

FREEBORN COUNTY



2011 Mid-Term Amendments Comprehensive Water Plan 2006 - 2015

**FREEBORN COUNTY
COMPREHENSIVE WATER PLAN
2006 – 2015**

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Preface

The Citizens of Freeborn County share a good fortune of living in an area rich in water resources. Generations of families have weaved this land into their homes. A strong tradition of stewardship for land and water protection is reflected in this fourth generation waterplan. The 2011 mid-term amendments to this 2006 – 2015 plan were designed to guide those land and water decisions. It outlines a five year strategy for addressing these issues.

Protection of the water resources is primarily a responsibility of federal, state and local officials. Freeborn County officials support this water planning strategy and have accomplished resource planning through this local water plan. The citizen partnership in application of water planning goals results in a “protect and improve” attitude toward our surface and ground water resources. We have gained a spirit of cooperation and will continue to foster those accomplishments.

I invite your review of the 2006 – 2015 water plan and seek your assistance in implementation of this plan. Your involvement is critical in protecting, preserving and restoring water quality in Freeborn County.

Chairperson
Freeborn County Water Planning Advisory Committee

INTRODUCTION

Summary

Freeborn County is a gateway into Southern Minnesota. Interstate Freeway 35 W and 90 intersect this area. We are bordered by the State of Iowa to the South, Faribault County to the West, Waseca County and Steele County to the North, and Mower County to the East. This County has a land area of 720 square miles, a 2010 population of 31,255, 14 incorporated cities, and 20 townships. The County Seat is the City of Albert Lea, which is located approximately 100 miles South of Minneapolis, MN. Some 81% of productive land in this County is farmed or used for rotational animal pastures.

Purpose

The purpose of this updated Local Water Management Plan for Freeborn County is:

- 1) To focus efforts on identified existing and potential priority concerns and/or opportunities for protection, management, and development of related water resources and land resources.
- 2) To continue to develop, update and implement this water plan of action to promote sound management of our resources through the use of Best Management Practices.
- 3) To intensify land use practices aimed at effective environmental protection.
- 4) To provide a guidance document for local decision makers.
- 5) To regulate land use practices for the development, management and protection of water and related land resources.

Freeborn County Comprehensive Water Plan 2006 – 2015 establishes priorities in actions related to water quality, water quantity, special land uses and conditions that influence land and water resources.

2011 Amendment

The 2011 Amendment to this Water Plan represents updates to the Goals and Objectives Sections of this plan at the mid-term of the 10 year plan. We have identified Storm Water Management as an additional priority item, due to significant flood events that have occurred.

Priority Concerns

This water plan process produced 13 priority concerns to focus water management efforts through December 31, 2015. The process through which these priority concerns were identified is detailed in Appendix A “Public Participation in the Freeborn County Water Planning Process” document.

Goals and Actions

The following is a summary of the Goals and Actions identified for 2006 – 2015 Priority Concerns:

- 1) Water Wells – protect aquifer from contamination by water wells.
- 2) Sewer Systems – protect surface water and groundwater from individual sewage treatment systems (ISTS) contamination.
- 3) Top Soil – protect and preserve topsoil.
- 4) Wetlands – preserve existing wetlands.
- 5) Feedlots – protect land and water resources from animal waste contamination.
- 6) Municipal Waste Water – protect water resources from municipal waste water contamination.
- 7) Mixed Solid Waste – protect land and water resources from mixed solid waste contamination.
- 8) Hazardous Waste – protect water resources from hazardous waste contamination.
- 9) Storm Water – Work to bring Freeborn County Lakes, ditches, rivers into compliance with TMDL requirements.
- 10) Watersheds – Manage land resource to reduce contamination into surface waters.
- 11) Flooding – control surface water run-off.
- 12) Shoreland – protect and preserve existing shorelands.
- 13) Public Waters – provide recreational opportunities.

Goals and Actions - 2011

- 1) Protect groundwater from depletion and degradation.
- 2) Enhance protection of surface and groundwater resources from sewage treatment systems.
- 3) Address impaired surface waters.
- 4) Management of animal manure for land applications.
- 5) Control soil erosion.
- 6) Storm water management.
- 7) Protect shoreland areas.

Plan Consistency

Freeborn County examined State Agency, other county, Turtle Creek Watershed District and Shell Rock River Watershed District to ensure consistency with their water resource management efforts.

This 2006 – 2015 Water Plan reflects Minnesota Pollution Control Agencies Lower Mississippi River Basin water quality efforts.

These 2011 amendments reflect additional five year water planning efforts in this ten year plan.

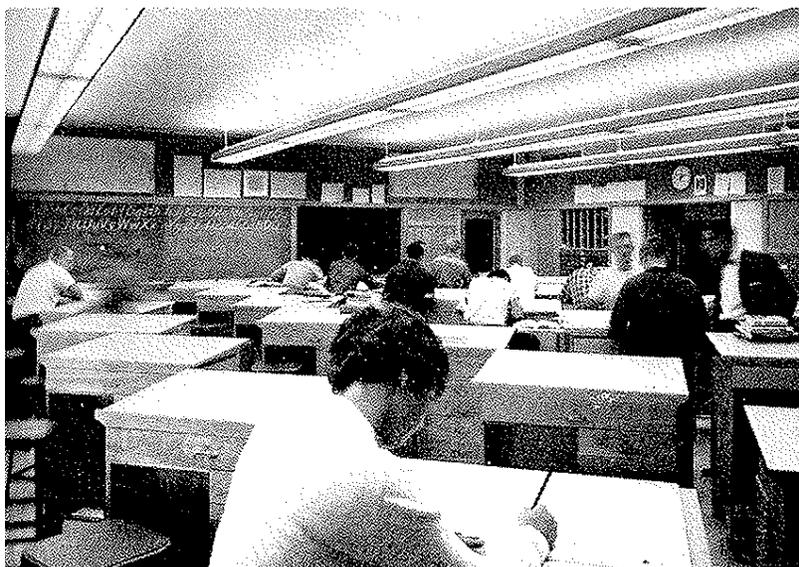
This plan incorporates some of Minnesota Department of Natural Resources Lake Management strategies. It contains targeted Best Management Practices from the Blue Earth River Basin total maximum daily load strategies. This Comprehensive Local Water Plan will incorporate Board of Water and Soil Resources study of flooding in Mower County, Steele County, and Freeborn County.

Recommended Amendments

Pursuant to the authority conferred by the State of Minnesota; Freeborn County adopts this 2006 – 2015 Water Plan and includes all provisions of the 1995 – 2005 Water Plan, to promote and protect the public health, safety and general welfare of all inhabitants.

Freeborn County does not see the need for any amendment to other plans and official controls.

Freeborn County adopts the 2011 amendments.



FREEBORN COUNTY PRIORITY CONCERNS:

AQUIFERS

In Freeborn County, groundwater exists in unconsolidated glacial deposits and in the underlying bedrock. These bedrock aquifers are among the highest water yielding in the United States. These groundwater supplies contained within the bedrock aquifer are adequate for present and foreseeable needs. Estimated water yields in glacial outwash range from 100 to 500 gallons per minute.

These aquifers are the:

- Cedar Valley – Maquoketa – Galena System
- St. Peter – Prairie du Chien – Jordan System
- Franconia – Ironton – Galesville System
- Mt. Simon – Hinckley System

Current data suggests good hydraulic connection between these bedrock units within each of the four aquifer systems. Most domestic and farm water wells draw supplies from the uppermost bedrock aquifer (Cedar Valley – Maquoketa – Galen Limestones). Specific aquifer recharge or discharge sites have not been identified in this county. A geologic atlas of Freeborn County presents subsurface geologic and hydrologic data is available for review in the Environmental Services Department.

GOAL: **Protect Aquifer From Contamination By Water Wells**

Objective: Require proper construction, maintenance, and abandonment of water wells.

Action: Target the cities of Albert Lea, Alden and Glenville for education of MDH Water Well Construction Standards, well sealing procedures and ground water protection strategies

Timeline: 2011 On-going

Implementation: Environmental Services Department, Minnesota Department of Health, Extension Agency

Estimated Cost: Annual – NRBG Grant

Action: Target the cities of Albert Lea, Alden and Glenville for inventory and mapping of existing water wells to prioritize abandonment policy

Timeline: 2011 On-going

Implementation: Environmental Services Department, MDH

Estimated Cost: NRBG Grant

Action: Assist the cities of Albert Lea, Alden and Glenville in applying for Federal and State Funding to assist landowner sealing water well costs

Timeline: 2011 On-going

Implementation: Environmental Services Department

Estimated Cost: NRBG Grant – In-kind

Action: Seek local cost-share funding for water well sealing

Timeline: 2011 On-going

Implementation: Freeborn County, Shell Rock River Watershed District, Turtle Creek River Watershed District

Estimated Cost: NRBG Grant

Action: Assist Public Water Suppliers with implementing wellhead protection plans

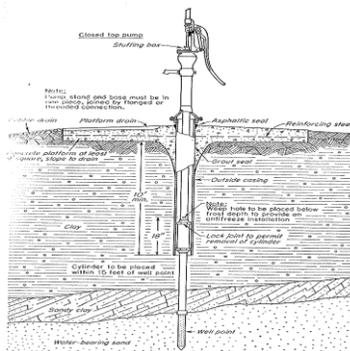
Timeline: 2011 On-going

Implementation: Freeborn County, Shell Rock River Watershed District

Estimated Cost: NRBG Grant

GOAL: Protect Groundwater From Depletion and Degradation

- Support Minnesota Rules Chapter 4725 “Guide to Water Wells and Borings” is followed during construction, maintenance, and abandonment of water wells
- Increase well head protection efforts in land use policy plans
- Promote wise and efficient use of groundwater resources
- Improve citizens/landowners access to local and regional groundwater data
- Collect water quantity and quality data for management decisions
- Sealing abandoned/unused wells
- Develop a water allocation plan to manage drought conditions/water shortages



SURFACE WATERS

Freeborn County has 49 lakes covering approximately 21,000 acres. Department of Natural Resources protected waters consist of 21 lake basins, 33 water sources and 18 wetland basins. More than 50% of all these basins are affected by artificial drainage systems. A 2010 MPCA report listed three (3) lakes and three (3) rivers as impaired; these waters are considered hypereutrophic. This is typical for lakes in the western corn belt ecoregion. Water quality is affected by summer algae blooms. Chemical analysis of Freeborn County's surface waters indicate a high level of phosphorus contributing to the algae blooms. However, no public health concerns have been expressed by Federal or State Agencies dealing in surface water quality. Surface water quantity has historically remained stable. No evidence exists to suggest the quantity of surface waters will limit current or future lake uses. Agriculture in Freeborn County is dependent upon the public and private drainage systems; which are more than 350 miles of open ditches.

GOAL: Storm Water Management

- Provide assistance to municipalities for the development of stormwater control and treatment plans
- Participate with communities to develop and implement stormwater policies on flood and pollution mitigation plans
- Offer incentives on rain gardens, rain barrels, stormwater wetlands, and water storage pond construction
- Assist in educational events on urban best management practices to reduce run-off
- Identify areas in drainage systems to establish water retention/water infiltration ponds
- Support the use of drained wetland areas for water storage capacity
- Seek funding for surface water gauging stations
- Seek grant opportunities to fund wetland restoration in priority areas

GOAL: Address Impaired Surface Waters

- Provide technical assistance with outreach, education and demonstration sites to reduce agricultural chemical and nutrient impacts
- Support Aquatic Invasive Species Prevention Programs
- Assist the MPCA in development of "Total Maximum Daily Load" TMDL by major watershed for the following priority pollutants:

CLEAN WATER ACT SECTION 303(d) LIST (Draft 2010) LIST OF IMPAIRED WATERS

STREAMS

Assessment Unit	ID	Impaired Use	Impairment Cause	Impairment Status
Blue Earth River, East Branch: Headwaters to Brush Cr	07020009-554	AqLife	Fishes Bioassessments	TMDL Required
Blue Earth River, East Branch: Headwaters to Brush Cr	07020009-554	AqLife	Turbidity	TMDL Required
Cobb River: T104R23W S34, south line to Little Cobb R	07020011-568	AqLife	Fishes Bioassessments	TMDL Required
Cobb River: T104R23W S34, south line to Little Cobb R	07020011-568	AqLife	Turbidity	Proposed Impairment Under USEPA Review
Shell Rock River: Albert Lea Lk to Goose Cr	07080202-501	AqLife	Ammonia (Un-ionized)	Removed from inventory - New Analysis Shows Attainment
Shell Rock River: Albert Lea Lk to Goose Cr	07080202-501	AqLife	Turbidity	TMDL Required
Shell Rock River: Albert Lea Lk to Goose Cr	07080202-501	AqLife	pH	TMDL Required
Shell Rock River: Albert Lea Lk to Goose Cr	07080202-501	AqRec	Fecal Coliform	TMDL Approved
Unnamed creek: Mud Lk to Fountain Lk	07080202-516	AqLife	Turbidity	Proposed Impairment Under USEPA Review
Woodbury Creek: Headwaters to Cedar R	07080201-526	AqRec	Fecal Coliform	TMDL Required

LAKES

Assessment Unit	ID	Impaired Use	Impairment Cause	Impairment Status
Fountain: East Bay	24-0018-01	AqRec	Nutrient/Eutrophication Biological Indicators	TMDL Required
Fountain: West Bay	24-0018-02	AqRec	Nutrient/Eutrophication Biological Indicators	TMDL Required
Albert Lea	24-0014-00	AqRec	Nutrient/Eutrophication Biological Indicators	TMDL Required
Pickereel	24-0025-00	AqRec	Nutrient/Eutrophication Biological Indicators	TMDL Required

- Provide technical assistance throughout the TMDL study and implementation study. Freeborn County will share water quality/quantity data collected for use in identifying impaired waters.

- Seek local, state, and federal grant funding to protect surface waters
- Participate in low interest loan, cost share, and incentive programs for “Best Management Practice” implementation
- Develop plans to address subwatershed level impacts to reduce pollutants causing impairments, as part of an approved implementation plan.
- Continue support of citizen stream monitoring, citizen lake monitoring, and citizen precipitation monitoring programs
- Facilitate effective water resource management through education and public outreach (newsletters, articles, radio, county fair booth)
- Participate with MPCA on the Watershed Restoration and Protection (WRAP) Program starting in the following years:

LeSuer River Watershed	2008
Cedar/Shell Rock River Watershed	2009
Cannon River Watershed	2011
Winnebago River Watershed	2013
Blue Earth River Watershed	2017
- Coordinate with the Shell Rock River Watershed and Turtle Creek Watershed Districts efforts on remediating water quality through a comprehensive strategy on watershed management.
- Coordinate Agriculture Water Management Issues and Conservation Drainage Issues
- Designate a Lakes Management Subcommittee to participate with Department of Natural Resources and Ducks Unlimited in the development of management plans on Bear Lake and State Line Lake
- Continue systematic redetermination of benefits for ditch systems
- Implement consistent buffer initiatives according to current drainage law

GOAL: **Protect Surface Water And Groundwater From Individual Sewage Treatment System Contamination (ISTS)**

Objective: Follow Minnesota Pollution Control Agency approved design, construction and operation of SSTS.

Action: Follow MPCA Water Quality Division SSTS, Chapter 7080 thru 7083

Timeline: 2011 On-going

Agency: Environmental Services Department, MPCA

Cost: Two FTE Licensed Inspectors

Action: Seek licensing of all SSTS Designers, Installers, Pumpers and Septage Haulers that perform work in county

Timeline: 2011 On-going

Agency: MPCA, Environmental Services Department

Cost: NRBG In-kind

Action: Provide education to landowners on properly installed and functioning SSTS

Timeline: 2011 On-going

Agency: Freeborn County Environmental Services Department, Shell Rock River Watershed, Extension Agency

Cost: NRBG In-kind

Action: Apply for state and local cost-share funds for SSTS Installations

Timeline: 2011 On-going

Agency: Environmental Services Department, Freeborn County

Cost: NRBG In-kind

GOAL: Enhance Protection of Surface and Groundwater Resources from Subsurface Sewage System Treatment Systems

- Continue compliance with Minnesota Rules 7080 through 7083
- Provide County level FTE licensed and certified SSTS inspectors
- Develop an individual parcel county-wide compliance inspection program
- Provide continuing education to local SSTS professions and landowners
- Apply for state and local cost share programs to assist municipalities and income eligible landowners with waste water collection and treatment construction costs



TOPSOIL

The soils in Freeborn County are mostly deep and loamy. These soils range from tight clays to porous sands and gravels. They formed extensively in glacial till and less extensively in glacial outwash, lacustrine sediments, alluvium and organic material. Varying parent materials, topography and native vegetation reflect the number of different soils present. A digitized soil survey exists for 13 broad soil descriptions. These broad classifications are a detailed inventory of 64 soil types. This general soil map is used for land use planning. Soil erosion has resulted from urban development and farming practices.

GOAL: **Protect and Preserve Topsoil**

Action: Educate landowners on soil erosion practices

Timeline: 2011 On-going

Agency: SWCD, NRCS, Extension Agency

Cost: SWCD Funding

Action: Participate in (Ag BMP) Minnesota Department of Agriculture Best Management Loan Program

Timeline: 2011 On-going

Agency: Freeborn County Environmental Services Department, SWCD

Cost: In-kind NRBG

Action: Implement Minnesota construction site erosion and sediment control planning

Timeline: 2011 On-going

Agency: Freeborn County Building Inspectors

Cost: NRBG In-kind

Action: Support enrollment of highly erodible lands into Federal Conservation Reserve Program (CRP), reinvest in Minnesota Program (RIM), Environmental Quality Incentives Program (EQUIP)

Timeline: 2011 On-going

Agency: SWCD, NRCS, Freeborn County Commissioners, Environmental Services Department

GOAL: Control Soil Erosion

- Preserve and protect top soil
- Promote conservation programs that reduce soil erosion
- Pursue grant opportunities for incentive funding of controlled tile drainage systems on ag fields
- Provide public education for the protection of sensitive lands
- Participate in demonstrations of effective conservation tillage methods
- Support wind erosion conservation practices (tree plantings, seeding of erosion area)
- Educate landowners on TMDL permit efforts to reduce sedimentation of creeks, ditches, and lakes.
- Enhance the promotion of buffer strips, filter strips, grassed waterways, and sediment control basins.
- Support the use of “Precision Agricultural Technologies” (PCT) and cover crops where appropriate.
- Engage local partners (NRCS, Conservation Groups, Lake Associations) to foster new relationships on conservation approaches.



WETLANDS

Wetlands are lands transitional between terrestrial and aquatic systems that enhance biodiversity. The water table is usually at or near the surface of the land. Freeborn County has an estimated 10,000 acres of pre-settlement wetlands remaining. The following is a summary of Circular 39 Type Wetlands found in the National Wetland Inventory of Freeborn County:

<u>Circular 39 Type</u>	<u>Approximate Acres</u>
1	765
2	246
3	8,800
4	216
5	363
6	278
7	70
Riverine	200

Approximately 95% of the County is considered upland.

Freeborn County Officials support development and maintenance of wetlands for good water quality, serving as reservoirs for flood control, providing fish and wildlife habitat, acting as sediment and nutrient traps and providing recreational opportunities.

GOAL: Preserve Existing Wetlands

Action: Participate in Wetland Preservation Program (WPA)

Timeline: 2011 On-going

Agency: Freeborn County Commissioners, NRCS, SWCD

Cost: NRBG In-kind

Action: Freeborn County, acting as local governing unit for implementation of the Wetland Conservation Act will continue to follow US Corps of Engineers, DNR, BWSR Wetland Regulations

Timeline: 2011 On-going

Agency: Environmental Services Department, SWCD

Cost: NRBG

Action: Apply for state funding and assistance from MDA and DNR to control invasive species infestations on public and private wetlands

Timeline: 2011 On-going

Agency: Environmental Services Department

Cost: NRBG In-kind

Action: Complete wetlands inventory and prioritization for protection planning

Timeline: 2011 - 2016

Agency: Environmental Services Department, SWCD

Cost: NRBG

Action: Work to establish Federal, State and Local funding partnerships for wetland restoration land purchase.

Timeline: 2011 On-going

Agency: Freeborn County, Shell Rock River Watershed District, Turtle Creek River Watershed District

Cost: Unknown

Action: Develop and implement a 5 year wetland preservation education action plan

Timeline: 2011 On-going

Agency: Environmental Services Department, BWSR, DNR, SWCD, Extension Agency, U.S. Corps of Engineers

Cost: NRBG



FEEDLOTS

Freeborn County has a detailed feedlot inventory database in the Environmental Services Department. Currently there are 464 feedlots in this county. This inventory shows the following information:

<u>Animal Units</u>	<u>Shoreland Area</u>	<u>Not in Shoreland Area</u>	<u>Total</u>
10 – 49	4	109	113
50 – 99	8	129	137
100 – 299	6	123	129
300 – 999	2	67	69
1,000 or More	0	16	16

Freeborn County is a MPCA Delegated County to operate the feedlot permitting process. Existing feedlot sites receive random and scheduled on-site inspections from the feedlot officer or MPCA. When a new feedlot is planned, engineered plans are required for the manure storage pits. A conditional use permit maybe required dependent upon animal units at the site or the location of animal buildings. Land application of animal manure is a potential pollution issue. Specific manure storage requirements, manure application rates, set-back distances from water wells, surface waters and field tile inlets or culverts are enforced with all feedlot sites. Livestock production is an important livelihood in Freeborn County and will continue to be centered in Southern Minnesota.

GOAL: **Protect Surface Water and Groundwater Resources From Feedlot/Animal Waste Contamination**

Action: Enforce Minnesota Rules Chapter 7020 – MPCA Feedlot Permit Program Standards.

Timeline: 2011 On-going

Agency: Environmental Services Department, MPCA

Cost: .5 FTE Inspector

Action: Continue to provide education to feedlot owners/operators on best management of animal waste.

Timeline: 2011 On-going

Agency: Environmental Services Department, MPCA, Extension Agency

Cost: NRBG In-kind

Action: Pursue Federal and State Funding to mitigate or eliminate pollution from feedlots and animal manure.

Timeline: 2011 On-going

Agency: Environmental Services Department, SWCD, NRCS

Cost: NRBG Grant

GOAL: Management of Animal Manure for Land Applications

- Follow Minnesota Rules 7020 for animal feedlot, manure storage, and land application of liquid and solid waste products.
- Provide manure management workshops
- Require and provide construction inspections of new feedlot facilities
- Provide manure management plan review every four years with all producers
- Provide opportunities and incentives to owner/operators for planning and training of feedlot operations
- Continue to provide MPCA/Freeborn County Feedlot Officers and permitting process
- Utilize GPS for mapping of feedlot sites and identification of environmentally sensitive areas to control manure application
- Require soil sampling of manure application acres for nutrient analysis
- Host/participate in field demonstrations plots, new equipment displays, and calibration of injectors/spreaders
- Assist MPCA, MDA, U of M, and MN Extension Offices on grazing of lands and nutrient management plans
- Utilize GIS/GPS Technologies in developing Manure Management, Nutrient Management, Pasture Management, and Rotational Grazing Plans.
- Encourage involvement in the Livestock Environmental Quality Assurance (LEQA) Program
- Consider development of local Agricultural Advisory Committee for livestock producers
- Provide technical assistance with implementation of Best Management Practices to reduce impacts of manure land applications



MUNICIPAL WASTEWATER

Freeborn County has prioritized municipal waste water treatment to protect their citizens and resources. A Blue Earth River Basin Fecal Coliform TMDL Presentation revealed waterborne pathogens to be present in southern Minnesota streams. Bacteria and Protozoan Parasites present from human waste impair Freeborn County's surface waters. Inadequately or improperly treated human waste impacts surface waters significantly. Currently one incorporated city within Freeborn County does not have a municipal waste water collection and treatment facility. Local, state and federal agencies are actively assisting all communities with waste water transportation and treatment options.

GOAL: Protect Surface Water and Groundwater From Municipal Wastewater Contamination

Action: Provide assistance to municipalities to construct and maintain wastewater treatment facilities

Timeline: 2011 On-going

Agency: Freeborn County Commissioners, Environmental Services Department, MPCA, MDH

Cost: NRBG In-kind

Action: Apply for federal/state/local funding for wastewater treatment facilities

Timeline: 2011 On-going

Agency: Environmental Services Department, MPCA, MAP, USDA RD

Cost: NRBG In-kind

Action: Seek priority placement on MPCA Wastewater Infrastructure Fund (WIF) for non-conforming wastewater treatment facilities

Timeline: 2011 On-going

Agency: Environmental Services Department, MPCA, MAP, USDA RD

Cost: Unknown

SOLID WASTE

Pollution from landfills or dumpsites is an important concern to Freeborn County residents. If left unmanaged, mixed municipal waste, demolition debris or hazardous waste pose a threat to ground and surface waters. One closed solid waste landfill is managed by the City of Albert Lea. Two permitted demolition landfills are currently operating within Freeborn County. All mixed municipal waste generated within the County is transported to be landfilled outside of Freeborn County. Clandestine dump sites are recognized, cleaned up and closed. Freeborn County is committed to an effective policy, clearly defined, which applied practices minimize impacts from this pollutant source.

GOAL: Protect Surface Water and Groundwater From Mixed Solid Waste Contamination

Action: Maintain an effective solid waste management system

Timeline: 2011 On-going

Agency: FTE Solid Waste Officer

Cost: SCORE Funds, Solid Waste Assessment Fee

Action: Continue countywide recycling program

Timeline: 2011 On-going

Agency: FTE Solid Waste Officer

Cost: SCORE Funds, participant volunteer workers, Solid Waste Assessment Fee

Action: Continue to participate in agricultural waste chemical collections and agricultural waste pesticide container collection programs

Timeline: 2011 On-going

Agency: MDA, Environmental Services Department, Extension Agency

Cost: NRBG In-kind

Action: Provide public education on the reduction, reuse and recycling of solid waste

Timeline: 2011 On-going

Agency: Freeborn County Solid Waste Officer

Cost: SCORE Funds, Solid Waste Assessment Fee

GOAL: Protect Surface Water and Groundwater Resources From Hazardous Waste Pollution

Action: Continue countywide hazardous waste collection program

Timeline: 2011 On-going

Agency: Freeborn County Environmental Services Department, Community Volunteers

Cost: SCORE Funds, NRBG In-kind

Action: Develop public education program for residential/commercial/industrial hazardous waste disposal

Timeline: 2011 On-going

Agency: MPCA, Extension Agency, Environmental Services Department

Cost: SCORE Funds, NRBG In-kind

Action: Apply for federal/state funds for clandestine dumpsite clean-up

Timeline: 2011 On-going

Agency: Environmental Services Department, MPCA

Cost: NRBG In-kind, BWSR Challenge Grant

Action: Prompt discussion for legislation at the national level to require manufacturers to label products for proper end disposal and product stewardship

Timeline: 2011 On-going

Agency: Environmental Services Department

Cost: SCORE Funds, NRBG In-kind



STORM WATER DRAINAGE

Freeborn County has an extensive drainage system that has a direct effect on water quality/quantity of receiving streams, rivers and lakes. It is our policy to reduce the nutrient and sediment loads carried in these waters. Approximately 400,000 acres of land is cropped, some 1,400 miles of roadway and 350 miles of open ditches are all contributors to storm water issues. We actively address establishment and maintenance of grass filter strips on both sides of ditches and roads. Erosion areas are scattered throughout Freeborn County (small concentration in the north central area). One percent (1%) is considered high erosion in the shoreland district and approximately 6% high erosion in other areas. Freeborn County as a whole consists of 94% low erosion priority area. Although approximately 1% is considered Urban Residential Land Use, they contribute significant amounts of storm water runoff. A surface water sampling effort is underway through the efforts of the Shell Rock River Watershed District that is providing diagnostic data on storm water quality. River, ditch, creek and lake water quality sampling program also continues. The City of Albert Lea is phasing in changes to the storm water catch basins along new urban development areas.

GOAL: **Protect Surface Waters From Storm Water Drainage of Sediment, Nutrients and Chemicals**

Action: Maintain or improve existing ditch system

Timeline: 2011 On-going

Agency: Freeborn County

Costs: Unknown

Action: Require vegetative buffer strips along public ditches upon redetermination

Timeline: 2011 On-going

Agency: Freeborn County, NRCS, SWCD

Costs: Unknown

Action: Encourage landowners of private ditches to establish and maintain vegetative buffer strips

Timeline: 2011 On-going

Agency: Freeborn County, SWCD, DNR

Action: Educate landowners on land treatment options and available cost-share programs to minimize transport of sediment

Timeline: 2011 On-going

Agency: Environmental Services Department, SWCD, BWSR, DNR, Extension Agency

Cost: NRBG In-kind

Action: Identify ditches that contribute excess sediment into surface waters

Timeline: 2011 On-going

Agency: Environmental Services Department, SWCD, Shell Rock River Watershed District, Turtle Creek River Watershed District

Cost: NRBG

Action: Measure surface water flows and analyze water for nutrient/chemical/sediment loading

Timeline: 2011 On-going

Agency: Environmental Services Department, MPCA, SWCD, MDH

Cost: NRBG

Action: Follow MPCA Total Maximum Daily Load (TMDL) recommendations for remediation of waters

Timeline: 2011 On-going

Agency: Freeborn County

Cost: Unknown



WATERSHEDS

The general topographic relief of Freeborn County presents two distinctive features; gently rolling north-south moraines and the depressional basins with boggy and alluvial deposits located to the southeast and eastern areas. Both of these features are products of the last glacial period, and have subsequently affected soil development, vegetation and wildlife habitat. Small hilly areas exist and the most rugged tracts are in Section 16 of Newry Township and Sections 1 and 2 of Pickerel Lake Township (Hills Rise 50 to 100 feet). A majority of this county is drained southeastward through the Shell Rock and Cedar Rivers. The northwestern part drains to the Minnesota River via the LeSuer and Blue Earth River Basins. There are six major watersheds and 74 minor watersheds shaping this topography. An average altitude is about 1,250 feet above sea level, although extremes of altitude are between 1,150 feet above sea level in the northwestern corner to about 1,280 feet above sea level in the central part of the County. An important statement can be made about the watersheds in Freeborn County "We are a headwater County". The fact that water does not drain into this County make water resource protection an on-going priority.

GOAL: Manage Watersheds to Reduce Bacteria, Nutrients, Chemicals and Sediments From Entering Surface Waters

Action: Develop an education presentation on point and non-point pollution sources

Timeline: 2011 On-going

Agency: Environmental Services Department, MPCA, Extension Agency, SWCD

Cost: NRBG

Action: Apply for federal/state/local funding for Land Best Management Practices

Timeline: 2011 On-going

Agency: Environmental Services Department, SWCD

Cost: NRBG In-kind

Action: Require erosion and sediment control plan on construction sites (requirement in building permit)

Timeline: 2011 On-going

Agency: Freeborn County Building Inspectors

Cost: NRBG In-kind

Action: Assist municipalities on storm-water management issues

Timeline: 2011 On-going

Agency: Environmental Services Department

Cost: NRBG In-kind

GOAL: Manage Watersheds to Control Surface Water Run-off

Action: Require post-land development surface water run-off rates not exceed pre-land development run-off rates

Timeline: 2011 On-going

Agency: Freeborn County Environmental Services

Cost: NRBG In-kind

Action: Preserve flood plain areas

Timeline: 2011 On-going

Agency: Freeborn County Zoning Officials

Cost: NRBG In-kind

Action: Continue to participate in DNR Floodplain Management – MN Chapter 103.F

Timeline: 2011 On-going

Agency: Freeborn County Zoning Officials

Cost: NRBG Grant

Action: Apply for federal/state/local funds for construction of riparian buffers

Timeline: 2011 On-going

Agency: Environmental Services Department

Cost: NRBG In-kind

Action: Continue participation in MN Department of Agriculture Best Management Loan Program

Timeline: 2011 On-going

Agency: Freeborn County Agricultural Inspector, SWCD, BWSR

Cost: Annual Administration

Action: Prioritize drained wetlands for use as water holding basins and restore wetland use

Timeline: 2011 On-going

Agency: Environmental Services Department, DNR, SWCD

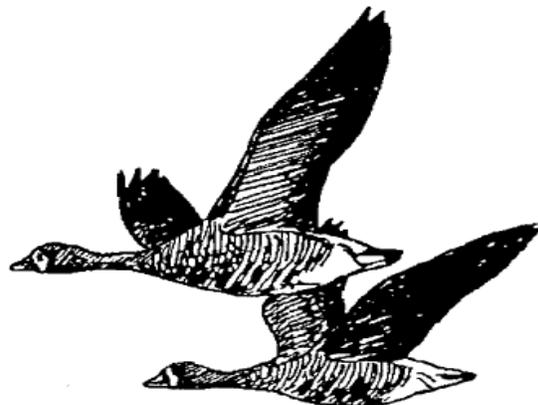
Cost: NRBG In-kind

Action: Continue participation in volunteer citizen precipitation gauge monitoring program

Timeline: 2011 On-going

Agency: Environmental Services Department, SWCD

Cost: NRBG In-kind



SHORELANDS

There are 49 lakes within Freeborn County, covering some 20,000 acres. Twenty-one (21) lakes, 33 water sources and 18 wetland basins are considered DNR protected. Geneva Lake, Bear Lake and Lower Twin Lakes have variable crest structures installed for the purpose of allowing temporary drawdown. Albert Lea Lake and State Line Lake are being considered for construction of variable crest structures. Freeborn County adopted the Minnesota Shoreland Act and has revised and adopted DNR Shoreland Rules. Freeborn County is a member of the 37 County Joint Powers addressing Minnesota Rivers Shoreland Issues. Currently Fountain Lake has the greatest density of residential units in a shoreland area of all Freeborn County Shoreland areas. Continued pressure for residential development of remaining shoreland areas make this a priority concern for soil erosion. Currently no evidence exists to suggest the quantity of surface water available within Freeborn County will limit immediate or future lake uses. No wake or limited wake issues are enforced during high water periods on selected lakes. Tourism appears to have minimal effects on surface waters. We have taken steps to stop shoreland degradation and anticipate residential building may increase.

GOAL: **Protect and Preserve Existing Shorelands**

Action: Follow MN DNR Standards for Management of Shoreland Areas – M.S. 6120

Timeline: 2011 On-going

Agency: Freeborn County Zoning, DNR

Cost: NRBG

Action: Provide educational opportunities on shoreland protection

Timeline: 2011 On-going

Agency: Environmental Services Department, DNR, SWCD

Cost: NRBG In-kind

Action: Work to preserve existing natural riparian vegetation or re-establish it

Timeline: 2011 On-going

Agency: Environmental Services Department

Cost: NRBG

GOAL: Provide Recreational Opportunities on Public Waters

Action: Support Department of Natural Resources Lake Management Plans

Timeline: 2011 On-going

Agency: Freeborn County

Cost: Unknown

Action: Work to up-grade public access onto Twin Lakes, Pickerel Lake, Bear Lake, State Line Lake, Geneva Lake, and Freeborn Lake.

Timeline: 2011 On-going

Agency: Environmental Services Department, DNR, Ducks Unlimited

Cost: Unknown

Action: Assist in development of local lake management plans

Timeline: 2011 On-going

Agency: Environmental Services, DNR, BWSR, Shell Rock River Watershed District, Turtle Creek Watershed District, Ducks Unlimited, and citizen participation

Cost: NRBG In-kind

Action: Apply for federal/state/local funding for lake management implementation

Timeline: 2011 On-going

Agency: Freeborn County

Cost: Unknown

Action: Protect/preserve/promote wildlife habitat

Timeline: 2011 On-going

Agency: Environmental Services Department, SWCD, DNR and Ducks Unlimited

Cost: NRBG In-kind

Action: Seek installation and operation of rough fish barriers on State Line Lake, Freeborn Lake, Fountain Lake, Albert Lea Lake, Twin Lakes, White Lake, Pickerel Lake, Geneva Lake and Bear Lake

Timeline: 2011 On-going

Agency: Environmental Services Department, DNR, Shell Rock River Watershed District and Ducks Unlimited

Cost: Unknown

GOAL: Protect Shoreland Areas

- Identify shoreland erosion sites and prioritize run-off sites for remediation
- Promote best management practices to reduce erosion and sedimentation on shoreland areas
- Promote vegetative buffers along shoreland areas
- Require animal grazing management practices to limit erosion potentials
- Pursue aquatic management areas
- Follow MN DNR Public Waters permitting and local shoreland ordinance practices (M.S. 6120)
- Require construction site erosion control standards
- Provide building contractor educational opportunities on erosion control practices
- Provide landowner information on sediment and erosion control practices
- Support DNR Lake Management Plans
- Support up-grades to public access areas on Freeborn, Bear, Pickerel, Upper Twin, Lower Twin, Geneva, Fountain, Albert Lea, Goose, and State Line Lakes in Freeborn County
- Preserve, enhance, and protect natural shoreland resources of all water bodies for wildlife habitat



WATERSHEDS AND THE LAKES WITHIN FREEBORN COUNTY

Minnesota Department of Natural Resources (MN DNR) assigned unique watershed identification numbers during 1981 to each watershed in the state. These unique five digit numbers can be broken down into two parts. The first two digits represent a major watershed. The last three digits represent a minor watershed. These unique minor watershed identification numbers were assigned without regard to hydrologic relationships and therefore cannot be used to establish a hydrologic order among minor watersheds.

Watershed boundary lines follow the height-of-land delineation. Height-of-land assessment is described from contour data or contour lines. Land surface topography, natural waterways and artificial drainage ditch systems represent an accurate hydrologic boundary. Minor watershed boundaries that incorporate artificial surface water drainage systems are most accurate as they will increase reliability of environmental impacts and present land use.

MN DNR Lake Management Rules include:

- Shoreland Management Act
- Minnesota Law 1973, Chapter 379
- Minnesota Statute 105
- Floodplain Management Act
- Wild and Scenic Rivers Act
- Minnesota Rules Chapter 6120

They were all designed to control development on lakeshores. They were based on the water's chemical, physical and biological characteristics.

MN DNR Lake classification system for shoreland management was based on development density, lake size and shape, natural characteristics of this water body (and shoreland) as well as state/region/county water needs.

The following is MN DNR Lake and Stream Classification System:

- Natural Environment – Those waters needing significant protection from development
- Recreational Development – Those waters which can support additional development and recreational use
- General Development – Those waters which will support high density development, multiple use and have significant existing development

MN DNR
UNIQUE NUMBER

30000 **Blue Earth River Watershed.** The west Central Part of Freeborn County lies within the Blue Earth River Major Watershed; the local drainage is from East to West along Foster Creek and the East Fork of the Blue Earth River.

Morin Lake

32000 **LeSuer River Watershed.** The northwestern portion of Freeborn is primarily within the LeSuer River Watershed. Regional drainage is from South to North along the LeSuer River and South to Northwest along the Big Cobb River and Cobb Creek.

	<u>DNR Classification</u>
Freeborn Lake	Natural Environment
Trenton Lake	Natural Environment
Penny Lake	Natural Environment

39000 **Cannon River Watershed.** The northeastern edge of Freeborn County lies within the Cannon River Major Watershed which drains to the North.

48000 **Cedar River Watershed.** The eastern part of Freeborn County lies primarily within the Cedar River Major Watershed. The regional drainage is from West to Southeast along Deer Creek, Mud Lake Creek, Woodbury Creek and Turtle Creek.

	<u>DNR Classification</u>
Geneva Lake	Natural Environment
Hickory Lake	Natural Environment

49000 **Shell Rock River Watershed.** The central portion of Freeborn County is within the Shell Rock River Watershed. In this area the local drainage is from North to South and major drainage channels are Bancroft Creek, Peter Lund Creek, Goose Creek and the Shell Rock River.

	<u>DNR Classification</u>
Halls Lake	Natural Environment
Mud Lake	Natural Environment
Sugar Lake	Natural Environment
School Section Lake	Natural Environment
White Lake	Recreational Development
Pickrel Lake	Recreational Development
Albert Lea Lake	Recreational Development
Fountain Lake	General Development
Upper Twin Lake	Natural Environment
Lower Twin Lake	Natural Environment
Church Lake	Natural Environment

50000

Winnebago River Watershed. The southwestern portion of Freeborn County lies primarily within the Winnebago River Major Watershed. In this area the regional drainage is from North to South toward the Minnesota – Iowa border. Local drainage is toward Steward and Lime Creeks

Bear Lake
State Line Lake

DNR Classification
Natural Environment
Recreational Development

COOPERATIVE WORK WITH WATERSHED DISTRICTS

There are six major watersheds within Freeborn County. Within the Cedar River Watershed is Turtle Creek. A Turtle Creek Watershed District was initially formed in 1968. The Turtle Creek Watershed District revised their Management Plan to run 2003 – 2012. A Shell Rock River Watershed District was initially formed in 2003. The Shell Rock River Watershed District wrote their management plan in 2004. Both Watershed District’s Management Plans were part of Freeborn County’s local water plan review process. Both Watershed District’s Managements Plans contained goals and objectives that were incorporated into this 2011 mid-term amendment, and the 2006 – 2015 Water Plan. Both Watershed Districts play an essential part in Freeborn County’s local water planning. The pursuit of water resource protection is a common goal in all three Water Management Plans. Freeborn County supports the efforts of the Turtle Creek and Shell Rock River Watershed Districts protection of our water resources.



FREEBORN COUNTY COMPREHENSIVE WATER MANAGEMENT PLAN 2006 – 2015

PRIORITY CONCERNS SCOPING DOCUMENT

INTRODUCTION

Freeborn County is the Gateway to Southern Minnesota. This County has a land area of 720 miles, a 2010 population of 31,255, 14 incorporated cities and 20 townships. The County Seat is Albert Lea, which is located approximately 100 miles south of Minneapolis, MN. Some 81% of this County is farmed or used for rotational pasture.

LOCAL WATER MANAGEMENT PLAN

Freeborn County Environmental Health Coordinator is responsible for the Local Water Management Plan (LWMP). Development of an original Local Water Management Plan began in 1986. The first water plan was approved and adopted in 1990. This plan was revised in 1997, approved by the Board of Water and Soil Resources for a time period through December 31, 2005.

The 2006 – 2015 Plan is under implementation. The 2011 amendments enhance existing management efforts.

PRIORITY CONCERNS IDENTIFICATION

Freeborn County Local Water Management planning process of addressing priority concerns has included the following steps/actions:

- September 7, 2004 - Freeborn County Board of Commissioners signed a resolution to update the Local Water Plan
- September 10, 2004 – Written notice was sent to 5 contiguous counties, all 20 townships in Freeborn County, all 14 incorporated cities within Freeborn County, the Turtle Creek Watershed Board, the Shell Rock River Watershed Board, State Agencies (MPCA, MNDNR, MDA, MDH, BWSR, EQB) United States Fish and Wildlife Service, Freeborn County Soil and Water Conservation District, Freeborn County Farm Service Agency, Freeborn County Natural Resources Conservation Service, Freeborn County Chamber of Commerce Lakes Committee, Fountain Lake Sportsmen Club, Fountain Lake Association, Pork Producers, Cattlemen Association, Dairy Association, Corn and Soybean Growers, Ducks Unlimited, Pheasants Forever, League of Women Voters, and the Deer Hunters Association. The notice requested copies of local plans and official controls and further requested identification of any conflicts, problems or opportunities they would like examined in this process. We requested this information returned by December 31, 2004.
- November 15, 2004 – Meeting with Dave Petersen of BWSR and Freeborn County Staff to discuss the revised updating process

LIST OF PRIORITY CONCERNS

1. Minimize flood damage
2. Municipal storm water treatment/discharge
3. Individual sewage treatment systems
4. Preserve wetlands
5. Protect water resources from feedlot/animal manure
6. Protect and preserve existing shorelands

Attached is the summary of survey responses and the minutes from the November 22, 2004 public meeting.

PRIORITY CONCERN SELECTION

The Water Planning Advisory Committee reviewed all written information received from these surveys and oral information received during public meetings. We identified and compiled concerns that were common among information received. Freeborn County's Priority Concerns and concerns identified from local, regional and state agencies are very similar.

PRIORITY CONCERNS NOT ADDRESSED BY THIS PLAN

Local citizens, regional agencies and state government recognize agriculture practices dominate water quality in Freeborn County. Municipal waste water and storm water management was identified as concerns. All concerns identified in this input process are attempted to be included in this Water Management Plan.

PRIORITY CONCERN SELECTION

Following is a list of priority concerns received from state and local governments and the public.

State Agencies Priority Concerns:

MDH

1. Well head protection programs, plan development and plan implementation.
2. Non-community public water supply systems and the inner well management zone.
3. Water quality data bases for private wells

MPCA

1. Impaired waters/total maximum daily loads.
2. Lake monitoring and lake system management.
3. Drainage system management and open tile inlets.
4. Feedlots and land application of manure.
5. Involvement in watershed initiatives.

MDA

1. Conservation tillage and drainage.
2. Pesticides.
3. Manure management and individual sewage treatment systems

BWSR

1. Prevention of erosion of agricultural soils.
2. Drainage system maintenance and repair
3. Storm water runoff and sediment delivery from impervious surfaces

DNR

No comment received.

EQB

No comment received.

Local Government Priority Concerns:

Turtle Creek Watershed District

1. Intergovernmental cooperation
2. Restructure and expand the Citizens Advisory Committee to establish strong connections for the Turtle Creek Watershed District
3. Financing - utilize planning, education and partnerships to cost effectively fulfill district goals and address water resource management issues.
4. Encourage partners and residents to work together on a lake management plan for Geneva Lake
5. Maintain the drainage system, research new and innovative projects to protect and benefit the system
6. Increase miles of ditch filterstrips through a buffer initiative
7. Protect and preserve topsoil while reducing sedimentation runoff into Turtle Creek
8. Develop baseline monitoring data for each sub watershed in the Turtle Creek Watershed
9. Preserve at or below 100 year flood elevations
10. Examine cost effective options to reduce agricultural and urban flood damages through wetland restorations
11. Examine cost effective options to reduce agricultural and urban flood damages through researching culverts
12. Understand watershed concept
13. Understand water resources
14. Communications - residents, landowners, local, state and federal government will be given updates of district initiatives, projects and challenges

Riceland Township

1. Flooding of public roadways
2. The return of agricultural land into ponds next to roadways
3. Conservation tillage (gone bad)

City of Hartland

1. Storm water runoff (north and west part of city)
2. Storm water runoff (south and east part of city)
3. Reduction of phosphorus in rivers

City of Myrtle

1. Wastewater treatment system for the city

City of Freeborn

1. Erosion of shoreland on Freeborn Lake
2. Poor water quality of Freeborn Lake

Freeborn County Soil and Water Conservation District

1. Surface water runoff quality/quantity
2. Gully erosion
3. Individual sewage treatment systems.

PUBLIC PARTICIPATION

Public Participation in the Freeborn County water planning process has included the following:

1986: On June 23, Freeborn County passed a resolution to develop a Comprehensive Water Plan.

1989: October 1, Freeborn County completed a draft plan and submitted it to affected local units of government for review and comment under Chapter 110B of Minnesota Statutes.

October 1, Freeborn County submitted its draft plan to the Minnesota Departments of Agriculture, Health, Natural Resources, Pollution Control Agency, State Planning Agency, and the Minnesota Geological Survey for preliminary review and comment.

December 13, a public hearing was held on pursuant to Section 110B.08 Subd. 4 for the purpose of obtaining public input into the Water Plan.

1990: May 1, Freeborn County submitted its Water Plan along with written comments received, a record of the public hearing, and a summary of changes incorporated as a result of the review process to the Minnesota Board of Water and Soil Resources.

September 18, the Minnesota Board of Water and Soil Resources provided written comments to Freeborn County on its final plan.

October 24, the Minnesota Board of Water and Soil Resources approved the Freeborn County Comprehensive Water Plan.

December 18, the Freeborn County Board of Commissioners approved and locally adopted its Comprehensive Water Plan.

Beginning in 1990: The Water Planning Advisory Committee meetings were held with the public participation in reviewing and discussing this water plan, and making recommendations for changes. Meeting dates were:

1991: January 10 and November 14.

1992: April 24 and June 15.

1993: January 22, April 30, May 18, July 1 and July 27.

1994: February 10 and April 13.

1995: February 15, Township Officers Meeting.

February 23, Public Information Meeting for revision of the Water Plan.

August 22, Consultant hired to provide technical assistance developing the revision of the County Water Plan.

1997: March 31, Township Officers Meeting.

October Revision of Comprehensive Water Plan distributed of State Agency and Local Units of Government review and comment.

Public participation is continuously received from interested individuals, municipalities, and local business which take an active interest in this process.

September 7, 2004: Freeborn County passed a resolution to revise the 1997 – 2005 Water Plan

September 10, 2004: Surveys were sent to state agencies, contiguous counties, city and township officials, agricultural organizations, environmental groups, watershed organizations, and interested individuals seeking input in development of the Priority Concern Document.

November 10, 2004: Freeborn County Water Planning Advisory Committee held a public meeting to update the public and seek additional input for development of the Priority Concerns that will be addressed in this water plan revision.

January 10, 2005: Water Planning Advisory Committee Public Meeting

February 1, 2005: Water Planning Advisory Committee Public Meeting

March 15, 2005: Water Planning Advisory Committee Public Meeting

April 12, 2005: Water Planning Advisory Committee Public Meeting

June 27, 2005: Water Planning Advisory Committee Public Meeting

July 18, 2005: Water Planning Advisory Committee Public Meeting

August 29, 2005: Water Planning Advisory Committee Public Meeting

December 14, 2005: Freeborn County submitted Priority Concerns Scoping Document to Minnesota Board of Soil and Water Resources (BWSR)

January 4, 2006: BWSR convene the Southern Minnesota Water Plan Review Committee to discuss Freeborn County 1997 – 2005 CWP and provide comment on resource protection, funding, staff and accomplishments as outlined in Priority Concerns Scoping Document

January 25, 2006: BWSR returns official comments pertaining to the State review of the Freeborn County Priority Concerns Scoping Document (PCSD) for the local water plan

March 27, 2006: Water Planning Advisory Committee Public Meeting – Recommend approval of the 2006 – 2015 Freeborn County Comprehensive Water Plan

- May 2, 2006: Freeborn County held a public hearing at a regularly scheduled Commissioner Meeting to receive input on the proposed 2006 – 2015 Comprehensive Local Water Plan.
- October 19, 2011: Notice of Decision to amend Water Plan and request for comments sent to State Agencies, contiguous counties, townships, cities and interested citizens.
- November 16, 2011: Mower County comments on Water Plan Revision received.
- November 21, 2011: Minnesota Pollution Control Agency comments received on CLWP Amendment.
- November 29, 2011: Minnesota Department of Agriculture comments on Water Management Plan received.
- November 30, 2011: Minnesota Department of Health comments received on amendments to Water Plan.
- February 7, 2012: Freeborn County held a Public hearing at a regularly scheduled Commissioners Meeting to receive input on the proposed 2011 mid-term amendment to this Comprehensive Local Water Plan.
- February 21, 2012: Resolution amending and adopting the 2011 Mid-Term Comprehensive Water Plan.

Acknowledgements

Freeborn County Board of Commissioners

Glen Mathiason	Commissioner 1 st District
Dan Belshan	Commissioner 2 nd District
Jim Nelson	Commissioner 3 rd District
Christopher Shoff	Commissioner 4 th District
Mike Lee	Commissioner 5 th District

Freeborn County Water Planning Advisory Committee

Don Kropp	Soil and Water Conservation District Board
Tom Butler	Turtle Creek Watershed
Ken Nelson	Shell Rock River Watershed
Tony Trow	Urban Citizen
	Township Association
Dan Belshan	County Commissioner
Glen Mathiason	County Commissioner
Kyle Skov	City of Albert Lea
Andy Henschel	Watershed Field Technician
Richard Hoffman	Environmental Health Coordinator

County Agencies

Freeborn Environmental Services
Freeborn County Extension Service
Freeborn County Soil and Water Conservation District
Freeborn County Natural Resources Conservation Services

State Agencies

Board of Water and Soil Resources
Land Management Information Center
Minnesota Department of Agriculture
Minnesota Department of Natural Resources
Minnesota Department of Health
Minnesota Extension Service
Minnesota Geological Survey
Minnesota Department of Transportation
Minnesota Pollution Control Agency
Water Resources Center, Mankato State University

February 23, 2012