen involvement. The final public input meeting held in Onamia was scheduled in April to hopefully find many of the seasonal residents back in the county.

Discussion by participants of the public input meetings included concerns about stormwater collection ponds that impact the water table, and the potential use of rain gardens in stormwater management. It was noted that community stormwater pond layouts could be incorporated into public pathway designs that would encourage healthful walking habits. Septic systems impacts, development in wetland areas, and well water quality were also concerns discussed at the meeting. Participants of the final public input meeting in Onamia raised concerns about the stormwater runoff impacts of increasing development in the city of Onamia. Public input surveys were presented at the meetings.

Through the public input survey and public meeting facilitation process, the respondents were asked: (11 public input surveys received)

MILLE LACS COUNTY WATER PLAN PUBLIC INPUT SURVEY

A. How would you describe yourself: (3) Ag Producers, (3)Rural Residents, (5)Unspecified
Township of Residence: (7) Greenbush, (2) Princeton, (1) Bradbury, (1) Borgholm

B. Surface Water:

1. Based on your observations and knowledge has overall surface water quality **(circle one)**
(2) improved, (4) declined, or (3) remained unchanged in the County. (2) unspecified
2. Based on your observations and knowledge what are the three most critical items that should be addressed in regards to the Rum River and Mille Lacs Lake in the County?
(check the 3 most critical issues)

(9) failing septics	(3) storm water quality
(3) loss of fish and wildlife habitat	(3) other, please describe: feedlots
(3) shoreline development	(2) water quality monitoring
(3) control of exotics species	(1) destruction of the shoreline

(3) run-off and erosion

3. Based on your observations, knowledge and views what are the 2 most critical items that should be addressed in regards to wetland areas, small lakes, rivers, and streams in the County? (**check 3 most critical issues**)

- | | |
|------------------------------|----------------------------------|
| (8) development issues | (1) water quality monitoring |
| (8) failing septics | (0) agricultural impacts |
| (4) runoff / erosion | (0) other; please describe _____ |
| (2) loss of wildlife habitat | |

4. How should we address these issues? Also list or note any other issues, concerns or suggestions you may have regarding surface water quality.

- Separation of septics & mottled soil
- Building site inspections prior to permit to build
- Better zoning ordinance
- Better zoning ordinance/development standards, particularly as it relates to drainage and stormwater management

C. Land Use:

1. Based on your observations and knowledge, what are the most critical issues the County should consider in relation to water quality and rural land use management? (**check 3 most critical items**)

- | | |
|---|----------------------------------|
| (8) failing septics | (2) recreational pressure |
| (5) wetland protection | (2) ditches / drainage |
| (5) better zoning regulations | (1) rural subdivisions |
| (4) manure / nutrient management | (0) intensive ag land use |
| (2) loss of woodland / habitat to development | (0) other; please describe _____ |

2. How should we address these issues? Also list or note any other issues, concerns or suggestions you may have regarding surface water quality.

- Develops standards, i.e. maximum lot coverage/impervious surface
- Two comments to change zoning ordinance
- Make it harder for land owners to destroy wetlands
- Cost share assistance

3. How should we address these issues? Also list or note any other issues, concerns or suggestions you may have regarding surface water quality.

- Develops standards, i.e. maximum lot coverage/impervious surface
- Two comments to change zoning ordinance
- Make it harder for land owners to destroy wetlands
- Cost share assistance

D. Ground Water:

1. Based on your observations and knowledge has ground water quality (**circle one**) (0) improved, (5) declined, or (3) remained unchanged in the County.

2. Based on your observations and knowledge what are the three most critical items that should be addressed in regards to ground water quality in Mille Lacs County? (**check the 3 most critical issues**)

- | | |
|--------------------------|----------------------------------|
| (9) failing septics | (3) wetland protection |
| (8) seal abandoned wells | (1) manure / nutrient management |

- (6) rural development
- (3) well water quality monitoring
- (0) intensive ag land use
- (0) other; please describe _____

4. How should we address these issues? Also list or note any other issues, concerns or suggestions you may have regarding surface water quality.
- Better zoning – cost sharing assistance
 - Survey property owners about old unused wells
 - Inspect Septic Systems
 - Initiate site inspections for buildings
 - Do water sampling & check septic

E. Comments

1. Please describe below any other water related concerns or project ideas that you think should be included in the Mille Lacs County Water Plan.
 - Develop programs/incentives to encourage change from current practice.

Additional Comments were collected from **Townships** using a Priority Concerns Input Survey. Comments were received from representatives of Milaca, Borgholm, Kathio, Bradbury, Dailey, and East Side Townships:

Suggested Priority Concern 1:

- Housing density
- Building houses in wetlands: important for long term viability of development. Actions needed include possible site inspections or site survey. Resources to accomplish this might come from County zoning fees. High priority countywide.
- Surface water quality: important to protect lakes. Actions needed include following ordinances. High priority in the area of Mille Lacs Lake.
- More Walleye in Mille Lacs Lake.
- Deep granite operations in Dailey township area.

Suggested Priority Concern 2:

- Excessive use of chemicals/fertilizers
- Farming activity to be allowed at 50' radius of public water supply: important to efficient farming. Actions needed include best farming practices schedule. Resources to accomplish this might come from NRCS, FSA or SWCD. High priority countywide.
- Increased development: important due to new sewers. Actions needed include following impervious surface regulation. Resources to accomplish this might come from county ordinances. High priority in the area of West Mille Lacs Lake.
- Water Quality of Mille Lacs Lake.
- ISTS mound failures: Actions needed include farther setbacks from roads and/or ditches that convey water. Resources to accomplish this might come from zoning authorities.

Suggested Priority Concern 3:

- Manure containment
- Long term plan that addresses the compatibility of farming and development: important because of rapid development. Rapid action is needed to catch up with developers. Resources to accomplish this might come from SWCD/Planning Commission. High priority countywide.

Comments were also contributed by local and state review agencies using a Priority Concerns Input Survey. Comments were received from representatives of Mille Lacs County Health, Environmental Quality Board (EQB), MN Pollution Control Agency (MPCA), MN Dept of Health (MDH), Board of Water & Soil Resources (BWSR), Dept of Natural Resources (DNR).

Suggested Priority Concern 1:

- Develop community septic systems in subdivisions: important for improving land use; protection of ground water. Actions needed include change in ordinances; education of communities. Resources to accomplish this might come from funding, zoning, township agreement. High priority in southern end of county, but all areas are effected. – ML Co Health
- Ground water contamination: important because throughout most of Mille Lacs County there are areas of medium to high ground water contamination susceptibility. Suggested actions include checking with PCA and local SWCD or watershed district on how to reduce the risk of ground water contamination associated with developments in sensitive areas. - EQB
- Impaired Waters/Total Maximum Daily Loads (TMDL): important because the federal Clean Water Act requires states to adopt water quality standards to protect the nation's waters. These standards define how much of a pollutant can be in a surface and/or ground water while still allowing it to meet its designated uses, such as for drinking water, fishing, swimming, irrigation or industrial purposes. Many of Minnesota's water resources cannot currently meet their

designated uses because of pollution problems from a combination of point and nonpoint sources. Addressing impaired waters in LWM Plans is voluntary. However, the MPCA strongly encourages counties to consider how their LWM Plans address impaired waters, as identified on the “Final List of Impaired Waters” available on MPCA’s website.² Actions needed include identifying the priority the County places on addressing impaired waters, and how the county plans to participate in the development or implementation of TMDL projects; include a map of impaired waters within the County; identify the pollutant(s) causing the impairment (see MPCA website); address the commitment of the County to submit any data it collects to MPCS for use in identifying impaired water, provide plans, if any, for monitoring as yet unmonitored waters for a more comprehensive assessment of waters in the County; and describe actions and timing the County intends to take to reduce the pollutant(s) causing the impairment, including those actions that are part of an approved implementation plan for TMDLs. The MPCA will use this information to help guide its funding and resource allocation priorities for impaired waters activities. We believe the County should consider impaired waters (below) as a top priority for discussion in the LWM Plan. – MPCA

UPPER MISSISSIPPI RIVER BASIN

Upper Portion Reach	Stressor
Knife River; Dry Run to Knife Lake	Fish IBI and Invertebrate IBI*
Rum River; Ogechie Lake to Lake Onamia	Mercury
Rum River; Lake Onamia to Tibbetts Brook	Mercury
Rum River; Tibbetts Brook to Bogus Creek	Mercury
Rum River; Bogus Creek to West Brook Rum River	Mercury
Rum River; West Brook Rum River to Stanchfield Creek	Mercury
Mille Lacs Lake	Mercury
Shukopee	Mercury
St. Croix Basin Reach	Stressor
Groundhouse River: Headwaters to South Fork Groundhouse River	Fecal Coliform
Groundhouse River, South Fork: Headwaters to Groundhouse River	Fish IBI*
Groundhouse River South Fork Headwaters to South Fork Groundhouse River	Invertebrate IBI*

* Index of Biological Diversity (IBI)

The 303 (d) List was updated in 2004 and is updated every two years.

- Drinking water protection:** Drinking water is important to everyone and is a vital necessity for community health and economic well being. 1: Recognizing and supporting needs of public water suppliers in their wellhead protection planning programs: plan development, and plan implementation. 2: Recognizing non-community public water supply systems and the inner well management zone (a 200 foot radius around the public water supply well also known as IWMZ) protection needs. 3: Supporting the establishment of monitoring and testing of private wells. Conducting testing clinics for nitrate testing and possible testing for arsenic where that is considered a risk potential. Developing a county wide program to accurately locate wells that have a construction log to better understand the geology of the area. Local resources are the best way to address local issues, however, the MDH provides a high level of technical assistance support on most drinking water issues. Areas of high priority will be approved wellhead protection areas (when identified) and a 200 foot radius around all public water supply wells (also know as IWMZ). In Mille Lacs County presently there is one approved wellhead protection plan, namely the City of Pease. The cities of Bock and Princeton are currently in the wellhead protection program and will soon have a completed plan. See the drinking water supply management area (DWS MA) maps for approved protection areas. Also, visit the following website for a listing of public water suppliers and for a copy of the Source Water Assessment for

the public water suppliers in the County: <http://www.health.state.mn.us/divs/water/swp/swa>. - MDH

- **Surface Water Quality and Development Adjacent to Riparian Areas:** Importance - Water Quality can be greatly influenced by impacts with a direct connection to lakes, rivers, streams, wetlands and ditches. Specifically, development project(s) not well conceived can result in erosion, sedimentation, flooding, and nutrient loading which in turn affects surface water quality. Recommended Actions: Currently, Mille Lacs County conducts a monthly Technical Evaluation Panel (TEP) to address requirements of the Wetland Conservation Act (WCA). At the discretion of the Local Governmental Unit (LGU), the panel would be expanded to include additional technical expertise. Their purpose would be to address natural resource issues beyond the scope of the (WCA). Specifically, best management practices(BMPs), focusing in the areas of erosion, sedimentation, and stormwater control. Recommendations from this panel would provide a **coordinated** and holistic approach to resource management as it relates to development. This panel should provide decision makers and land use planners with the information they need to make informed land use decisions.
Two Watersheds are of high priority the Mille Lacs Lake watershed consisting of 116,480 acres and the Rum River watershed with specific concern in the Anoka Sandplain area. – BWSR
- **Basin Monitoring for Water Quantity and Quality Information:** Management decisions require good information. However, the number of water bodies monitored in both the Upper Mississippi and St. Croix basin is low. For example, more than half of basin lakes in the Upper Mississippi basin have not been monitored or assessed.
Recommended actions to address the priority:
 - Support long-term basin monitoring program for river, lakes, streams and groundwater;
 - Quality nutrient loadings and other water quality parameters;
 - Develop a coordinated approach with federal, state, and local governments to collect water data necessary for informed management decisions. - DNR

Suggested Priority Concern 2:

- **Abandoned wells:** important because open abandoned wells are a safety issue; contaminant risk to ground water. Actions needed include at minimum, the identification of all well locations. Resources to accomplish this might come from historian, volunteers to check abandoned or unused sites. High priority would be all areas – northern end. – ML Co Health
- **TMDL – Impaired Waters:** important in reference to both point & non-point sources of pollutant that contribute to impairment of waters. Suggested action would be to check with PCA to consider how to plan for developments contemplated in or near impaired waters. – EQB
- **Stormwater:** important because Mille Lacs is experiencing increased development, especially on lakes and rivers. Recommended actions include efforts be made to make contractors and developers in the county aware of stormwater permitting requirements and appropriate best management practices (BMPs) designed to keep pollutants from entering water bodies. Making stormwater informational packets available for contractors, developers and land owners at the County permitting office would help provide this type of information. The MPCA can assist in addressing many concerns through the construction, industrial and municipal stormwater programs. In addition, for those areas outside of the municipal separate storm sewer system (MS-4) municipal areas, Section 319 funds of the federal Clean Water Act may be used in some circumstances to assist local efforts. Visit the web site for details on the Construction Stormwater Program at: <http://www.pca.state.mn.us/water/stormwater/index.html>. Mille Lacs Lake and the

Rum River should be considered high priority water bodies to focus stormwater control measures.
– MPCA

- Erosion Control and Water Quality Impacts on recreational land: Importance- Mille Lacs County provides a number of recreational opportunities. In addition to lakes which include Mille Lacs Lake, it provides 105,606 acres of wetland, six wildlife management areas (34,695 acres), State Forests (16,568 acres), 2 State Parks, a National wildlife refuge and 100+miles of rivers and streams.
Current demographic shifting shows continued population growth in Mille Lacs and the surrounding counties. This population trend combined with the county’s proximity to the Twin Cities have increased the public’s demand for recreational opportunities. High use recreational areas not properly managed are susceptible to accelerated degradation do to excessive erosion, and sedimentation. This will have a direct affect on water quality.
Recommended Action: To adequately protect the water quality in recreational areas Mille Lacs County needs to conduct a resource assessment to determine areas particularly sensitive to the increasing recreational pressure. This study would be countywide and consist of items such as riparian areas, rare and endangered species, high priority wetlands, erosion prone soils, and areas of historical significance. This assessment would be part of an overall “**recreational plan**”. The plan would provide decision makers with the proper tools to direct recreational activities. It would also address best management practices to control erosion and protect the water quality. High priority areas are Mille Lacs Lake and the Rum River Watershed – BWSR
- Improve Nutrient Management and Other Water Quality Parameters (pholshorus, nitrogen, turbidity, dissolved oxygen, and bacterial levels.): This is a priority because lakes and rivers of the basins increasingly suffer from degraded water quality due to excessive nutrient deposition in their waters. This affects not only fish and wildlife and ecological functions but property values and human health as well.
Recommended actions:
 - Maintain proper sewage systems to prevent contaminants from entering ground and surface waters;
 - Promote reduced use of fertilizers, pesticides and cleaning agents;
 - Promote the use of filter strips of vegetation along and near water bodies;
 - Model implementation of identified management actions at government/Department facilities;
 - Advocate best management practices in land use; and
 - Provide information to ensure that nutrient loads meet targets for ecological integrity. - DNR

Suggested Priority Concern 3:

- Runnoff due to increasing asphalt & cement surfaces: important to protect groundwater. Actions needed include educate people in alternative methods to slow or retain runoff; ordinances on management of runoff. Resources to accomplish this might come from media; environmentalist. High priority all areas. – ML Co Health
- Ground water availability: important because Mille Lacs County is located within the central province of Minnesota. This geologic province is characterized by buried sand aquifers overlaid by thick glacial sediments. In this province, the upper layer made up of sand and gravel aquifers is more commonly tapped for water tan the deeper fractured bedrock. Suggested action would be to check with the DNR to consider how to plan for significant water using developments.
- Individual Sewage Treatment Systems (ISTS)/Septage: important because increased development pressure and sensitive soils in many parts of the County, as well as the high quality water bodies

of Mille Lacs Lake and Rum River, make these systems a priority for water quality protection. Recommended action is for the County to inspect new and upgraded ISTS or undertake a random inspection program to check compliance, performance and acceptable construction practices. The Mille Lacs Lake and Rum River are high priorities for this effort. – MPCA

- **Soil Erosion and nutrient management:** Despite a declining farm population agriculture continues to have a major economic impact. Agriculture is one of the major arable land uses in the County (54%). Studies show it remains the major contributor to soil loss in the county, particularly the southern-half. Improper management lends itself to excess wind erosion with an average loss of 3-5 tons/acre/year, water erosion, and sedimentation. In addition, waste management including the land application attributes to high phosphorus and nitrogen concentrations. All, will directly affect the quality of surface and groundwater within Mille Lacs County. Mille Lacs County needs to continue farm planning followed by implementation of recommended practices. Whether arable or forested; best management practices need to be implemented. Most soil loss can be reduced to tolerable levels through crop rotation, or an ecological practice such as residue management. On occasion an engineering practice (terrace or sediment basin), may have to be installed. In addition to traditional farming practices the use of existing retirement programs such as RIM and CRP should be an option in areas highly susceptible to erosion. - BWSR
A number of specific areas exist including:
 - Snake River Watershed – Groundhouse minor
 - South-half of the Mille Lacs County
 - Anoka Sandplain area (specific)
 - Greenbush & Princeton Township (specific)
- **Minimize Storm Water Discharges from Developed and Developing Areas:** Increased stormwater runoff associated with development often initiates a chain of events that includes flooding, erosion, stream channel alteration and ecological damage. Non-point pollution also grows as increased runoff transports pollutants directly into waterways. Sediment itself contributes to water quality degradation, both directly and through transport of pollutants adhering to soil particles.
Recommended Actions:
 - Minimize stormwater impacts through encouraging good site design, especially low impact development technologies.
 - Encourage stormwater best management practices in all development plans.
 - Identify sties where increased storm water discharge has a high potential for adversely impacting important natural resources. - DNR

Suggested Priority Concern 4:

- **Groundwater quality:** important to identify areas that have problem wells; determine if problem is an individual well or group of wells. Actions needed include educate people on well testing & protecting wells; well water testing at reduced rates. Resources to accomplish this might be Public Health or public forums. High priority countywide, or specifically East Central area. – ML Co Health
- **Protection of Shoreland/Riparian Areas:** Due to its large surface area, Mille Lacs lake is especially vulnerable to shoreline erosion from wave and ice action. It is recommended that vegetative buffers and shoreland stabilization BMPs be considered to reduce soil erosion. – MPCA
- **Protect Groundwater Resources:** The groundwater resources in the two basins are stressed in places by failing or sub standard individual sewage treatment systems, agricultural waste systems, and withdrawals that threaten both aquifers and surface waters.

Recommended Actions:

- Promote water conservation.
- Develop sustainable water resource protection thresholds for communities.
- Protect, restore and manage the quality of groundwater and surface water used for drinking water in the basins.
- Protect, restore and manage the quality of groundwater in the sand plains, recharge zones and other sensitive areas. - DNR

Suggested Priority Concern 5:

- Feedlots: The feedlot program in Mille Lacs County is a fairly new program with new staff added in the last year. We recommend all sites be registered, coupled with compliance inspections and maintaining a field presence. Information and assistance to operators about appropriate land management of manure should be provided. MPCA feedlot staff in the Brainerd Office would be available to provide assistance. – MPCA
- Protect Scenic and Ecological Values of Basin Lakes and Streams: What is done with the shoreline of waters, in floodplains and in wetlands affects the quality of the water resource and the diversity of habitats available. Maintaining and/or restoring intact shoreline ecosystems are important goals that serve many other resource management goals.

Recommended Actions:

- Identify and address high priority areas for wetland protection and restoration in shoreland and riparian areas, ground water recharge areas, and wetland complexes.
- Encourage lakeshore owners to retain or restore existing, native vegetation.
- Encourage plantings of emergent vegetation as techniques for reducing shoreline erosion.
- Assist local communities with natural resource inventories as guides to the conservation of ecological functions. – DNR

Suggested Priority Concern 6:

- Promote Local Learning About Watershed Values And Issues: Public awareness of the need to protect and preserve what is left of our natural ecological heritage is the first step towards increasing stewardship of our resources. Many communities and counties have discovered the value of active public education programs.

Recommended Actions:

- Establish newsletters and informational packets for landowners and new home owners outlining steps for watershed stewardship.
- Sponsor educational seminars and workshops on topics related to watershed ecological functions. - DNR

PRIORITY CONCERN SELECTION:

The following priority concerns were chosen after discussion and evaluation of the input from surveys, input from public input meetings, and the written comments submitted by local and state review agencies. While most submitted comments have true merit, the Mille Lacs County Local Water Management Plan Task Force realized only a number of them can be effectively implemented in the next five years. Mille Lacs County intends to coordinate with various local government, state and federal plans to assure consistency and identify areas of potential coordination of actions.

❖ The cumulative effects of Development on Surface and Groundwater is a priority concern in Mille Lacs County.

Mille Lacs County is experiencing increased development, especially on lakes and rivers. Public, local government and state agency input received identified the effects of development on surface and groundwater as a high priority concern.

Two Watersheds identified as a high priority are the Mille Lacs Lake watershed consisting of 116,480 acres and the Rum River watershed with specific concern in the Anoka Sandplain area.

Actions will be taken to address this concern by focusing on the following initiatives:

- Develop a process that would provide a coordinated and holistic approach to resource management as it relates to development. The process would address natural resource issues that overlap the scope of individual efforts by planning & zoning entities, Wetland Conservation Act (WCA) technical evaluation panel (TEP), Soil & Water Conservation District (SWCD), and others. This process should provide decision makers and land use planners with the information they need to make informed land use decisions by providing technical expertise. Specifically, best management practices (BMPs), focusing in the areas of erosion, sedimentation, and stormwater control.
- Develop a coordinated approach with local planning and zoning bodies to minimize stormwater impacts through encouraging good site design, especially low impact development technologies; encourage stormwater best management practices in all development plans; and identify sites where increased storm water discharge has a high potential for adversely impacting important resources.
- Create a plan to inspect new and upgraded Individual Sewage Treatment Systems ISTS or undertake a random inspection program to check compliance, performance and acceptable construction practices.

❖ **Development of TMDLs for Impaired Waters in Mille Lacs County is a priority concern.**

The federal Clean Water Act requires states to adopt water quality standards to protect the nation's waters. These standards define how much of a pollutant can be in a surface and/or ground water while still allowing it to meet its designated uses, such as for drinking water, fishing, swimming, irrigation or industrial purposes. Many of Mille Lacs County's water resources cannot currently meet their designated uses because of pollution problems from a combination of point and nonpoint sources.

The Rum River is currently listed as Impaired by the State of Minnesota and has been identified locally as a priority concern area.

Actions will be taken to address this concern by focusing on the following initiatives:

- Participate in the development and implementation of TMDL projects. Establish funding sources for implementation plans.
- Prioritize impaired waters in need of TMDL studies as time and funding become available.
- Create monitoring plans of waters for a more comprehensive assessment of waters in Mille Lacs County.
- Continue farm planning followed by implementation of recommended best management practices, whether arable or forested.
- Assist with the registration of all feedlot sites in Mille Lacs County, coupled with the development of a compliance inspection plan, and information and assistance provided to operators about appropriate land management of manure.

Appendix 1

STATE REVIEW AGENCIES & NEIGHBORING COUNTIES:

MPCA – ST PAUL OFFICE

David Johnson
Water Policy and Coordination Section
520 Lafayette Road North
St Paul MN 55155-4194

Aitkin County Courthouse

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Aitkin, MN 56431

Sherburne Co Board of Commissioners

Sherburne County Govt Center
13880 Highway 10
Elk River, MN 55330

DNR- BRAINERD OFFICE

Lonnie Thomas
1601 Minnesota Drive
Brainerd, MN. 56401

Morrison Co Board of Commissioners

Morrison County Government Center
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Little Falls, MN 56345

MN. DEPT OF HEALTH - ST.CLOUD

Mike Howe
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Isanti Co Board of Commissioners

Isanti County Government Center
503 - 555 18th Avenue SW
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Art Parsons
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Cade Steffenson/Matt Huddleston
Mille Lacs Co Zoning
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 Bock MN 56313

Trudy Wedell , Clerk
 Borgholm Township
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 Milaca MN 56353

Ed Keimig, Clerk
 Milo Township
 7821 115th Ave
 Princeton MN 55371

Rebecca Haugen, Clerk
 City of Foreston
 PO Box 66
 Foreston 56330

Maxine Gingery, Clerk
 Bradbury Township
 35052 180th Ave
 Onamia MN 56359

Carol Mott, Clerk
 Mudgett Township
 27095 100th Ave
 Onamia MN 56359

Louann Sawatzky, Clerk
 City of Isle
 PO Box 427
 Isle MN 56342

Ronald Straka, Clerk
 Dailey Township
 11603 290th Street
 Onamia MN 56359

Jerome Athman, Clerk
 Onamia Township
 34849 125th Ave
 Onamia MN 56359

Greg Lerud, Clerk
 City of Milaca
 255 First Street E
 Milaca MN 56353

Judy Schmidt, Clerk
 East Side Township
 43369 Vista Road
 Isle MN 56342

Stephanie Drayna, Clerk
 Page Township
 19301 140th Ave
 Milaca MN 56353

Kathleen McCullum, Clerk
 City of Onamia
 PO Box 186
 Onamia MN 56359

Connie Trunk, Clerk
 Greenbush Township
 13624 45th Street
 Princeton MN 55371

Lisa Rarick, Clerk
 Princeton Township
 PO Box 144
 Princeton MN 55371

Jeff Hanson, Clerk
 City of Pease
 PO Box 89
 Pease MN 56363

Lavon Ziegler, Clerk
 Hayland Township
 20692 Keystone Road
 Milaca MN 56353

David Anderson, Clerk
 South Harbor Township
 7554 Tailor Road
 Wahkon MN 56386

Mark Karnowski, City
 Administrator
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 Princeton MN 55371

William Young, Clerk
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 Wahkon MN 56386

Karrie Roeschlein, Clerk
 City of Wahkon
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 Wahkon MN 56386

Nancy Sammis, Clerk
 Lewis Township
 34342 30 Ave
 Isle MN 56342

Janice Lueck, Clerk
 Bogus Brook Township
 9276 65th Ave
 Milaca MN 56353

Tom Dillon, Clerk
 Milaca Township
 16991 130th Ave
 Milaca MN 56353

Appendix I – 2006 Mille Lacs County Local Water Management Plan Contributors

Local Lead Agency

Mille Lacs Soil & Water Conservation District
 Susan Shaw, District Manager
 900 Hwy 23 West
 Milaca, MN 56353
 (320) 983-2160

Board Supervisors: Kurt Beckstrom, Chair
 Ray Schultz
 Marcella Hoefert
 Gene Gerth
 Jim Miller

Mille Lacs County Commissioners

Jack Edmonds - District 1
 Roger Neske - District 2
 Phil Peterson - District 3
 Robert Hoefert - District 4
 Frank Courteau - District 5

Advisory Committee & Technical Assistance

Shannon Bengtson
 NRCS District
 Conservationist

Tim Crocker
 DNR Hydrologist

Bill Dilks
 Snake River Watershed
 Coordinator

Kriste Ericsson
 Friends of the Rum River

Karen Evens
 MN Pollution Control
 Agency

Keith Grow
 Board of Water and Soil
 Resources

Marlin Hage
 DNR Forestry

Scott Hanson
 Mille Lacs Band of Ojibwe

Robert Hoefert
 Mille Lacs County
 Commissioner

Kay Keimig, Chair

Mille Lacs County Public
 Health

Mike & Barbara Macioch
 Mille Lacs Lake Watershed
 Mgmt Group

Michele McPherson, Vice
 Chair
 Mille Lacs County Zoning &
 Environmental Services

Jay Munson, Assistant
 Engineer
 Mille Lacs County Highway
 Department

Dave Pauly
 DNR Wildlife

Tim Pharis
 DNR Wildlife

Ray Schultz
 Mille Lacs SWCD Board
 Supervisor

Susan Shaw, Water Plan
 Coordinator
 Mille Lacs SWCD

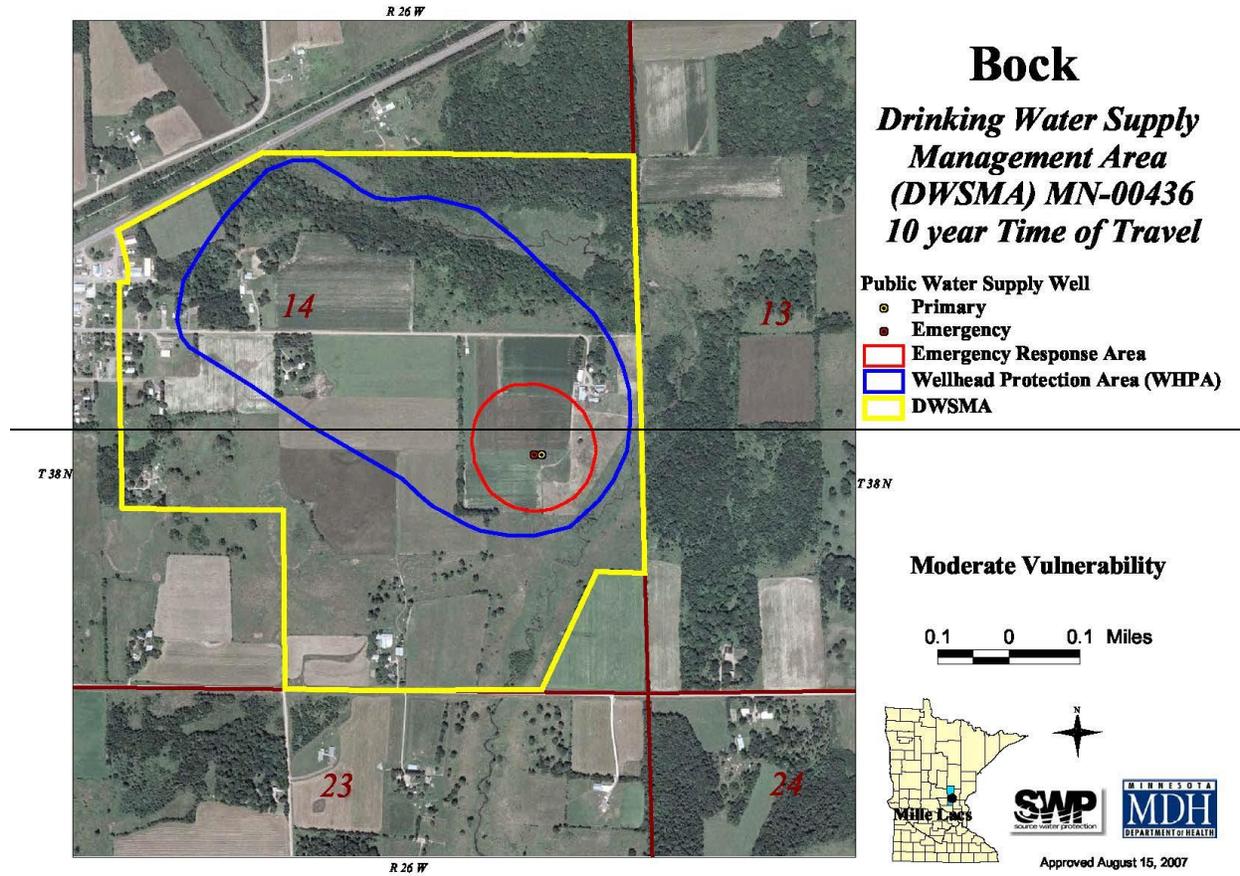
Cade Steffenson

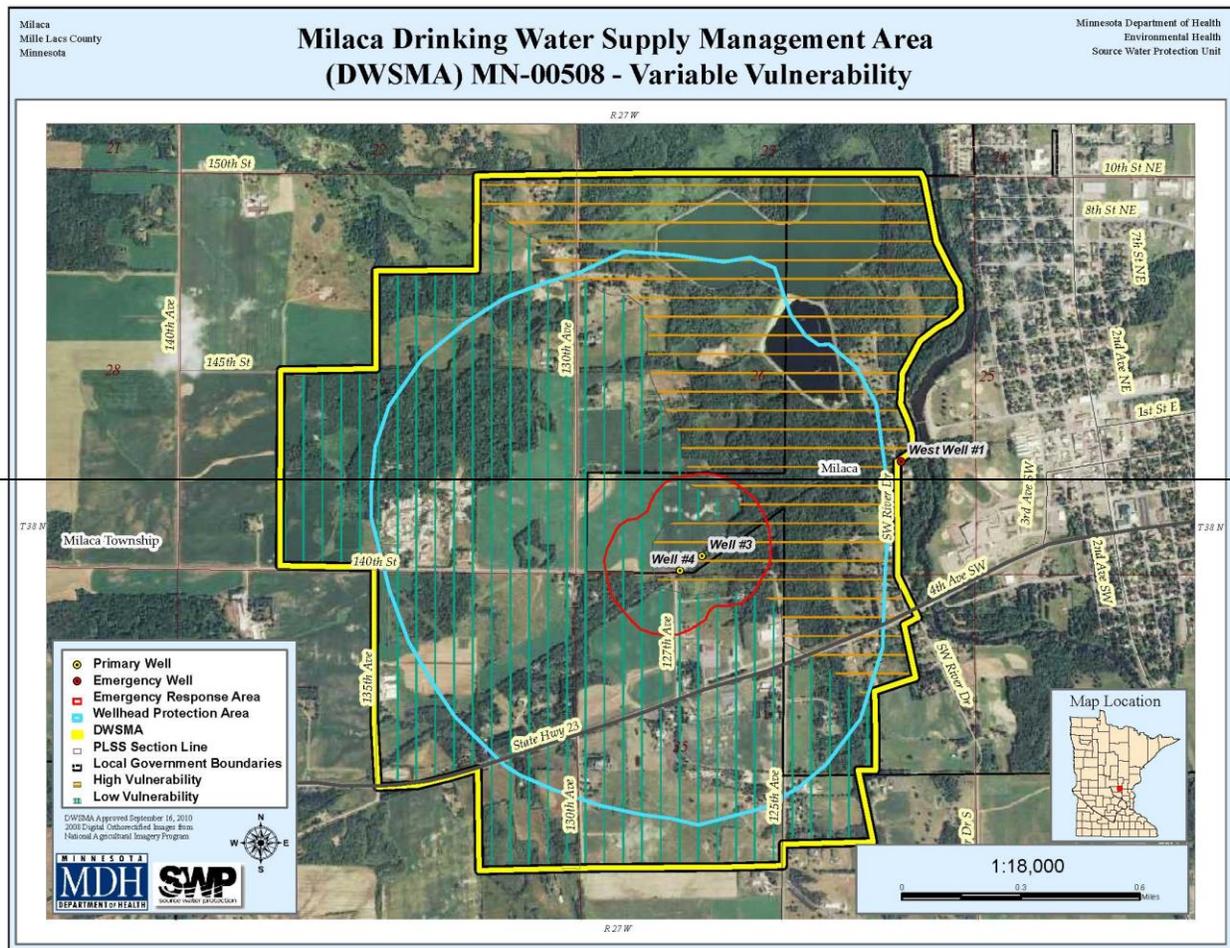
Mille Lacs County Zoning &
 Environmental Services

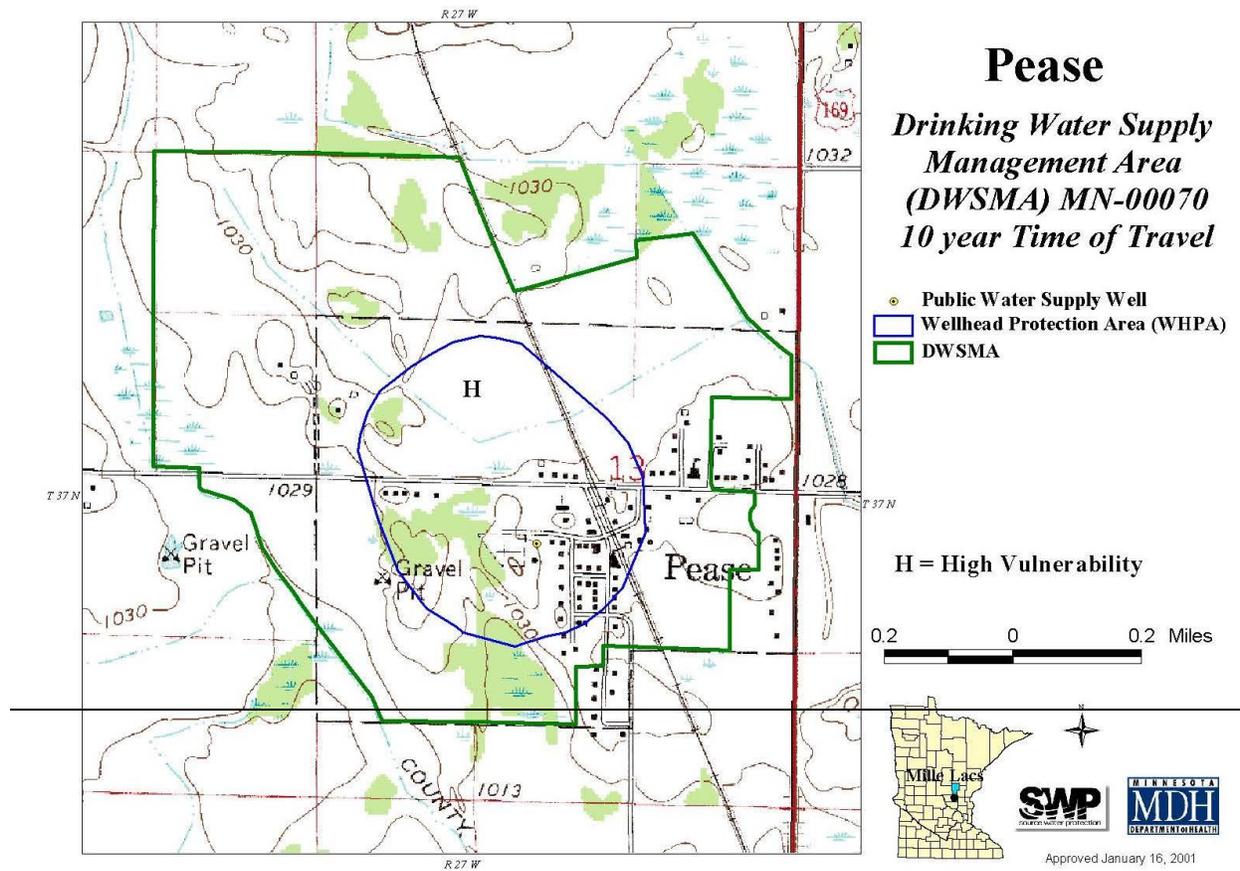
Barb Zeroth
 Mille Lacs SWCD

Lori Wolff
 US Fish & Wildlife Service

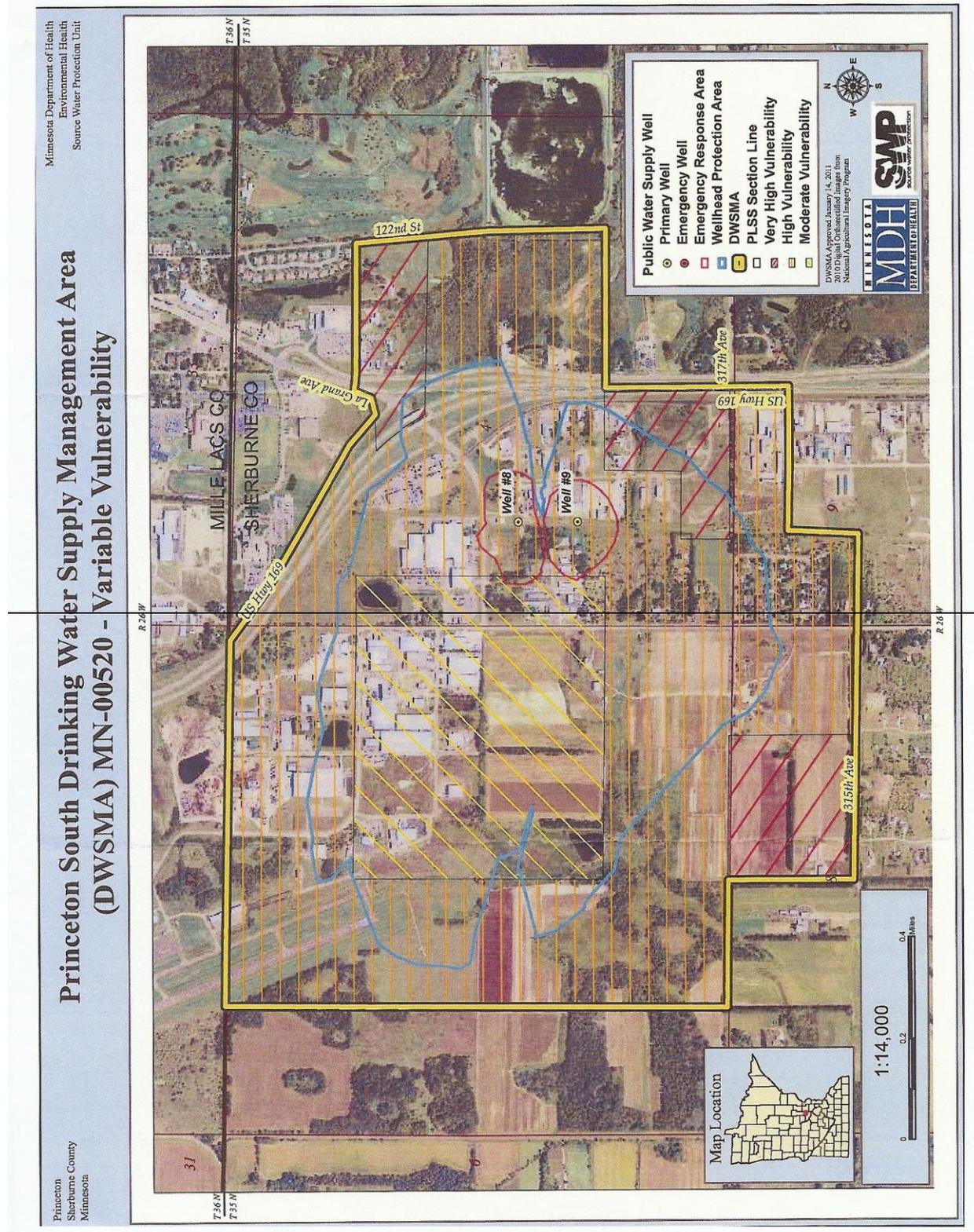
Appendix J – Mille Lacs County Well Head Protection Maps

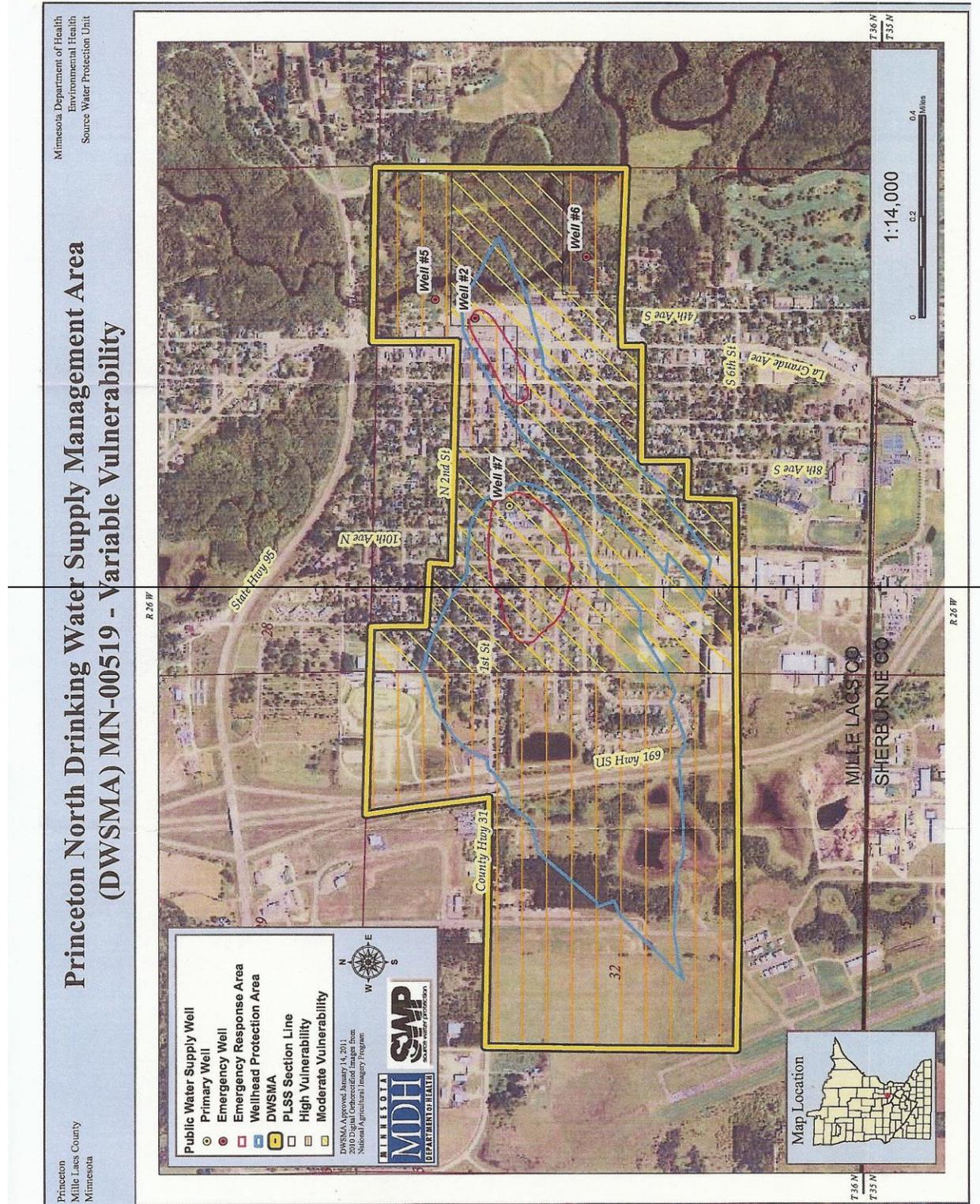




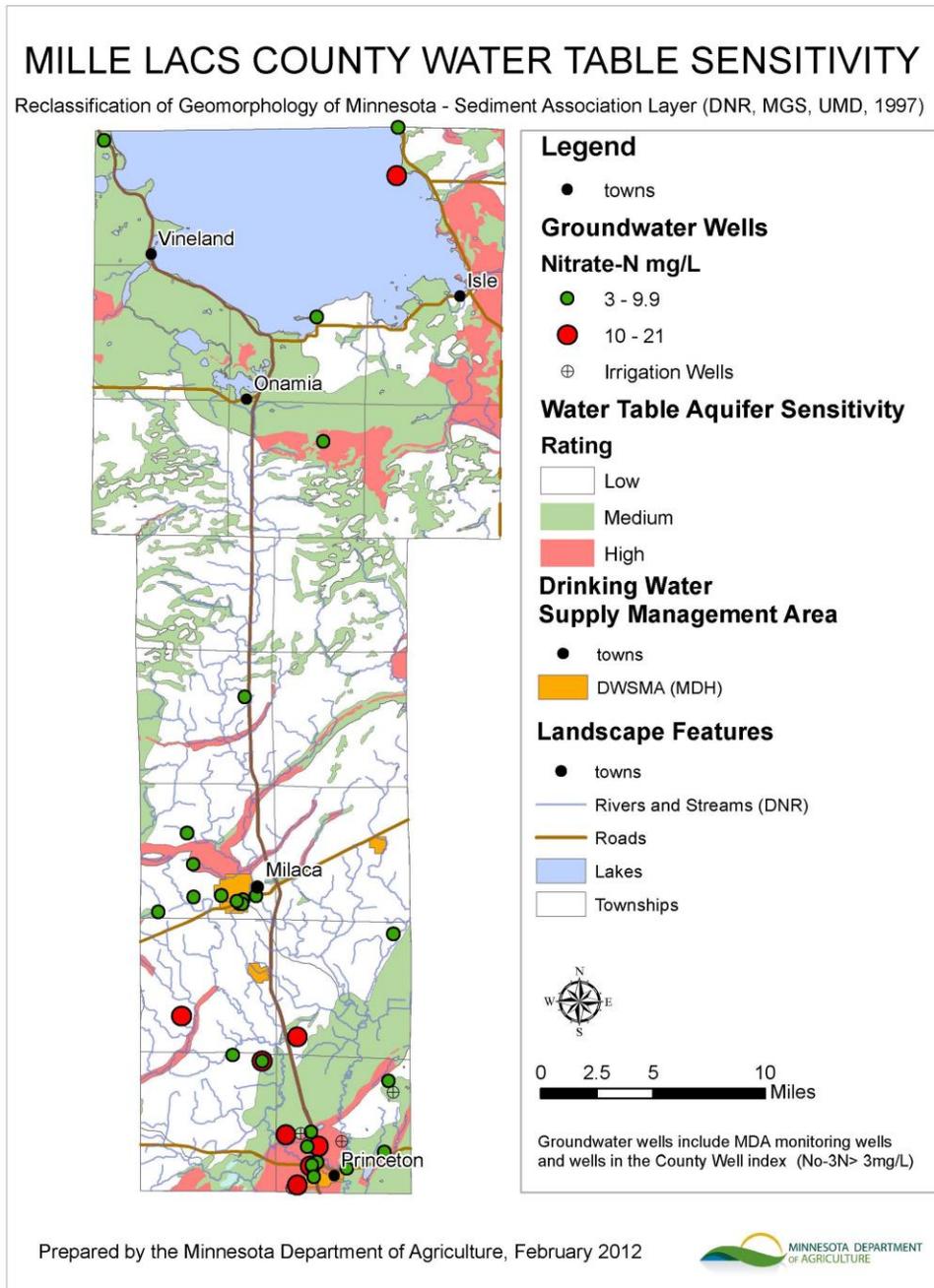


<http://mako.health.state.mn.us/doc/whpa/images/jpg/dws00070.jpg>[7/10/2012 4:36:22 PM]





Appendix K – Minnesota Department of Agriculture water table sensitivity map*



* This map is provided by the Minnesota Department of Agriculture. Additional recommendations by the MDA regarding groundwater and surface water protection can be found on their website at <http://www.mda.state.mn.us/protecting/waterprotection/waterplanning/agchemicals.aspx>