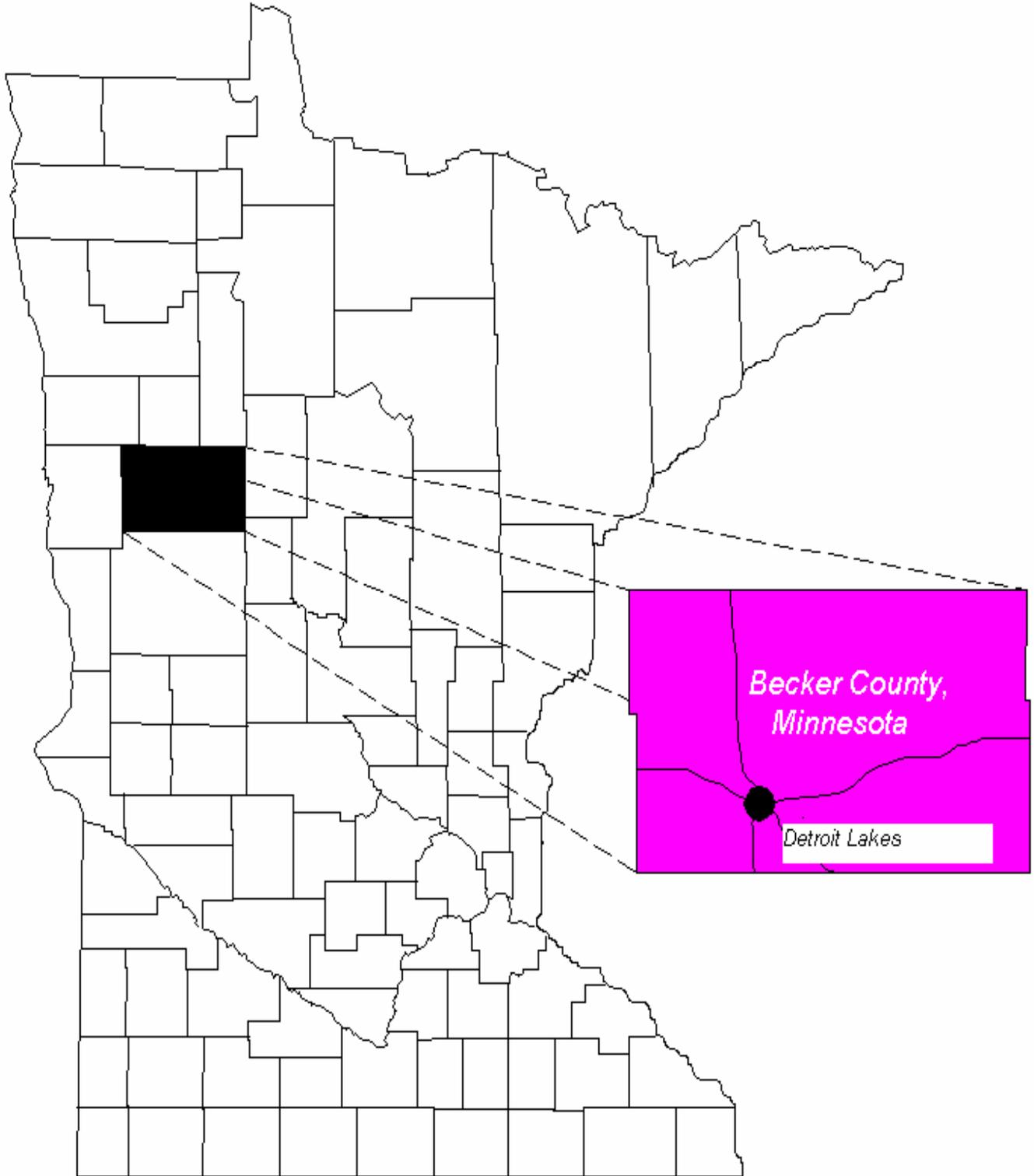


# *Becker County Local Water Management Plan*



**January 1, 2005 – December 31, 2014**

An amendment to the plan and implementation schedule will be completed Dec. 31, 2009

Prepared by the Becker Soil and Water Conservation District  
Becker County Local Water Planning Task Force

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Local Water Management Plan  
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## **A. Executive Summary:**

### **Introduction**

Becker County is located in west-central Minnesota, 30 miles east of the Fargo/Moorhead metropolitan area, and encompasses an area of approximately 1,440 square miles. From 1990 to 2000 Becker County experienced steady growth in population with the number of residents listed at 30,000. In reviewing the Minnesota State Demographers census projections it is expected that Becker County's population will increase to 32,700 by 2010, and to 35,400 by 2020. However current growth rates indicate these estimates could be easily surpassed.

Of the 921,000 acres that make up Becker County the two predominant land uses are forestland (361,191 ac. 39%) and cultivated land (302,058 ac. 33%). The dominant land use in the county remains agriculturally based, with forestry uses not far behind. Becker County is blessed with an abundance of water resources with 487 lakes located within its boundaries and is situated in a prime tourist area of Minnesota due to its natural beauty of lakes and forests.

Administration of the Local Water Management Plan has been the responsibility of the Becker Soil and Water Conservation District since 1990. A revision of the plan was completed in 1997 and expired December 31, 2003. This update will cover the ten year period from 2005 – 2014. The accomplishments of the Local Water Management Program in Becker County have been many. A summary can be found on page 27 of this document.

### **Purpose**

The purpose of the Local Water Management Plan (LWMP) is to identify existing and potential problems and opportunities for protection, management and development of water resources and related land resources in Becker County. Pursuant to the requirements of Minn. Stat. 103B.311 subd., the five requirements of this plan are as follows:

1. The plan must cover the entire county.
2. The plan must address problems in the context of watershed units and groundwater systems.
3. The plan must be based upon principles of sound hydrologic management of water, effective environmental protection, and efficient management.
4. The plan must be consistent with local water management plans prepared by counties and watershed management organizations wholly or partially within a single watershed unit or ground water system.
5. This revision of the Becker County Local Water Management Plan covers the period 2005-2015, with an amendment to the implementation schedule to be completed in 2010. In addition work plans and reports will be prepared annually.

## **Summary of Goals and Actions:**

**Description of Priority Concerns in no particular order of importance are:**

### **Priority Concern: Surface Water Quality and Management**

Becker County has an abundance of open water areas. From rivers, streams, lakes and marshes surface water accounts for 14% of Becker County's total surface area. Water quality concerns arise from a variety of areas such as existing and potential impacts of development, impacts of drainage on water level management, maintaining a safe drinking water supply, industrial and agricultural needs along with fish and wildlife habitat. Areas of this concern to be addressed include the following.

- Nutrient reduction from the Upper Pelican River Watershed Area to Big Detroit Lake. Estimated cost (plan and implementation \$1.5 million)
- Improve surface water quality in the Sand Lake Watershed through intense land use inventorying and establishment of conservation measures to achieve improved water quality within the watershed. Estimated cost. \$242,500.
- Continue to assist with the Becker COLA lake water quality monitoring program and the Restore the Shore Tree Program to reestablish natural lake shore vegetation. Costs \$65,000 over 10 years for trees and monitoring cost.
- Work with the Becker COLA to identify at risk lakes and assist in the development of lake management plans.
- Maintenance of existing drainage systems and establishment of additional buffer strips to reduce sedimentation impacts in the Buffalo and Wild Rice Watersheds.

**Priority Concern: Stormwater Management**

Assist with the implementation of the NPDES permit program that requires the development and implementation of approved erosion and sediment control measures on development and re-development projects.

- Promote the use of existing federal, state and local conservation programs that reduce soil erosion and sedimentation through the establishment of buffer strips, sediment control basins and grassed waterways. Priority will be given to lands in the Buffalo-Red Watershed and the Wild Rice Watershed.
- Work closely with the Pelican River Watershed Districts permit program for stormwater control and impervious surfaces in the shore impact zone.
- Educate contractors on the NPDES permitting program and its requirements for controlling stormwater runoff during construction.

**Priority Concern: Groundwater Quality**

Current water quality data reflects that the quality of the ground water in Becker County is generally good. However there are areas in the County such as the Pineland Sand Plains in eastern Becker County, and the Pelican River Sand Plains in south central Becker County, that are more susceptible to pollutants entering them due to their high permeability rates. From a planning perspective it is important to provide protection to the groundwater recharge areas. Priority concerns to be addressed in this plan include:

- Continue to inventory lake shore parcels for non-conforming ISTS systems and bring them into compliance. Enforce individual sewage treatment system ordinance countywide. Provide low interest SRF AgBMP loans to upgrade non-conforming systems. \$350,000 over 10 years.
- Support and assist with the development of wellhead protection plan for communities in the county that have not completed them. Estimated cost is staff time.
- Continue to support and provide cost-share incentives to seal abandoned wells in Becker County. Estimated cost \$50,000 over 10 years, plus staff time.
- Continue to conduct free well water testing clinics for county residents to determine the presence of elevated nitrates. Costs, staff time to conduct clinics.
- Assist irrigators in the Pelican River Sand Plains area and the Pineland Sand Plains in developing conservation plans on irrigated acres incorporating best management practices to reduce potential groundwater contamination.
- Encourage the proper closure of animal waste holding facilities where livestock is no longer present. Inform landowners of programs available for proper closure of these facilities.

**Priority Concern: Development Pressures**

As stated in the 2003 Becker County Comprehensive Plan increased development pressures have been placed on the County's agricultural and lake resources. Traditional agricultural areas have experienced an increase in the development of non-farm housing, along with increased development pressures being placed on many

of the County's small remote lakes. For these reasons development pressures have been identified as a high priority item to be addressed in this Local Water Management Plan update. These priority development concerns will include:

- Advocate for changes to the Becker County Zoning ordinance to guide new development with thorough planning and appropriate consideration for natural resources. Costs \$30,000
- Educate landowners on the importance of natural, native shoreline vegetation for maintaining water quality and lake habitat, and encourage maintenance and restoration of native vegetation along shorelines.
- Identify and protect sensitive areas around lakes from extensive inappropriate development.

### **Consistency with other plans:**

In preparation of the Becker County Local Water Management Plan (LWMP) the most recent plans available from several entities were examined to ensure consistency with their concerns.

The Becker County Comprehensive Plan that was completed and adopted in 2003 raises many of the issues that are addressed in this LWMP update. They compliment each other in their concerns on water quality, shoreland protection, development pressures and septic system monitoring. It encourages cluster and community water and septic systems for lakeshore and cluster developments and seeks sustainable development and economic use of Becker counties natural resources.

The Pelican River Watershed District is currently in the process of updating their existing Management Plan with the revision due in 2005. Upon reviewing their preliminary concerns the LWMP will address several of the issues to be included in their updated plan. Some of which are, increased treatment of urban stormwater runoff, reduce the phosphorus loading into Big Detroit Lake, identify agricultural runoff sources, and promote educational opportunities to improve citizen knowledge and interest.

Despite not an official Watershed District, the Otter Tail River Watershed Basin Plan completed in 2002, reflects many of the concerns of the County's LWMP. The Otter Tail River plan has been recognized by the Board of Water and Soil Resources as an adequate plan for addressing conservation programs.

The 2002 White Earth Reservation Integrated Resource Management Plan that establishes goals, policies and strategies that guide the stewardship of the resources of the White Earth Indian Reservation's natural resources was reviewed for compatibility with the LWMP.

Other current plans reviewed for compatibility with the LWMP included the Buffalo-Red River Watershed District Management Plan, the Wild Rice Watershed District Management Plan, the Cotton Lake Management Plan, Bad Medicine Lake, Pickerel Lake, and the Sand Lake Watershed Project plan.

The Becker County Local Water Management Plan incorporates implementation activities that will assist in addressing the identified concerns of these plans.

### **Recommendations to Other Plans and Official Controls:**

Becker County is currently revising the County Zoning and Shoreline Ordinances regarding development densities, shoreline impacts, resort conversion, etc. With increased development pressures being placed on our Natural Environmental lakes it seems appropriate that the State would re-examine the Shoreland Management Rule to provide adequate protection to our small sensitive lakes from over development.

## **B. Priority Concerns:**

### **Priority Concern: Surface Water Quality**

Protect and enhance the surface water quality in Becker County, and where degradation has occurred assist in providing restoration of water quality.

Objective A. Provide for protection of all surface waters in Becker County through enforcement of existing regulations, use of existing programs and development of new programs.

Objective B. Protect our wetland resources from degradation

### **Priority Concern: Stormwater Management**

Becker County recognizes that stormwater management applies to both residential and agricultural areas and that water resources may be protected by proper land use and best management practices.

Objective A. Improve stormwater runoff quality and reduce quantity by increased utilization of stormwater management practices throughout the County.

Objective B. Promote compliance of stormwater rules and ordinances by continuing to educate landowners on the use of BMPs that reduce runoff.

### **Priority Concern: Groundwater Quality**

Becker County has an abundant groundwater resource in its surficial and buried drift aquifers throughout the county. Surficial aquifers are easily and quickly recharged by precipitation since they are exposed to the ground surface. They also can be quickly contaminated by a variety of sources, such as chemical spills, failing ISTS systems, improper dumping, etc.

Objective A. Protect and preserve ground water quality in Becker County.

### **Priority Concern: Development Pressures**

In recent years Becker County has seen increasing pressures on the County's agricultural and lake resources. Traditional agricultural areas have seen an increase in the development of non-farm housing, including those areas designated agricultural in previous plans. Sharp rises in development is similarly increasing on our more remote lakes, and in more intensive development patterns than seen historically.

Objective A. Becker County will promote development patterns that protect agricultural land, forests, lakes and wetlands throughout the county.

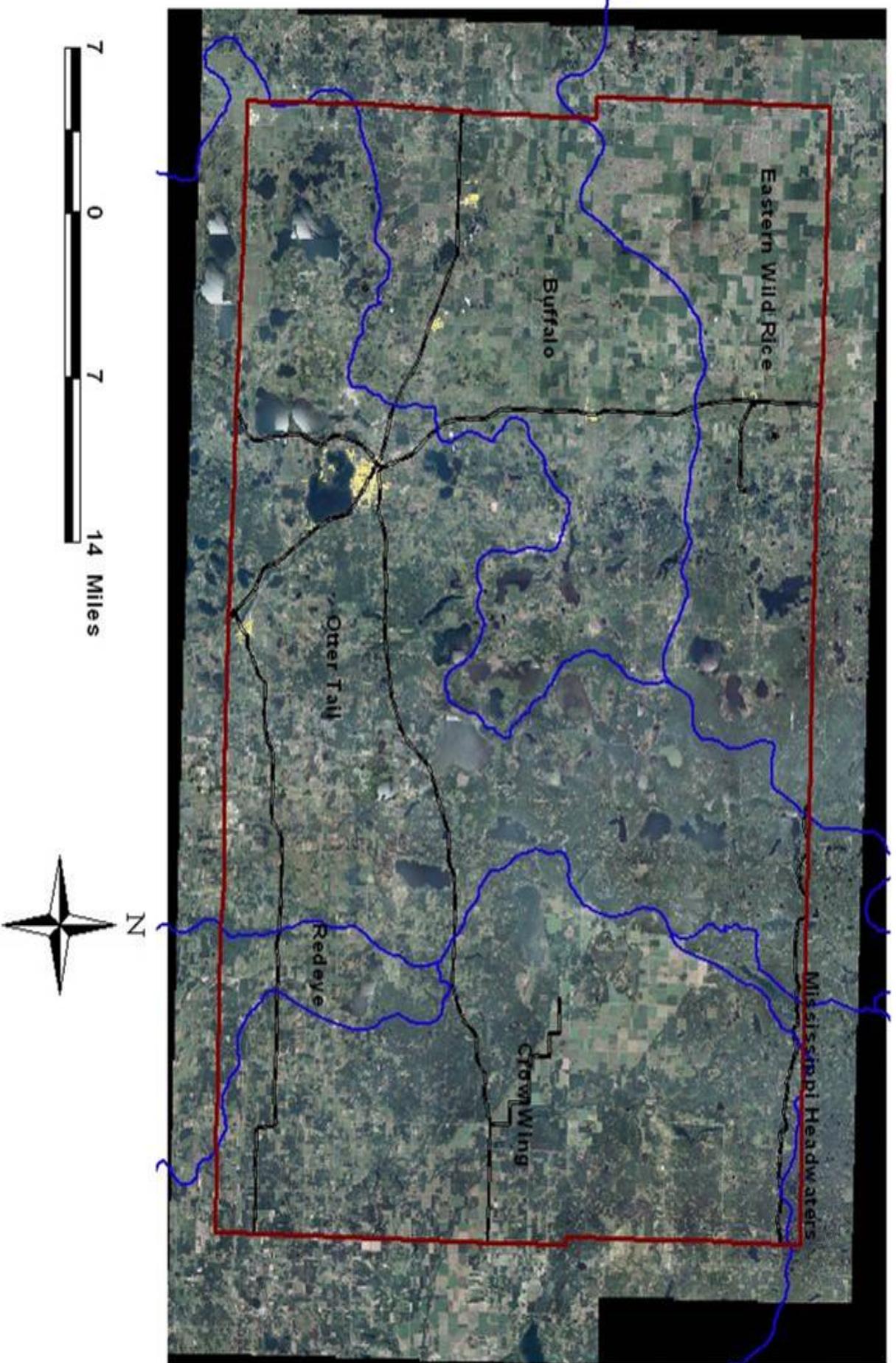
Objective B. Encourage development patterns and land use practices that protect, enhance, maintain or restore water quality.

## **Assessment of Priority Concerns**

### **Assessment of Surface Water**

Becker County is traversed by a continental divide, with the eastern third of the County contributing to the south-flowing Mississippi River basin, and the central, west, and southern County flowing into the Red River basin. The western portion of Becker County is drained by the Wild Rice, Buffalo and Otter Tail Rivers;

# Becker County Major Watersheds



these three rivers flow into the Red River of the North. Eastern Becker County drains into the Crow Wing and Redeye, and Mississippi Headwaters watersheds that flow into the Mississippi River drainage basin.

Maximum runoff generally occurs in the spring and early summer. Flooding is generally not a major problem, although periodic high-peak flows do occur and can cause damage to infrastructure and to agricultural production.

Open waters, rivers, streams and wetlands account for 14% of Becker County's total surface area. Lakes and wetland areas provide the resource for the County's tourism and recreation industry, and contribute to the high quality of life for residents.

The area of Becker County is primarily covered by four major watersheds. They are the Wild Rice River, Buffalo River, the Otter Tail River and the Crow Wing. Of these four the Otter Tail covers the largest area in Becker County, 350,636 acres (total watershed size 1,269,120 ac.) and contains a significant number of the 487 lakes located in the county.

Surface water in the **Otter Tail Watershed** portion of Becker County is generally considered to be good. However isolated areas of concern do exist, such as those found in Lake Sallie as a result of Ditch #14 dug to drain Lake St. Clair, which served as a sewage disposal area for the City of Detroit Lakes for many years. This ditch resulted in a discharge of sewage effluents into the Pelican River and thence to Muskrat and Sallie lakes for more than 80 years. Related algae problems on Lake Sallie were in large part the result of upstream sewage treatment. Changes to the sewage treatment system completed in 1976 resulted in significant reductions in loadings from upstream sources, and in lake concentrations. Nevertheless nuisance algae blooms, and other symptoms of poor water quality continued, so in spite of water quality improvements, Lake Sallie remains a borderline eutrophic lake.

Other surface water assessments in the Otter Tail watershed deal with the impacts from sedimentation, storm water runoff, lake shore development, **(additional surface water assessments are discussed in the Development Pressures Concern of this plan)** manure management and feedlots. Since 1991 additional surface water monitoring programs have been undertaken, such as the Becker COLA's lake monitoring program and the lakeshore septic system inventory program. With the tremendous economic impacts derived from surface water resources, it is imperative that the water quality be maintained and that efforts are made to expand the information available on the water quality of our many lakes and streams.

Understanding the characteristics of the Otter Tail River Watershed is important to water resource management. Modifications to watershed, such as land use, development, drainage of wetlands and the loss of forests can increase the rate and volume of surface water runoff. Increases in the rate or volume of surface water runoff may escalate the delivery of sediments, nutrients and pollutants to lakes and streams and also cause an increase in flooding and erosion along stream banks.

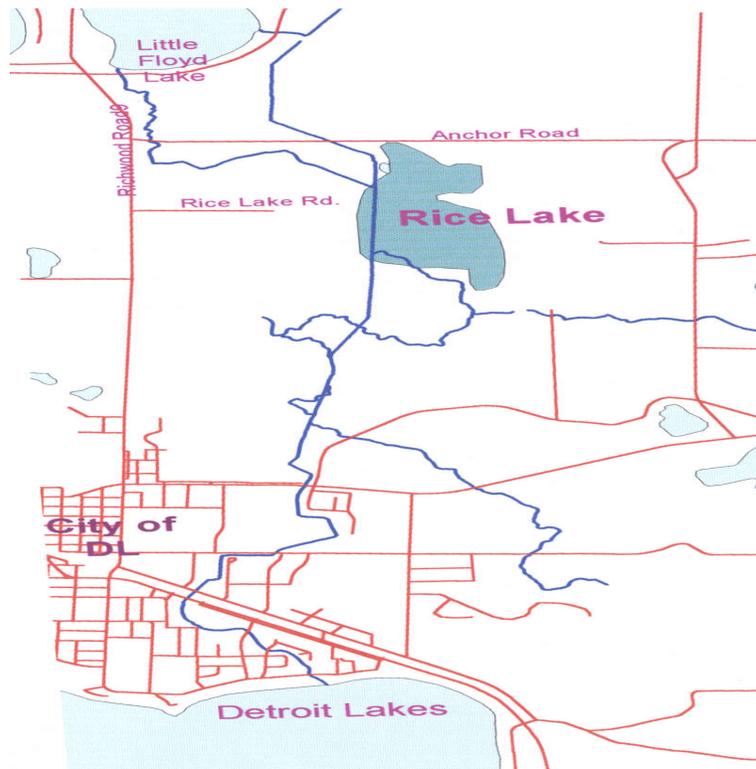
The Pelican River Watershed District is making a concentrated effort to address these problems. Since the 1993 Phase 1 report, based on data collected in 1987 and 1988, considerable progress has been made in addressing some of the origins of external loading in the Sallie basin and from upstream areas via the Pelican River and Big and Little Detroit Lakes. For example, both Lakeview Township and the City of Detroit Lakes have adopted fertilizer ordinances which virtually eliminate the application of phosphorus fertilizers in much of Lake Sallie's watershed area. Shoreland ordinances are strictly enforced, and aimed at reducing impacts in riparian areas.

Also, a proposal for a combination of Clean Water Partnership grants and loans, to deal with several aspects of the situations building on the Phase 1 study are being submitted. The program is aimed at lowering the average trophic state by reducing nutrients entering from upstream lakes. Also the Pelican River Watershed

District (PRWD) and the City of Detroit Lakes have formed a storm water task force in an effort to address concerns about handling runoff from urban areas in and around the city of Detroit Lakes. The 2003 PRWD Activities Summary stated that overall the lakes located in the watershed district had better clarity and lower phosphorus levels than in recent years.

Following is a summary of a Water Quality Assessment of the Upper Pelican River Watershed conducted by the Minnesota Pollution Control Agency and the Pelican River Watershed District.

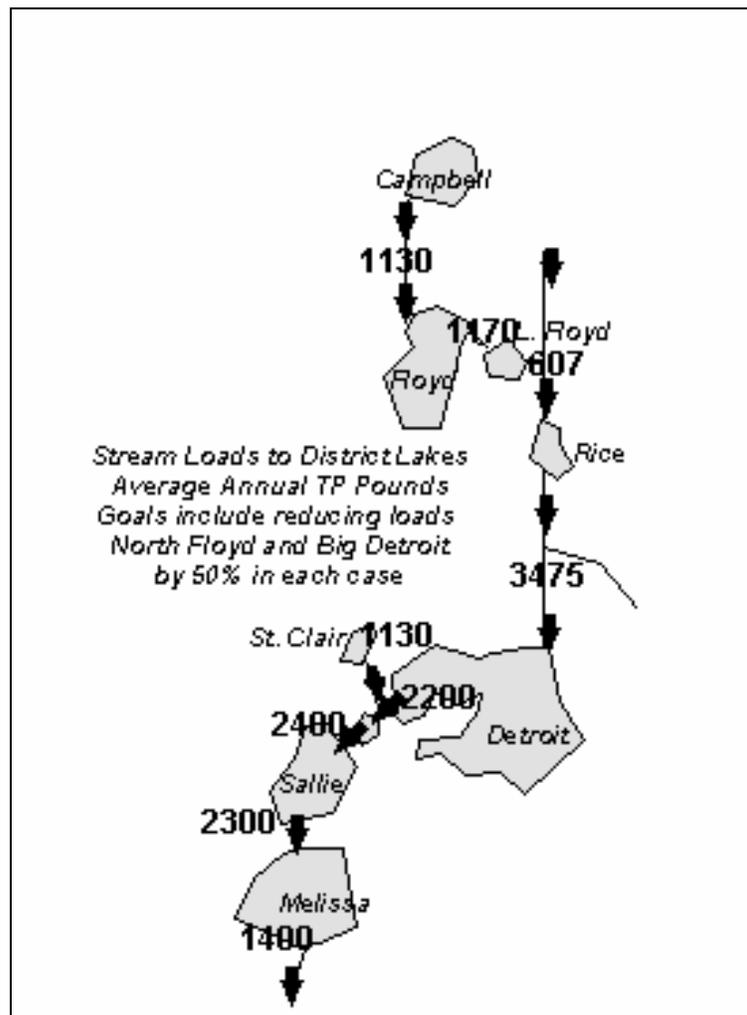
**Water Quality Assessment of the  
Upper Pelican River Watershed  
(North Floyd, Floyd, Little Floyd, Rice Wetland,  
Detroit Lake, Little Detroit Lake)  
Becker County, Minnesota**



The Upper Pelican River Watershed (drainage basin through Detroit Lakes' outlet) has been monitored over the past five years at six stream and five lake locations by the Pelican River Watershed District in conjunction with several partners including the Minnesota Pollution Control Agency. The purpose of these diagnostic efforts has been to establish short and long term water quality management goals and objectives.

Using the PRWD's database, stream and lake water quality was summarized using standard limnological assessments. This assessment is to aid future efforts to refine stream and lake management efforts of the Pelican River Watershed District.

The water quality of the Upper Pelican River watershed is more similar to lakes and streams of the Northern Lakes and Forests (NLF) ecoregion than the North Central Hardwood Forests (NCHF) ecoregion. There are key stream locations exhibiting elevated average total phosphorus concentrations (a key plant nutrient that largely determines water quality) including: (1) the inlet to North Floyd Lake - Campbell Creek (CC1) with an average of 89 ppb total phosphorus; and (2) the outlet of Rice Lake Wetland, Pelican River 3 (PR3) with an average value of 95 ppb total phosphorus. Total phosphorus loading to North Floyd Lake from Campbell Creek, in turn, causes increased lake phosphorus and algal concentrations and reduced water clarity. The same is true for the Pelican River system draining via PR2 and PR3 which cause elevated total phosphorus loading to Big and Little Detroit Lakes. Recent (2002) additional stream monitoring of the inflow streams to the Rice Lake Wetland has shown extremely elevated nutrient and sediment concentrations. Target stream phosphorus concentrations, necessary to improve North Floyd and maintain Detroit Lakes are likely more on the order of 40 – 50 ppb total phosphorus. Over the 1998-2000 time period, which has annual precipitation exceeding average conditions, there is a general increase of about 2,000 kg P per year (or about 4,400 pounds) of loading coming through the Rice Lake Wetland. Hence, the Rice Lake Wetland should receive priority attention to better understand nutrient sources and processing occurring within the wetland and for priority rehabilitation management actions.



Accordingly, it is recommended that a 50% reduction in total phosphorus and sediment loadings, relative to 1998-2000 conditions, be accomplished for Campbell Creek (CC1), and Pelican River outlet of Rice Lake Wetland (PR3). Otherwise, water quality for North Floyd Lake will continue to be impaired and the Rice Wetland outlet may threaten the quality of the Detroit Lakes over time due to cumulative impacts. Big Detroit and Little Detroit have exhibited better water quality than generally defined by lake simulation models using the measured stream values. It should be noted that internal P loading appears to be minimal in the Detroit Lakes in contrast to the continuing high internal loading that continues to be observed in Lake Sallie 15 + years after extensive changes in P loading to that lake realized by wastewater facility upgrades. It is recommended that additional watershed rehabilitation efforts are needed to minimize internal loading within the Detroit Lakes basins – both of which have optimal depths (e.g. shelf areas between 10 and 35 feet) for developing internal P loading. Hence, minimizing cumulative P loading impacts from watershed sources to these important lakes - will be an important management strategy.

The lakes of the study area could exhibit declines in transparency and increases in the amount of algae with increases in in-lake total phosphorus. The Floyd Lake System and Detroit Lakes will be sensitive to changes (increases or decreases) in nutrient loading from watershed or in-lake sources. Increases of in-lake phosphorus will lead to increased degradation of the lake. It is essential, therefore, that all local government focus upon lake protection via land use/zoning authorities (e.g. Becker County, City of Detroit Lakes and the Pelican River Watershed District). Extra efforts to manage storm water quality from the urban and agricultural areas will have economic benefits.

It is hoped that this working paper will help refine future management actions for these important water resources.

The second largest watershed in Becker County is the **Crow Wing Watershed** which has 222,081 acres of its 1,253,760 acres in Becker County and covers approximately the eastern one-quarter of the county. Water quality and quantity information is limited in the watershed. However local concerns include development along the river corridor, farm runoff, obstructions in the river, recreational usage, and flooding are among the items listed in the Upper Mississippi River Basin Water Quality Plan. The portion of the Crow Wing Watershed in Becker County would be the very northeasterly portion and contains several tributaries to the Crow Wing River. These tributaries are Kettle Creek, the Shell, Straight and Fishhook Rivers. Water quality data in this area of the watershed is also limited. However water quality monitoring has been taking place on several of the area lakes located in the watershed to establish water quality baseline data.

The **South Branch of the Wild Rice River Watershed** (139,470 acres in Becker County) and the **Buffalo River Watershed** (173,139 acres in Becker County) essentially drain the north-western portion of Becker County. This portion of Becker County is considered a glacial moraine area and is characterized as rolling prairie, interspersed with lakes, ponds and wetlands. The economy of the area is primarily agricultural production of small grains, soybeans and sugar beets.

The Minnesota Pollution Control Agency (MPCA) in cooperation with the Wild Rice Watershed District has been responsible for assessing the water quality status of streams, rivers, and lakes within the Wild Rice Watershed District. The MPCA generally performs an assessment of whether surface water bodies meet water quality standards every other year.

The main threat to the surface water quality in these portions of the county can be attributed to non-point sources such as failing septic systems, agricultural runoff of fertilizers and feed lot runoff. However, a more common non-point pollution problem involves increases in turbidity due to wind and water erosion of soil from the land. The sediment entering the streams and lakes originate from upland erosion, stream bank erosion, drainage ditch erosion, and gully and wind erosion.

An area of the Buffalo River Watershed that has been identified as a high priority surface water quality concern is the Sand Lake Watershed located in extreme western Becker County. In the fall of 2002, the Red River Basin Commission (RRBC) received an Environmental Protection Agency (EPA) 319 Grant to help implement and promote best management practices, including buffer strips, in three target areas on the Minnesota side of the Red River. One of the project areas includes the Sand Lake Watershed located in Becker and Clay counties. This small watershed straddles the Becker - Clay county line and has five small lakes within the hilly terrain that have been impacted by row crop production and feedlots within extensively drained areas. Extensive water quality data exists for this area. Critical sites to be addressed include areas adjacent to drainage ditches, tile inlets, swales, drained and farmed wetlands, shoreland areas, and steep slopes. Pre and post project monitoring will measure improvements in water quality as buffers and other best management practices are installed.

Most of the remaining lakes in the Buffalo and Wild Rice watersheds are located in the eastern portions of the watershed. Shoreland erosion is the most prevalent form of degradation on these lakes. Nearly all of the major lakes within this area of Becker County have outlet structures which maintain stable lake levels, thus reducing shoreline erosion. Most of these lakes have natural forested watersheds which result in little noticeable sedimentation within the lakes.

Since 1993 an extensive effort has been made by the Becker County Lakes Association (COLA) to establish base line data on water quality for many of Becker County lakes by determining its trophic status index using the Carlson Trophic State Index. A lakes trophic state index (known as TSI) is a way to measure a lake's health based on transparency, chlorophyll-a, and total phosphorous. The lower the number the healthier the lake. (additional lake assessment information can be found in the Development Pressures Assessment on pages and-)

As information on the water quality of area lakes increased over the years of testing it became apparent that more in-depth information would be very beneficial for proper lake management. In 2002 the Pickerel Lake Association responded to a COLA initiative to participate in the Sustainable Lakes Management Project and completed a Lake Management Plan (LMP) for Pickerel Lake, which was completed in 2003. This same effort was carried out for Cotton Lake and Bad Medicine Lake in 2004. These LMP's address specific issues raised by landowners around the lake and address such concerns as water levels, fisheries, water quality, development pressures, shoreline, and public access, to list a few. In addition each LMP contains a section of issues, goals and action plans to be achieved.

It is apparent that as more water quality concerns arise that Lake Management Plans will be very instrumental in how we manage our surface waters in Becker County.

### **Assessment of Storm Water Runoff**

The portions of the **Buffalo-Red** and **Wild Rice Watersheds** in Becker County are characterized as glacial moraine areas located east of the old Lake Agassiz beach ridge. The landscape of this region was formed by the soil, rocks and debris deposited by the glaciers. The glacial moraine area can be characterized as rolling prairie, with scattered areas of sharply rolling hills interspersed with lakes, ponds wetlands, and bogs. Soil erosion and sedimentation is a major pollutant in Minnesota and is a resource concern in Becker County. Soil erosion occurring in the county is associated with one or more of the following types: sheet and rill, wind, concentrated flow (ephemeral and classic gully), streambank, lakeshore, road bank, construction site and irrigation induced. The effects of soil erosion regardless of where or how it occurs present the same detrimental impacts to water quality and water quantity management.

Soil loss associated with storm water runoff in these watershed areas of Becker County is most severe in those lands which have rolling topography and steeper land slopes. Such soil losses due to storm water runoff are usually associated with agricultural activities in these areas. However in the eastern portions of these watersheds, where numerous lakes are present a significant amount of impervious surfaces (buildings, pavements, etc.) have also supplied greater volumes of storm water entering water bodies such as lakes and wetlands, thus increasing nutrient loading.

Effects of storm water runoff have significant impact on fish and wildlife resources, however modification in farming practices have been influenced by the federal government policy, and has resulted in large areas of land being converted to permanent cover. Erosion in some areas has been significantly reduced because of these programs. In addition the Becker SWCD has partnered with the Buffalo-Red Watershed District and has installed 30 sediment control basin on lands adjacent to or near the Buffalo River thus reducing effects of flooding during storm events as well as reducing sediments being deposited into the river.

The portions of the **Otter Tail River** watershed and the **Crow Wing River** watershed in Becker County have similar concerns when it comes to storm water management. Both watershed areas have numerous lakes, rivers, and wetlands dispersed within their boundaries. Each also has a reasonable amount of cropland, though not on a scale that is carried out in the northwestern portion of the County.

An area of storm water runoff impacts that has been largely overlooked until recent years has been urban and residential storm water management. The **Pelican River Watershed District**, which is part of the Otter Tail River Watershed, has been in the forefront of implementing measures to reduce the effects of storm water runoff within the watershed. In 2003 they adopted a permit system which requires landowners to obtain permits for such activities as:

- land alterations in the shore impact and bluff impact zones, and steep slope areas.
- adding replacing or repairing retaining walls, rip-rap or beach blankest
- adding impervious surface, if more than 25% of a lot.
- Subdivisions, plats or planned unit developments

Other conditions must be met for permits, including:

- storm water discharge rates to lakes, wetlands, streams, or adjoining properties may not be substantially increased
- plans for controlling runoff, nutrients, and sediments are provided
- ice ridges may be repaired, not modified (except for walkways)
- rip-rap and retaining wall projects must be for the purposes of correcting existing erosion or stability problems

In addition landowners have installed 11 sediment control basins adjacent to Campbell Creek thus reducing the sediment loading into Big and Little Floyd Lakes. Monitoring has shown a considerable improvement in the runoff coming from these areas.

With increasing shoreline development and alteration stormwater will continue to be a priority concern. Improving this management will encompass the reestablishment of vegetative buffers along lakes and rivers, maintenance of detention ponds and other storm water management facilities, and continued education to modify property owner behaviors.

With many Becker County lakes reaching full development the cumulative effects of shoreland alterations will become more obvious. These alterations typically increase the amount of phosphorus and sediment entering the lakes. In 2004 Becker County issued 145 sewer permits within the shoreland area and 38 land alteration permits, each having the potential to have an impact on the lake from runoff during construction, removal of natural buffer vegetation, etc. Lakeshore alterations typically increase the amount of phosphorus and sediment entering the lake. This increase degrades water quality and clarity, which in turn can have a

negative impact on overall property values as proven by a recent Bemidji State University study, “Lakeshore Property Values and Water Quality. This study should motivate lakeshore property owners to utilize erosion and sediment control measures, lakescaping, and preservation of lakeshore vegetation as a means to reduce the impacts of stormwater nutrient loading to area lakes.

The following Figures II-F through I reflect a study conducted by the Wisconsin Department of Natural Resources which shows the effects of development as natural cover is removed and impervious surfaces increased.

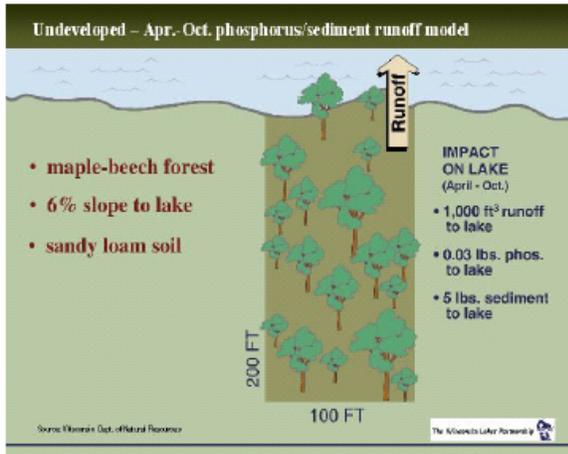


Figure II-F The first is a lot with its vegetation intact. Note the amount of phosphorus that enters the lake.

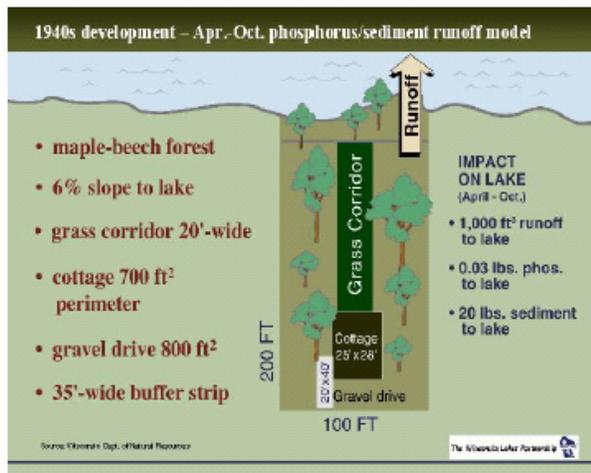


Figure II-G Here is the same lot with a 1940s type cabin and a 20-foot wide grassy path to the lake. There is a 35-foot buffer of vegetation and much of the lot is still wooded. The grass corridor is a typical lawn turf. The model is based on vegetation after it has recovered from construction.

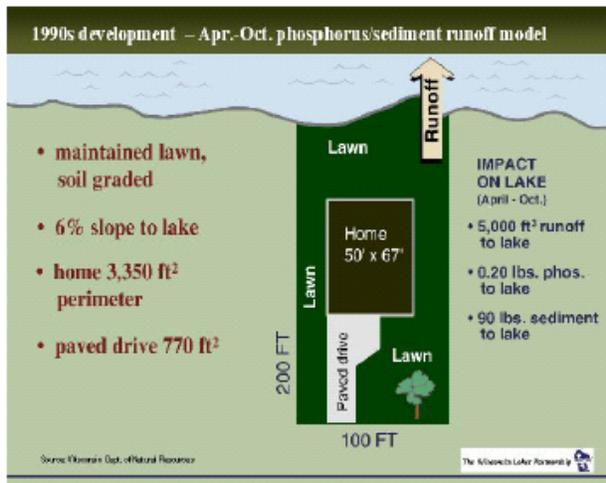


Figure II-H Here is the same lot with a 1990s type house, 50X67 feet: the 35-foot buffer of vegetation is gone, there is more impervious area and most of the trees are gone. Again the lawn is a typical grass turf. Note the amount of phosphorous that washes off the land and into the lake. Again, the model is based on vegetation after it has recovered from construction.

Data has been completed by the Wisconsin Department of Natural Resources.

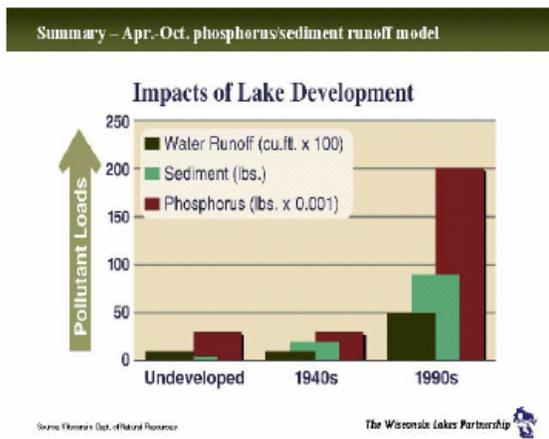


Figure II-I Change in runoff, compared to undeveloped lot:

- 1940s
  - runoff, no change
  - sediments, 4X increase
  - phosphorus, no change
- 1990s
  - runoff, 5X increase
  - sediments, 18X increase
  - phosphorus, 7X increase

This image summarizes the runoff of water, sediments and phosphorus at the three levels of development. When landowners remove the natural vegetation to build a home and establish a lawn, the amount of phosphorus and sediments that can be carried into the lake by rains greatly increases.

## Assessment of Groundwater

Becker County has an abundant groundwater resource in its surficial and buried drift aquifers located throughout the county. All of Becker County's citizens depend on the ground water for their drinking water. Concerns of groundwater contamination have always been high on its list in setting priorities for water plan implementation activities. These concerns include such items as locating and properly sealing abandoned water wells in the county, inventorying and identifying failing septic systems, agricultural contamination, potential for well contamination, education, effects of land use, abandoned animal waste holding facilities, and hazardous waste disposal.

Overall the quality of the groundwater in Becker County is good. Since 1995 the Becker SWCD has conducted free well water testing clinics annually. On average 150 water samples have been tested annually with a minimal number exceeding the recommended level for nitrate. Since 1993 the Becker County Comprehensive Local Water Plan has provided cost-share assistance for properly sealing abandoned water wells. This program has resulted in 347 abandoned wells being properly closed to date

In addition to the well water testing and abandoned well sealing the Water Plan staff and SWCD personnel have assisted in the development of two wellhead protection plans for the cities of Detroit Lakes and Frazee. The Wellhead Protection Program administered by the Minnesota Department of Health (MDH) is a means of protecting public water supply wells by preventing contaminants from entering the area that contributes water to the well or well field over a period of time. The wellhead protection area is determined by using geologic and hydrologic criteria, such as the physical characteristics of the aquifer and the effects which pumping has on the rate and direction of groundwater movement. A management plan is developed for the wellhead protection area that includes inventorying potential sources of groundwater contamination, monitoring for the presence of specific contaminants, and managing existing and future land and water uses that pose a threat to groundwater quality. The MDH has prioritized over 2,400 community wells and about 1,000 “non-transient, non-community” wells in Minnesota. This prioritization was based on population served, vulnerability, well construction and other factors. Following is the current list of twelve wells identified by MDH in Becker County along with their state ranking.

<u>Well</u>	<u>Rank</u>	<u>Well</u>	<u>Rank</u>
Twin Haven Estates	96	City of Audubon	717
Country Manor Mobile Home Park	152	Ogema Elementary School	839
Oak Grove Mobile Home Pare	174	Faith Luth. Church & School	906
City of Callaway	309	Daggett Trucking	1,007
Brandy Lake Estates	322	S.J. Electro Systems Inc.	1,019
City of Lake Park	682	Lakes Medi-Van, Inc	1,118

Note: A lower ranking represents a higher potential for contamination.

Septic systems both complying and non-complying with management regulations, have the potential to impact groundwater quality. Failing sewage systems discharge untreated waste water into the environment where it contaminates groundwater supplies, degrades surface waters, or poses a serious pathogenic health threat on the ground surface. Failing septic systems continue to be a problem throughout Becker County based on unacceptable failure rates. The Becker Planning and Zoning office estimates that the countywide failure rate could exceed 50%.

Since 1992 Becker County Planning and Zoning Office has conducted extensive inventories on 26 lakes in Becker County to determine the status of ISTS systems around these lakes. Once inventoried landowners were contacted and notified that they would have to upgrade their existing systems. The chart below shows the progress on upgrading the ISTS systems around inventoried lakes in Becker County.

<b>Lake Name</b>	<b>Year Inventoried</b>	<b>Total Parcels Inventoried</b>	<b># of Non-conforming or Undetermined Systems Found</b>	<b>2004 Status</b>
Bad Medicine	1992	102	55	100% con-forming
Lake Ida	1993	155	24	100% “
Lake Eunice	1993	41	16	100% “
Buffalo Lake	1994	56	12	100% “
Island Lake	1994	77	19	100% “
Straight Lake	1994	190	77	100% “
Big Elbow Lake	1994	97	36	99% (1 left to update)
Cotton Lake	1994	236	51	99% (1 left to update)
Floyd Lake	1995	294	Not available	100% con-forming

Big Toad Lake	1995	186	48	100%	“
White Earth Lake	1995	154	65	100%	(Becker Cty. Side)
Tulaby Lake	1995	94	34	100%	(Becker Cty. Side)
Middle Cormorant	1995	161	38	100%	con-forming
Little Bemidji	1995	8	2	100%	“
Round Lake	1995	115	49	100%	“
Big Sugar Bush	1996	90	32	100%	“
Leif Lake	1996	146	53	100%	“
Upper Cormorant	1996	199	61	98%	(2 left to update)
Little Cormorant	1998	50	24	100%	con-forming
Height of Land	1998	84	36	92%	(7 left to update)
Little Toad Lake	1998	50	23	90%	(5 left to update)
Long Lake	1998	146	27	96%	(7 left to update)
Maud Lake	1999	131	35	95%	(6 left to update)
Lake 6	1999	6	1	100%	con-forming
Eagle Lake	2001	59	17	98%	(2 left to update)
Lake Bijou	2001	98	26	91%	(9 left to update)

In addition to the previously mentioned well testing projects, the Local Water Management Plan recognizes the two groundwater sensitive areas in Becker County. These are the Pelican River Sand Plain located in the southwestern portion of Becker County. This glacial outwash consists of sands and gravels deposited primarily by meltwaters of the Des Moines Glacial Lobe. Relief is typically rolling to hilly. The other is the Park Rapids (or Pineland) Sand Plain located in the eastern part of Becker County. This glacial outwash consists of sands and gravels deposited by meltwaters of the Wadena Lobe. Relief is typically nearly level to undulating. With the ever growing numbers of irrigated acres in these sensitive groundwater areas, especially in the Pineland Sands area, it is imperative that proper best management practices be followed and water quality monitoring takes place. Through the Sand Plains Cooperative Agreement between the Minnesota Department of Agriculture and the Becker SWCD, a 20 year monitoring plan has been established to identify contaminants in the ground water within the Pineland Sand Plain area. The goal of this joint ground water monitoring cooperative is to provide information on impacts of the routine use of agricultural chemicals on the region’s ground water so that agricultural chemicals may be managed to prevent degradation of the ground water resources.

### **Assessment of Development Pressures**

Becker County’s natural resources have long provided both economic sustenance and a high quality of life for Becker County residents. The county agricultural production and its varied lakeshore environment continue to offer economic and quality-of-life benefits to county residents and visitors.

In recent years Becker County has seen increasing pressures on the county’s agricultural and lake resources. Traditional agricultural areas have seen an increase in the development of non-farm housing, including those areas designated agricultural. Development is similarly cropping up on increasingly remote lakes, and in more intensive development patterns than historically seen. This development pressure may be attributed to economic incentives to sell and divide property due to high land values, potential investment returns, demand for riparian properties, and diminishing agricultural returns. Development pressure and impacts are a concern due to high growth rates, poor land use decisions resulting in poor land management, and the cumulative effects of development on surface and groundwater resources. For these reasons citizens have identified lakeshore and rural development as a critical issue for Becker County.

With a majority of development occurring in shoreland areas, effects on water quality are a concern. Overall surface water quality throughout the county is generally good but some basins and streams are showing signs of degradation. Some water quality degradation can be attributed to these land use conversions and extensive shoreland development. For these reasons the Becker County Board of Commissioners placed a six month



The Becker County Planning and Zoning Office reported the following Land Subdivisions within the shoreland district from 2001-2004.

<b>Year</b>	2001	2002	2003	2004
<b>Plats applied for</b>	8	11	11	7
<b>Number of lots</b>	80	129	108	130
<b>Certificates of survey lots created</b>	14	19	52	35

With increased development, increases in the impervious areas around lakes, and just more density of residents a greater impact is apparent on our surface and groundwater quality. A method developed by MPCA to help solve the problem of water pollution is the developing of Total Maximum Daily Loads. This information from the MPCA web page states that 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. The Clean Water Act requires states to publish, every two years, an updated list of streams and lakes that are not meeting their designated uses because of excess pollutants. The list, is known as the 303(d) list, and is based on violations of water quality standards and is organized by river basin. The MPCA has established a list of impaired waters for water bodies across the state. This list includes lakes, river and streams.

**Lake Water Quality.**

Some water quality data has been collected on 60 Becker County Lakes, and on nearly all of the larger ones. Much of this effort has been undertaken by volunteers, lakeshore residents who have a special interest in “their” lake. For ten lakes this commitment has taken the form of more than 20 years of record, and for 40 of the lakes there are currently active data collection efforts. A significant component of the current data collection activity is stimulated by the Becker County Coalition of Lake Associations (BCOLA), which has been supported by the Becker County Water Plan since 1992.

The current BCOLA strategy is to urge and support the adherence of its member associations to Citizen Lake Monitoring Program and MPCA data collection protocols which specify weekly clarity measurements and protocols for total phosphorus and chlorophyll-a sampling. About 30 Becker County lakes are now in compliance with those standards.

**“At Risk”, “Problem” and “Damaged” Becker County Lakes**

Minnesota, in accordance with federal Clean Water Act provisions, uses water quality data from citizen monitoring programs, and other sources, to determine whether lakes are not suitable for certain purposes, especially aquatic life, fish consumption, and aquatic recreation. The criteria for certifying surface water “impairment” for such purposes is based upon regional standards, and result in impairment designations for one river segment (Ottetail, from Rice Lake to Mud Lake), and 13 lakes, all but one for fish consumption (mercury contamination) problems.

For various reasons, including sampling costs, and reporting problems, not all lakes in Becker County which are “impaired” are certified as such. Moreover, most citizens and officials in Becker County consider the standard for impairment designation to be much too high (insufficiently strict!) to be applied to Becker County Lakes, and fails to acknowledge lakes in the process of deteriorating.

Since lake water quality is critical to the continued economic progress of the County, we believe that a more rigorous standard for characterizing Becker County lakes is warranted. For simplicity's sake, and following Carlson's Trophic State Index (TSI) model, lake water quality conditions should be characterized by using measures of transparency, total phosphorus and Chlorophyll-a. In the table below, these data are converted to index form, upon which generalizations about current and potential conditions can be made.

<b>TSI Index</b>	<b>Characteristics</b>	<b>Examples of Becker County Lakes</b>
<b>Less than 35</b>	Low nutrients and algae, very clear water, oxygen throughout the year at all depths, and cold water, oxygen loving fisheries in deep lakes	<i>Bad Medicine, Juggler,</i>
<b>35-45</b>	good clarity, few and only moderate algae blooms, low plant growth; episodes of low oxygen may begin to limit fishery	<i>Big Sugarbush, White Earth, Pickerel, Big Floyd, Long, Eunice, Meadow, Middle Cormorant, Big Cormorant, Turtle, Rice, Two Inlets, Boot, Buffalo, Cotton, Elbow, Island, Little Toad, Straight,</i>
<b>46 – 50 “At Risk”</b>	– increasing incidence of nuisance algae blooms, phosphorus levels in the 25-30 ppb range, moderate to nuisance plant growth, transparencies under 10 feet during mid-summer; low oxygen in deep water imposes limitations on fish species	<i>Melissa, Big Detroit, Little Detroit, Munson, Fox, Pearl, Upper Cormorant, Leif, Johnson, Reeves, Little Floyd</i>
<b>51 – 55 “Problem”</b>	high incidence of nuisance algae blooms, luxuriant weed growth, summer transparencies usually less than 7 feet, phosphorus levels often over 35, shift to warm water fishery; without action deteriorating conditions will accelerate.	<i>North Floyd, Little Cormorant, Muskrat, Sallie, Little Floyd</i>
<b>Over 56 “Damaged”</b>	Algae scums probably, dominance of blue-green algae, luxuriant aquatic plant growth; Undesirable for water-based recreation, deteriorating or absent game fishery, high probability of further declines in quality	<i>St. Clair, Perch, Brandy, Abbey, Lee</i>

“At Risk” lakes are those which have experienced some tendencies toward deterioration. In any case, they have some algae and clarity problems, especially during mid-summer. Special attention needs to be given to inflows to these lakes, and to control runoff from shoreline development. “Problem” lakes have repeated algae blooms, much lower mid-summer transparencies. Intensive analysis and diagnosis is warranted, and an action plan should be implemented to avoid further deterioration. “Damaged” lakes will have to be rehabilitated based upon diagnoses of the specific causes of the damage.

Note that the above assignment of lakes to these categories is based upon data bases which vary in number and length of records, types of tests and observers. They are meant to be suggestive, rather than definitive, and they obviously do not include all Becker County Lakes. Other Becker County lakes can be assigned to one or the other of these categories only after sufficient testing is completed.

## **C. Goals, Objectives and Action Item:**

A goal's, objectives and implementation schedule has been developed for each priority concern area. Though primary responsibilities are listed they are not meant to be exclusive, as additional partners such as landowners, lake associations, townships, and others may become cooperators to accomplish various goals.

### **Priority Concern: Surface Water Quality**

#### **Objective A. Provide for protection of all surface waters in Becker County through enforcement of existing regulations, use of existing programs and development of new programs.**

1. Install 100 acres of buffer strips adjacent to eligible surface waters over the next 5 years through the continuous CRP program.
2. Continue to support the efforts of the Pelican River Watershed District in their permitting program as it relates to land alterations in the shore impact and bluff impact zone.
3. Contact all landowners within the Sand Lake Watershed in western Becker County as part of a Clean Water Partnership/319 Grant, and identify any resource protection needs on their properties.
4. Make landowners aware of forestation and reforestation programs, such as State Cost Share, and the Sustainable Forestry Incentives Program, available through the Minn. DNR.
5. Complete the nutrient reduction plan for the Upper Pelican River Watershed to reduce nutrient loading to Detroit Lake.
6. Construct and implement the nutrient reduction plan for the Upper Pelican River Watershed once approved.
7. Reduce nutrient loading to Detroit Lake from the Upper Pelican River Watershed by 50%.
8. Work with Becker County Planning and Zoning and other agencies to develop lake sustainability and carrying capacity criteria.
9. Identify at risk lakes in Becker County and assist in the preparation of lake management plans.
10. Control the distribution and spread of undesirable vegetation in county lakes.

#### **Objective B. Protect our wetland resources from degradation.**

1. Include in the revised Zoning Ordinance a minimum width for natural buffers on lakeshore development sites.
2. Maintain existing drainage systems and work with landowners to establish additional buffer strips to reduce sedimentation impacts in the Buffalo and Wild Rice Watersheds.
3. Continue to work with the Becker COLA on their lake monitoring program and lake management plan developments.

4. Work with appropriate agencies to inventory and create a GIS layer showing emergent vegetation areas on Becker County lakes for the purpose of reducing impacts from development, and other shoreline disturbances.
5. Carryout the provisions of the Minnesota Wetland Conservation Act throughout Becker County.

## **Priority Concern: Stormwater Management**

### **Objective A. Improve stormwater runoff quality by increased utilization of stormwater management practices throughout the County.**

1. Continue to conduct the crop residue survey inventory to monitor trends on reduced tillage farm operations in Becker County.
2. Work closely with the PRWD's permit program in regards to stormwater control and impervious surfaces in the shore impact zone.
3. Promote proper management of forestry lands to help prevent erosion and sedimentation due to logging operations.
4. Keep landowners informed of incentive programs such as EQIP that provide incentives for conducting conservation measures such as no-till farming, sediment basins, field windbreaks, residue and nutrient management, etc.
5. Identify critical erosion areas in the Buffalo, Ottertail and Wild Rice Watersheds and promote the use of erosion control measures, such as sediment control basins, to reduce sediment entering our ditches and watercourses. Priority will be given to those areas within 1000 feet of rivers, lakes and major ditch systems.
6. Give high priority consideration for EQIP program participation and funding to install a total of 1500 acres of conservation tillage, 3 sediment basins and 25 acres of buffer strips in the Sand Lake Watershed, the Upper Pelican River/Campbell Creek Watershed and the Redeye River Watershed.
7. Install 40 sediment and erosion control basins over the next 5 years through programs such as EQIP, State Cost-share, and others.
8. Seek funding from other agencies, such as the Buffalo-Red, Wild Rice, and Pelican River Watershed Districts to compliment other cost-share programs to assist in the installation of erosion control measures.

### **Objective B. Promote compliance of stormwater rules and ordinances by continuing to educate landowners on the use of BMPs that reduce runoff.**

1. Work with contractors on understanding and implementing the NPDES permitting program and its requirements for controlling stormwater runoff during construction causing land alterations.
2. Inform landowners and operators (on a watershed basis as they are selected) in Becker County of the financial benefits available through the Conservation Security Program for BMPs that they may be already carrying out on their lands.

3. Sponsor and carryout youth educational programs such as Ag-in-the-Classroom, Envirothon, Lakes Water Watch, Soil Stewardship Observance, 5<sup>th</sup> Grade Conservation Tour, and others that educate our youth on water management and other resource issues.

## **Priority Concern: Ground Water Quality**

### **Objective A. Protect and preserve the ground water quality in Becker County.**

1. Continue to make available well water testing opportunities to individuals in Becker County and provide free well water testing clinics annually in cooperation with Minnesota Department of Agriculture.
2. Educate landowners through news articles, brochures, etc. on the importance of properly sealing abandoned wells.
3. Assist landowners with the sealing of abandoned wells and provide cost-share assistance through existing programs.
4. Work with the City of Ogema in properly sealing wells located within the City once their new city water system is installed. Provide cost-share assistance to Ogema residents wishing to seal abandoned wells with funds provided by Becker County for sealing purposes.
5. Keep a record of locations of all abandoned wells sealed in Becker County with cost-share and other programs as the information becomes known.
6. Assist wellhead water protection teams with the development and implementation of their Wellhead Protection Plans.
7. Continue to monitor 7 well in the Pelican River Sand Plains area and 20 in the Pineland Sand Plains Area for static water levels and provide the information to the Minn. DNR Division of Waters.
8. Continue to assist landowners in the proper closure of unused animal waste facilities and inform them of funding assistance that may be available through the federal EQIP program or the State Cost-share program.
9. Continue to support solid waste programs and education efforts on the proper disposal of hazardous waste and recycling programs.

### **Objective B: Work with Becker County Planning and Zoning to increase ISTS compliance.**

1. Identify and ensure the upgrade of failing septic systems throughout Becker County.
2. Continue to make low interest loans available for ISTS upgrades through the AgBMP Loan Program.
3. Continue to inventory and monitor ISTS systems around Becker County lakes to insure compliance with ISTS rules and regulations.

## **Priority Concern: Development Pressures**

### **Objective A. Becker County will promote development patterns that protect agricultural land, forests, lakes and wetlands throughout the county.**

1. Create an Environmental Review Committee to meet with developers prior to plat preparation to discuss all environmental and zoning concerns on proposed development sites.
2. Continue to enforce existing ordinances. Request assistance from appropriate agencies for ordinance revisions and updates.
3. Assist in the development of technical changes to the Becker County P&Z Ordinances for clarification enforcement and understanding.
4. Revise the Becker County Zoning Ordinance to require that 70% of lakeshore on new developments be left in its natural condition.
5. Assist the MPCA with the TMDL process for water bodies as they are determined.
6. Incorporate the LWMP into the Becker County Comprehensive Plan.

### **Objective B. Encourage development patterns and land use practices that protect, enhance, maintain or restore water quality.**

1. Revise the Becker County Planning and Zoning Ordinances (P&Z) concerning Resort Conversions, Planned Unit Developments, Common Interest Communities, out lots, funnel development and un-suitable shorelines.
2. Work with Becker County to develop a stronger enforcement program of Becker County Ordinances.
3. Educate residents on restoring and preserving natural shoreline areas.
4. Create County cluster development standards that include substantial buffers for agricultural areas, and encourage such development in appropriate areas of the County.
5. Encourage the Minnesota legislature to develop and fund conservation easement programs that protect existing marginal shoreland areas from development.

**Becker County Local Water Management Plan  
Priority Concerns  
Implementation Schedule  
2005-2009**

<b>Implementation Schedule Priority- Surface Water Quality</b>					
<b>Objective A: Provide for protection of all surface waters in Becker County.</b>					
<b>Actions</b>	<b>Primary Responsibility</b>	<b>Cost</b>	<b>Potential Funding Sources</b>	<b>Duration</b>	<b>Watershed</b>
1	NRCS, SWCD	\$10,000	Federal & St. Cost-share	2005 - 2009	All
2	PRWD	N/A	Existing staff time	Ongoing	Ottertail
3	SWCD, MPCA, RRBC	\$42,000	Grants, Existing staff time	2005 - 2006	Buffalo
4	DNR, Cty. NRM, SWCD	N/A	Existing staff time	Ongoing	All
5	NRCS, PRWD	\$50,000 time	Federal staff, PRWD staff	2005	Ottertail
6	PRWD, NRCS	\$500,000	Federal grant, PRWD	2005 - 2007	Ottertail
7	PRWD	Result of #5	N/A	Ongoing	Ottertail
8	P&Z, Becker Co, Mn. DNR	N/A	Existing staff time	Ongoing	All
9	PRWD, COLA, SWCD		Local, Existing staff time, Grants	Ongoing	All
10	WD, MPCA, COLA	N/A	Local, Existing staff time	Ongoing	All
<b>Objective B: Protect our wetland resources form degradation.</b>					
1	P&Z, Becker Cty.	N/A	Existing staff time	2005	All
2	Becker Cty, WD, NRCS,	N/A	Local, Existing staff time	Ongoing	Buffalo, Wild Rice
3	SWCD, COLA, WD	\$30,000	SWCD, grants, COLA	Ongoing	All
4	SWCD, DNR, P&Z, COLA	\$10,000	Grants,	2007 - 2008	All
5	SWCD, Becker County	\$250,000	Existing local staff, grants	Ongoing	All
<b>Total Projected Cost</b>		<b>\$602,000</b>			

<b>Implementation Schedule Priority – Stormwater Management</b>					
<b>Objective A: Improve stromwater runoff quality throughout the county.</b>					
<b>Actions</b>	<b>Primary Responsibility</b>	<b>Cost</b>	<b>Potential Funding Sources</b>	<b>Duration</b>	<b>Watershed</b>
1	SWCD, NRCS	\$4,000	Grants	Ongoing	All
2	PRWD, SWCD	\$6,000	Local fees	Ongoing	PRWD
3	Cty. NRM, DNR	N/A	Existing staff time	Ongoing	Ottertail, Miss.
4	NRCS, SWCD	N/A	Existing staff time	Ongoing	All
5	SWCD, NRCS, WD	N/A	Local, Existing staff time		Ottertail, Buffalo, Redeye
6	NRCS, SWCD	\$65,000	Federal & State Cost-share	2005 - 2009	Buffalo, Redeye, Ottertail
7	NRCS, SWCD	\$200,000	Local, Existing staff time, grants	2005 - 2009	All
8	SWCD	\$25,000	WD	Ongoing	Wild Rice, Buffalo,
<b>Objective B: Promote compliance of stormwater rules and ordinances.</b>					
1	MPCA, WD, P&Z	N/A	Existing staff time	Ongoing	All
2	NRCS, SWCD	N/A	Existing staff time	Ongoing	All
3	SWCD, WD	\$6,000	Grants, SWCD, WD,	Ongoing	All
<b>Total Projected Cost</b>		<b>\$306,000</b>			

## Implementation Schedule Continued 2005 - 2009

<b>Implementation Schedule Priority – Ground Water Quality</b>					
<b>Objective A: Protect and Preserve the ground water quality in Becker County.</b>					
<b>Actions</b>	<b>Primary Responsibility</b>	<b>Cost</b>	<b>Potential Funding Sources</b>	<b>Duration</b>	<b>Watershed</b>
1	SWCD, MDA	N/A	Existing staff time	Ongoing	All
2	SWCD	N/A	Existing staff time	Ongoing	All
3	SWCD	\$20,000	NRBG, EQIP,	Ongoing	All
4	SWCD, Cty., MDH	\$12,700	County	2005 - 2007	Wild Rice
5	SWCD	N/A	Existing staff time	Ongoing	All
6	SWCD	N/A	Existing staff time	Ongoing	All
7	SWCD, DNR	\$15,000	Grants, Existing staff time	Ongoing	Mississippi, Ottertail
8	NRCS, SWCD	\$10,000	EQIP, Cost-share	Ongoing	All
9	Cty. Environmental Ser.	N/A	Existing staff time	Ongoing	All
<b>Objective B: Work with Becker County Planning and Zoning to increase ISTS compliance.</b>					
1	Cty. P&Z	N/A	Existing staff time	Ongoing	All
2	SWCD, MnDA	N/A	Existing staff time	Ongoing	All
3	Cty. P&Z	\$40,000	Grants	Ongoing	All
<b>Total Projected Cost</b>		<b>\$97,700</b>			

<b>Implementation Schedule Priority – Development Pressures</b>					
<b>Objective A: Promote development patterns that protect agricultural land, forests, lakes, and wetlands.</b>					
<b>Actions</b>	<b>Primary Responsibility</b>	<b>Cost</b>	<b>Potential Funding Sources</b>	<b>Duration</b>	<b>Watershed</b>
1	P&Z, Becker County	N/A	Local, Existing staff time	2005	All
2	P&Z	N/A	Existing staff time, Local	Ongoing	All
3	P&Z, PRWD, SWCD, Cty.	N/A	Existing staff time	2005	All
4	P&Z,	N/A	Existing staff time	2005	All
5	MPCA, SWCD, WD	N/A	Existing staff time	Ongoing	All
6	Becker Cty. LWMP Comm.	N/A	N/A	2005	All
<b>Objective B: Encourage development patterns and land use practices that protect, enhance, maintain or restore water quality.</b>					
1	P&Z, Becker Cty.	\$20,000	Local, Existing staff time	2005	All
2	P&Z, Becker Cty.	N/A	Existing staff time		
3	P&Z, WD, SWCD				
<b>Total Projected Cost</b>		<b>\$20,000</b>			

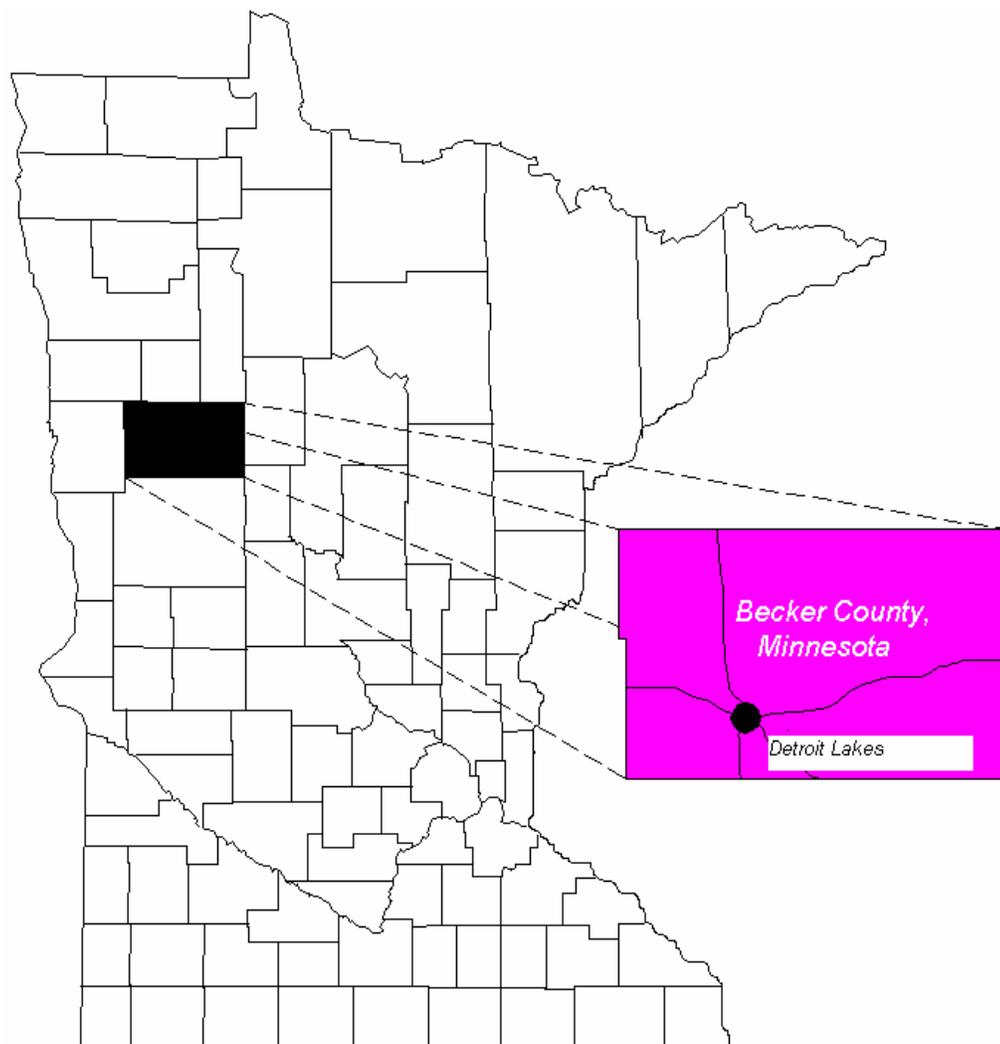
## **Local Water Management Plan Accomplishments 1991-2004**

The first 5 year water plan for Becker County was authorized by the County in 1989 and developed under the direction of the International Coalition, the Becker SWCD and a local citizen task force. Upon completion of the first water plan the Becker County Board of Commissioners delegated the Becker SWCD the responsibility of implementing the water plan. This implementation has been ongoing under the guidance from an Environmental Advisory Committee and the Becker SWCD Board of Supervisors. As required by State Statute, the Becker County Water Plan was updated in 1997; this update will be the third generation water plan for Becker County.

The programs developed and funded with water plan monies have been one of the most user friendly methods to provide funds to accomplish a variety of resource needs and desires of local residents. Some of the accomplishments of the past Water Plan Programs include the following:

- Held abandoned well sealing demonstrations and has provided \$64,000 in cost-share assistance to landowners to properly seal over 300 abandoned wells since 1992.
- Provided \$57,857 from 1993 - 2001 to Becker County Planning and Zoning to inventory lake septic systems. This resulted in 26 lakes being inventoried.
- Provided \$26,000 in cost-share to Becker County Lakes Association to establish and carryout a lake water quality monitoring program.
- Provided \$8,900 toward the cost of digitizing the Becker County Soil Survey.
- Provided cost-share assistance to properly close 7 ag waste holding ponds. In addition we were able to secure an additional \$37,500 in challenge grant monies for ag waste pond closures in Becker County, resulting in the proper closure of 19 more ag waste ponds.
- Conducts a well water testing clinic annually during the Becker County Fair.
- Provided \$2,500 to the cost of cleaning up 2 illegal dump sites.
- Partially funds a technical position to coordinate water plan projects.
- Conducted an empty pesticide container collection day throughout the county
- Provides \$100 per year to assist in the sponsorship of the Envirothon Educational Program
- Provided secchi disks to Lake Associations wishing to participate in the Citizen Lake Monitoring Program.
- Assisted with the development of Wellhead Protection Plans for Detroit Lakes and Frazee.
- Completed a Phase 1 inventory of feedlots in Becker County.
- Co-sponsored the Detroit Lakes Middle School "Water Watch Program".
- Conducted a fly over of the Toad and Ottertail Rivers in Becker County to identify possible pollution sites.

**PRIORITY SCOPING DOCUMENT  
BECKER COUNTY  
LOCAL WATER MANAGEMENT PLAN  
2005**



## **Introduction:**

**Population:** The population of Becker County listed from the 2000 census was 30,000 people.

**Population Trends:** During the ten year period 1990 to 2000 Becker County experienced steady growth in its population. Detroit Lakes, the county seat, comprised approximately 26% (or 7,800) of the County's total population. The other six incorporated areas in the County make up an additional 9% (2,800) of the population. The remaining 19,400 residents live in unincorporated areas over which the County exercises land use authority. In reviewing the Minnesota State Demographers census projections it is expected that Becker County's population will increase to 32,700 by 2010, and to 35,400 by 2020.

**Dominant Land Use and Trends:** Of the 921,000 acres that make up Becker County the two dominant land uses are forest land (361,191 ac. 39%) and cultivated land (302,058 ac. 33%). With an additional 10% of hay/pastureland/grassland designation. The dominant land use in the Becker county remains agriculturally based, with forestry uses not far behind.

In addition it should be noted that 9% (85,220 ac.) are water, and 5% (48,078 ac.) are listed as bog/marsh/fen.

Land use trends in the county are experiencing some changes primarily due to development pressures. The southwest and south central areas of the county are the primary areas for these new developments in the rural area. It does not appear that this will have a significant impact on the traditional agricultural areas of the county. With expected population growth in the county it is likely that this trend will continue for the foreseeable future.

**Plan Responsibility and Updates:** The responsibility of administrating ant coordinating implementation of the Becker County Local Water Management Plan (LWMP) is assigned to the Becker Soil and Water Conservation District.

Guidance and direction for implementation is provided by an Environmental Advisory Council whose members are appointed by the Becker County Board of Commissioners. Input and direction is also sought and provided by other local, state and federal units of government.

The original local water management plan was adopted on December 20, 1990 with the second generation plan being approved on September 9, 1997.

The current plan was scheduled to end on December 31, 2002, however an extension was granted by the Board of Water and Soil Resources until December 31, 2003. Due to budget cuts and program uncertainties in 2003 the updating process was delayed. With funding restoration for 2004 the updating process was renewed.

**List of Priority Concerns:** The following priority concerns were identified through public meetings, newspaper survey, and solicitation from the forty townships in Becker County, presentation to the Becker County Lakes Association and agency contacts. The priority concerns identified in order of concern were.

1. Groundwater quality or contamination
2. Development pressures
3. Surface water quality
4. Environmental Education
5. Soil Erosion
6. Failing septic systems
7. Contaminated runoff
8. Over application of fertilizers (near lakes)
9. Stormwater runoff management
10. Natural habitat destruction
11. Lack of regulations

The following resources were deemed to be the most threatened.

1. Lakes
2. Groundwater
3. Streams and rivers
4. Wetlands

**Priority Concern Identification:** The listed priority concerns for the Becker County Local Water Management Plan were developed using information gathered from the following:

- The Becker County Comprehensive Plan which was adopted in 2003. A forty-four member steering committee met nine times over an eighteen month period beginning November 14, 2000 and concluding on April 4, 2002 to review data collected on a variety of concerns including natural resource issues. Committee members included representatives from Becker County Board of Commissioners, Planning and Zoning, representatives from each city council in Becker County communities, DNR, SWCD, NRCS and the Pelican River Watershed District. In addition 3 public meetings were held at various locations in the County to gather input from public stakeholders. These public meetings were held on October 4<sup>th</sup>, October 5<sup>th</sup> and November 1<sup>st</sup>. Eighty people attended these meeting and gave input into the natural resource issue.
- The Otter Tail River Watershed Basin Plan completed in the fall of 2002 and supported by County Board resolutions in 2004 were used to identify priority concerns in the Otter Tail River Watershed. This watershed covers 350,636 acres of Becker County's 921,000 total acres, and contains the majority of the over 400 lakes in the county. This plan was prepared in cooperation of Becker, Wilkin, Otter Tail Counties along with Becker SWCD, Wilkin SWCD, and East and West Otter Tail SWCD's. The priority items in the Otter Tail Watershed Basin Plan were reviewed and considered in selecting the priority concerns in this scoping document.

- The Buffalo Red River Watershed District Management Plan was reviewed for like resource concerns that are found in the area of the watershed that is in Becker County. The watershed takes in 173,139 acres in Becker County. Common priority issues of concern were reviewed and were considered in developing the priority concerns. These include proper maintenance of drainage systems, sustain high quality surface and groundwater for public and private use, support and deliver programs that reduce sediment and erosion in the County.
- The Sand Lake Watershed Project is a small watershed in Southwest Becker County that has been approved for a 319 grant to address water quality issues that have been identified over a number of years of data collection by MPCA. A citizen committee has been working with several agencies and has secured a 319 grant to address these water quality and land use issues.
- Cotton Lake Management Plan Committee in cooperation with the Pelican River Watershed District completed and published the Cotton Lake Management Plan. Issues and concerns raised in the development of this plan were reviewed for priority concerns that are similar to many of the lakes in Becker County and therefore were considered in this scoping document.
- On June 14, 2004 a request for priority concerns was sent out to the following agencies: Mn. Department of Agriculture, Mn. Environmental Quality Board, Mn. Department of Health, Mn. Department of Natural Resources, Mn. Pollution Control Agency and the Mn. Board of Water and Soil Resources.
- A priority concerns survey was sent out to all forty townships in Becker County in March of 2004 seeking their input in establishing priority concerns for the water plan update. A news article informing the public of the water plan update was published in the March 31, 2004 issue of the Becker County Record newspaper along with the priority concerns survey.

#### Survey Results

1	Groundwater quality (contamination)	18
2	Development pressures	16
3	Surface water quality	15
4	Environmental education	11
5	Soil erosion	10
6	Failing septic systems	9
7	Contaminated runoff	9
8	Over application of fertilizers	8
9	Stormwater runoff management	7
10	Natural habitat destruction	6
11	Lack of regulations	2

## **Issues Identified by stakeholders:**

### **Board of Water and Soil Resources (BWSR) – Peter Waller**

- Priority Concern 1: Surface Water (specifically lakes) Quality Protection and Improvement
- Priority Concern 2: Flood Damage Reduction and Natural Resource Enhancement (specifically sedimentation) within the Buffalo-Red River Watershed District and Wild Rice Watershed District.
- Priority Concern 3: Ground Water Quality and Quantity Protection.

### **Minnesota Department of Health – Beth Kluthe**

- Priority Concern 1: Protect ground water-based drinking water sources within Becker County.
- Priority Concern 2: Sealing unused, unsealed wells.
- Priority Concern 3: Develop a local ground-water quality data base.

### **Pelican River Watershed District – Tera Guetter**

- Reduce nutrient loading of surface waters from upstream sources.
- Reduce trophic index of Big Detroit Lake by 5%.
- Complete the Upper Pelican River Watershed Campbell/Rice Lake Project Plan through the Small Watershed Protection Act (PL-566).
- Water quality monitoring
- Stormwater & runoff management.
- Environmental education.

### **Becker County Comprehensive Plan Natural Resource Issues**

- Lake and watershed carrying capacity.
- Shoreland septic monitoring and inventorying.
- Fund an expansion of the County's targeted monitoring of shoreland septic systems and prioritize additional monitoring programs.
- Develop materials to encourage upgrading and repair of failing systems to accompany monitoring.
- Performance standards for gravel and mining on county managed land
- Designate agricultural conservation areas
- Identify Best Management Practices (BMPs) for the particular conditions of the Ponsford Prairie area
- Promote or provide incentives for the use of BMPs to limit risk to ground water supplies of the Ponsford Prairie, the Straight River and nearby lakes and wetland areas.
- Improve enforcement procedures for enforcing rules, ordinances, and County policies that protect habitat, fish and wildlife populations, and natural resources valuable to the County economy.
- Prohibit lawn chemical use in selected watersheds.
- Continue to expand lake water quality monitoring.
- Encourage development patterns that protect resources.
- Educate public and public officials on non-point pollution.

- Incentives for private shoreland restoration.
- Create watershed zoning or watershed overlay districts.
- Encourage sustainable use of the County's natural resources.
- Limit through zoning or subdivision ordinance, the amount of impervious surface within sensitive watersheds and protect existing shoreland buffers.
- Shoreland protection.

### **Becker Soil and Water Conservation District**

- Sediment and erosion control in agricultural and lake areas of the County.
  - Surface water quality.
  - Establish buffer strips in areas adjacent to lakes, rivers and streams.
  - Sand Lake Watershed Project
  - Pelican River Watershed District – Upper Pelican River Watershed project for Campbell/Rice Lake.
  - No-till and crop residue management.
  - No net loss of wetlands.
  - Stormwater runoff control on development sites and shoreland areas
  - Groundwater contamination via abandoned wells or abandoned manure storage ponds.
  - Land use conflicts.
  - Drainage system maintenance.
  - Water quality/quantity monitoring.
  - Failing septic systems.
- 
- Environmental education.
  - Development pressures on small environmental lakes.
  - Shoreline erosion.

### **Priority Concern Selection:**

The Becker Soil and Water Conservation District and the Becker County Water Planning Task Force has reviewed the identified concerns raised during the data collection process and have selected the following priority concerns for inclusion in the water plan update. These selections were based on priorities identified in the plans reviewed and input from the public meetings of the Becker County Comprehensive Plan and the public surveys that were returned.

### **Priority Concerns:**

For the purpose of the Scoping Document the identified priority concerns have been categorized into similar areas of concern. The priority concerns are, in no particular order of importance are:

- Surface water quality, nutrient loading in the Pelican River Watershed, water quality monitoring, Sand Lake Watershed 319 Project concerning surface water impacts, drainage system maintenance and buffer strips
- stormwater runoff and management, erosion and sedimentation in the Buffalo and Wild Rice Watershed Districts,

- Groundwater contamination, failing septic systems, Environmental education, abandoned wells, abandoned manure holding facilities
- Development pressures, shoreline alterations,

**Priority Concerns Not Addressed by the Plan:**

The similarities in many of the identified priorities allow for considerable flexibility and opportunities to address the majority of identified concerns. However some areas are better off addressed through other measures or agencies, such as the Becker County Planning and Zoning, Pelican River Watershed District, etc. Some of these would include: designation of agricultural conservation areas, creation of watershed zoning and overlay districts, impervious surface areas, land use conflicts, are some of the items not included in the priority concerns but may well be addressed by others.

**ACRONYMS USED IN THIS PLAN**

<b>BMP</b>	<b>Best Management Practices</b>
<b>CCRP</b>	<b>Continuous Conservation Reserve Program</b>
<b>CHD</b>	<b>County Highway Department</b>
<b>COLA</b>	<b>County Lake Association (Becker)</b>
<b>CREP</b>	<b>Conservation Reserve Enhancement Program</b>
<b>CRP</b>	<b>Conservation Reserve Program</b>
<b>DNR</b>	<b>Department of Natural Resources</b>
<b>EAC</b>	<b>Environmental Advisory Committee</b>
<b>EQIP</b>	<b>Environmental Quality Incentives Program</b>
<b>GIS</b>	<b>Geographic Information System</b>
<b>LWMP</b>	<b>Local Water Management Plan</b>
<b>MDA</b>	<b>Minnesota Department of Agricultural</b>
<b>MDH</b>	<b>Minnesota Department of Health</b>
<b>MPCA</b>	<b>Minnesota Pollution Control Agency</b>
<b>NRCS</b>	<b>Natural Resources Conservation Service</b>
<b>P&amp;Z</b>	<b>Becker County Planning and Zoning Office</b>
<b>PRWD</b>	<b>Pelican River Watershed District</b>
<b>RIM</b>	<b>Reinvest in Minnesota</b>
<b>SWCD</b>	<b>Soil and Water Conservation District</b>
<b>WCA</b>	<b>Wetland Conservation Act</b>
<b>WD</b>	<b>Watershed District</b>
<b>WRP</b>	<b>Wetland Conservation Act</b>
<b>WRP</b>	<b>Wetland Reserve Program</b>