



THE WATER PLAN

MORRISON COUNTY

PRIORITY CONCERNS SCOPING DOCUMENT

LOCAL WATER MANAGEMENT PLAN 2010-2015



Mission Statement

“Our mission is to protect, preserve, and enhance the water and land related resources for the use and enjoyment of the citizens and visitors of Morrison County”



Prepared by the Morrison County Soil and Water Conservation District and the
Morrison County Local Water Plan Task Force
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A. Introduction:

1. County primer:

a. **County Overview** - Morrison County is a largely rural County covering over 737,700 acres or over 1,150 square miles. It is located centrally in Minnesota between the Twin Cities metropolitan area and the northern lakes region. Stearns, Benton, Cass, Crow Wing, Todd, and Mille Lacs counties border it. From a regional perspective, the County is located midway between two of the state's largest regional economic centers, St. Cloud and Brainerd.

Being located in between these metropolitan areas and regional economic centers, Morrison County occupies a strategic location. Morrison County is located within two different eco-regions, including the "Northern Lakes and Forests" and the "North Central Hardwood Forest". Eco-regions are important from a water resource planning and management perspective because they provide the scientific context in which to compare surface water resources in terms of quality. About one-third of the County is in a geological landform known as the sand plain. Located along the Mississippi River and in the south central portion of the county, the sand plains, with their large groundwater reserves are the most intensively used lands in the County and they are very sensitive to groundwater pollution. A second major geologic feature in the County is the St. Croix moraine. Located in the northwestern portion of the County, here the moraine creates a rolling to rugged landscape covered with lakes and forests that have experienced immense growth and development pressures over the past thirty years. The Mississippi River flows for 41 miles through the middle of the County. This section of the river north of Little Falls represents a truly unique natural resource, with its wide and shallow riffle environment; it sustains one of the most diverse ecosystems in the United States.

Within the County, there are 97 protected lakes and hundreds of miles of rivers and streams that today, provide a wealth of water-based recreational and residential amenities. The lakes and rivers in the County cover over 17,900 acres with wetlands covering over another 39,700 acres. Combined, the surface water features cover approximately 7.8 percent of the County.

Bedrock Aquifers

One of thirteen principal bedrock aquifers in Minnesota is found in Morrison County. Approximately one-fourth of the County in the northwestern quadrant is located in the Proterozoic Aquifer. Wells in this aquifer produce 5 to 70 gallons per minute and are 50 to 400 feet in depth. The rest of the County is underlain by Precambrian age rock consisting of igneous and metamorphic rock. Although these bedrock areas are not considered as having aquifers, wells in these areas can produce 5 to 25 gallons per minute and are generally 30 to 450 feet deep.

Glacial Drift Aquifers

Above the bedrock aquifers, there are substantial aquifers located in the glacial drift. The advance and retreat of glaciers left a series of significant water-bearing deposits in this drift. Glacial drift aquifers are divided into two categories including surficial drift and buried drift aquifers. Surficial drift aquifers are exposed at the land surface and are found in about one-third of the state. Most of these aquifers consist of sand and gravel deposits called outwash. Wells in these aquifers are typically at a depth of 30 to 240 feet and produce from 100 to 800 gallons per minute although some wells may exceed 2,000 gallons per minute. These aquifers are a significant source for irrigation, industry, and public water supply systems in Morrison County. Buried drift aquifers are comprised of sand and gravel deposits like surficial drift aquifers, but lie below confining layers of till, loess or alluvial material. These deposits are due to repeated glaciations and may or may not comprise a confining layer.

Most buried drift aquifers are less than 10-feet thick, but can be as much as 100 feet in some areas. In general, groundwater flow is similar to the surficial drift aquifer, however, it has a longer travel path and is less responsive to recharge. Typical yields are 100 to 600 gallons per minute, with up to 1,500 gallons per minute possible in isolated areas.

Morrison County lies entirely within the Upper Mississippi River Basin. In Morrison County, there are six (6) major watersheds. Within the six major watersheds in Morrison County, there are 111 minor watersheds.

There are 16 incorporated cities and 30 organized townships in Morrison County. The local units of government range in land area up to 4,287 acres (City of Little Falls) to 51,170 acres (Cushing Township). Generally, the geopolitical boundaries of these local units of government are linear, resulting in square or rectangular shaped jurisdictions. **Figure 1** shows the location of Little Falls, the County seat, and the geographic location of Morrison County in Minnesota.



Figure 1. Map of Minnesota depicting the location of Little Falls in Morrison County

b. Population – The U.S. Census Bureau estimated the Morrison County 2008 population to be 32,893. Projected population in the year 2010 is 33,550 or a 5.1 percent increase in population from 2000. The State Demographer predicts that Morrison County's population will continue to increase modestly through the year 2030 to 37,170 a 17.2 percent increase from 2000. Townships with recreational lakes and those near the City of Little Falls have experienced the greatest growth in both of the past two decades, including Scandia Valley, Cushing, Little Falls and Bellevue townships. For cities, the larger increases in population occurred in the largest cities including Little Falls, Royalton and Pierz. Smaller communities typically have experienced decreases in population over the past twenty years. Future populations at the community level will likely vary in patterns similar to those of the last ten to twenty years, with most of the growth occurring in the larger communities and townships with desirable amenities. **Table 1** depicts the forecasted population growth in Morrison County from 2010-2030.

Table 1. - Morrison County Forecasted Population Growth, 2010-2030

Year	Population
2010	33,550
2020	35,580
2030	37,170

c. **Land Use** – Morrison County has many unique opportunities to offer with its rich land and water resources, rural atmosphere, and character. For those who prefer a more quiet, rural atmosphere there are many cities and townships that offer a more rural setting with plenty of open spaces and areas of agricultural activity and for those who prefer a faster-paced urban lifestyle there are many vibrant cities with much to offer in fine schools, services and amenities. Growth within the county has occurred most frequently within city areas of the county and along the shore land areas of the county’s most popular lakes including Alexander, Shamineau, Fish Trap, and other lakes. The County Land Use/Cover is listed in **Table 2** and depicted in **Figure 2**.

Table 2. - Morrison County Land Use/Cover Distribution

DESCRIPTION	ACRES	% ACRES
Residences – Urban/Rural	28,310	3.8
Seasonal Recreational	3,810	.5
Cultivated Land	236,500	32
Industrial/Commercial	2,700	.4
Grassland	173,000	23.5
Grassland-Shrub-Tree Complex (Deciduous)	41,100	5.6
Grassland-Shrub-Tree Complex (Coniferous)	1,200	.2
Deciduous Forest	185,100	25
Coniferous Forest	5,400	.7
Mixedwood Forest	2,370	.3
Water	17,900	2.4
Wetlands	39,700	5.4
Gravel Pits and Open Mines	600	< 0.1
Exposed Soil	10	< 0.1
TOTAL	737,700	100

se and Cover



Figure 2. Map of Morrison County depicting County Land Use/Cover

- Agriculture continues to be the most predominant land use in the all areas of the County except for the eastern edge and the northwestern corner of the County including Camp Ripley. Agriculture zoned land accounts for 534,697 acres or over 72% of the total acreage of the county. Thirty-two percent of the County was under cultivation.

With the most substantial groundwater supplies in the County, row crop production in the sand plain areas will continue, as will many of the dairy and poultry operations throughout the County. Impacts of feedlot operations and manure applications will likely continue and will need to be scrutinized and increasingly monitored. The trend for fewer family farms will continue with an increase in hobby farms and to a lesser degree, small specialty or organic operations. While the number of farms has decreased quite significantly, individual agricultural operations for the most part are getting larger. Changes in population, technology, and farming practices have a tendency to create more intensive uses of the agricultural land. Farming on marginal lands will decline as the world market increases competition, buyouts or support from farm programs, and recreational interests grow and purchase these lands. These trends should lend the agricultural sector place more pressure on the County's water resources.

As of 2008, approximately 35,227 of the agricultural acres in Morrison County were under irrigation. As of 2009, Morrison County has over 600 registered feedlots according to the Morrison County Feedlot Officer.

- As a unique facility within the State of Minnesota, and more specifically Morrison County, it is appropriate to discuss the Camp Ripley Military Reservation. The largest publicly owned site in the County, Camp Ripley covers approximately 52,758 acres and borders the Crow Wing and Mississippi Rivers. At approximately 27 miles, it represents one of longest stretches of publicly owned land along the Mississippi River from the headwaters to the Gulf of Mexico. In addition to serving as a military training site, Camp Ripley is a statutory game refuge. Camp Ripley continues to work on a complete facelift of existing facilities. Numerous water and land resource management programs including the first wellhead protection plan in the County have been developed and/or implemented by Camp Ripley. Many of the utility services have been upgraded including the sanitary sewer system, storm sewer system, underground electrical wiring, wastewater treatment plant, and the water treatment plant and distribution system.

The Minnesota Department of Military Affairs is attempting to minimize the impacts that military training has on surrounding landowners through Army Compatible Use Buffer (ACUB). The program consists of a process whereby the Minnesota Department of Military Affairs becomes involved in local land use planning programs to address potential conflicts with present and future incompatible land uses. In addition, Camp Ripley has identified priority areas adjacent to the Military Reservation to help focus on the ACUB Program. Landowners within the area may be eligible to participate in a voluntary program to protect their lands from development, and thereby minimizing the public from Camp's noise, smoke, and dust. Furthermore, the program could ensure Camp Ripley's viability as a military training site into the future. Compatible land uses such as agriculture, forestry, and recreation will be encouraged in this voluntary program, which will also serve to protect the rural character of the area. As of June 2009, over 5,100 acres of land were under conservation easement and another 1,900 acres were ongoing, not yet finalized.

- Although relatively small in area in comparison to agricultural lands, residential development, including urban residential and rural residential development accounts for a 3.8 percent of the County's total land area.

Residential development is primarily concentrated within the cities of Morrison County as well as some concentrations of higher-density residential development along shoreline areas of the County. Rural residential development, which includes less dense rural residential developments and farmsteads, may be found sporadically throughout the County. A substantial portion of the developed areas have been paved or built upon, thereby greatly increasing stormwater runoff. Over the past 30 or so years, shoreland in the northwest portion of the County, with its rugged landscape covered with lakes and forest, has been extensively developed into small lots and tracts for seasonal and recreational uses. The lakes have also experienced the conversion of seasonal cabins and family resorts to year round residential uses. The geologic setting and natural landscapes have attracted thousands of people to live, work and recreate in these areas. Protecting the water quality is an ongoing challenge for the County. Development pressures in the rural and shoreland areas of the County will very likely continue to increase in the future due to the strong growth in the rural non-farm population, plat developments on previous undeveloped surface water areas and the number of parcels being sold as recreational or hunting land. One major geologic condition that Morrison County faces from a water resource management perspective is the sand plain.

As described earlier in this section, under Geologic Framework and Landform Patterns, the sand plain areas cover a significant portion of the County. It is in these most sensitive geologic areas that the more intensive land use activities occur. The largest city, Little Falls, is where the most intensive industrial and manufacturing activities and the most intensely irrigated lands are located.

- While the majority of commercial and industrial development is located within incorporated areas of the County, sporadic commercial and industrial development exists within unincorporated areas of Morrison County. The majority of the commercial development occurs within the sand plain area of the County. In addition, the greatest volume of automotive and railroad traffic travels through the sand plain area, commercial development land uses tend to pave or put down much less impervious surfaces, increasing surface water runoff. According to U.S. Census Bureau county business patterns, Morrison County boasted over 800 business establishments in the year 2007 with the majority of these businesses being small businesses with one to four employees. Based on the labor force projections and the slowing global economy, the County will likely experience a very modest growth in its commercial and industrial base.
- Of the 737,700 acres in Morrison County, a total of 65,465 acres are publicly owned, of which 52,758 acres is Camp Ripley. This amounts to slightly less than 9 percent of the County. The majority of publicly owned lands in the County serve multiple purposes including military training, public recreation, wildlife management, wetland protection, and other water and land resource conservation purposes. As such, publicly owned lands in the County tend to be in locations that are marginal for agricultural or land development uses. A jewel to the County is the Crane Meadows National Wildlife Refuge located along the Platte River and Rice Lake in the south central portion of the County a 1,802 acre refuge managed by the U.S. Fish and Wildlife Service. Established in 1992 to protect and restore wetlands for waterfowl and other migratory birds the refuge, also supports numerous educational and outdoor recreational activities. **Table 3** lists the publicly owned land in the County excluding those in the cities.

Table 3. – Morrison County Public Land Inventory

Public Agency/Division	Number of Sites	Acres
Morrison County	1	132
MN DMA – Camp Ripley	1	52,758
MN DNR – General	67	2,591
MN DNR – Parks	2	1,987
MN DNR – Wildlife Management Areas (WMAs)	14	6,082
US FWS – Crane Meadows	1	1,802
Totals Public Land	86	65,352

- The Mille Lacs Band of Chippewa Indians own approximately 3,150 acres of land along eastern border of the County in Leigh Township. Although not publicly owned, tribal lands are typically held in trust by the federal government for the tribal community.

2. Plan Information.

In 1986, the Minnesota State Legislature passed the Comprehensive Local Water Planning Act into law. This legislation made water Minnesota’s number one natural resource priority, and created the opportunity for counties to receive financial and technical assistance from the state to plan ways to better manage water resources at the local level. This legislation encourages counties to develop and implement local water plans and provides each county that develops such a plan, the authority and duty to exercise any and all powers necessary to assure its implementation.

The Morrison County water planning process started when the Board of Commissioners passed a resolution in 1989, to enter into the Comprehensive Local Water Planning (CLWP) program. The first or “original” Morrison County Comprehensive Local Water Plan was completed and adopted in 1990. Implementation of the plan began immediately that year.

As required by state law, the County’s water plan has to be updated at least every five years. In 1995, the Morrison County Board of Commissioners completed and adopted its first plan update, and started implementing additional action items to solve the problems found in completing the assessments.

The process to update the County’s water plan in preparation for the third five-year interval began during the summer of 2000. With limited staff time and funding combined with the desire to prepare a more comprehensive rewriting of the plan, County staff sought additional funding and a time extension for the plan development. After several months of effort and support from several organizations, the County was successful in obtaining funding for the complete rewrite of its Water Plan. The third five-year interval rewrite was completed and adopted in 2002 and implemented in 2003.

The current plan expired in 2008, but the Board of Water and Soil Resources approved the Morrison County Commissioners request for a two-year extension. A two-year extension was granted until May 2010.

In April 2009, due to staff and funding constraints, Morrison County contracted with Morrison SWCD to accomplish and be responsible for the update of the current Water Plan. Morrison SWCD accepted and will be the LGU responsible for the update.

3. Plan Responsibility.

Throughout the history of water planning and implementation in Morrison County, two groups have anchored the development and implementation of the water plans including the Water Plan Task Force and the Technical Committee. The Morrison County Water Plan Task Force serves as the primary citizen review and advisory component in the development of this Water Plan. The Task Force, appointed by the Board of Commissioners, was established to ensure that the planning process maintained a leadership, local focus and provided local knowledge and insights on County resources, problems and procedures. During the development of this plan, the Water Plan Task Force met regularly to review citizen input and to establish the goals, objectives, action plans, and implementation strategies in the Plan. The Morrison County Water Plan Task Force is composed of:

Mark Wettlaufer	Jerry Lochner	Don Meyer	Daniel Miller
Bill Brown	Greg McGillis	John Holthaus	Jim Lilienthal
Jon Kolstad	Thomas Brutscher	Scott Albers	Tom Wenzel

In addition to the Water Plan Task Force, there were numerous agency personnel and County staff serving in an ex-officio capacity at the meetings. These technical experts gave presentations on surface water, groundwater and land use resource topics as a part of the planning process. Agency personnel on the Technical Committee included:

Mark Anderson, Morrison County	Laurel Mezner, MPCA
Amy Kowalzek, Morrison County	Todd Holman, TNC
Megan Molitor, Morrison County	Ann Sittauer, US FSW
Tim Crocker, MN DNR	Janelle Smude, SWCD
Eric Altena, MN DNR	Alan Ringwelski, SWCD
Lance Chisholm, SWCD	Phil Votruba, MPCA

The BWSR Board Conservationist for the Water Plan is Dan Steward, from the Brainerd office. Overseeing and managing the development of this Water Plan is Helen McLennan, Morrison SWCD, District Manager. The GIS consultant for the project is Chuck Forss.

B. List of Priority Concerns:

The Water Plan Task Force and Technical Committee selected the priority concerns for Morrison County after the evaluation of the surveys, review of the comments received by local and state agencies, and discussion. Below is the list of priority concerns selected.

Priority Concerns Selected

- 1. Protect the Quality and Manage the Quantity of Groundwater Resources**
- 2. Protect the Quality and Manage the Quantity of Surface Water Resources**
- 3. Promote and Implement Sound Land Use Practices that Reduce the Impacts on all Water Resources**

C. Priority Concerns Identification:

1. The Priority Concerns of Morrison County were identified through the following process:

- March 2, 2009 a written notice was sent to all interested parties informing them of intent to update. The notice further requested that the party identify any conflict, problem, or opportunity they would like examined in the process. A survey regarding priority water management concerns was also mailed out to the below listed parties. The parties were given 39 days to respond. 26 surveys were returned

MPCA	Morrison County Agencies
BWSR	County Commissioners
MN Dept of Agriculture	Initiative Foundation
DNR-Fisheries	NRCS
DNR-Waters	30 Townships
DNR-Wildlife	16 Cities/Towns
DNR-Impaired Waters	The Nature Conservancy
Dept of Military Affairs (DMA)	USFW
SWCD	Adjacent County SWCD's
Sustainable Forestry Association of MN	
Lake Assoc./LID (Alexander, Shamineau, Fish Trap, Cedar, Sullivan, and Green Prairie Fish Lake)	

- April 16, 2009 a meeting with Dan Steward (BWSR) was held to discuss the update.
- SWCD website
- May 5, 2009 initial meeting of the Morrison County Water Plan Task Force and the Technical Committee was conducted.
- May 17, 2009 Citizen Input Survey published in Morrison County Record newspaper and the Morrison SWCD Website. Surveys were due back by May 30, 2009. Forty-nine Citizen Input Surveys were received. Citizens were also invited to attend Task Force Meetings.
- May 20, 2009 a radio spot was conducted referencing the Counties intent to update the Water Plan and the Citizen Input Survey and to invite citizens to the Task Force Meetings.
- May 27, 2009 second meeting of the Morrison County Water Plan Task Force and the Technical Committee was conducted.
- June 10, 2009 third meeting of the Morrison County Water Plan Task Force and the Technical Committee was conducted.
- June 22, 2009 "Final Draft" Scoping Document was sent for a final review by the Morrison County Water Plan Task Force and the Technical Committee.
- Jun 29, 2009 mailed PCSD to agencies
- July 8th, 2009 fourth meeting of the Morrison County Water Plan Task Force and the Technical Committee was conducted.
- July 29th, 2009 fifth meeting of the Morrison County Water Plan Task Force and the Technical Committee was conducted.

2. Citizen Concerns

Groundwater

- Impacts of agricultural operations – feedlots, manure management, chemical/fertilizer management, run-off and erosion. (41 responses)
- Impacts of irrigation. (32 responses)
- Impacts of failing septic systems. (14 responses)
- Need for more wetland protection. (11 responses)
- Wellhead/Aquifer protection. (10 responses)
- Abandoned wells. (2 responses)

Surface Water

- Impacts of agricultural operations – feedlots, manure management, chemical/fertilizer management, run-off and erosion. (41 responses)
- Land development pressure/impacts – shoreline, rural residential, and marginal land (30 responses)
- Impacts of failing septic systems. (14 responses)
- Need for more wetland protection. (11 responses)
- Declining water clarity (9 responses)
- Control of exotics species (9 responses)
- Impaired waters (7 responses)
- Loss of fish and wildlife habitat. (6 responses)
- Stormwater/Drainage/Floodwaters management. (2 responses)

Land Use and Development

- Impacts of agricultural operations – feedlots, manure management, chemical/fertilizer management, run-off and erosion. (41 responses)
- Impacts of irrigation. (32 responses)
- Land development pressure/impacts – shoreline, rural residential, and marginal land (30 responses)
- Impacts of failing septic systems. (14 responses)
- Need for more wetland protection. (11 responses)
- Natural habitat destruction. (9 responses)
- Lack of regulations. (6 responses)
- Stormwater/Drainage/Floodwaters management. (2 responses)

3. Agencies, Water Plan Task Force, and Technical Committee Concerns

PRIORITY CONCERN: Surface and groundwater protection from Feedlot Runoff

- Educate landowners about “Best Management Practices” available to minimize negative environmental impacts on water resources in the County. (NRCS) (P&Z)
- Provide increased Federal, State, Local funding for agricultural producers and assist in implementing practices that fix feedlot runoff problems in the County. (NRCS) (P&Z) (City of L.F.)
- Clean-up feedlots with conservation practices such as erosion control practices, feedlot runoff management, riparian buffers, filter strips, diversions and agricultural waste management. (Morrison SWCD)
- Local increased enforcement on OLA’s and funding secured to cost-share fixes for feedlot runoff problems. Feedlot runoff continues to be a problem, as too many riparian feedlots exist. (Morrison SWCD)
- Target compliance efforts on worst-case situations – feedlots in ground water, sensitive areas, shoreland, and TMDL studies. (MPCA)
- Conduct level 3 inspections of feedlot operations. (MPCA)
- Monitor ongoing BMP’s to ensure effectiveness of water protection/restoration efforts. (MPCA)
- Work with landowners to implement BMP’s where necessary. Priority BMP’s include: creating and maintaining vegetative buffers, alternative watering considerations for livestock, land application strategies, and proper site selection for manure stockpiles. (MPCA)
- Co-host field demonstrations and seminars, promote low cost feedlot solutions, provide basic manure management tools and services, promote adoption of manure management BMP’s targeting efforts on dairy and poultry manure and/or areas of highest concern. (Benton SWCD) (Morrison SWCD) (City of L.F.)

PRIORITY CONCERN: Surface and groundwater protection from agricultural chemical use

- Review available monitoring data and information regarding pesticides in groundwater and promote applicable pesticide groundwater quality BMP’s. High nitrate levels are commonly detected where geologic conditions are conducive to groundwater contamination. (MDA) (City of L.F.) (Bellevue Twp)
- Review current and ongoing water quality sample results and promote BMP’s appropriate for specific conditions where surface water is or may be a concern. The County contains many areas that are susceptible to runoff from Ag land to adjacent surface waters especially where steeper landscapes and erodible soils are present. The MDA maintains a surface water quality-monitoring program and has detected pesticides in surface waters in the County. (MDA) (City of L.F.) (Bellevue Twp)

PRIORITY CONCERN: Surface water protection from Floodwaters

- Explore funding opportunities to obtain LIDAR for the County. (DNR Waters)
- Work with DNR Waters and FEMA to consider updating the floodplain maps for the County. (DNR Waters)
- Educate local officials and the public on the importance of maintaining stream channel integrity and proper floodplain development to ensure resource sustainability and flood damage reduction. (DNR Waters) (Bellevue Twp)

PRIORITY CONCERN: Surface and groundwater protection from Sediments and Stormwater Erosion

- Identify highly erodible areas and work with landowners to implement practices that fix sediment runoff in the County. (NRCS)
- Improve filter strip programs and riparian buffers. Enforce set-backs and implement other soil loss practices to protect and improve water quality in the County. (NRCS)
- Too many abandoned “barrow sites’ are loading into surface waters in the County. Inventory through assessment. (Morrison SWCD)
- Support construction of sediment ponds, basins (including re-establishment of wetlands), and other erosion and sediment control BMP’s throughout the watershed. (MPCA)
- Develop rules requiring application of and appropriate design requirements for sediment ponds, basins, contour farming, buffer strips, conservation tillage, grassed swales/draws, and other erosion and sediment control BMP’s. (MPCA)
- Provide design recommendations and technical assistance for erosion and sediment control plans for all roadway projects. (MPCA)
- Provide support and assistance for the construction of sediment ponds and basins for intensive agricultural operations. (MPCA)
- Facilitate discussions and provide seminars or workshops for LUG’s, agencies, and relevant parties on issues of BMP’s and stormwater. (MPCA)
- Investigate and implement measures that address controlling the movement of sediment once it has entered the river or stream system, and the minimization of bank erosion. (MPCA)
- Regulate stormwater runoff discharges and volumes on a watershed-wide basis to: minimize flood problems, flood damages, and the future cost building and maintaining stormwater management systems. (MPCA)
- Eliminate or minimize the discharge of untreated stormwater to surface waters, watercourses, and tributaries. (MPCA)
- Reduce the level of pollutants in waters of concern identified in TMDL studies or 303(D) list. (MPCA)
- Prevent or minimize contaminates from entering surface waters. (MPCA) (Bellevue Twp)

PRIORITY CONCERN: Groundwater quality for private wells

- Test, map, and monitor groundwater well test results and collect data indicating trends in groundwater quality. Nitrate contamination from over application of animal waste and confined ag-facilities could potentially become a drinking water hazard. (Morrison Public Health) (City of L.F.)
- Promote information sharing regarding monitoring projects, continue to promote sealing of unused wells, identify and protect possible regional water supplies, identify and protect possible recharge areas. (Morrison SWCD) (Benton SWCD) (City of L.F.)

PRIORITY CONCERN: Septic systems in the wellhead protection zones

- Septic systems within the Wellhead Protection Zones need to be inspected and any that are considered none-compliant with existing State and County standards would be required to update to current standards to halt possible contamination to groundwater. (DMA) (City of Royalton) (City of L.F.)

PRIORITY CONCERN: Impaired Waters

- Currently a few TMDL studies are underway or completed within or affecting the County, such as Swan River (fecal), Little Rock Creek (nutrient, biota), and Elk River Watershed (TSS, DO). As additional impaired waters are being identified LUG's need to be involved. The LUG's are pivotal in bringing local perspectives to this process, implementing clean water BMP's on the landscape, and providing the critical link between State support and landowners. (DNR Eco Resources/Wildlife)
- Once TMDL and Implementation plans are finalized, clean water grants need to be made available and projects implemented. (DNR Eco Resources/Wildlife)
- Address impaired waters issues and how the County plans to participate in the development of TMDL pollutant allocations and implementation of TMDL's. (MPCA)
- Provide a list of impaired waters and types of impairments in the Water Plan. (MPCA)
- Commit to submit any data the County collects to MPCA for use in identifying impaired waters and data entry into the STORET database. (MPCA)
- Provide plans, if any, for monitoring yet unmonitored waters for more comprehensive assessment of waters in the County. (MPCA)
- Describe actions and timing the County intends to take to reduce pollutants causing impairments. (MPCA)
- Participate as a member of the Little Rock Creek and Lake Technical Committees. (Benton SWCD)

PRIORITY CONCERN: Groundwater protection Data Collection

- Collection of geologic data and groundwater information is necessary in order to provide insight into future water appropriation potential throughout the County. (DNR Waters)
- Have a Geologic Atlas developed for the County to provide an in depth inventory of bedrock in addition, surficial geology and hydrogeology. (DNR Waters)

PRIORITY CONCERN: Local coordination for water related issues

- Outline all entities and their responsibilities within the County for water related issues; assessing wetland drainage extent and developing strategic restorable wetland and waterway buffer inventories by minor watershed across the County; improved assessment of threats to groundwater resources. (DNR Eco Resources/Wildlife)

PRIORITY CONCERN: Beaver control

- Develop a plan to address beaver impoundments that flow back on to property, causing flooding and other issues. (DMA)

PRIORITY CONCERN: Watershed land use

- Watershed issues and land use have a great impact on many fluvial processes. Changes in the landscape can have direct impacts to water quality and quantity. Use of buffer strips and native plants augment the ability of the landscape to accept changes. Address land use as it affects tributary streams and ditches. Offer potential buffer or plant incentives for BMP's and increase education regarding land use principles. (DNR Fisheries)

PRIORITY CONCERN: Groundwater protection from Irrigation Practices

- Educate agricultural producers on the importance of Water Irrigation Management. (NRCS)
- Work with agricultural producers on “Best Management Practices” in the areas of fertilizer, manure, and farm chemical applications, which will minimize the potential to pollute groundwater, especially nitrate leaching. (NRCS) (Bellevue Twp)
- Monitor and base information on groundwater pumping (irrigation) effects on groundwater levels and nitrate levels. (NRCS) (L.F. Township) (City of L.F.) (Bellevue Twp)
- Projects to aid in groundwater re-charge. (Morrison SWCD)
- Map and monitor aquifers. (Morrison SWCD)
- Review irrigation water logs, irrigator application permits to ensure proper procedure is followed, and ensure proper set-backs are enforced. (Morrison SWCD)
- Continue to monitor observation wells for groundwater levels and collect daily-recorded precipitation levels in the County. Collect baseline data on groundwater level fluctuations and trends. (Morrison SWCD)
- Assess ground water resources, determine long-term trends, interpret impacts of pumping and climate, plan for water conservation, evaluate water conflicts, and otherwise manage the water resource. (Morrison SWCD) (City of L.F.)
- Consider the impacts of windbreak removal for irrigation systems, which leads to wind erosion. (Morrison SWCD)
- Conduct a base line study of water supplies to determine impact on groundwater and surface water resources as the most intensive cultivated lands are also located in the sand plain areas. Much of the cropland utilizes irrigation since this area has an abundant supply of groundwater at shallow depths. The groundwater resource makes irrigation wells economically viable. (Morrison SWCD) (P&Z) (City of L.F.)
- An evaluation of the current process for obtaining a DNR Waters Appropriations Permit would be beneficial and how it relates to the Water Plan. DNR regulates the amount of water, but how the land is used falls under local jurisdiction (i.e. ag, residential, development, etc.). A proactive approach by evaluating current land use practices within areas of the County and the potential for future water appropriation may be beneficial to sustaining groundwater resources. (DNR Waters)
- Educational workshops for citizens and irrigators on sustainability and “Best Management Practices”. (DNR Waters)
- Have DNR and Wellhead managing staff review requests for new irrigation wells that are within or adjacent to Wellhead Management Areas. This would allow Wellhead managing staff notification to new wells that may draw down water from the same aquifer. If significant lowering of water levels is noticed, restrictions could be put in place by State and or County officials to protect Wellhead Management Area groundwater resources. (DMA) (City of Royalton)
- Work with appropriate entities to identify aquifer thresholds to maintain adequate water supply for consumptive uses. (MPCA) (L.F. Township) (City of L.F.)
- Identify and protect re-charge areas. (MPCA)
- Continue to monitor groundwater levels. (MPCA) (L.F. Township)
- Work with industries, municipalities, and the agricultural community on water conservation practices. (MPCA)
- Identify groundwater-monitoring needs. (MPCA)

PRIORITY CONCERN: Protect, enhance, and improve (where needed) surface water quality of lakes, rivers, streams, and wetlands

- Manage storm water runoff via landscaping, vegetative buffers, rain gardens, etc. (Shamaineau Lake Assoc.)
- Educate landowners to convey the need for “Best Management Practices”, provide incentives such as cost-share, and tax breaks to ensure successful implementation. (Shamaineau Lake Assoc.)
- Solicit local civic groups (i.e. Boy Scouts/Girl Scouts) to volunteer time and energy to implement a buffer. (Shamaineau Lake Assoc.)
- Manage (where needed) and prevent the introduction of aquatic invasive species. Educate and address the issue in Lake Management Plans. (Shamaineau Lake Assoc.)
- Maintain strong protection against destructive shoreline developments and watershed developments. To include limits on large housing developments near surface waters and agricultural practices that would affect the water quality of lakes, rivers, streams, and wetland. (Shamaineau Lake Assoc.) (Lake Alexander Property Owners Assoc.)
- Provide landowners information on shoreline and watershed good management practices. (Shamaineau Lake Assoc.) (Morrison SWCD)
- Discourage airborne pollution of the lakes (i.e. mercury and other heavy metals). (Shamaineau Lake Assoc.)
- Enforce septic updates, implement shoreline stabilization, and watershed management practices on surface waters in the County to improve water quality – coli forms, algae blooms, etc. (Morrison SWCD)
- Adhere to set-backs and ordinances pertaining to grading, filling, and development of non-conforming lots along surface waters. (Morrison SWCD) (Lake Alexander Property Owners Assoc.)
- Buffers. Recommend and provide assistance on the preservation or installation of buffers along surface water features through applicable conservation programs. (Morrison SWCD)
- Identifying water resources with high water quality will assist local and State natural resource managers prioritize protection activities. Systematic, repeatable way of identifying high quality waters with local input and agreement; prioritize protection and restoration of uplands adjacent to existing wetlands and other surface waters (regardless of ownership type) to minimize degradation of existing high quality wetlands. (DNR Eco Resources/Wildlife)
- Surface waters have been highly impacted by direct manipulation of shoreline areas. This affects water quality and even quantity. Residential development is having significant impacts to surface waters by adding impervious surfaces and increasing runoff. Ditch cleaning and continued development on river and stream systems prevent fluvial processes from taking place naturally, Sediment is added due to disturbances and increased flow for the increased impervious areas. Shoreline ordinances Countywide need to adopt alternative shoreline rules to protect both lakes and moving waters throughout the County. Protections that are more stringent need to be in place to prevent further degradation and potentially restore shoreline areas. (DNR Fisheries)
- Protect wetlands with buffer areas and BMP’s to aid in water infiltration. Wetlands and ditches convey a considerable amount of water. Protection of wetlands through minimal impact buffering will aid in their filtering capacity. (DNR Fisheries)
- Conduct water quality monitoring and lake assessments on area lakes. (P&Z)
- Conduct delineation of sensitive shoreland areas in the County and considerations of special protection ordinances to protect these sensitive areas. (MPCA)

- Conduct public promotion and education on the importance of shoreland buffers. Educate on the availability of cost-share and conservation set aside programs. (MPCA)
- Continue Citizen Lake Monitoring Program on area lakes as a cost effective way collecting water quality data. (MPCA/Lakes and Streams Monitoring Unit)
- Dock regulations. (Lake Alexander Property Owners Assoc.)
- Continue wetland permitting system, education, inspections, enforcement of wetland Conservation Act. (City of L.F.)
- Constant monitoring on rivers and streams to isolate point-source pollution. (Pierz Township)

PRIORITY CONCERN: **Non-point source pollution** (City of L.F.)

PRIORITY CONCERN: **Pierz, City Lagoon**

- Informing public of the water testing results. Test immediately before draining lagoon. Notify farms in the vicinity prior to draining. (Pierz Township)

D. Priority Concern Selection:

The priority concerns were selected based on the discussions from the meetings held, the evaluation of surveys collected from all sources, and the written comments submitted by local and state review agencies. Participants were given the opportunity to rank the broad range goals listed, and add specific action items to the goals they selected. The highest ranking goals were then selected as the Morrison County priority concerns, with the most numerous action items listed under the broad range goal. The priority concerns appear to be in line with other state, local and regional plans, and with concerns expressed by other state and local agencies. Morrison County intends to coordinate with various local government, state and federal plans to assure consistency and identify areas of potential coordination of actions.

E. Priority Concerns Not Addressed By The Plan:

While most submitted comments have true merit, the Morrison County Local Water Management Plan Task Force realized only a number of them could be effectively implemented in the next five years. Most of the concerns, listed by the participants, that were not selected, were either already included in a broader goal, were site specific, or would take more staff and/or funding than will be available to accomplish the entire water management plan.