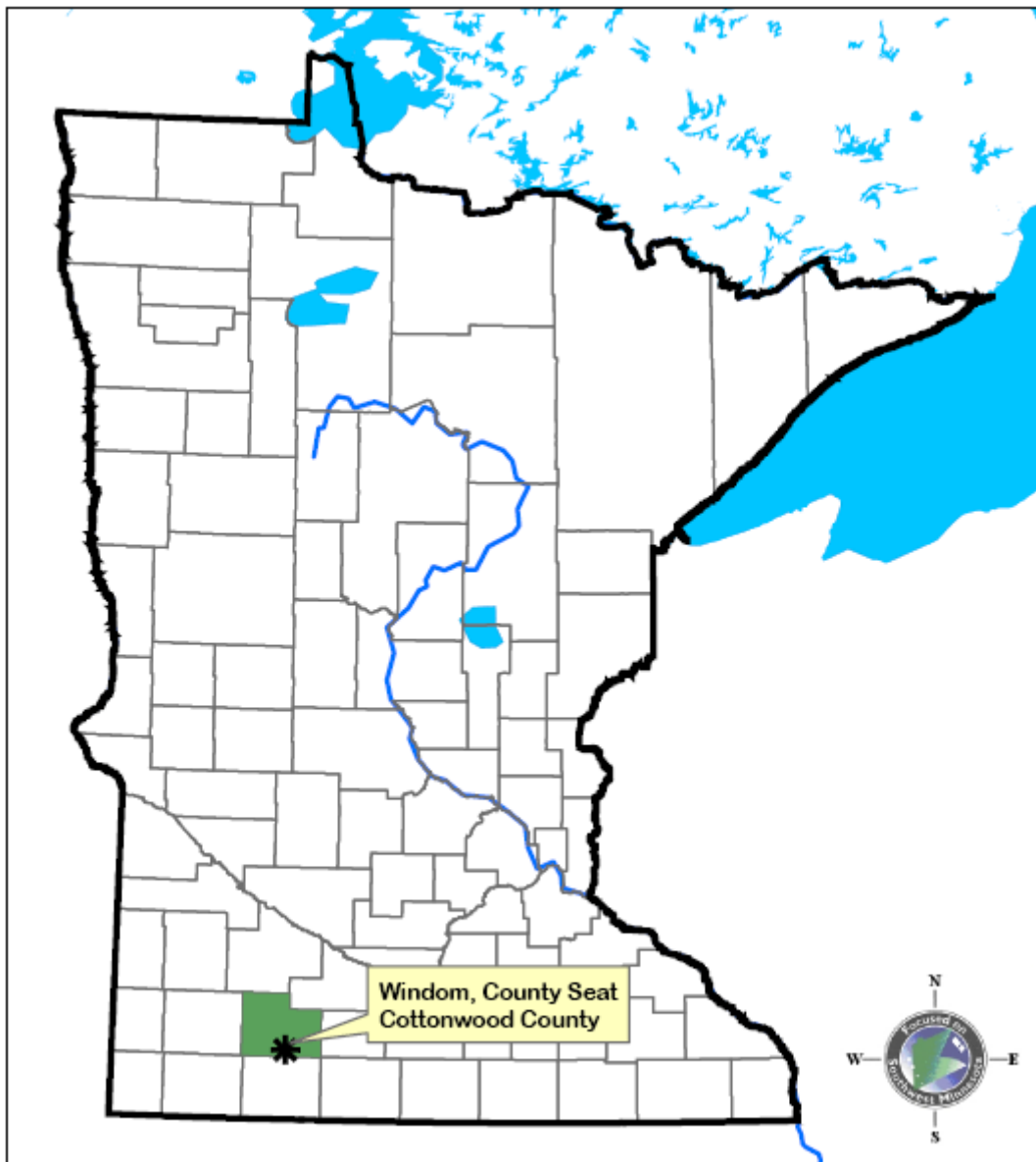


COTTONWOOD COUNTY LOCAL WATER MANAGEMENT PLAN 2007-2017

A 10-year plan with a 5-year implementation schedule
March 2007

Prepared for the Cottonwood County Local Water Management Plan Task Force
By Cottonwood County Environmental Office and
Southwest Regional Development Commission



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For additional information on water management in Cottonwood County, Minnesota, contact:
Cottonwood County Environmental Office
235 Ninth Street, Windom, MN 56101-1642
(507) 831-2060

A. Executive Summary

Cottonwood County is located in southwestern Minnesota, adjacent to Murray, Redwood, Brown, Watonwan, Jackson, and Nobles counties. The City of Windom is the county seat. Cottonwood County's population in the 2000 census was 12,167 and the City of Windom's population was 4,490.

The Coteau des Prairies—a conspicuous ridge extending northwest to southeast across the region—bisects Cottonwood County into two major drainages. Watersheds of the Cottonwood, Watonwan, and to a lesser extent the Little Cottonwood and Blue Earth, drain in a northeasterly direction into the Minnesota River, which meets the Mississippi River at St. Paul. The West Fork Des Moines River watershed drains south into Iowa and eventually into the Mississippi River.

A.1 Purpose & Introduction

The Cottonwood County Local Water Management Plan is intended to identify existing and potential water issues in the context of watershed units and groundwater systems, informing specific implementation actions to achieve goals for sound hydrological management of water and related resources.

Requirements of a local water plan are set forth in current state statute (M.S. 103B.311, Subd. 4.). The plan must address management of water, effective environmental protection, and efficient resource management, and 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 systems. This Water Plan is a ten-year management plan with a five-year implementation schedule.

This is the third edition of a local water management plan for Cottonwood County. On 7 April 1987, the Cottonwood County Board of Commissioners approved a resolution entering into a joint powers agreement with twelve other counties to form the South Central Minnesota Counties Comprehensive Water Planning Project. On 18 August 1987, the Cottonwood County Board of Commissioners adopted a resolution to develop a comprehensive local water plan according to Minnesota Statutes in effect at that time. A public hearing was held on 24 September 1991 where comments were heard by the County Board, and the plan adopted by the Cottonwood County Board of Commissioners after the 90-day review.

The County updated the water plan in 1996, with a public hearing and adoption on 1 October 1996. This second edition of the water plan took a watershed-based approach for data assessment. The Cottonwood County Board of Commissioners adopted a resolution on 10 January 2006 to revise this plan, according to Minnesota Statutes now in effect.

Major accomplishments under Cottonwood County's previous water management plans included:

- Managed and provided funds for county residents to test well water for nitrates and bacteria.

- Promoted the sealing of abandoned wells, and provided cost share to seal 191 wells since 1998, and numerous wells prior to that; and maintained the data base with the pertinent information.
- Promoted the replacement of non-compliant septic systems: 90 systems replaced between 1981 and 1989, 400 systems between 1990 and 1999, and 227 from 2000 to date. Maintained files and data base with pertinent information.

Cottonwood County Water Plan							
Ag BMP Loans							
	Septics	Dollars	Agricultural Waste	Dollars	Conservation and Tillage	Dollars	
2000	0	\$0	1	\$23,217	1	\$20,000	
2001	7	\$41,829	1	\$50,000	5	\$39,320	
2002	7	\$37,325	1	\$50,000	3	\$67,520	
2003	6	\$30,846	5	\$126,352	8	\$123,160	
2004	4	\$22,460	5	\$221,544	15	\$243,950	
2005	1	\$7,250	5	\$113,750	6	\$169,533	
2006	0	\$0	4	\$94,064	12	\$166,455	

Source: Cottonwood County Environmental Office, SWCD

- Secured funds for the Low Interest Loan Program to provide funding for installation of septic systems, and continue to look for additional sources of this funding.
- Worked with MPCA as a Delegated County for the Feedlot Program, and maintained the feedlot data base.
- Worked with county livestock producers in registering their feedlots and completing their Manure Management Plans.
- Provided county livestock producers with funding for testing samples of manure.
- Provided technical assistance and guidance in developing Well Head Protection Plans for Red Rock Rural Water, the City of Windom, and the City of Jeffers.
- Participated in the 13 County Water Planners organization.
- Worked with Mankato State University in the development of GIS mapping capabilities and shape-files.
- Worked with Mankato State University on the Cottonwood County Geological Atlas and the Cottonwood County Surface Hydrology Atlas.
- Administered the Wetland Conservation Act
- Administered the Shoreland and Flood Plain Management Program.
- Administrator for and helped fund the West Fork Des Moines River (WFDNR) Drinking Water Project Phase I Clean Water Partnership.
- Administrator for the Des Moines River Phase I Clean Water Partnership Project.
- Rewrote the County Comprehensive Plan and addressed the protection of the waters in the County.
- Developed a Mining, Extraction, and Excavation Ordinance to protect the quality and quantity of water in Cottonwood County.
- Funded and participated in the Little Cottonwood Clean Water Partnership.

- Cottonwood County, along with Brown and Nicollet Counties, sponsored and helped co-ordinate the annual Children’s Water Festival held in the month of March for approximately 900 4th grade students of the three counties for the past 8 years
- Provided funding for Conservation Day attended by 5th grade students of Cottonwood County for many years.
- Provided funding for the Southwest MASWCDE Environmental Fair attended by 6th grade classes of Cottonwood County for many years.
- Helped fund a SWCD CREP (Minnesota River Basin) staff position for 4 years.
- Provided funds to plant trees in shelter belts and wildlife plantings.
- Provided funds for a weed-badger used in weeding the tree plantings.

The Cottonwood County Environmental Office is responsible for local water management in Cottonwood County, including facilitation of public input and convening the Cottonwood County Local Water Management Plan Task Force. Cottonwood County retained the Southwest Regional Development Commission to manage the Plan update process. Task Force membership currently includes:

2006-07 Local Water Management Plan Task Force Members

- Phyllis Bakken, County Planning Commission, Agriculture
- Dave Bucklin, Cottonwood Soil & Water Conservation District
- Kay Clark, Cottonwood Soil & Water Conservation District
- Kelli Daberkow, Red Rock Rural Water System / Heron Lake Watershed District (2006)
- Mike Haugen, City of Windom
- Norm Holmen, Cottonwood County Commissioner
- Dominic Jones, Red Rock Rural Water System (2007)
- Tom Kresko, MN Department of Natural Resources
- Wendy Meyer, City of Mountain Lake
- Art Steere, Amo Township, Agriculture
- Mike Hanson, Cottonwood County Environmental Office/Water Planner
- Marlene Smith, Cottonwood County Environmental Office
- Karen Boysen, Cottonwood County TMDL Project Coordinator
- John C. Shepard, AICP, Southwest Regional Development Commission Planner (project manager)

A.1.a Public and Internal Forums

- 9/27/2005 Cottonwood County Board of Commissioners approve new Comprehensive (land use) Plan after several years of public process, including chapters addressing the relationship of land use, development and water resources. Identifies task of updating Water Plan.
- 1/10/2006 Cottonwood County Board of Commissioners approve resolution of intent to revise and update the local water management plan.
- 3/17/06 KDOM-AM/FM interview with Southwest Regional Development Commission Development Planner, discussing water plan update.
- 3/21/06 Notice of Decision to Revise and Update the Local Water Management Plan provided by email and/or postal service to local units of government, organizations and responsible agencies as suggested and required.

4/5/06	Shallow Lakes Forum addresses water quality concerns.
5/10/06	Requested date for priority concerns, comments and information to be returned to Cottonwood County Environmental Office or Southwest Regional Development Commission.
5/10/06	Meeting notice published as legal ad in <i>Cottonwood County Shopper</i> .
5/17/06	Meeting Notice published as display ad in <i>Cottonwood County Citizen</i> .
5/18/06	Cottonwood County Planning Commission Public Hearing to consider zoning amendments addressing mining impacts on shoreland and water resources, as identified in the Comprehensive Plan.
5/25/06	Local Water Management Plan Update Information Meeting held with Task Force as public hearing on priority water management concerns for Cottonwood County, at DNR Office in Windom. (8 att.)
6/23/06	Meeting of DNR staff with Cottonwood County Water Planner and Southwest Regional Development Commission Development Planner in Slayton, to discuss priority water concerns.
6/29/06	Continuation of Local Water Management Plan Update Information Meeting with Task Force and staff held at Cottonwood County Environmental Office. (12 att.)
11/08/06	BWSR Southern Water Planning Review Committee
11/30/06	Plan Task Force Meeting on Priority Concerns — Feedlots & ISTS (10 att.)
12/20/06	Plan Task Force Meeting on Priority Concerns — Groundwater (9 att.)
1/25/2007	Plan Task Force Meeting on Priority Concerns —Surface Water Quality. (11 att.)
2/16/07	KDOM-AM/FM interview with Southwest Regional Development Commission Development Planner, discussing water plan update.
2/22/07	Plan Task Force Meeting on Implementation (9 att.)
3/27/07	Public Hearing on Local Water Management Plan before the County Board of Commissioners

A.1.b Plan Adoption and Amendment

Upon approval of this plan by the Minnesota Board of Water and Soil Resources (BWSR), Cottonwood County has up to 120 days to pass an Adoption and Implementation Resolution. After final adoption, the plan may be amended in a similar process, by petitioning the BWSR Board, scheduling a public hearing, and sending notice to the required parties.

A.2 Description of Priority Concerns

The Priority Concerns listed below were selected by the Water Plan Task Force members by consensus, after carefully reviewing submitted concerns and comments. While the assessment of priority concerns utilized the best available data, this plan rests solidly on information and analysis contained in previous editions of the county's local water management plan.

Priority Concern 1. Improve Surface Water Quality.

Protecting soil from erosion is always a challenge. Improved land use and agricultural best management practices are necessary to address the quality of lakes, wetlands and rivers. MPCA listing of impaired waters requires local strategies to meet Total Maximum Daily Load (TMDL) standards.

Priority Concern 2. Protect Groundwater.

Portions of Cottonwood County have enjoyed adequate groundwater supplies, while other areas have experienced difficulty with sufficient supply. There is increasing concern with groundwater quality and long-term supply. Efforts to protect groundwater should be focused on Drinking Water Supply Management Areas (DWSMA) and surficial aquifer areas.

Priority Concern 3. Feedlots & ISTS (Individual Sewage Treatment Systems).

Nutrient management plans and controlling feedlot runoff are important tools in preventing water quality issues. There are also many dispersed farmsteads and rural residential properties with outdated septic systems; there is a great need and demand to continue upgrades.

A.3 Summary of Goals, Actions, and Projected Costs

Goals and Actions were selected to address priority concerns, with a focus on principles of sound hydrological management.

Priority Concern 1. Improve Surface Water Quality.

This concern will be addressed to prevent further degradation of stream and lake water quality, with a priority for Des Moines and Watonwan Watersheds. Objectives include protecting soil from erosion, drainage management, wetland restoration and management, and addressing TMDL impaired waters.

Implementation actions include promotion and education, reviewing ordinances, providing technical assistance with programs and best management practices, providing financial incentives for conservation practices, developing new GIS map layers, and working with state and federal agencies on measures to improve water quality.

Projected costs over the five years of the management plan to implement all actions would include about \$927,000 for projects and financial assistance, \$760,000 for TMDL plans and implementation, \$100,000 for technical assistance and \$6,250 for outreach and education, as well as annual in-kind services. All dollar figures are estimates and recognize approximate costs of all identified implementation partners.

Priority Concern 2. Protect Groundwater.

This concern will be addressed to assure long-term quality and quantity of groundwater supplies, with a priority for Drinking Water Supply Management Areas

(DWSMA) and surficial aquifers. Objectives include supporting well head protection, preventing groundwater contamination, and protecting long-term supplies.

Implementation actions include providing technical assistance and incentives for landowners, outreach and education, reviewing ordinances, maintenance of GIS layers, testing well water quality, providing assistance to seal unused wells, and working with cities and water providers for long-term water supplies.

Projected costs would include about \$10,000 over the five year management plan for review of Conditional Use Permits; \$75,000 for assistance to landowners sealing unused wells, \$20,000 for technical assistance, and \$3,750 for outreach and education, as well as annual in-kind services.

Priority Concern 3. Feedlots & ISTS (Individual Sewage Treatment Systems).

This concern will be addressed to protect public waters and assist residents in meeting feedlot and septic standards, focusing on immediate health and safety needs. Objectives include assisting feedlots owners to maintain compliance with state statutes and continuing to bring nonconforming septic systems into compliance with state standards.

Implementation actions include providing education and outreach, technical assistance with nutrient and manure plan development, maintenance of GIS layers, review ordinances, and providing financial assistance to fix feedlot problems, and replace non-compliant septic systems.

Projected costs would include about \$1,400,000 towards bringing septic systems into compliance, \$350,000 for projects and financial assistance, \$120,000 for technical assistance and consulting, and \$5,000 for outreach and education, as well as annual in-kind services.

A.4 Consistency with Local, State and Regional Plans

Cottonwood County Environmental Office administers the County's comprehensive land use plan and zoning ordinance. This helps to maintain consistency between this plan and these other plans and ordinances. The *Cottonwood County 2005 Comprehensive Plan* identifies issues, goals, objectives, policies and tasks, which have been reviewed for consistency with this water management plan. No other plans were received for review.

A.5 Summary of Recommended Amendments to Other Plans and Official Controls

No specific amendments are recommended at this time. Action items include updates to the comprehensive plan and zoning ordinances within this document's management timeline. It would be recommended to incorporate data from this plan into other local plans and controls when they are updated.

B. Priority Concerns

B.1 Identification of Priority Concerns

Priority Concerns for local water management were selected by the Cottonwood County Local Water Management Plan Task Force members after reviewing the concerns submitted by state and local agencies and other stakeholders. (See *Priority Concerns Scoping Document* appended.)

Local water management concerns and comments were received from:

- *Minnesota Board of Water and Soil Resources*
- *Minnesota Department of Agriculture*
- *Minnesota Department of Health*
- *Minnesota Department of Natural Resources*
- *Minnesota Pollution Control Agency*
- *Cottonwood County Soil & Water Conservations District*

Concerns were presented at the public input meeting and discussed. Staff then reviewed, refined, and developed focused Priority Concerns for Task Force consideration. After further discussion, the Task Force members selected the Priority Concerns by consensus.

B.2 Assessment of Priority Concerns

Cottonwood County consists of seven (7) incorporated cities, one (1) unincorporated village, and eighteen (18) townships. The Minnesota State Demographic Center estimates that there are 11,842 residents in the county as of 2005, 2.7% less than the 12,167 people counted in the year 2000 US Census and 6.4% less than the 12,648 counted in 1990. The Demographic Center projects the County's population at 12,280 in 2030.

Although total population has declined in the county, the number of households is stable. The Demographic Center estimates 4,903 households in the county in 2005.

Cottonwood County Water Plan		
Population		
	2000	2005
Civil Division	Population	Estimate
Amboy township	172	162
Amo township	140	146
Ann township	191	181
Bingham Lake city	167	163
Carson township	311	295
Comfrey city (part)	10	10
Dale township	154	142
Delton township	146	132
Germantown township	224	206
Great Bend township	326	309
Highwater township	169	176
Jeffers city	396	370
Lakeside township	255	246
Midway township	297	283
Mountain Lake city	2082	2082
Mountain Lake township	442	420
Rose Hill township	189	176
Selma township	204	202
Southbrook township	112	94
Springfield township	161	149
Storden city	274	254
Storden township	198	176
Westbrook city	755	725
Westbrook township	302	293
Windom city	4490	4450
County	12,167	11,842
Source: Minnesota State Demographic Center		

Geographically, US Highway 71 runs north-south through Windom. MN State Highway 30 and State Highway 62 run east-west across the county. MN State Highway 60 runs on a diagonal through Windom, Bingham Lake and Mountain Lake between Worthington and Mankato, providing a major link between the Twin Cities and Sioux City, Iowa. The Union Pacific Railroad runs parallel to Highway 60.

Agriculture is the primary economic driver in the county, with some industrial businesses along Highway 60. The University of Minnesota found that about 82% of the land area in Cottonwood County was cultivated, with 7% in grass/shrub/wetlands, 6% urban and just over 1% covered by water in the year 2000 (Remote Sensing and Geospatial Analysis Laboratory, **see attached map**). There were almost 5,300 acres of Impervious area, or 1.3% of the county overall.

Cottonwood County is on the edge of the Midwestern humid area, with average annual precipitation of 25-28 inches (Minnesota's state-wide average is 27.01 inches). Average precipitation can vary from less than 17 inches (1955) to over 41 inches (1993). In 2005, over 36 inches of precipitation was observed (State Climatology Office – DNR Waters at <http://climate.umn.edu/>). Previous editions of the Water Plan contain historical weather data and trends.

Southwestern Minnesota has a conspicuous feature called the Coteau des Prairies, meaning “highland of the prairies” or “hill of grasses”, which bisects Cottonwood County. This is a ridge that extends northwest to southeast across South Dakota, Minnesota and on into Iowa. The rolling topography of the county consists of glacial till on top of Sioux Quartzite and Cretaceous sandstone bedrock. Depth to bedrock is variable, deepest in the western part of the county, with outcrops of Quartzite in the northeast. Pre-settlement vegetation consisted of grasslands and hardwood forests in river-bottom stands.

Five major watersheds cross the county borders (**see attached maps**). The three larger watersheds include the Cottonwood River Watershed which encompasses the north-central and western portion of the county covering about 245 square miles or 38% of the county land area; the Watonwan River Watershed which covers the eastern portion of the county and contains 198 square miles or 31% of the county land area; and the West Fork Des Moines River Watershed located in the southwestern and central portions of the county covering 165 square miles or 25% of the county land area. The two smaller watersheds include the Middle Minnesota Watershed (also called the Little Cottonwood River Watershed) which starts close to the center of the County and continues to the very northeastern edge of Cottonwood County covering 39 square miles or 6% of the land area; and the smallest one, the Blue Earth Watershed which covers only 1.3 square miles in the southeastern corner of the county. All but the Des Moines drain into the Minnesota River.

The following rivers and creeks drain within these watersheds:

- Cottonwood River Watershed: Dry Creek, Dutch Charley Creek, Highwater Creek, Mound Creek, Pell Creek
- Watonwan River Watershed: Watonwan River, North Fork of the Watonwan River, South Fork of the Watonwan River, Unnamed Branch

- West Fork Des Moines Watershed: Des Moines River, Heron Lake Outlet
- Middle Minnesota River Watershed: Little Cottonwood River
- Blue Earth River Watershed: no named streams

In addition to flowing creeks and streams, there are about 30 bodies of still water in Cottonwood County covering 5,824 acres of land and average about 170 acres each in size. Surface waters are typically undeveloped and most of the runoff and drainage water is not retained. *High priority water quality problems* are seen in areas where sediment, nutrients, chemicals or other pollutants discharge to DNR designated protected waters or to any high priority waters as identified in this plan, or discharge to a sinkhole or ground water. The pollutant delivery rate to the water source is in amounts that will impair the quality or usefulness of the water resource.

Typical land use and management practices have caused water quality degradation in all of the County’s lakes and streams. Due to the increase in nutrients in the water column, the County’s lakes have seen an increase in algae blooms and other suspended sediments. With this decrease in water clarity, the sunlight is not able to reach all areas of the lake and this restricts many different kinds of plant growth. This not only eliminates a food supply for many game fish, but it also favors the growth of less desirable species such as carp and black bullhead. These fish then cause greater destruction to water bodies by uprooting other types of vegetation and sending more debris into the water column. [For more information on land use, see the *Cottonwood County 2005 Comprehensive Plan*].

Priority Concern 1. Improve Surface Water Quality.

Surface waters of Minnesota are managed under the doctrine of riparian rights. This means that riverbank landowners have equal rights to reasonable use of waters that border their property. The Minnesota Department of Natural Resources (DNR) Division of Waters has the authority to issue permits for water use, and to limit withdrawals of surface water and groundwater in accordance with the public interest (see also the discussion of groundwater below).

Cottonwood County Water Plan				
Surface Water Appropriation Permits				
November 2006				
Permittee	Use	Resource	Permitted Withdrawals	
			GPM*	(MG/Y)*
D.D. Beam	Major Crop Irrigation	Dug Pit/Holding Pond	500	12.9
Windom Ready Mix	Non-Crop Irrigation	Des Moines River	500	36.0
Windom Country Club	Golf Course Irrigation	Gravel pit	150	13.1
Windom Ready Mix	Sand and Gravel Washing	Cottonwood Lake	500	25.2
Mountain Lake Golf Club	Non-Crop Irrigation	Mountain Lake	150	8.0
Windom Ready Mix	Sand/Gravel Pit Dewatering	Quarry/Mine/Gravel Pit	1500	40.0
Southern MN Construction Co	Quarry Dewatering	Quarry/Mine/Gravel Pit	1200	150.0
G.L. Mattison	Major Crop Irrigation	Stream/River	500	13.0
G.L. Mattison	Major Crop Irrigation	Highwater Creek	500	6.7
G.L. Mattison	Major Crop Irrigation	Stream/River	500	13.0
Glen Mattison	Major Crop Irrigation	Ditch	900	33.0

* GPM - Gallons per Minute; MG/Y - Million Gallons per Year
 Source: DNR - Division of Waters

a. Protect soil from erosion and prevent agricultural runoff

The *Cottonwood County 2005 Comprehensive Plan* encourages farmers to adopt Best Management Practices (BMPs) to optimize farm profits, conserve soil, and to protect and enhance ground and surface water quality. Simple conservation practices, such as grass waterways, terraces, and sediment basins, can substantially reduce the impacts of soil erosion on surface waters and wetlands. Vegetative buffers separating cropland from bodies of water act as a last line of defense from runoff. These buffers should be a minimum of 33 feet wide and extend at least to the edge of the flood plain.

High priority erosion problems occur in areas where erosion from wind or water is occurring equal to or in excess of twice the “tolerable rate” as defined by NRCS. High priority erosion problems also occur in any area that exhibits active gully erosion. As well, the focus-areas for this local water management plan, including watersheds of impaired waters, should be considered high priority for erosion prevention.

Conservation tillage, leaving adequate crop residue, provides a layer of protection from water and wind erosion and increases organic matter in the soil. In the state of Illinois, for example, no-till soil conservation practices have surpassed conventional tillage, according to NRCS and state Soil & Water Conservation District (SWCD) surveys. Cottonwood County SWCD & NRCS have completed tillage transect surveys in the past to better understand trends in local conservation tillage. Changes in market economics for corn and soybean production have raised concerns among producers about the efficiency of conservation tillage. In particular, recent increases in the price of corn have led to predictions of increasing acres planted “corn-on-corn”, rather than the typical corn-soybean rotation. Farmers are pressed to get into the field earlier and earlier each year. These concerns must be addressed by ag educators and advocates, such as the University of Minnesota Extension Service, Watershed District, Soil & Water Conservation District, and the Environmental Office, through promotion, education and demonstration.

Some highly erodible lands may benefit more by being taken out of production, or being protected as public lands (**see attached map**). Cottonwood County operates several parks that offer natural recreation opportunities. Cottonwood County also has 18 DNR Wildlife Management Areas (WMAs), and 12 USFWS Waterfowl Production Areas (WPAs), as well as lands protected by the DNR divisions of Waters, Trails and Waterways, and Fisheries.

Voluntary conservation programs have proven a popular method to reward agricultural producers for doing their part to prevent erosion. Conservation Reserve (CRP), Conservation Reserve Enhancement (CREP), and Environmental Quality Incentives (EQIP) program provide tools to return appropriate land to a native ecology that is better able to respond to erosion pressures. As of February 2007, there are 14,782 acres enrolled in CRP and CREP in Cottonwood County,

according to the USDA Farm Service Agency. Private conservation easements have also proven popular in other areas of the state and nation.

Effects of erosion are also evident on many of the county's stream-banks and lakeshores. Aquatic plants provide a natural buffer between windswept open water and fragile shores. Drainage and development have eliminated many of these plants, leading to bank erosion, runoff of fertilizer from fields and lawns, and other problems. The typical modern response has been hard-scape—concrete and rock rip-rap. A concerted effort to replace riparian vegetation in shorelands, including tree windbreaks, would help protect lake shores and restore wildlife habitat.

The State of Minnesota regulates the use of shoreland—land within 300 feet of a river or 1,000 feet of a lake (**see attached maps**). The DNR identifies three river types in Cottonwood County (addressed in the Cottonwood County Zoning Ordinance): Transition River Segments, Agricultural River Segments, and Tributary River segments. The lakes within Cottonwood County are classified as Natural Environment, Recreational Development and General Development lakes. Guidelines for the development of lakes were developed by the DNR and adopted by the County in its zoning code. Most lakes in the County have areas that are unsuitable for development, such as wetlands or soils not capable for development (septic systems, wet soils, strength).

The *Comprehensive Plan* calls on developers to complete a detailed study identifying the areas and development techniques, as well as long term land management practices, that would minimize environmental impacts to the watershed any time development is proposed in shoreland areas. New development is encouraged to focus on bodies of water best suited for more intensive uses; discouraging development around more sensitive areas. The *Comprehensive Plan* also encourages natural landscaping to enhance wildlife habitat and protect water quality. Development should conform to natural limitations presented by topography and soil to create the least potential for environmental degradation.

b. Drainage Management

Agricultural drainage is intended to remove standing or excess water from land which does not drain naturally. These systems use surface ditches and subsurface permeable pipes to direct water off the land. As explained by the U of MN Extension Service, “Until the 1970s, most subsurface drainage pipes were made from short, cylindrical sections of concrete or clay called ‘tile.’ That is why terms like tile, tile drainage, and tiling are still used, even though most drainage pipe today is perforated polyethylene tubing” (*Agricultural Issues and Answers*, <http://www.extension.umn.edu>). Typically, private ‘tile’ systems then outflow into public ditches and streams.

Increased tiling has led to changes in the typical hydrograph of regional watersheds. Headwaters are moving upstream as water is brought to the surface

earlier—while many lands benefit from tile intakes, another specific property is inundated and may become un-usable. Increased flows speed up water flow as well, with larger peak flows (and subsequent lower off-peak flows) damaging in-stream fish habitat, stream-banks and wetlands.

Modern, comprehensive drainage management can provide the private and public tools to stabilize the effects of both wet and dry weather cycles, reduce soil erosion, and improve water quality, while also providing additional benefits to wildlife habitat. Research continues on the optimal combination of strategies such as variable depth tilling, drainage structures and controlled intakes. As one example, the Minnesota Corn Growers Association has joined with the national Agricultural Drainage Management Coalition to promote the wider use of comprehensive approaches to drainage. Locally, the SWCD and HLWD have been promoting Alternative Tile Intakes, also known as rock inlets. A long trench is excavated and backfilled with a 6"-12" bed of small rock. A perforated tile is placed and covered with pea gravel to about 1' above grade for settling. According to the Watershed District, these systems have been demonstrated in Minnesota to deliver "adequate drainage capacity and a 50% reduction of sediment and phosphorus loading into subsurface tile lines."

Area II Minnesota River Basin Projects, Inc. is a local grant-in-aid organization which provides financial and technical assistance to member counties for the planning, design, and installation of floodwater retarding/retention projects. According to the BWSR website "Nine reservoirs have been constructed since 1978, with several providing multi-purpose functions as county park and recreation areas. Besides the larger structures, Area II has assisted with the installation of many road retention structures which serve as temporary reservoirs that 'meter' out the floodwaters at controllable velocities and volumes."

Development activity in flood-prone areas should be avoided. For example, high risk areas could receive a permanent vegetative cover in order to help alleviate erosion and sedimentation caused by flooding. Some communities have adopted a No Adverse Impact (NAI) floodplain management approach, which extends beyond the floodplain to manage development in the watersheds where flood waters originate. NAI requires new development to mitigate potential impacts before disaster strikes.

c. Wetland restoration and management

As the USFWS notes, historically, southwestern Minnesota was part of a huge grass and wetland complex called the Prairie Pothole Region of the Northern Tallgrass Prairie. Cottonwood County's remaining wetlands act as natural filters, holding water on the landscape, retaining flood waters, reducing erosion and allowing time for sediment to settle (**see attached map**). These interrelated prairie potholes and wetland complexes also provide important habitat to a variety of plants and animals. Wetlands also reduce the size and scope of storm event and snowmelt flooding.

Wetlands need to be integrated into management of the larger drainage system to be of greatest benefit. However, active wetland restoration would be required to show substantial differences. The Wetland Reserve Program (WRP), administered through NRCS, has a potential to provide incentives for landowners. State and federal funding sources have not been found to be effective in promoting wetland restoration in the county. Wetland banking—restoring or creating a wetland as a “deposit” available for sale—has also shown some long-term potential. However, new drain tile installation will continue to accelerate water flow to the potential detriment of downstream users, unless new and/or replacement wetlands are created to balance flows within and between watersheds.

d. TMDL Impaired Waters

The federal Clean Water Act requires states to adopt water quality standards. A water body is considered “impaired” or polluted if it fails to meet these standards. The Act requires the state to conduct a Total Maximum Daily Load (TMDL) study to identify point and non-point sources of each of these pollutants. MPCA and other agencies are working to reduce impairments in these waters (see **attached map**). Statewide, there were 2,274 impairments listed on 1,304 waters in 2006.

Cottonwood County Water Plan			
2006 Impaired Waters Requiring a TMDL			
Name	Stretch	Pollutant*	Affected Use
Little Cottonwood River	Headwaters to Minnesota River	FC, T	Aquatic Life & Recreation
Dutch Charlie Creek	Headwaters to Highwater Creek	B-F, T	Aquatic Life
Highwater Creek	Double Lk Outlet to Dutch Charlie Creek	B-F	Aquatic Life
North Fork Watonwan River	Headwaters to Watonwan River	T	Aquatic Life
Watonwan River	Headwaters to N. Fork Watonwan River	B-F, FC, T	Aquatic Life & Recreation
Unnamed Creek	Headwaters to S. Fork Watonwan River	B-F	Aquatic Life
Des Moines River	Windom Dam to Jackson Dam	A, DO, FC, T	Aquatic Life & Recreation
Des Moines River	Heron Lake Outlet to Windom Dam	T	Aquatic Life
Heron Lake Outlet	Heron Lake to Des Moines River	pH, T	Aquatic Life
Des Moines River	Lime Creek to Heron Lake Outlet	FC, T	Aquatic Life & Recreation
Fish Lake		Hg FCA	Aquatic Consumption
Mountain Lake		Hg FCA	Aquatic Consumption

* Pollutant, Stressor or Indicator
A: Ammonia
B-F: Fish IBI
DO: Dissolved Oxygen
Hg: Mercury
FC: Fecal Coliform
FCA: Fish Consumption Advisory
pH: pH
T: Turbidity

Source: MPCA 2006 Final List of Impaired Waters, MPCA GIS files

Cottonwood County is part of TMDL studies in three different watersheds. The West Fork Des Moines River Watershed TMDL underway covers ammonia, low oxygen, fecal coliform and turbidity, with a target completion date of 2008. Dutch Charlie Creek is scheduled for a study of fecal coliform in the Redwood/Cottonwood Rivers Watershed in 2008-2012, and a study of turbidity in the Cottonwood River Watershed in 2011-2015. The Little Cottonwood River in the Minnesota River Watershed was scheduled for a study of turbidity in 2006-2008. The Watonwan River headwaters are included in a Blue Earth Basin study of fecal coliform in 2007-2011. The Watonwan North Fork and headwaters are scheduled for a study of Turbidity in 2008-2012. (For MPCA project schedules, see <http://www.pca.state.mn.us/water/tmdl/projectlist.xls> .)

Priority Concern 2. Protect Groundwater.

Demand for water resources is expected to continue to grow for the foreseeable future. Groundwater is the primary source of drinking water in southwestern Minnesota. The original edition (1991) and first revision (1996) of the *Cottonwood County Comprehensive Water Plan* contain extensive information on the geology and aquifers of Cottonwood County.

While there are locally important aquifers in Cretaceous sandstones and Precambrian Sioux Quartzite, these deposits typically are high in dissolved minerals (sulfate, iron, manganese). Even when these minerals are within US EPA standards, they may give water an objectionable taste and stain laundry and dishes. Quaternary sand and gravel deposits show higher yields and offer good potential for source water.

Some aquifers in surficial sand and gravel deposits associated with lakes and river channels show substantial yields, in particular along the Des Moines River where the City of Windom and Red Rock Rural Water System both have established well fields. These surficial aquifers yield “young water”, with 10-12 year recharge cycles from precipitation. This makes them more susceptible to drought and contamination from both point and non-point sources.

a. Well Head Protection

The Minnesota Dept. of Health (MDH) Wellhead Protection program is designed to protect public water supply wells. As explained on the MDH website, “A capture zone for the well (called the wellhead protection area) is designated and a plan is developed and implemented for managing potential contamination sources within the wellhead protection area.” A Drinking Water Supply Management Area (DWSMA) provides a geographic focus for securing the water supply.

Currently, RRRWS and the cities of Jeffers and Windom are the only public, community water suppliers to complete a Well Head Protection Plan (**see attached maps**). The City of Mountain Lake is currently in MDH’s plan process. The RRWS and Jeffers WHPs were completed only recently. Efforts in these

areas will move toward implementation of the protection plans, such as education and outreach to landowners and users of land in the DWSMAs.

There are also a number of other sources in the County which are considered public water suppliers by MDH, such as resorts, restaurants or churches. MDH has completed ground water assessments on 15 public water systems in the county, including 7 non-community systems. On this list, public water is now provided to the unincorporated community of Delft by Red Rock Rural Water System.

Cottonwood County Water Plan	
Public Water Suppliers	
February 1, 2007	
Amo Lutheran Church	Amo Twp
City of Bingham Lake	Bingham lake
Delft	Carson Twp
Dutch Charlie Park	Westbrook Twp
City of Jeffers	Amo Twp
City of Mountain Lake	Mountain Lake
Mountain Lake Golf Club	Midway Twp
Neuhof Hutterian Brethren	Mountain Lake Twp
New Vision Co-op	Midway Twp
PM Windom	Windom
Red Rock Rural Water System	Great Bend Twp
City of Storden	Storden
Talcot Lake County Park/Campground	Southbrook Twp
City of Westbrook	Westbrook
City of Windom	Windom
Source: Minnesota Dept. of Health	

b. Nitrate and pesticide infiltration of shallow groundwater

Cottonwood County and the SWCD work regularly with landowners to ensure the proper application of fertilizers and farm chemicals. This is especially important in sensitive areas (**see attached map**), particularly those in the floodplain where there is the possibility of spreading overland, and above shallow aquifers where pollutants can infiltrate groundwater. Well samples taken from 1991-2002 showed elevated results of coliform across the county. Results were highest in Amboy (64% positive for coliform), Carson (62%), Rosehill (52%) and Storden (52%) townships. Since that time, many residents in these townships have hooked up to rural water. It may be worthwhile to systematically test wells in these areas to update the baseline data.

Proper use of manure management plans and nutrient management plans (see Feedlot section below) places the right amount of chemical on the ground while minimizing unneeded input costs. The *Cottonwood County 2005 Comprehensive Plan* encourages regular screening clinics for testing private wells for nitrates. This helps alert homeowners to protect their families' health.

c. Unused Wells

New wells drilled today have an established permitting process, which allows the public to track well locations and characteristics. However, there are an unknown number of wells put in place since settlement that continue to provide pathways

for potential pollutants to reach the county’s aquifers. Established farmstead sites are often abandoned as agricultural operations consolidate into larger units and rural residents choose different home locations. Each of these sites typically has a well that needs to be correctly sealed by a licensed contractor. Property owners who connect to rural water systems need to decommission their existing wells if the wells will no longer be used.

Cottonwood County has worked with property owners to see that unused wells are properly sealed (see attached map). The county offers cost-share assistance as it is able. Public demand for this assistance is likely to continue into the future.

Cottonwood County Water Plan			
Wells Sealed With Assistance			
	Wells	Total Cost	Private Cost
2000	23	\$9,767	\$2,332
2001	33	\$13,528	\$3,382
2002	26	\$9,651	\$2,117
2003	13	\$6,322	\$1,373
2004	24	\$11,811	\$2,833
2005	23	\$9,640	\$2,221
2006	28	\$21,039	\$4,417

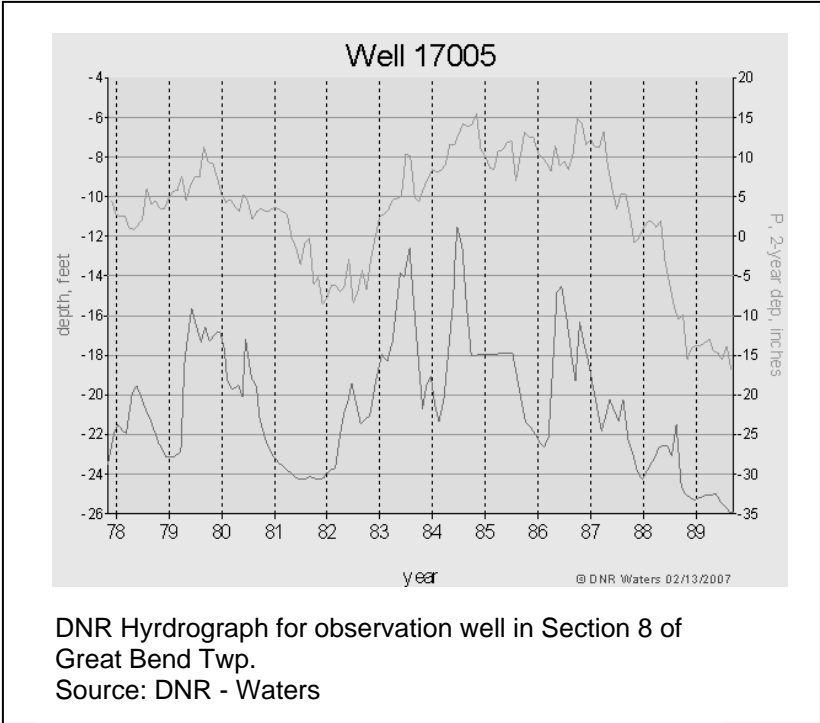
Source:
Cottonwood Co Environmental Services

d. Long-term water supply

There is growing concern in the county about the quantity and quality of available ground water. With the poor quality of groundwater outside the glacial drift aquifers, the rural water system will be an increasingly important asset for communities, livestock producers and rural residents. The *Comprehensive Plan* supports development of the Red Rock Rural Water System as an alternative for rural property owners. RRRWS provides service in much of the county, and is

expanding the quantity and extent of their residential and industrial services (see attached map).

Minnesota DNR has tracked water levels for many years. This data indicate strong correlations between rainfall and well levels across Cottonwood County, suggesting potential water supply issues in future times of drought. For example, the chart for Well 17005 tracks depth to water (lower line with scale on left) and variation from normal precipitation (upper line with scale on right) for an observation in a surficial aquifer area along the Des Moines River.



Recent growth of feedlots and ethanol facilities has begun to highlight the need for sustainable, long-term water supplies. An average rural resident may use about 100,000 gallons of potable water a year. An average feedlot may use 1,000,000 gallons of water a year. With current technology, corn-based ethanol refineries use water at an average rate of four-to-six gallons per gallon of fuel produced; therefore, a 100 million gallon plant will require at least 400,000,000 gallons of water each year. Moreover, where potable drinking water supplies must meet basic standards for public safety, ethanol plants require further pre-treatment to remove minerals and chemicals commonly found in groundwater in the region.

Further growth in animal agriculture and renewable energy will require careful balancing of interests in economic development and protection for existing residents. New industrial development requires careful planning for infrastructure and utilities. The *Comprehensive Plan* encourages new development inside city limits. Applicants for new development should document long-term sources of water, and document financial ability to complete extension of infrastructure. Applicants should also document quality of water supply and mitigate any potential detrimental impacts.

Priority Concern 3. Feedlots & ISTS (Individual Sewage Treatment Systems).

Development in rural communities is a process of balancing interests. The majority of land in Cottonwood County is in agriculture. Feedlot expansion has, at times, created conflicts with nearby residents. Residential development itself can lead to conflicts with established agricultural operations, waters and wildlife. Cottonwood County seeks to provide opportunities for housing in both town and country, but that development must fit into working landscapes and natural areas.

a. Feedlot conformance with state standards

The total number of farms in the county has been declining to stable, similar to trends across southwestern Minnesota. The 2002 U.S. Census of Agriculture reports 832 farms on 374,717 acres in Cottonwood County. Of these, 326,562 acres were harvested cropland. There were 192 farms with cattle, 80 with hogs, and 37 with sheep.

The *Cottonwood County 2005 Comprehensive Plan* supports the right to farm. The Plan also states that the County must carefully control the location of feedlots and other animal confinement operations to minimize the potential for pollution. Animal agriculture creates manure which must be safely managed. Trends in feedlot management, such as changing demographics; market trends for feed, beef and pork; and economics of fertilizer will effect growth in the industry. Population growth in some townships, however, may also lead to future land use conflicts with feedlots and manure management.

Nutrient management programs are intended to prevent and mitigate non-point nutrient contamination of water and soil resources. This is particularly important in areas with a great deal of surface runoff, as well as surficial aquifer areas.

Cottonwood County Water Plan				
Setback Permits Issued				
	House*	Feedlots	Other	Total
2002	34	23	63	120
2003	49	15	60	124
2004	36	19	71	126
2005	42	27	76	145
2006	40	17	85	142

* Includes Housing, Addition, or Garage
 Source: Cottonwood Co Environmental Services

Technical assistance from county staff can help farm operators understand the variety of rules and regulations, which can be confusing and seemingly contradictory. While larger operations are required to develop formal management plans, more modest feedlots can also benefit from the same sound scientific management principles.

MPCA regulates the collection, transportation, storage, processing and disposal of animal manure. As of November 2006, there are 312 registered feedlots in Cottonwood County (**see attached map**). Of these, 143 feedlots have beef animals, 177 have swine and 25 have dairy animals (some with more than one species present). Approximately 15% of registered feedlots and other livestock facilities should be considered high priority for improvements. As noted above, the County continues to implement Agricultural Best Management Practices (AgBMPs) in conjunction with the Minnesota Dept. of Agriculture, such as feedlot improvements; upgrading manure storage facilities, and odor control; improved manure handling, and spreading and incorporation equipment.

b. ISTS compliance with state standards

Individual Sewage Treatment Systems (ISTS, also known as SSTS or Sub-Surface Treatment Systems) can provide a high degree of sewage treatment if properly sited, installed and maintained. State legislation governing ISTS is implemented at the county level.

Failing and nonconforming treatment systems are considered an imminent threat to public health. These systems can spread hepatitis, dysentery and other diseases that are spread by bacteria, viruses and parasites in wastewater. Untreated sewage also may contain toxic chemicals from household cleaning products. This wastewater can directly enter surface waters and spread to unsuspecting humans, as well as pets and wildlife. Excess nutrients reaching lakes or streams will also promote algae growth, making lakes unsuitable for swimming, boating and fishing. Over time, wastewater will reach down to groundwater as well.

Many communities are relying more on engineered treatment systems; however, there does not appear to be a consensus supporting increased requirements in Southwestern Minnesota.

Another option for treatment is a regional sewer district, which functions much the same as rural water systems. A central entity, often a non-profit organization or the incumbent water supplier, organizes construction of sewer collection and treatment facilities and provides annual maintenance, and in return collects payment on a utility fee-for-service basis.

The Greater Blue Earth Basin Alliance (GBERBA) has received Clean Water legacy funding from the State of Minnesota to develop a nine-county, basin-wide plan to bring non-conforming ISTSs into compliance with state standards. A Technical Panel has been formed and discussion has begun to formalize the project workplan and timeline.

Cottonwood County Water Plan		
Septic System Inventory		
November 2006		
Township	Residences	Systems Known In Compliance
Lakeside	93	66%
Great Bend	130	58%
Germantown	80	55%
Amboy	82	55%
Carson	97	54%
Delton	59	53%
Rosehill	65	52%
Mountain Lake	80	51%
Highwater	66	47%
Springfield	60	47%
Westbrook	108	46%
Dale	69	43%
Storden	83	43%
Ann	79	41%
Amo	57	39%
Southbrook	38	37%
Midway	91	36%
Selma	85	33%
Total	1422	52%

Source: Cottonwood Co Environmental Services

The *Cottonwood County 2005 Comprehensive Plan* discourages development in areas where poor soil characteristics may not support ISTS systems, and encourages property owners to upgrade septic systems. The plan also calls for enforcement of standards for on-site sewage treatment systems of all types. Cottonwood County has a successful record of assisting landowners to upgrade their septic systems through a low-interest loan program (see **attached map**). Public interest in assistance is expected to continue into the future.

Cottonwood County Water Plan	
Septic Permits Issued	
	ISTS
2000	18
2001	35
2002	26
2003	46
2004	39
2005	60
2006	45

Source:
Cottonwood Co Environmental Services

B.3 Goals and Objectives to Address Priority Concerns

Goals and Objectives for local water management were selected by the Task Force based on the selected priority concerns. **Goals** are general statements that clearly communicate **what is to be accomplished** over the long-term to address the priority concerns. Goals are achievable in a reasonable period of time. **Objectives** state **how the goal will be accomplished** by breaking it down into smaller, more specific measures that will be taken. Objectives should be measurable. Goals and objectives listed below were reached by consensus and are not necessarily in rank order.

Priority Concern 1. Improve Surface Water Quality.

Goal 1: Prevent further degradation of stream and lake water quality, with a priority for the Des Moines and Watonwan watersheds.

Objective 1.a: Protect soil from erosion and prevent agricultural runoff.

Objective 1.b: Address impacts of Drainage Management

Objective 1.c: Wetland restoration and management.

Objective 1.d: Address TMDL Impaired Waters

Priority Concern 2. Protect Groundwater.

Goal 2: Assure long-term quality and quantity of groundwater supplies, with a priority for Drinking Water Supply Management Areas (DWSMA) and surficial aquifer areas.

Objective 2.a: Support Well Head Protection planning and implementation.

Objective 2.b: Prevent nitrate and pesticide infiltration of shallow groundwater.

Objective 2.c: Prevent groundwater contamination from unused wells.

Objective 2.d Protect long-term water supply.

Priority Concern 3. Feedlots & ISTS (Individual Sewage Treatment Systems).

Goal 3: Protect public waters and assist residents in meeting feedlot and septic standards, focusing on immediate health and safety situations.

Objective 3.a: Assist feedlot owners to maintain compliance with MN Statute 7020 standards.

Objective 3.b: Continue to bring nonconforming ISTS into compliance with state standards.

C. Implementation to Address Priority Concerns

This section establishes the implementation program for local water management to address priority concerns. **Action items** describe **specific measures** that the County intends to implement, in cooperation with appropriate local, state and federal agencies and organizations. Action items listed below were reached by consensus and are not necessarily in rank order.

C.1 Priority Concern 1. Improve Surface Water Quality.

Goal 1: Prevent further degradation of stream and lake water quality, with a priority for the Des Moines and Watonwan watersheds.

Objective 1.a: Protect soil from erosion and prevent agricultural runoff.

Actions:

- | | | | |
|-------|--|-----------------|------------------------|
| 1a.1 | Review zoning ordinances to insure minimal development impacts on surface waters.
Who: Env | When: 2007-2012 | Cost: In-Kind |
| 1a.2 | Assist coordination of a multi-county yearly water festival that educates 850 children on environmental stewardship.
Who: Env, BNC | When: 2007-2012 | Cost: In-Kind |
| 1a.3 | Help fund a multi-county yearly water festival that educates 850 children on environmental stewardship.
Who: Env, SWCD, BNC | When: 2007-2012 | Cost: \$500 per year |
| 1a.4 | Help fund an annual environmental fair and conservation day which educates 500 children from southwest Minnesota.
Who: Env, SWCD | When: 2007-2012 | Cost: \$500 per year |
| 1a.5 | Educate landowners on proper lakeshore and stream-bank stabilization practices.
Who: Env, DNR | When: 2007-2012 | Cost: In-Kind |
| 1a.6 | Promote use of buffer strips along ditches and streams within the Des Moines and Watonwan watersheds.
Who: Env, SWCD, NRCS, HLWD | When: 2007-2009 | Cost: In-Kind |
| 1a.7 | Assist producers in applying for cost share opportunities for conservation practices.
Who: Env, SWCD, NRCS,
RCRCA, BNC | When: 2007-2012 | Cost: In-Kind |
| 1a.8 | Promote conservation tillage, EQIP, and AgBMPs by contacting all County landowners through an informational bulletin sent by the SWCD.
Who: Env, SWCD, NRCS | When: 2007-2012 | Cost: \$1,000 per year |
| 1a.9 | Conduct conservation tillage transect survey for the County, and analyze data to determine residue cover.
Who: SWCD, BWSR, NRCS | When: 2007-09 | Cost: \$3,000 |
| 1a.10 | Provide incentives for sign up of 80 acres of buffer strips along ditches and streams within the Des Moines, Heron Lake and Watonwan watersheds.
Who: Env, SWCD, NRCS, HLWD | When: 2007-2009 | Cost: \$10,000 |

- 1a.11 Enroll 500 acres of marginal land into CREP buffer strip program.
Who: Env, SWCD, BWSR, NRCS When: 2007-2012 Cost: \$500,000
- 1a.12 Reduce the amount of wind erosion by planting 12,500 feet of field windbreaks and living snow fences; also plant 25 acres of farmstead shelterbelts.
Who: Env, SWCD When: 2007-2012 Cost: \$25,000

Objective 1.b: Address impacts of Drainage Management

Actions:

- 1b.1 Administer the Floodplain Ordinance to assure adherence to water plan.
Who: Env When: 2007-2012 Cost: In-Kind
- 1b.2 Investigate developing a GIS layer of all public drainage systems.
Who: Env, Auditors Office When: 2007-2008 Cost: In-Kind
- 1b.3 Develop a GIS layer of all public drainage systems and include: system name, watershed size, outlets, date established, system type, repair history, improvement history, and other relevant data.
Who: Env, Auditors Office, BWSR When: 2009-2012 Cost: \$60,000
- 1b.4 Assist with and install 25 grassed waterways.
Who: NRCS, SWCD When: 2007-2012 Cost: \$75,000
- 1b.5 Assist with and install 30 sediment control structures.
Who: NRCS, SWCD, HLWD When: 2007-2012 Cost: \$150,000
- 1b.6 Work with Area II Representatives to identify areas in the Minnesota River basin watersheds for water retention structures.
Who: Env, SWCD, Area II When: 2009-2010 Cost: In-Kind
- 1b.7 Seek additional funding for water retention structures within the Des Moines River and Watonwon headwaters watersheds.
Who: Env, SWCD, USDA When: 2007-2012 Cost: In-Kind

Objective 1.c: Wetland restoration and management.

Actions:

- 1c.1 Provide technical assistance to the Wetland Technical Evaluation Panel (TEP) to minimize the amount of wetland conversions.
Who: Env, SWCD, BWSR When: 2007-2012 Cost: \$100,000
- 1c.2 Work with DNR and US Fish and Wildlife Service to maintain wetlands in existing wildlife areas.
Who: Env, DNR, US FWS When: 2007-2012 Cost: In-Kind
- 1c.3 Work with the Heron Lake Watershed District to educate landowners on the benefits of converting drained wetlands back to a vegetated state, using Wetland Reserve Program, Conservation Reserve Program and Continuous CRP.
Who: Env, SWCD, HLWD When: 2007-2012 Cost: In-Kind

- 1c.4 Enroll 100 acres of marginal land into CREP/WRP wetland restoration program.
Who: Env, SWCD, BWSR, NRCS When: 2007-2012 Cost: \$100,000

Objective 1.d: Address TMDL Impaired Waters

Actions:

- 1d.1 Provide public information on water quality through a booth at the County Fair.
Who: Env, SWCD When: 2007-2012 Cost: \$750 + In-Kind
- 1d.2 Provide public information on water quality through a booth at Windom Ag day.
Who: Env, SWCD When: 2007-2012 Cost: \$500 + In-Kind
- 1d.3 Coordinate preparation of the Des Moines River TMDL study and plan.
Who: Env, SWCD, HLWD, MPCA When: 2007-2008 Cost: \$10,000 +In-Kind
Murray, Jackson, Nobles counties
- 1d.4 Provide technical assistance for preparation of Greater Blue Earth Basin TMDL plans.
Who: Env, SWCD, MPCA, GBERBA When: 2007-2012 Cost: In-Kind
- 1d.5 Provide technical assistance for preparation of the Little Cottonwood River TMDL plans.
Who: Env, SWCD, BNC, MPCA When: 2007-2008 Cost: In-Kind
- 1d.6 Provide technical assistance for preparation of the Redwood/Cottonwood Rivers TMDL plans.
Who: Env, SWCD, MPCA, RCRCA When: 2008-2012 Cost: In-Kind
- 1d.7 Coordinate implementation of the Des Moines River TMDL study and plans, through funding from Clean Water Legacy and other sources.
Who: Env, SWCD, HLWD, MPCA When: 2008-2012 Cost: \$750,000
Murray, Jackson, Nobles counties

C.2 Priority Concern 2. Protect Groundwater.

Goal 2: Assure long-term quality and quantity of groundwater supplies, with a priority for Drinking Water Supply Management Areas (DWSMA) and surficial aquifer areas.

Objective 2.a: Support Well Head Protection planning and implementation.

Actions:

- 2a.1 Educate cities on importance of Wellhead Protection
Who: Env When: 2007-2012 Cost: In-Kind
- 2a.2 Assist cities with completing a Wellhead Protection Plan.
Who: Env, MDH When: 2007-2012 Cost: In-Kind
- 2a.3 Educate landowners in DWSMAs on measures to protect groundwater.
Who: Env When: 2007-2012 Cost: In-Kind

Objective 3.b: Continue to bring nonconforming ISTS into compliance with state standards.

Actions:

- | | | | |
|------|--|-----------------|--------------------------|
| 3b.1 | Work through GBERBA to develop a basin-wide (Greater Blue Earth watershed) plan to accelerate upgrades to septic systems.
Who: Env, GBERBA | When: 2007-2008 | Cost: \$20,000 |
| 3b.2 | Upgrade 40 non-compliant septic systems per year.
Who: Env | When: 2007-2012 | Cost: \$7,000 per system |
| 3b.3 | Seek additional funding from USDA and other sources for ISTS construction.
Who: Env, MPCA | When: 2008-2012 | Cost: In-Kind |
| 3b.4 | Update County ISTS ordinance to achieve compliance with State rules.
Who: Env, MPCA | When: 2008 | Cost: In-Kind |
| 3b.5 | Provide an informational packet regarding septic system maintenance to every landowner who installs a new ISTS.
Who: Env, MPCA | When: 2007-2012 | Cost: \$200 per year |
| 3b.6 | Maintain a GIS layer of all septic system installations throughout the County.
Who: Env | When: 2007-2012 | Cost: In-Kind |
| 3b.7 | Work with Cities to hook households and businesses with non-compliant ISTS onto municipal services.
Who: Env | When: 2007-2012 | Cost: In-Kind |
| 3b.8 | Provide public information on state sewer rules and educate property owners about the imminent public health threats and environmental harm posed by non-complying systems.
Who: Env, RRRWS | When: 2007-2012 | Cost: \$2,000 |

D. Implementation Schedule of Ongoing Activities

This section identifies other local activities and programs of the County Environmental Office and cooperators which contribute towards the goals and objectives of local water management, in addition to those under the scope of the local water management plan. There are also many other public and private efforts at the regional, state and federal levels which serve to promote the regulatory and informational goals of sound water management. These particular ongoing activities typically encompass all watersheds in the county, reaching a broad cross-section of local residents and businesses.

D.1 Priority Concern 1. Improve Surface Water Quality..

- Administer and provide assistance for the State Revolving Fund for Ag BMP's.
- Assist with testing and providing services for commercial pesticide applicators.
- Continue to administer Wetland Conservation Act.
- Promote technical assistance for conservation programs.
- Promote the SWCD tree program.
- Promote and help facilitate the CREP program.

D.2 Priority Concern 2. Protect Groundwater.

- Continue to promote and provide Household Hazardous Waste Program to correctly dispose of HHW.
- Provide a collection program for waste pesticides and empty containers.
- Promote recycling and solid waste management.
- Provide electronics and appliance disposal.
- Provide cost-share assistance for well sealing.

D.3 Priority Concern 3. Feedlots & ISTS (Individual Sewage Treatment Systems).

- Continue to be a delegated County in the MPCA Feedlot Program and provide data to state databases.
- Inspect and assist producers in maintaining compliance with State rules.
- Promote and provide assistance for manure management plans and practices.
- Inspect and assist producers in maintaining compliance with County and State feedlot rules.
- Administer regulations, permit, and inspect individual sewage treatment systems.

D.4 Additional Environmental Office Programs.

- Assist landowners with setback permits and zoning regulations.
- Facilitate and track biological control of noxious weeds.
- Educate Townships on the noxious weed program.
- Participate in the State's Rainfall monitoring program.
- Administer Shoreland and Floodplain Management Program.

E. Appendix

E.1 Acronyms Used

AgBMPs – Agricultural Best Management Practices
Area II – Area II Minnesota River Basin Projects, Inc.
BWSR – Board of Water and Soil Resources
BNC – Brown Nicollet Cottonwood Joint Powers Water Quality Board
CDP – Census Designated Place
CWP – Clean Water Partnership
DNR – Department of Natural Resources
DWSMA – Drinking Water Supply Management Area
Env – County Environmental Office
FWS – U.S. Fish and Wildlife Service
GIS – Geographic Information Systems
GBERBA – Greater Blue Earth River Basin Alliance
HLWD – Heron Lake Watershed District
ISTS – Individual Sewage Treatment System (see SSTS)
LCMR – Legislative Commission on Minnesota Resources
L&CRWS – Lewis & Clark Rural Water System
MDA – Minnesota Department of Agriculture
MDH – Minnesota Department of Health
MPCA – Minnesota Pollution Control Agency
NRCS – Natural Resources Conservation Service
NWI – National Wetlands Inventory
PCSD – Priority Concerns Scoping Document
PF – Pheasants Forever
RCRCA – Redwood-Cottonwood Rivers Control Area
RRRWS – Red Rock Rural Water System
SSTS – Sub-Surface Treatment System
SWCD – Soil and Water Conservation District
TMDL – Total Maximum Daily Load
USCOE – United States Corp of Army Engineers
USDA – United States Department of Agriculture
USFW – United States Fish and Wildlife
WRP – Wetland Reserve Program

E.2 Priority Concerns Scoping Document (follows)

COTTONWOOD COUNTY LOCAL WATER MANAGEMENT PLAN PRIORITY CONCERNS SCOPING DOCUMENT

July 2006

Prepared for the Cottonwood County Local Water Management Plan Task Force
By Cottonwood County Environmental Office and Southwest Regional Development
Commission

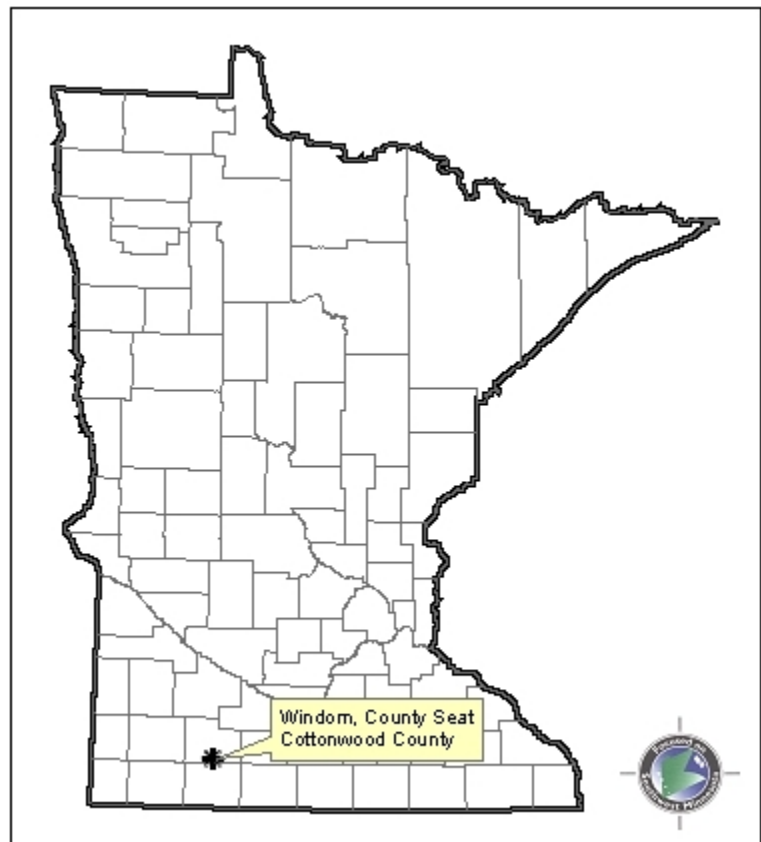
1. INTRODUCTION

1.A County Primer

Cottonwood County is located in the southwestern corner of Minnesota, adjacent to Murray, Redwood, Brown, Watonwan, Jackson, and Nobles counties. The City of Windom is the county seat. Cottonwood County's population in the 2000 U.S. Census was 12,167, with a density of 19 persons per square mile. The Minnesota State Demographic Center estimates the current population (2004) is 11,935. The Demographic Center forecasts total population of 12,290 by 2030.

Cottonwood County is typical prairie environment, with average annual precipitation between 25" and 28". Bedrock is primarily Cretaceous sandstone and Sioux Quartzite which outcrops in the northeastern part of the county. Cottonwood County contains five major watersheds, three larger—the Cottonwood, Watonwan and West Fork Des Moines—and two smaller—the Blue Earth and Middle Minnesota. All of these drain into the Minnesota River, except the West Fork Des Moines which flows south through Iowa directly into the Mississippi River.

Windom (pop. 4,471) and Mountain Lake (pop. 2,085) are the largest cities in the county. The dominant land use in the county is agriculture. Minnesota Land Management Information Center analysis has found 87% of land under cultivation, 6.7% in grassland, 2.1% forested, 1.9% water and wetlands, and approximately 2% developed. The 2002 U.S. Census of Agriculture reports 832 farms on 374,717 acres in Cottonwood County. Of these, 326,562 acres were in cropland. There were 192 farms with cattle, 80 with hogs, and 37 with sheep.



1.B Plan Information

The Cottonwood County Board of Commissioners adopted a resolution on 18 August 1987 to develop a county comprehensive water plan according to Minnesota Statutes in effect at that time. In July 1988, the County Board established a 13-member Water Advisory Committee to draft the plan. A public hearing was held in September 1991 where comments were heard by the County Board, and the plan adopted by the Cottonwood County Board of Commissioners after the 90-day review.

The County updated the water plan in 1996, with a public hearing and adoption on 1 October 1996. A major update of this plan was anticipated by 1 January 2007. The Cottonwood County Board of Commissioners adopted a resolution on 10 January 2006 to revise this plan, according to Minnesota Statutes now in effect.

The Cottonwood County Environmental Office is responsible for local water management in Cottonwood County, including facilitation of public input and convening the Cottonwood County Local Water Management Task Force. Cottonwood County has retained the Southwest Regional Development Commission to assist with writing the Plan update. Task Force membership currently includes:

2006 Local Water Management Task Force Members

- Phyllis Bakken, County Planning Commission, Agriculture
- Dave Bucklin, Cottonwood Soil & Water Conservation District
- Kay Clark, Cottonwood Soil & Water Conservation District
- Kelli Daberkow, Red Rock Rural Water System / Heron Lake Watershed District
- Mike Haugen, City of Windom
- Norm Holmen, Cottonwood County Commissioner
- Tom Kresko, MN Department of Natural Resources
- Wendy Meyer, City of Mountain Lake
- Art Steere, Amo Township, Agriculture
- Mike Hanson, Cottonwood County Environmental Office/Water Planner
- Marlene Smith, Cottonwood County Environmental Office
- Karen Boysen, Cottonwood County TMDL Project Coordinator

2. LIST OF PRIORITY CONCERNS

The *Cottonwood County Local Water Management Plan* to be developed in 2006 will cover ten years, with a 5-year implementation schedule. The Plan will address the following priority concerns.

2.A. Summary of Priority Concerns:

The task force considered the variety of concerns submitted, as well as more specific implementation of concerns.

1. Improve Surface Water Quality

Goal 1: Protect soil from erosion and prevent agricultural runoff

Goal 2: Address impacts of Drainage Management; Begin to digitize public ditch information in Geographic Information Systems (GIS)

Goal 3: Wetland restoration and management

Goal 4: Address TMDLs

- ⇒ Des Moines River Lime Creek to Heron Lake Outlet
- ⇒ Des Moines River Windom Dam to Jackson Dam
- ⇒ Watonwon River headwaters

2. Protect Groundwater

Goal 1: Wellhead protection

- ⇒ Designated DWSMAs (Drinking Water Supply Management Areas)

Goal 2: Prevent nitrate and pesticide infiltration of shallow groundwater

- ⇒ sand/gravel, along rivers

Goal 3: Well water quality database that is GIS-compatible

Goal 4: Long-term water supply

3. Feedlots & ISTS (Individual Septic Treatment Systems)

Goal 1: Continue to bring feedlots into compliance with MN Statute 7020 standards

Goal 2: Continue to bring nonconforming ISTS into compliance with state standards

- ⇒ Immediate health and safety situations

3. PRIORITY CONCERN IDENTIFICATION

3.A Public and Internal Forums

- | | |
|-----------|---|
| 9/27/2005 | Cottonwood County Board of Commissioners approve new Comprehensive Plan after several years of public process, including chapters addressing the relationship of land use, development and water resources. Identifies task of updating Water Plan. |
| 1/10/2006 | Cottonwood County Board of Commissioners approve resolution of intent to revise and update the local water management plan. |
| 3/17/2006 | KDOM-AM/FM interview with Southwest Regional Development Commission Development Planner, discussing water plan update. |
| 3/21/2006 | Notice of Decision to Revise and Update the Local Water Management Plan provided by email and/or postal service to local units of government, organizations and responsible agencies as suggested and required. |
| 4/5/2006 | Shallow Lakes Forum addresses water quality concerns. |
| 5/10/2006 | Requested date for priority concerns, comments and information to be returned to Cottonwood County Environmental Office or Southwest Regional Development Commission. |
| 5/10/2006 | Meeting notice published as legal ad in <i>Cottonwood County Shopper</i> . |
| 5/17/2006 | Meeting Notice published as display ad in <i>Cottonwood County Citizen</i> . |

- 5/18/2006 Cottonwood County Planning Commission Public Hearing to consider zoning amendments addressing mining impacts on shoreland and water resources, as identified in the Comprehensive Plan.
- 5/25/2006 Local Water Management Plan Update Information Meeting held with Task Force as public hearing on priority water management concerns for Cottonwood County, at DNR Office in Windom. 8 in attendance (see below).
- 6/23/2006 Meeting of DNR staff with Cottonwood County Water Planner and Southwest Regional Development Commission Development Planner in Slayton, to discuss priority water concerns. 3 in attendance.
- 6/29/2006 Continuation of Local Water Management Plan Update Information Meeting with Task Force and staff held at Cottonwood County Environmental Office. 12 in attendance (see below).

3.A.1 Summary of Task Force Proceedings.

Cottonwood County Local Water Management Task Force

Water Plan Update Information Meeting * Priority Water Management Concerns

Thursday 25 May 2006, DNR Office, Windom

In Attendance:

- Norm Holmen, Cottonwood County Commissioner
- Kay Clark, Cottonwood Soil & Water Conservation District
- Dave Bucklin, Cottonwood Soil & Water Conservation District
- Mike Haugen, City of Windom
- Phyllis Bakken, Representing the County Planning Commission, Agriculture
- David Sill, MN Board of Water & Soil Resources
- Mike Hanson, Cottonwood County Environmental Office Water Planner
- Marlene Smith, Cottonwood County Environmental Office
- Karen Boysen, Cottonwood County Environmental Office
- John C. Shepard, AICP; Southwest Regional Development Commission
- An anonymous member of the public

Introductions

Mike Hanson called the update information meeting to order at 6:30pm and began introductions.

Brief Overview of Water Planning Process

David Sill reviewed the Local Water Management Plan process. Cottonwood County began their first water plan in 1987. The current plan is an update completed in 1996. The new process puts a focus on Priority Concerns and goal-oriented implementation.

Water and Land Resource Plans and Official Controls Submitted

After several years of public process, Cottonwood County Board of Commissioners approved a new Comprehensive (land use) Plan in September 2005, and zoning amendments for agriculture and mining in May 2006. Discussed goals, objectives, policies and tasks related to water management.

Priority Concerns Submitted from State and Local Agencies, and the Public

John Shepard reviewed priority water management concerns submitted to date.

Priority Concerns of the Task Force

Concerns submitted were summarized in 4 general categories and discussed. The Task Force added and clarified concerns (*italics*).

Draft PC#1: Improve Surface Water Quality

- Protect soil from erosion – *we've made progress, much still to do.*
- Prevent agricultural runoff
- Wetland restoration; Shallow lake / wetland management
- Address TMDLs
 - ⇒ Des Moines River Lime Creek to Heron Lake Outlet
 - ⇒ Des Moines River Windom Dam to Jackson Dam
 - ⇒ Watonwon River headwaters

*Ag BMPs, Conservation Tillage address erosion and runoff, difficult to separate.
BMP compensation not increasing as property values go up; programs not very flexible
Distinguish between erosion damage from “gullywashers” (major storm events)& stream banks*

*Nutrient Management major concern, especially with increased tiling speeding runoff
Agricultural tiling continues to expand*

Stormwater & wastewater are ongoing concerns managed by City.

Focus on supporting TMDL project areas and Clean Water Partnership follow-up

Draft PC#2: Protect Groundwater

- Wellhead protection
 - ⇒ Designated DWSMAs (Drinking Water Supply Management Areas)
- Prevent pesticide infiltration of shallow groundwater
 - ⇒ sand/gravel soils, along rivers

Windom has wellhead protection in place. Red Rock/Jeffers in adoption process. Windom concerned about infiltration from old landfill.

*Private well users concerned about quantity and quality; those who can going to rural water
Nitrates/fertilizer bigger public concern than pesticides in particular*

Program to seal unused wells started early 90s, very popular. Survey could be updated.

Focus on DWSMAs – eg gravel zoning amendments effective in DWSMAs

Draft PC#3: Feedlots & ISTS (Individual Septic Treatment Systems)

- Bring feedlots into compliance with MN Statute 7020 standards
 - ⇒ Open lots near water resources
- Bring nonconforming ISTS into compliance with state standards
 - ⇒ Shoreland, rural villages

Feedlots not so much, number cattle declining, larger operations making improvements.

Nutrient management is bigger concern (ie in #1 above)

ISTS is huge \$\$\$ issue. Since Delft sewer project is now in place, focus is immediate health & safety threats. County has adopted compliance requirement on property transfer, which may increase ISTS loan demand even more.

Draft PC#4: Long-term Water Supply

- Source-water protection
- Infrastructure for public water supply

For private users, hooking to rural water can be a major cost issue even more than logistics. Integral part of #2 groundwater, but bigger-picture question; may not rise to priority concern at this time.

Putting It All Together

Discussion on public involvement and outreach to date. Who else needs to be at the table? Red Rock Rural Water, City of Mountain Lake have committed to the Task Force, had conflicts with this date. Hanson will follow-up on his previous calls to agricultural and conservation groups with the opportunity to participate.

Next Steps

Shepard and Hanson will compose Priority Concerns for Task Force review, target to meet again in 30 days, about last week of June.

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Cottonwood County Local Water Management Task Force

Water Plan Update Information Meeting * Priority Water Management Concerns
Thursday 29 June 2006, County Environmental Office, Windom

In Attendance:

- Norm Holmen, Cottonwood County Commissioner
- Dave Bucklin, Cottonwood Soil & Water Conservation District
- Phyllis Bakken, County Planning Commission, Agriculture
- Art Steere, Amo Township, Agriculture
- Kelli Daberkow, Red Rock Rural Water System / Heron Lake Watershed District
- Wendy Meyer, City of Mountain Lake
- Bruce Johnson, Watonwon County
- David Sill, MN Board of Water & Soil Resources
- Mike Hanson, Cottonwood County Environmental Office/Water Planner
- Marlene Smith, Cottonwood County Environmental Office
- Karen Boysen, Cottonwood County TMDL Project Coordinator
- John C. Shepard, AICP; Southwest Regional Development Commission

Introductions

Mike Hanson called the update information meeting to order at 7:00pm, began introductions.

Review of Water Planning Process/Concerns Received

John Shepard reviewed results of the public information meeting and concerns received to date. Shepard, Hanson and Sill met with Tom Kresko, hydrologist with Mn Department of Natural Resources, to discuss concerns submitted. Kresko suggested the idea of “Drainage Management” would cover concerns in several areas.

Priority Concerns of the Task Force

Red Rock Rural Water is concerned with protecting groundwater. Long-term water supply is an aspect. Mountain Lake is starting a wellhead protection plan, concerned with both quantity and quality; have a 1-½ year old water treatment plan, contemplating outflow treatment. Doing storm water runoff education; areas of the city as constructed would not meet current standards, leading to runoff conflicts.

Increased flows do create problems downstream, need to look at bigger picture e.g. Drainage Management, holding water on landscape. Discussion regarding identifying ag tiling and public drainage systems, GIS mapping in other counties, update process for FIRM floodplain maps. Agriculture is concerned about long-term projects and larger policy issues having impacts on the ground. Farm program payments are not keeping pace with increases in land rent. State conservation programs are looking at flexibility. TMDL process on Des Moines doing education, working towards plan implementation. Concerns with BWSR funding, not loosing follow-up from successful Clean Water Partnerships.

Don't lose track of basic erosion/runoff control, preventing pesticide runoff “wise use”. Issues with farming ditches. Need continued monitoring of projects in place.

Next Steps

Shepard and Hanson will compose the Priority Concerns Scoping Document to be submitted to BWSR. They will then draft information for the plan document. The Task Force will be called to meet again in a few months to review progress on the plan.

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3.B Summary of Comments Received

No plans or controls were received from any state or local agencies. The Cottonwood County Environmental Office administers the *Cottonwood County Comprehensive Plan* and zoning ordinances, and has found no conflicts with other plans currently in place.

Comments from the following agencies and individuals were discussed at Task Force meetings:

BWSR-

- Erosion/Nutrient Management
- Feedlot Management / Nonconforming ISTS (Individual Septic Treatment Systems)
- Groundwater Protection – wellhead protection areas

MDA-

- Pesticide/Nutrients - shallow groundwater, adjacent to Des Moines River
- Pesticide/Nutrients - surface water
- Conservation Tillage- erosion impacts to TMDLs; adjacent to water resources, Coteau
- Manure Management / ISTS – lakeshore, rural villages, open lots near resources

DNR-

- Surface Water / Groundwater Protection – Windom/Des Moines River
- Ag BMPs – w/in 1,000 feet of water, wetlands, wellhead protection areas
- Holding Water on the Landscape – wetland restoration
- Shallow Lake / Wetland Management
- Buffers- Ditches, Streams, Rivers
 - Reduce non-point pollution
 - Native wildlife habitat

MPCA-

- TMDL Impaired Waters – listed waters
 - Des Moines River Lime Creek to Heron Lake Outlet
 - Des Moines River Windom Dam to Jackson Dam
 - Watonwon River headwaters
- Feedlots
- Nonconforming ISTS

SWCD

- Surface Water Quality – Ag BMPs
 - Look at watersheds with impaired waters

N. Holmen

- Funding, Implementation – Streambank erosion & buffer strips

MDH-

- Wellhead protection plan implementation
- Water quality database for wells, GIS-compatible
- Seal unused wells
 - Drinking Water Supply Management Areas (DWSMAs)

4. PRIORITY CONCERN SELECTION

The Priority Concerns listed above (Section 2) were selected by the Local Water Management Plan Task Force members after reviewing the concerns submitted by state and local agencies and the public. Letters were presented at the public input meeting and discussed. Staff then reviewed and refined focused Priority Concerns for Task Force consideration. After further discussion, the Task Force members selected the Priority Concerns by consensus.

5. PRIORITY CONCERNS NOT ADDRESSED BY THE PLAN

The Cottonwood County Local Water Management Plan Task Force carefully considered all concerns submitted, as well as concerns of individual members representing a diverse constituency in the County. Concerns beyond the specific focus of the Priority Concerns listed above are typically beyond the scope of local water management, or are currently or potentially being addressed by other entities which work closely with the Cottonwood County Environmental Office.