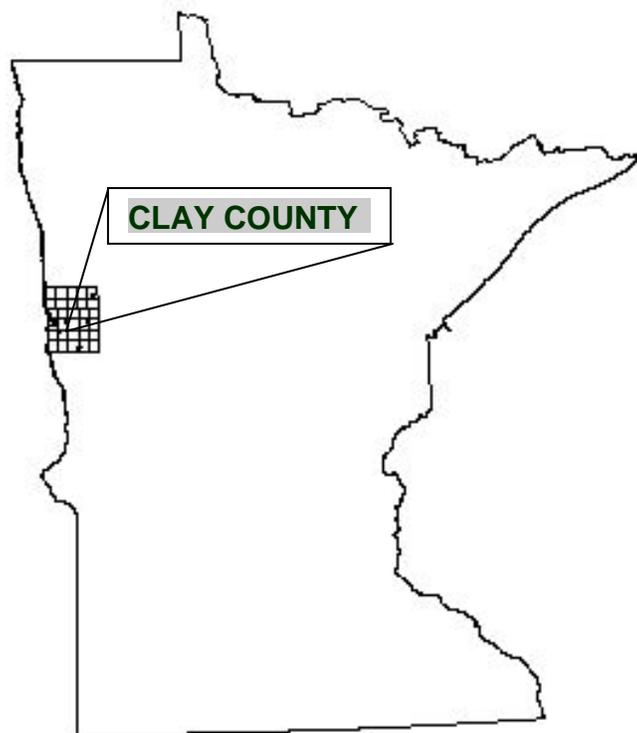




LOCAL WATER MANAGEMENT PLAN

2006-2015

*An amendment to the plan and implementation schedule to be completed Dec. 31, 2010



Prepared by the Clay Soil & Water Conservation District
And the Local Water Management Plan Advisory Committee

This Plan was approved by
the Board of Water and Soil Resources December 14, 2005,
and locally adopted by the Clay County Board December 20, 2005

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LIST OF FREQUENTLY USED ACRONYMS

ASG	Agricultural Service Groups
BRRWD	Buffalo-Red River Watershed District
BWSR	Board of Soil and Water Resources
CREP II	Conservation Reserve Enhancement Program II (USDA & BWSR)
CCRP	Continuous Conservation Reserve Program (USDA)
CRP	Conservation Reserve Program (USDA)
DNR	Department of Natural Resources
EQIP	Environmental Quality Incentive Program (USDA)
EH	Environmental Health (Clay County)
Ext	Extension (U Of M – Clay County)
FME	Farm Management Educators
ISTS	Individual Sewage Treatment System
LWMP	Local Water Management Plan
MDH	MN Department of Health
NRCS	Natural Resources Conservation Service
MPCA	MN Pollution Control Agency
PF	Pheasants Forever
P&Z	Planning and Zoning (Clay County)
RW	River Watch
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
USFWS	US Fish and Wildlife Service
WCA	Wetland Conservation Act
WMA	Wildlife Management Area (state owned)
WPA	Waterfowl Production Area (federally owned)
WRWD	Wild Rice Watershed District
WD	Watershed Districts (collectively)

CLAY COUNTY LOCAL WATER MANAGEMENT PLAN ADVISORY COMMITTEE

The following individuals were involved in the updating of this plan:

Kevin Campbell (County Commissioner)	Brian Winter (The Nature Conservancy)
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Greg Hoch (Concordia College)	Bruce Jaster (Environmental Health)
Bob Backman (River Keepers)	Jack Frederick (MPCA)
Bob Merritt (DNR)	Bruce Albright (BRRWD)
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CLAY COUNTY COMMISSIONERS

Ben Brunsvold

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CLAY COUNTY LOCAL WATER MANAGEMENT PLAN LEAD AGENCY

**Clay Soil & Water Conservation District
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EXECUTIVE SUMMARY

Clay County is situated on the western border of Minnesota, separated from Cass County, North Dakota by the Red River of the North. Clay County encompasses 1,053 square miles, and includes 30 townships and 11 cities. The County seat, Moorhead, comprises 63 percent of the total county population of 51,229 people (2000 Census). The State Demographer's Office projects that the population of Clay County will grow by 5.6 percent from 2000 to 2020, from 51,229 to 54,000. Much of this growth, if current trends continue, will occur near Moorhead and along primary transportation corridors. Of the 30 townships, only 6 have experienced an increase in population since 1950 (see maps in the Appendix denoting township growth and land use).

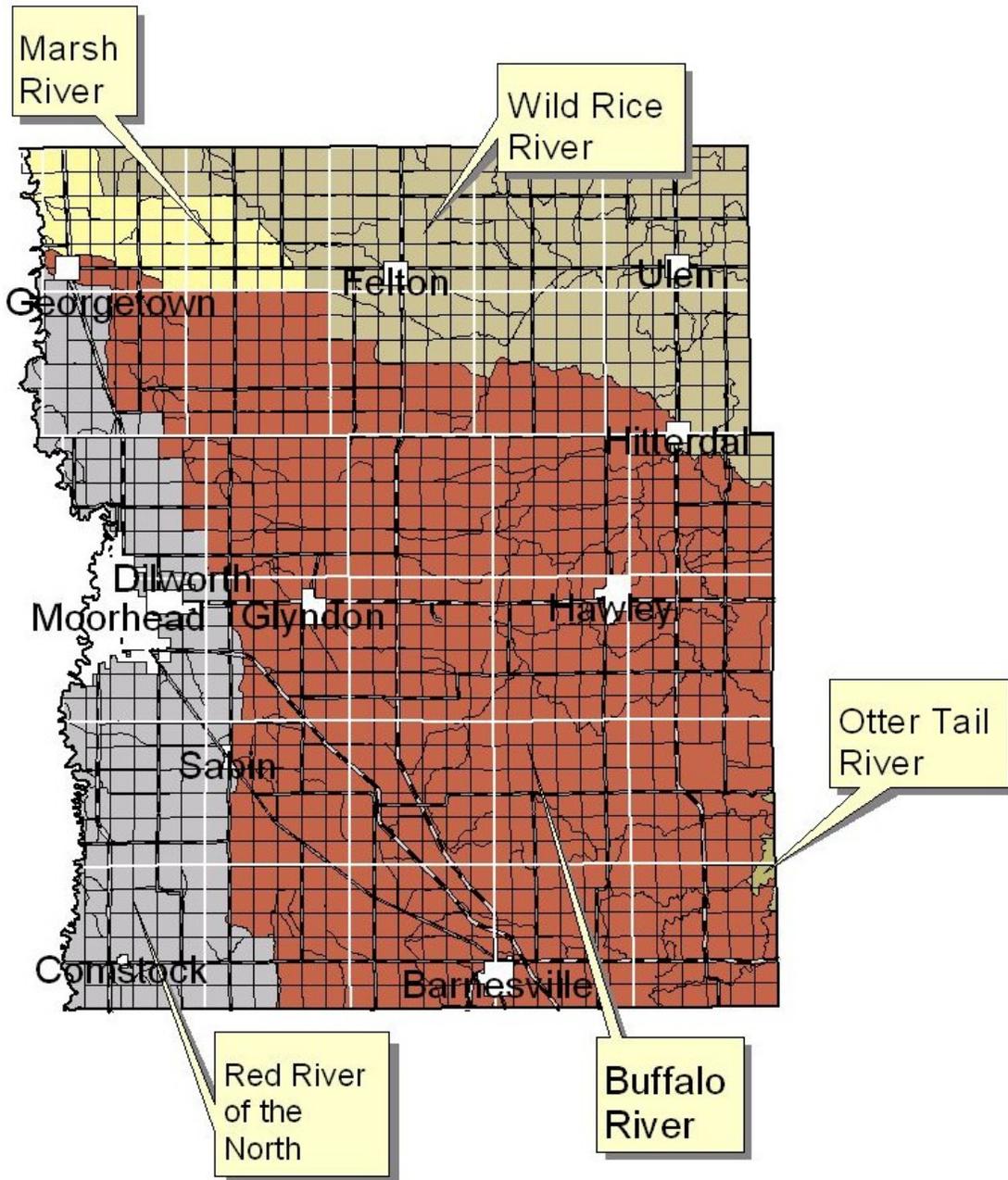
Of the 673,733 acres that make up Clay County, agricultural land classification dominates accounting for nearly 90 percent of the land use. Interestingly, the total amount of land in farms (cropland) compared to the total acreage in the County has dropped from 1978 to 1997 while the amount of cropland actually harvested has risen from 1978 to 1997 despite a decrease in cropland acres. The most obvious explanation is a decrease in the number of acres in farm programs such as the Conservation Reserve Program (CRP), or other programs. Also of interest, wheat, corn, sunflower seeds, soybeans and hay/alfalfa have increase in the number of acres grown while barley and oats have decreased (Clay County Comprehensive Plan, 2000).

Land Use Category	Percent of Total
Cultivated Land	81.4%
Grassland, hayland, or pasture (combined)	7.9%
Forested land	4.4%
Urban and rural development	2.5%
Bog, marsh, fen	1.6%
Water	1.1%
Brushland	0.9%
Mining	0.2%

Source: 1989 Land Use Data (Compared with Clay County Assessors data)

Despite the limited amount of surface water resources, surface water drainage dictates land use, and management of water resources on a watershed scale is paramount. Two primary watersheds, the Buffalo River watershed and the Wild Rice River watershed divide Clay County. Three smaller, secondary watersheds, the Red River (headwaters) watershed, the Otter Tail River watershed, and the Marsh River watershed, drain smaller portions of the county to the west, east and north respectively.

In terms of water management, those areas in Minnesota that drain directly to the Red River are included under the Buffalo River Watershed and Wild Rice River Watershed, and the Marsh River is also included under the Wild Rice River.



The Buffalo-Red River Watershed District (BRRWD) encompasses a land area of 1,380 square miles. Approximately 75 percent of the geographic area of Clay County is in the BRRWD, which translates to 58 percent of the watershed area. The Buffalo River originates in Becker County, but transects Clay County where it enters the Red River of the North northwest of Georgetown. The main tributaries to the main branch of the Buffalo River include Hay Creek (originating in Becker County) and the South Branch of the Buffalo River. Again, several drainage ditches also contribute to this branch of the Buffalo River. Major tributaries of the South Branch of the Buffalo River include Hay

Creek, Stony Creek, Spring Creek, Whisky Creek, and several drainage ditches. Wolverton Creek/ Comstock Coulee, although a direct tributary of the Red River of the North, is also included in this watershed. The Wild Rice Watershed District (WRWD) encompasses a land area of 2,080 square miles. Approximately 25 percent of the geographic area of Clay County is in the WRWD, which translates to 12 percent of the watershed area. The South Branch of the Wild Rice River runs across the northeast corner of Clay County from east to west with its headwaters located in Becker County and its terminus in Norman County. Other surface waters in Clay County include Stiner Creek, Felton Ditch, Dalen Coulee and several drainage ditches that are tributaries of the Wild Rice River, or the Red River of the North.

Although the land use figures vary somewhat from year to year, the dominant land uses do not. The struggle between urbanization or increased growth and the traditional agricultural character of the County is clear and present. The challenge for Clay County is to find balance between the preservation of the agricultural heritage, protection of the remaining natural resources and the desire for economic and community growth. To achieve such goals will require the careful, comprehensive consideration of the County's natural resources.

Administration of the Clay County Local Water Management Plan

The administration of the Clay County Local Water Management Plan has been the responsibility of the Clay Soil and Water Conservation District (Clay SWCD) since 1998 (from 1990 to 1998 with the County Planning and Zoning Department). The first generation "Water Plan" was adopted June 12, 1990, and, in 1997, was revised and adopted locally on December 17, 1997. This second generation plan, after a requested two-year extension, will expire on December 31, 2005. The revised Clay County Local Water Management Plan will cover a ten year period from 2006 to 2015, with an implementation plan covering five year increments (2006 to 2010, and a revised implementation plan covering 2011 to 2015).

The Purpose of Local Water Management

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

1. *To identify existing or potential problems and opportunities for protection, management, or development of water resources and related land resources in the county.*
2. *To develop and implement a plan of action to promote sound hydrologic management of water and related land resources in the county, and*
3. *To work toward effective environmental protection and management in the county.*

Pursuant to Minnesota Statute 103B.311, subd. 4, the local water management plan must;

1. address water management issues over the entire county
2. address problems in the context of watershed units and groundwater systems
3. be based upon principles of sound hydrologic management of water, effective environmental protection, and efficient management
4. be consistent with local water management plans prepared by counties and watershed management organizations wholly or partially within a single watershed unit or groundwater systems
5. address water management issues over a ten year period with five year implementation plans.

The Water Management Plan revision process requires that the county base future management considerations on public input derived from private citizens and public agencies. Public input was gathered through landowner surveys (paper and internet based surveys), township officer surveys and agency comments (see the *Clay County Priority Concerns Scoping Document* in the Appendix for more information). Through the Water Management Plan revision process, four *PRIORITY CONCERNS* were identified to address in the coming decade; water quality, natural resources enhancement and protection, erosion, and flood damage reduction. The process through which these concerns were identified is detailed in the *Clay County Priority Concerns Scoping Document* located in the Appendix.

Summary of Priority Concerns and Objectives

Priority Concern: Water Quality (surface and groundwater)

Clay County is bordered on its west by the Red River of the North and is dissected by the Buffalo River (South Branch and Main Branch), South Branch of the Wild Rice River, and their respective tributaries. Additional surface waters include several small, shallow lakes and numerous scattered wetlands. Four of these lakes, Lake 15, Turtle Lake, Silver Lake and Lee Lake, are moderately to extensively developed, and many more are experiencing development. Most surface waters in Clay County are degraded, and several are listed as “impaired waters” (see *Impaired Waters of Clay County* map in the Appendix) as defined by the Clean Water Act (CWA). As such, these waters do not meet water quality standards designed to protect human health and biological functions and, thus, must be cleaned up to meet their intended use via locally developed Total Maximum Daily Load (TMDL) Plans. Further, groundwater resources within the County are of utmost concern. Specifically, the Buffalo Aquifer, emergency water supply source for over 70 percent of the County’s population, is vulnerable to contamination from surface water (the South Branch of the Buffalo River and gravel pits exposing the water table), land use activities, abandoned wells and leaking storage tanks. In addition, the geology of the middle portion of the county causes the underlying groundwater resources to be very highly susceptible to contamination (RHA 3, Part B, Plate 4 of 4, 1997). As such, it is critical that future land uses be carefully considered to further protect the county’s groundwater resources. For more information on groundwater resources of Clay County, see the maps highlighting groundwater resources (including major aquifers and current, defined wellhead protection areas) and contamination potential in the Appendix.

This plan will address the following objectives related to this concern:

- Actively participate in the development and implementation of Total Maximum Daily Load (TMDL) Plans for impaired waters within Clay County and target those watersheds to address these impairments; particularly, sedimentation
- Aggressively market conservation programs (such as CRP and CREP II) in areas lacking riparian buffers, and low interest loan programs (such as the State Revolving Fund [SRF]) for failing septic systems to further protect water quality
- Protect and preserve critical groundwater sources (such as the Buffalo Aquifer) through assisting in Wellhead Protection Plans, Source Water Assessment Plans, and prioritizing cost share funds for sealing abandoned wells within and out of delineated Drinking Water Supply Management Areas (DWSMA).

Estimated Potential Cost: \$13,153,500

Priority Concern: Natural Resources Enhancement and Protection

Clay County is truly unique in that it is dominated by agricultural land use, yet retains some of the highest quality, biologically significant natural resources in Minnesota. According to the Minnesota County Biological Survey (MCBS), Clay County retains only 4 percent of its original native (presettlement) landscape – much of which is high quality, high biodiversity natural lands. As the *Original Vegetation of Clay County* map in the Appendix denotes, much of the historic vegetation regime of Clay County prior to European settlement was comprised of Tallgrass prairie, wet prairie, riverine and pothole wetland complexes, and oak savannah. Much of this original landscape has been altered in one way or another resulting in a patchwork of natural resource features. The Felton Prairie, Bluestem Prairie near Buffalo River State Park, and the Barnesville Wildlife Management Area denote three key large-block habitats linking the Glacial Lake Agassiz Beach Ridges landscape from north to south. Indeed, agency efforts at the federal, state and local level are all focused on connecting large blocks of native habitats, restoring riverine corridors, and buffering surface waters to reduce the effects of habitat fragmentation, providing connections (connectivity) between habitats for wildlife, and protecting the unique natural resources of Clay County and the greater Red River Basin Ecosystem. Although a watershed approach to these efforts is noteworthy, the preferred focus may be on the three “geomorphic regions” of the County as depicted in the *Public Lands of Clay County* in the Appendix. This plan will address the following objectives related to this concern:

- Consolidate the natural resource management planning and implementation efforts of federal, state and local agencies using existing prioritization models to target program funds to areas where the greatest ecological benefit can be realized. Also, develop public outreach materials to educate the public of the value of natural resource areas.
- Develop and organize a series of workshops, or other outreach options, to educate landowners on the options available to them to protect natural resources and reduce the impacts of wildlife habitat fragmentation of existing woodland and wetland/grassland habitat on their land through conservation program agreements, tax exemption programs, or easements.
- Quantify the need for adequate buffers on stream/rivers county-wide and “natural environment lakes” and target areas with inadequate buffers for program marketing and implementation, and target minor watersheds with greater than 50 percent drained wetland acreage for wetland restoration and enhancement using available conservation programs and tax exemption programs.
- Improve County wetland management by reintroducing the “Clay County Wetland Model”, a GIS based model designed to rank existing wetlands and potential restoration sites via a “functions and values” point system.
- Complete a quality restoration of an abandoned gravel pit complete with grading, shaping, seeding with native vegetation, and vegetative management. Use the

proposed reclamation as a public outreach/education event.

- Quantify the need for grade stabilization on specific reaches of streams and rivers throughout the beach ridges to enhance fish habitat and reduce in-stream erosion.
- Publicize the vast "outdoor based" recreational opportunities in the county - canoeing, kayaking, hunting, fishing, birding, hiking, etc. - as viable "ecotourism", revenue producing opportunities.
- Educate the public on how conservation efforts can be supported through easy-to-do opportunities such as "Backyard Conservation", and new marketing strategies for commodities - "earth friendly" cereals, bread, etc

Estimated Potential Cost: \$50,500

Priority Concern: Erosion

There are many general land use practices in Clay County that have the potential to impact both surface water quality, but soil erosion from the landscape is the leading cause of sedimentation of Clay County's surface waters. The geology and topography of the landscape, in addition to the predominance of open cultivated land, creates a challenge for agricultural producers and resource managers alike to prevent soil erosion. As the economics of farming goes, so goes the landscape. Commodity prices, cost of fuel and the introduction of genetically modified crops all play a role in *how* cropland is farmed and *how much* is farmed. Nearly all of the soils in Clay County are potentially subject to erosion rates beyond sustainability if adequate groundcover is lacking according to the calculations used by the Natural Resources Conservation Service (NRCS). All soil has the potential to erode, but there are soils that are much more prone to erosion than others as shown in the *Highly Erodible Soils of Clay County* map in the Appendix. Wind and water erosion delivers sediment to water bodies, as well as chemical residue and nutrients such as phosphorus and nitrogen. In addition to degrading the quality of the water, storage capacity and the conveyance of a water body can be altered, increasing the severity of in-stream erosion and flooding. The resulting increase in turbidity causes exceedences in turbidity water quality parameters thereby leading to "impairment". In the case of the Red River of the North, municipal water treatment facilities in Moorhead, MN and Fargo, ND incur increased costs to treat turbid water for human consumption. This plan will address the following objectives related to this concern:

- Coordinate with Clay County Farm Management Educators to improve dialogue and discuss topics such as; the economics of tillage to illustrate the potential savings of reduced tillage for a "typical farm" (reduced recreational tillage, conversion to no-till or mulch-till, etc.), and the obstacles to tillage practices including the relationship between residue management and incidence of crop disease.
- Continue to market (with emphasis on the eastern half of the county) no-till and mulch-till via the SWCD No-till Drill Program and the Environmental Qualities

Incentive Program (EQIP). Also, research the Clay SWCD records to determine the percentage of producers who rented the no-till drill, then bought their own through the SWCD administered low interest loan program.

- Address the problem of erosion county-wide by; 1) Marketing "alternatives" to field windbreaks in the form of replacing trees with shrubs (and thereby more windbreaks to adequately cover the entire field), and implementing herbaceous wind barriers and field borders, 2) Tracking tillage practices over time using the results of the "Tillage Transect Survey" to determine the extent of no-till vs. conventional tillage practices, 3) Utilize GIS to select soils with C slopes or greater ($C \geq 6-12$ percent) to determine the extent of gully erosion and target establishment of grassed waterways and sediment basins and subsequent enrollment into conservation programs, 4) Investigate and document the extent of farming of road ditches in the county, and 5) Investigate the potential for a soil loss ordinance.
- Reduce the incidence of in-stream erosion and streambank erosion by; 1) Utilizing existing stream survey information to target practices and special projects, and 2) Cooperate with townships and agencies to inventory streams and rivers for grade stabilization needs.

Estimated Potential Cost: \$12,000

Priority Concern: Flood Damage Reduction (FDR)

Flooding and flood related damages have, and will continue to plague the Red River Basin. However, the period since 1993 has been an abnormally wet hydrologic cycle. The topography of the county, an especially flat western half, lends itself to the potential for flooding (see *Floodplain Areas of Clay County by Watershed* map in the Appendix). The challenge is dealing with flooding and flood related damages in a collective manner. Improvements have been made by communities and resource agencies to deal with flood damage reduction, but there is room for improvement. Zoning regulations between communities seem to lack consistency in dealing with flood prone areas, and poor land use decisions continue to be made. Stormwater issues, runoff from developed and developing areas, in addition to urban drainage require more attention and coordination from local levels of government. As such, this plan will address the following objectives related to this topic:

- Commit to a decade of county involvement in the FDR process by Local Water Management focus on FDR strategies including, but not limited to, flood storage wetlands and impoundments, wetland restorations, river corridor restorations, riparian buffer strips, retirement of land, land use and best management practices.
- Investigate issues of conflict/concern with FDR efforts including; 1) the conflict in culvert sizing between fish passage and flow velocity, 2) the perceived inconsistent use of roads as temporary floodwater control structures (not allowed on CSAH #

31, but now being allowed on County Road 56 for the Whisky Creek Tributaries Project), and 3) the effects of pattern tiling on water quality and water quantity.

- Involve townships in the FDR process by interviewing township officers to determine where flooding consistently occurs in their township and correlate with soils data, past floodplain data, and new floodplain data to create maps of "flood prone areas" in the county and provide these maps to the Clay County Planning Commission and County Board.
- Involve communities in the FDR process through enhanced education and outreach, and challenging communities to develop plans to address drainage and stormwater challenges caused by future land use changes.

Estimated Potential Cost: Attempts will be made to cover Objectives with existing staff and funds.

Consistency with Other Local, State and Regional Plans

Preparation of the Clay County Local Water Management Plan (LWMP) required the review of several existing planning documents from governmental and nongovernmental organizations. Due to the nature of county based water management, the plans were examined for consistency from the “local level up” approach.

City Plans Some plans at the city level were analyzed for consistency including the City of Moorhead Wellhead Protection Plan, Source Water Assessment Plan and the Stormwater Ordinance. These plans address many of the same issues raised in the LWMP, but address certain issues in more detail. The intent of the LWMP is to assist in these efforts and not duplicate efforts unnecessarily.

County Plans The Clay County Comprehensive Plan completed and adopted in 2001 addresses many of the concerns raised in this LWMP revision. There exists consistency with issues such as development, agricultural preservation and natural resources protection.

Watershed District Plans The BRRWD is currently in the process of revising their 1998 Watershed Management Plan, whereas the WRWD Management Plan was revised in 2002. Watershed Districts inherently deal with many of the same issues as LWM, thus it is assumed that the concerns to be addressed by the LWMP are consistent with those of the Watershed Districts. The Clay County, through LWM will continue to work closely with both Watershed Districts to promote the betterment of Clay County’s water resources.

Red River Basin Plans Given the nature of Clay County and the water management concerns raised, the revised Clay County LWMP supports the goals and principles of the Red River Basin Flood Damage Reduction Work Group Agreement dated December 9, 1998. Also completed in 1999, the MN Pollution Control Agency (MPCA) spearheaded the completion of the Red River Basin Water Quality Plan which addresses issues related to water quality. Again, the Clay County LWMP supports the goals, priorities and strategies of this plan.

Regional Plans Given the acreage owned by The Nature Conservancy (TNC) in Clay County, the Ecological Planning in the Northern Tallgrass Prairie was reviewed for commonalities. High priority issues that parallel those of the Clay County LWMP include grassland management, habitat fragmentation and conversion, hydrologic alterations to the landscape, wetland management and recreational use.

Neighboring County Plans Nearly all of the neighboring counties have updated their LWM Plans with the exception of Norman County. Several recurring themes arise in the review of these plans including concerns related to; erosion, water quality, and development pressure. Clay County does not anticipate any inconsistencies between county LWM Plans.

ASSESSMENT OF PRIORITY CONCERNS

ASSESSMENT OF WATER QUALITY

Surface Water The potential for contamination through human activity is high in Clay County. Given the fact that a majority of the land area is dedicated to farming, agricultural activities have the greatest potential to contribute pollutants to surface water resources. Major pollutants would likely include sediment, nutrients (phosphorous and nitrogen), and pesticides. Urban and food processing plants also have the potential to contaminate surface waters. Pollutants include treated effluent, coliform bacteria, organics, pesticides, and fertilizers. Additional sources of contamination include urban areas, transportation arteries and pipelines that transect the County and represent locations of possible toxic-waste spill sites and point discharges of contamination to water sources (Stoner et al. 1993).

Pesticides are also a potential concern for water quality. Although used extensively in the Red River Valley, only small amounts have been detected in streams. Moreover, they comprise only 2 percent of the total amount applied, and are usually at concentrations well below drinking water standards. Results indicate that the organic soils, flat land, pesticide degradation and pesticide management limit the amount of pesticide contamination that reach Red River Basin streams (Tornes and Brigham 1995).

Clay County's water resources are classified for a variety of uses including; habitat for fish and wildlife, drinking water supplies, sources of recreation, agriculture or industrial water, and navigation (MPCA, 1994). The MPCA sets specific water quality standards for these uses. If these standards are frequently exceeded, the water body is either *fully supporting*, *partially supporting* or *not supporting* for that use. A listing of the *Impaired Waters of Clay County* can be found in the Appendix. The Red River of the North, the Buffalo River, the South Branch of the Buffalo River between Whisky Creek and Stony Creek, and Stony Creek are listed as impaired. Turbidity, primarily caused by excess sediment suspended in the water, is the most prevalent impairment. Sources of pollution include sediment, urban runoff, animal holding/management areas, and septic systems. Contamination of surface waters by these pollutants results in decreased dissolved oxygen, habitat and biodiversity, and increases in sedimentation, eutrophication and turbidity (based on the 2004 MN 303(d) report to the Congress of the U.S. MPCA, 2004). Sedimentation is the primary concern for Clay County's streams and rivers. Streams and rivers throughout the County may have been impacted and degraded by increased sedimentation over the past 100 years due to land use changes and alterations to drainage patterns and timing. High levels of total suspended solids in the Red River have raised concern by the MPCA and the City of Moorhead as to continued use of Red River water for domestic consumption.

Individual on-site sewage treatment systems pose another potential source for surface water impacts. These systems are in use throughout the County and if not properly installed or maintained can have a direct impact on the quality of surface water and groundwater. Improperly installed and operated systems that discharge to the surface are considered to be “imminent health threats” and need to be addressed through the County Sewage Treatment Ordinance. At present, Clay County’s response to noncompliance septic systems is reactionary on a complaint basis, sale/transfer of property, or application for building permits. The Comprehensive Sewer Ordinance follows Minnesota Rule 7080 which has been in effect since 1985. In Clay County, lakes represent a priority for sewer system compliance. Due to limited lake resources, monitoring of noncompliance septic systems on lakes is often left to established lake associations or concerned citizens.

Groundwater Most of the groundwater available to streams, springs and wells is supplied by sand and gravel aquifers near the land surface (surficial aquifers) or 100 to 300 feet below the land surface (buried aquifers). As expected, surficial aquifers are more prone to the effects of land use activities than are buried aquifers. In addition, these aquifers are connected to surface water bodies (Stoner et al. 1993). These facts have demanded the focus of groundwater quality monitoring.

Present groundwater quality in the county is thought to be of good quality, although samples collected are usually only tested for nitrates and coliform bacteria. The regional groundwater assessment conducted by the MN Geological Survey and the DNR provides much needed information about general ground water quality in Clay County. In addition, the Clay County Environmental Office offers a comprehensive water well testing program for nitrates and bacteria. The Minnesota MPCA and DNR have also been conducting a variety of groundwater testing programs in the county.

Another area of interest is the Glacial Lake Agassiz Beach Ridge area in the eastern portion of the County. The geology of this area is composed of sand and gravel moraines and glacial outwash, thus representing an area of concern with regards to water resource contamination. Although most of Clay County is moderately susceptible to ground water contamination, the beach ridge is highly susceptible to such contamination (see map entitled Groundwater Sensitivity to Contamination). These areas should be designated as high priority groundwater protection areas to protect the groundwater resources present.

Leaking underground storage tanks (LUSTs) also pose a threat to groundwater quality. The MPCA has made available to the SWCD a list of all the hazardous waste tank (above ground and underground) and spill locations known, and a list of all hazardous waste generators within Clay County. Two such sites have proven to be a major concern for the Buffalo Aquifer. In 1994 and 1995, corrective action was necessary to remediate leaking underground storage tanks at Commercial East Acres Truck Plaza, Glyndon, MN. Terracon Environmental, Inc. implemented the removal of materials,

three underground storage tanks, and 20,260 cubic yards (42,000 tons) of contaminated soil. Approximately 80 percent of the soil was treated on site for removal of petroleum hydrocarbons. Groundwater monitoring indicates that petroleum based contaminant concentrations were significantly decreased following remediation activities, but two non petroleum based constituents still remain (Terracon Environmental, Inc. 1995). A similar situation occurred with the Truckers' Inn facility. Three consecutive small petroleum based spills reported to the MPCA in 1998 prompted designation of the site as a leak site followed by onsite investigations by the MPCA. These investigations lead to the discovery of significant levels of petroleum contamination to a depth of 25 feet. Dissolved phase contaminant was found at greater depths within the Buffalo Aquifer. Remediation efforts using "free product recovery" (pumping) were somewhat successful, but excavation was required to remove the petroleum tanks and more contaminated material. In 2003, the landowner offered to demolish a portion of the infrastructure to facilitate excavation of the contaminated soil. Presently, pockets of contamination still exist, but widespread contamination is no longer an issue at this site. There are limited concerns about diesel contamination (DRO) in existing and newly drilled wells, but the MPCA believes this may be due to drilling methods used in the installation of new wells. At this point, the MPCA believes that "closure of the site is on the horizon" (Arlene Furuseth, MPCA, personal communication, September 2005).

Major concerns for the contamination of groundwater include gravel mining, improperly sealed abandoned wells, industrial development, major highways, petroleum pipelines, railroads, sewage lagoons, and land use on sensitive groundwater areas. As a result of the mandates of the Federal Safe Drinking Water Act (SWDA) and Minnesota Groundwater Protection Act (1989), public water supply wells need to have a wellhead protection plan (WHP) delineating areas of enhanced protection for wells. Wellhead Protection Plans have been completed for the cities of Moorhead, Barnesville, Georgetown and Glyndon. Use the following link to view a full list of the Public Water Supply sites in Clay County.

<http://www.health.state.mn.us/divs/eh/water/swp/swa/>

NATURAL RESOURCES ENHANCEMENT AND PROTECTION

There are also concerns regarding land use and its impacts on natural areas including prairie resources, wetland resources, and water (surface and groundwater) resources. These natural areas have been dramatically reduced in the past 150 years (USCOE 1985; DNR-MCBS 1997). Due to the alterations since presettlement, these remaining natural areas are critical for both aesthetic and ecological reasons. These areas provide necessary cover and forage for all types of wildlife and in some cases provide migration corridors through the County. With this in mind, "marginal land", land adjacent to water bodies, and land within the Lake Agassiz Beach Ridge should be prioritized for conservation and tax exemption programs to protect and preserve their uniqueness and value. It is paramount to comprehensively weigh the costs and benefits of altering these lands.

Currently, less than ten percent of the eligible cropland in Clay County is enrolled in a state or federal conservation program. Similarly, the total amount of land considered to be "habitat" is nearly twenty three percent of the total land area. This includes conservation lands, lands under federal and state easement, lands under federal and state ownership, and all other natural lands. The breakdown of conservation lands in Clay County (as well as all other counties in MN) is shown in the Appendix in the Conservation Lands Summary (BWSR, August 22, 2005). The potential loss of conservation lands, specifically lands in the conservation reserve program (CRP), is of primary concern. A majority of the lands under CRP contracts in Clay County (77 percent) are scheduled to expire in 2007, 2008 and 2009. It will be necessary to track the status of these lands and, if the CRP contracts are not renewed, encourage the landowners to enroll the land in other available conservation agreements.

Considering outdoor recreation, Clay County was, at one time, prime hunting for waterfowl and upland game. Further, remaining prairies, wetlands, woodlands and riparian corridors provide wildlife viewing, as depicted, for example, in the "Pine to Prairie Birding Trail" (2000). Hunting and wildlife viewing can bring additional revenue to the County, and natural areas can provide secondary benefits by reducing wind and water erosion thereby maintaining water quality. In addition, restoration of wetland habitat may, in some cases, protect and improve groundwater recharge in the eastern portion of the County.

Two relatively recent efforts make decisions regarding remaining critical habitat easier. These include the Minnesota County Biological Survey and the Lake Agassiz Beach Ridge Forum Reports. The Minnesota County Biological Survey, completed in 1997, details sensitive natural habitats of rare plants and animal species and will aid Clay County in making responsible decisions regarding Minnesota's rare plant and animal species. The Lake Agassiz Beach Ridge Forum Final Report illustrates the conflict between prairie remnant protection and gravel mining. Of the 21,310 acres identified as having prairie resources in Clay County, 14,290 acres are of medium to high significance (DNR-Clay County Beach Ridges Forum 1997). Two prairies of significance reside in Clay County. Felton Prairie is a dry prairie that contains several endangered plants and animals. Bluestem Prairie is located south of Highway 10 near Buffalo River State Park and is a prime example of Tallgrass Prairie. As it stands, the last prairie remnants in Clay County are in close proximity to active gravel mining locations. Another recent collaborative federal, state, and local effort specifies areas of focus for all natural resources management agencies of all governmental levels and nongovernmental organizations to maximize conservation efforts (Joint Assessment for the Conservation of Wetlands and Grasslands in Minnesota, 2005). It is critical to utilize these products for the benefit of the county and its resources and not waste financial resources by "reinventing the wheel".

When considering wildlife, one can also consider aquatic organisms and their associated recreational value. The rivers and lakes of Clay County have significant

fishery value. For instance, the Red River of the North is classified as a Class II stream by the Minnesota DNR. Fish taken for sport include walleye, northern pike, sauger, crappie, yellow perch and channel catfish. Similarly, the Buffalo River (including the South Branch) is classified as a Class IV stream where redhorse, white suckers, and bullheads (with occasional walleye and pike) are commonly sought (USCOE 1985). It must also be stated that tributaries of these rivers serve as nurseries for many aquatic species. Thus, protection/maintenance of these fisheries is critical to Clay County and much deserved.

ASSESSMENT OF EROSION

Sediment produced by non-point source pollution has adversely affected water quality in nearly all of the major rivers in Clay County. Agricultural drainage, streambank erosion, overland flooding, and wind erosion has contributed to the amount of sediment entering these watercourses. Detrimental effects associated with wind and water erosion include sedimentation of streams, public drainage ditches and road ditches, soil loss, nutrient loss, crop loss, loss of agricultural chemicals, and habitat losses. All of these factors translate to increased costs to the citizens and landowners of Clay County.

There are several conservation practices that can be established to reduce the effects of cropland erosion. Conservation tillage, specifically no-till and mulch till, is the best available means of reducing erosion on a "field scale". In addition, establishing stream bank buffer strips, and promoting field windbreak establishment, restoring wetlands, and changes in tillage practices can reduce the amount of sediment entering surface waters and road ditches. Further, these practices will enhance the soil quality of a finite resource.

Establishment of riparian buffer strips or grass filter strips along watercourses has been a priority of Clay County's water plan for a number of years. Due to the availability of Continuous Conservation Reserve Program (CCRP) and Conservation Reserve Enhancement Program (CREP II) funding for buffer strips, the possibility for enrollment is much improved.

The Watershed Districts have also been active in enforcing the existing State 103E drainage law regarding installation and maintenance of one rod (16.5 feet) grass buffer strips along *new* or *improved* public ditches and *reassessed* public ditches. However, there is room for improvement in establishing and maintaining these buffers. Another means of controlling sediment delivery to public drainage ditches is to require the establishment of grassed filter strips for field inlets into public ditches. Enforcing drainage law in regards to grass buffers is fruitless if field inlets allow sediment delivery on a regular basis.

As the expansion of developed areas occurs, there exists the potential for increased erosion off of construction sites. Stormwater management is becoming an issue that

needs greater attention. Clay County must work collaboratively with communities to focus on the issue of urban stormwater management in addition to addressing rural erosion issues.

ASSESSMENT OF FLOOD DAMAGE REDUCTION

Flooding and flood related damages plague the Red River Basin with high frequency. Flood damage reduction projects proposed by Watershed Districts in the 1980s and 1990s alarmed natural resource agencies as to the cumulative effect of these proposed projects on the environment. The US Army Corps of Engineers and MN Department of Natural Resources initiated a joint Environmental Impact Statement (EIS) questioning these cumulative effects on the Red River Basin ecosystem (USCOE and MNDNR, 1995). The EIS was subsequently challenged in state district court by the watershed districts and the Red River Watershed Management Board. In an effort to avoid costly, time consuming litigation, the MN Legislature authorized funding for a "Mediation Process" to resolve the conflicting issues of flood control in May 1997. The mediation process was designed to address issues in a positive, partnership-building effort, and provide alternatives that result in enhanced flood control and equally enhanced environmental benefits. The process was also designed to streamline the environmental permitting process by creating "project teams" for each watershed district. The project teams are comprised of federal, state and local agency representatives, landowners, and interest group representatives that meet regularly to discuss issues and potential projects. Everyone is involved from the beginning to the end of project development – something severely lacking prior to this process.

Drainage as it relates to Flood Damage Reduction Given the topography and hydrology of Clay County, drainage, both natural and constructed is an essential part of life. Although natural drainage occurs in Clay County, extensive drainage systems were constructed in the early 1900's and again in the 1940's and 1950's to enhance natural drainage of prime heavy soils. These ditches are typically oriented in an east-west direction, perpendicular to the Red River of the North. Without the constructed drainage system, agriculture would not be the economic base of the Red River Valley. Drainage systems within the County take two forms - natural and human constructed. Further, constructed drainage systems can either be public or private. Such systems provide drainage for agriculture, industry, residential development, streets, roads, airports and railroads. Considering the topography of Clay County, drainage problems are most prevalent in the western portion of the County where natural drainage does not convey water completely enough during accelerated snowmelt in the spring and/or heavy rainfall to mitigate crop and infrastructure damage. The first consideration determining the productivity capacity of tillable land has been its natural drainage or access to constructed drainage. Where drainage systems are not present or are not maintained, crop damage is likely and the regional economy can be negatively

impacted. Drainage systems also function to protect urban areas from infrastructure damage. Without such systems, such urban areas would be subject to severe flood damage.

Management of all public ditches in Clay County falls under Watershed District jurisdiction. Previously, the County managed several public ditches, but the last transfer of management to the Watershed Districts occurred in 2000. The Watershed Districts have jurisdiction over all improvements to existing public ditch projects and new public ditch projects as well. Such projects are assessed to those landowners who benefit, or whose land experiences an increase in market value, due to the project. Adequate drainage system design includes proper sediment and erosion control which reduces future maintenance. New public ditch projects must comply with Federal and State laws to better reflect the values and priorities of society and address the physical, biological and chemical integrity of the affected area.

RECOMMENDATIONS TO OTHER PLANS AND OFFICIAL CONTROLS

Alternative Buffer Vegetation Management – Currently, existing conservation programs disallow grazing of grass buffers adjacent to stream or rivers. There exists a need to create another program, or better yet, provide an alternative to existing programs to allow rotational grazing according to a certified grazing plan and/or haying of grass buffer strips where producers wish to do so.

Adequate Outlet – Often with new or improved drainage projects, downstream landowners are concerned with way an “adequate outlet” is defined. What is determined to be adequate under an engineering definition may not be obvious, or agreeable, to the common landowner. State agencies need to scrutinize how and adequate outlet is defined and whether the definition should vary from region to region.

Flood prone areas not included in Floodplain Mapping (NFIP) – Issues arise when Joint Powers Agreements are formed between municipalities and certain areas of populated townships, and there occurs developments outside of these defined JPA areas that do not fall under the same rules. There exists the need for a map that shows areas that are flood prone, but not defined by the 100 year floodplain maps. These are areas with frequently and occasionally flooded soils and/or high water tables that decision makers need to utilize when considering future growth and economic development.

Comprehensive Drainage Plans for New Subdivisions – One of the prevalent concerns of the watershed districts is the lack of comprehensive drainage plans for subdivisions. Developers often build access roads with culverts into the development with no elevations shown for additional culverts through driveways. This creates drainage issue that the watershed districts must deal with. Comprehensive planning can make these issues avoidable.

Municipal Drainage Plans – Several communities of a population greater than 1,000, with the exception of Moorhead, still lack a comprehensive municipal drainage plan. This is a necessary tool to be used when considering future land use changes for economic development and residential purposes.

GOALS, OBJECTIVES AND ACTION ITEMS

The Clay County LWM Advisory Committee has developed the following goals, objectives, and action plans to address the priority concerns identified. They also identified implementation and enforcement strategies, and identified new regulations or programs to ensure that the quantity and quality of water resources would be adequate to meet the needs of the future generations.

The following goals, objectives, and actions described relate directly to the priority concern assessments which define the issues or problem areas. GOALS and OBJECTIVES outline broad directions the county wishes to pursue to protect their resources. The ACTION ITEMS describe specific measures that the County will implement with assistance from appropriate federal, state, and local organizations, to achieve the goals and objectives. In all cases, action items are to be achieved in the next five years, unless otherwise specified. A list of acronyms used to identify lead agencies/groups is provided in the Introduction.

An overall goal that addresses all of the following priority concerns is to continue the administration and enforcement of existing rules and regulations that govern natural resources management issues, environmental health issues, planning and zoning issues, and development issues, and to improve the local government coordination of the enforcement of these regulations.

PRIORITY CONCERN: WATER QUALITY

GOAL 1: *Address the Impaired and Degraded Waters within Clay County*

OBJECTIVE A. Actively participate in the development and implementation of Total Maximum Daily Load (TMDL) plans for impaired waters of Clay County.

Actions:

1. Provide technical assistance and best professional judgment during TMDL planning process
2. Lead efforts on TMDL process within the Buffalo River and Wild Rice River watersheds

OBJECTIVE B. Aggressively market available conservation programs and low interest loan programs in the watersheds of impaired waters

Actions:

1. Inventory and map all conservation program contracts and easements present within these watersheds by 2006.
2. Inventory individual septic treatment systems (ISTs) in these watersheds to determine their status (failing or not-failing)
3. Contact all landowners within these watersheds via mailings, public meetings, and tax statements to encourage conservation program and/or low interest loan program enrollment.

OBJECTIVE C. Attempt to reduce the extent of impairment and degradation of impaired waters by 2010

Actions:

1. Utilize existing and ongoing research efforts to determine in-stream versus introduced (from adjacent land uses) sources of impairment
2. Take advantage of available conservation programs such as CREP and CCRP to establish buffers to reach 75 percent riparian buffer coverage along impaired waters by 2010

GOAL 2: *Address the issue of degrading water quality of surface waters in Clay County to limit future impacts of surface water quality*

OBJECTIVE A. Continue support of the *River Watch Program*

Action:

1. Prioritize start-up funding for new River Watch Programs including the South Branch of the Wild Rice River and its tributaries
2. Provide funding support for existing River Watch Teams - \$500 per year

3. Publicize River Watch efforts via the County website and the Clay SWCD newsletter articles

OBJECTIVE B. Improve water quality in watersheds adjacent to impaired waters watersheds through intensified GIS monitoring

Actions:

1. Inventory watersheds based on water quality data (River Watch, MPCA) if available to determine need for accelerated conservation practice marketing and establishment (5 minor watersheds per year)
2. Use GIS to inventory land use versus conservation practice acreage to determine need (5 minor watersheds per year)
3. Utilize the *Clay SWCD Wetland Model* and other digital data layers to identify drained wetlands available for restoration (5 minor watersheds per year)

OBJECTIVE C. Improve water quality in watersheds adjacent to impaired waters watersheds through the establishment of Best Management Practices (BMPs)

Actions:

1. Enroll 3,000 acres of CREP II practices by 2007 (consistent with state goal of 0.6 percent of eligible cropland)
2. Enroll 3,000 acres of CCRP practices by 2007
3. Enroll 2,000 acres of WRP by 2007
4. Enroll three miles (15,840 feet) of field windbreaks per year – 15 miles by 2010
5. Utilize new conservation programs created under the new 2007 Farm Bill

GOAL 3. PROTECT GROUNDWATER QUALITY

OBJECTIVE A. Complete groundwater protection planning strategies where they are lacking

Actions:

1. Assist in the development of Wellhead Protection Plans and Source Water Assessment Plans for communities lacking such plans
2. Employ Wellhead Protection and Source Water Assessment Plan information utilizing delineation of recharge areas and Drinking Water Supply Management Areas to substantiate changes in land use (zoning and development ordinances, enrollment in conservation programs) to protect the groundwater resources
3. Encourage and assist townships in developing rules/ordinances to limit certain land uses that threaten groundwater quality and quantity

OBJECTIVE B. Track land uses that threaten groundwater quality

Actions:

1. Inventory gravel pits via GIS, permit review and phone interviews with landowners and/or aggregate representatives to determine the reclamation status of gravel pits throughout the county (1-2 townships per year)
2. Hold one public outreach event to demonstrate the appropriate method of reclaiming/restoring a gravel pit
3. Utilize the Clay County Digitized Soil Survey and additional digital information to develop maps of areas throughout the county that are highly susceptible to groundwater contamination (create and distribute maps to one township per year)

OBJECTIVE C. Continue the Abandoned Well Sealing Cost Share Program

Actions:

1. Reimburse eligible landowners outside of a mapped Drinking Water Supply Management Area (DWSMA) who have their abandoned well sealed by a licensed well driller at 50 percent cost share up to \$300
2. Reimburse eligible landowners within a mapped Drinking Water Supply Management Area (DWSMA) who have their abandoned well sealed by a licensed well driller at 75 percent cost share up to \$500

PRIORITY CONCERN: NATURAL RESOURCE ENHANCEMENT AND PROTECTION (NRE&P)

GOAL 1: *Focus Natural Resource Enhancement and Protection (NRE&P) by geomorphic regions*

OBJECTIVE A. Consolidate agency planning / prioritization efforts to develop NRE&P goals for the Glacial Lake Agassiz lake plain, beach ridges, and moraine geomorphic regions

Actions:

1. Review existing USFWS, DNR and TNC planning/prioritization documents to ensure consistency in habitat management and acquisition goals
2. Hold one meeting per year to discuss habitat management goals by region

OBJECTIVE B. Develop an interagency strategy to enhance existing, large acreages natural resource features in Clay County (Felton Prairie, Bluestem Prairie and Barnesville WMA) through acquisitions, conservation program enrollment, or enhancement of adjacent working lands

Actions:

1. Schedule a workshop on “Landowner Options” available to landowners adjacent to priority natural resource sites (one workshop per year)
2. Target follow-up marketing of available programs, easements, tax exemptions to landowners who attended the workshop (5 landowner contacts per year)
3. Facilitate the initiation of a “Drained Wetland Inventory” for Clay County with the USFWS (\$30,000 total cost, \$15,000 local cost)

OBJECTIVE C. Develop a greater awareness for working lands enhancement to improve and connect natural areas

Actions:

1. Develop a workshop series to encourage working lands enhancement to promote long term stability and quality of these lands (one workshop every two years)
2. Secure grant funding to achieve 100 acres of working lands enhancement per year

OBJECTIVE D. Develop cooperative relationships with conservation groups (Pheasants Forever, Ducks Unlimited and others) to improve the acreage and quality of habitat for Clay County

Actions:

1. Attend conservation group meetings or invite conservation group representatives to a special meeting to discuss ways to combine efforts, funding and services to achieve greater conservation goals

2. Challenge conservation groups to provide incentives to landowners who enroll their land into conservation programs or easements – incentive payments, supplying native grass and forb seed, providing equipment, etc.

GOAL 2: Protect and enhance riparian corridors and buffers to allow habitat connections and wildlife migration

OBJECTIVE A. Investigate enforcement of Shoreland Ordinance provisions that pertain to a required buffer on lands adjacent to DNR Protected Waters

Actions:

1. Advocate stricter enforcement of Shoreland Regulations – coordinated approach of marketing conservation programs as a means of compliance
2. Assign “high priority” status to riverine wetlands making them eligible for the Wetland Preservation Area thereby tax exempt for the landowner
3. Consider a county tax incentive for landowners who maintain a fifty foot buffer on land adjacent to public waters

GOAL 3: Challenge increased NRE&P involvement from all landowners in the county

OBJECTIVE A. Target homeowners and small acreage landowners to increase small scale conservation efforts and purchasing habits that promote NRE&P

Actions:

1. Provide information on the County website for “Backyard Conservation” to encourage a conservation ethic in all county landowners
2. Support producers who market “natural resource friendly” commodities or products and challenge consumers to purchase these products

OBJECTIVE B. Work with large scale (>2,000 acres) farm operations to increase the participation in conservation programs

Actions:

1. Create a work group of large scale operators, agricultural interest groups and financiers to determine the impediment for their enrolling lands into conservation practices
2. Using the information derived from Action 1, work with one large scale operator to enroll land into conservation programs

OBJECTIVE C. Work with all producers to prepare them for the arrival of the Conservation Security Program (CSP)

Actions:

1. Develop a survey to determine the level of preparedness among the producers of the county
2. Develop a list of producers who have adequately prepared for CSP
3. Concentrate efforts to assist those producers not adequately prepared for CSP

PRIORITY CONCERN: EROSION

GOAL 1. *Address and reduce soil erosion county-wide*

OBJECTIVE A. Implement closer coordination with Farm Management Educators and Agricultural Service Groups to reach a larger number of producers

Actions:

1. Attend three Adult Farm Educator meetings per year to present information on erosion
2. Hold a tillage workshop to promote greater use of no-till and mulch till
3. Create a “typical farm” example of the economics soil erosion from a soil loss perspective and from a no-till implementation perspective

OBJECTIVE B. Increase the awareness of the negatives of soil erosion

Actions:

1. Map soils for wind and water erosion and publish on the County website
2. Write three articles for area newspapers and website per year – Topics may include “Costs of soil loss and Impaired waters – we will pay either way”
3. Investigate the feasibility of a soils loss ordinance

OBJECTIVE C. Address point sources of erosion including gully erosion and field inlets

Actions:

1. Identify minor watersheds with C slopes (6-12 percent) or greater where gully erosion is prevalent and map locations of gully erosion adjacent to surface waters.
2. Work with the watershed districts to develop a pilot project to address the issue of sedimentation of public ditches caused by field inlets

GOAL 2. *Reduce streambank and in-stream erosion*

OBJECTIVE A. Cooperate with agencies to inventory streams and rivers for streambank stabilization needs

Actions:

1. Utilize existing stream survey information of complete stream surveys to determine the need for streambank stabilization (one stream per year)
2. GPS locations where streambank stabilization is needed

OBJECTIVE B. Cooperate with agencies to inventory streams and rivers for grade stabilization needs

Actions:

1. Utilize existing stream survey information of complete stream surveys to determine the need for grade stabilization (one stream per year)
2. GPS locations where grade stabilization is needed

PRIORITY CONCERN: FLOOD DAMAGE REDUCTION (FDR)

GOAL 1. *Commit to a decade of County involvement in FDR process*

OBJECTIVE A. Continue involvement and county representation on Watershed District Project Teams

Actions:

1. Provide technical assistance and marketing for each Project Team project
2. Assist in FDR process at the county level by identifying and initiating small scale projects that compliment larger FDR projects

OBJECTIVE B. Identify Natural Resource Enhancement (NRE) opportunities for FDR projects proposed by the WRWD and BRRWD Project Teams

Actions:

1. Inventory project areas for natural resource enhancement opportunities including wetland restorations, sediment basins, buffer strips, etc.
2. Develop acreage goals for each based on results of inventories

OBJECTIVE C. Investigate issues that conflict with FDR

Actions:

1. Recommend that long range planning documents restrict structural development within established 100 year floodplains
2. Develop a policy statement with the County Engineer on using roads as temporary embankments for FDR projects that are adjacent to roads
3. Track pattern tiling to determine potential FDR issues and need for information gathering
4. Inventory locations in the county where beaver dams counteract efficient movement of floodwater
5. Secure funding to remove dams and reduce beaver populations in these locations

GOAL 2. *Involve communities in FDR process and strategies*

OBJECTIVE A. Educate the public on the issues of FDR

Actions:

1. Publish or link FDR background materials from watershed district websites to the Clay County website
2. Map areas known to flood on a frequent basis (every other year) and make maps available to decision makers, realtors, and the general public.

OBJECTIVE B. Challenge communities under a population of 10,000 to develop Stormwater Pollution Prevention Plans (SWPPPs) to adequately address the effects of changing land uses.

Actions:

1. Develop a workshop in conjunction with the MPCA to present the benefits of implementing SWPPPs
2. Provide information to communities on methods to reduce the effects of stormwater runoff
3. Research funding opportunities to implement these methods
4. Work with watershed districts on developing long range SWPPPs

IMPLEMENTATION SCHEDULE

Priority 1 - WATER QUALITY					
GOAL 1 – Address impaired and degraded waters					
Objective A: TMDL development					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	MPCA, BRRWD, SWCD	N/A	Existing staff time	2006-2010	South Branch – Buffalo, Red River
2	MPCA, BRRWD, SWCD	\$100,000	Federal, state, local	2006-2010	South Branch – Buffalo, Red River
GOAL 1 – Address impaired and degraded waters					
Objective B: Program marketing within impaired waters watersheds					
1	SWCD, NRCS	N/A	Existing staff time	2006-2007	South Branch – Buffalo, Red River
2	EH, SWCD	N/A	Existing staff time via NRBG	2006-2010	South Branch – Buffalo, Red River
3	SWCD, NRCS, WD, EH	\$1,000	NRBG, Existing staff	2006-2010	South Branch – Buffalo, Red River
GOAL 1 – Address impaired and degraded waters					
Objective C: Reduce impairment and degradation by 2010					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	MPCA, BRRWD, SWCD	N/A	Existing staff time	2006-2010	South Branch – Buffalo, Red River
2	SWCD, BRRWD, NRCS	Unknown	Federal, state, local	2006-2007	South Branch – Buffalo, Red River
GOAL 2 – Address Degraded Waters to limit future impacts of water quality					
Objective A: Support River Watch					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	SWCD	N/A	Existing staff time	2006-2010	Wild Rice
2	SWCD, BRRWD	\$2,500	NRBG, local	2006-2010	Buffalo River, Red River
3	SWCD	N/A	Existing staff time	2006-2010	All
GOAL 2 – Address Degraded Waters to limit future impacts of water quality					
Objective B: Monitor watersheds adjacent to impaired waters to improve water quality					
1	MPCA, RW, SWCD, WD	N/A	Existing staff time	2006-2010	All
2	SWCD	N/A	Existing staff time via NRBG	2006-2010	All
3	SWCD, NRCS	N/A	Existing staff time	2006-2010	All
GOAL 2 – Address Degraded Waters to limit future impacts of water quality					
Objective C: Improve water quality through BMP establishment					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	NRCS, SWCD	\$7.5 mill	Federal, state (FBA grants)	2006-2007	All
2	NRCS, SWCD	\$3 mill	Federal, state (FBA grants)	2006-2007	All
3	NRCS	\$2.5 mill	Federal	2006-2007	All
4	SWCD, NRCS	\$22,500	State Cost Share, Federal	2006-2010	All

5	NRCS, SWCD	Unknown	Federal, state, local	2006-2010	All
GOAL 3 – Protect groundwater quality					
Objective A: Complete protection strategies where lacking					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	SWCD, EH, NRCS	N/A	Existing staff time	2006-2010	All
2	Cities, Townships, County	N/A	Local	2006-2010	All
3	Townships, P&Z, SWCD	N/A	Existing staff time	2006-2010	All
GOAL 3 – Protect groundwater quality					
Objective B: Track land uses that threaten groundwater quality					
1	P&Z, SWCD	\$2,500	NRBG, local	2006-2010	All
2	P&Z, SWCD, WD	\$10,000	Local, NRBG	By 2010	All
3	SWCD, P&Z, GIS	N/A	Existing staff	2006-2010	All
GOAL 3 – Protect groundwater quality					
Objective C: Continue Abandoned Well Sealing cost share program					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	SWCD, BRRWD	\$10,000	NRBG, Local	2006-2010	All
2	SWCD, BRRWD	\$5,000	NRBG, Local	2006-2010	All

Priority 2 - NATURAL RESOURCES ENHANCEMENT & PROTECTION (NRE&P)					
GOAL 1 – Focus NRE&P efforts by geomorphic regions					
Objective A: Consolidate agency planning/prioritization efforts by geomorphic regions					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	All applicable agencies	N/A	Existing staff time	2006-2010	All
2	All applicable agencies	N/A	Existing staff time	2006-2010	All
GOAL 1 – Focus NRE&P efforts by geomorphic regions					
Objective B: Program marketing and targeting adjacent to existing natural areas					
1	All applicable agencies	\$2,500	Existing staff time	2006-2010	All
2	SWCD	N/A	FBA	2006-2010	All
3	SWCD, BWSR, USFWS, PF, DU, NRCS	\$30,000	Federal, state, local private	2010	All
GOAL 1 – Focus NRE&P efforts by geomorphic regions					
Objective C: Develop outreach strategies to improve working lands					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	SWCD, WD, TNC, PF, DU	\$2,500	State, Local	2006-2010	All
2	SWCD, WD, TNC, PF, DU	\$10,000	Federal, state, local	2006-2010	All
GOAL 1 – Focus NRE&P efforts by geomorphic regions					
Objective D: Improve working relationship with conservation groups to enhance efforts					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	SWCD	N/A	Existing staff time	2006-2010	All
2	SWCD, WD	\$5,000	State, Local	2006-2010	All
GOAL 2 – Protect and enhance riparian corridors and buffers					
Objective A: Investigate enforcement of the Shoreland Ordinance					
1	P&Z, SWCD, NRCS	N/A	Existing staff time	2006-2010	All
2	SWCD, County	N/A	Existing staff time via NRBG	2006-2010	All
3	SWCD, County	Unknown	State, Local	2006-2010	All
GOAL 3 – Challenge increased NRE&P involvement from ALL landowners in the County					
Objective A: Target small acreage landowners and homeowners					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed

1	SWCD, MIS	N/A	NRBG, Local	2006-2007	All
2	NRCS, SWCD	N/A	Federal, NRBG	2006-2007	All
GOAL 3 – Challenge increased NRE&P involvement from ALL landowners in the County					
Objective B: Work with large scale farm operations to enhance participation with conservation programs					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	ASG, FME, SWCD	N/A	Existing staff time	2006-2010	All
2	Producer, SWCD, NRCS	Unknown	Federal, State	2006-2010	All
GOAL 3 – Challenge increased NRE&P involvement from ALL landowners in the County					
Objective C: Prepare producers for the Conservation Security Program					
1	SWCD, FME, NRCS	\$500	NRBG, Local	2006-2007	All
2	SWCD, NRCS	N/A	NRBG, Federal	By 2007	All
3	SWCD, FME, NRCS	N/A	Existing staff	2006-2007	All

Priority 3 - EROSION					
GOAL 1 – Address and reduce soil erosion county-wide					
Objective A: Work with Farm Management Educators and Ag Service Groups to reach more producers					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	SWCD, NRCS	N/A	Existing staff time	2006-2010	All
2	SWCD, Ext, FME, ASG, NRCS	\$2,000	Local, donations	2006-2010	All
3	SWCD, Ext, FME	N/A	Existing staff time	2006-2010	All
GOAL 1 – Address and reduce soil erosion county-wide					
Objective B: Increase awareness regarding the detriments of soil erosion					
1	SWCD, NRCS	N/A	Existing staff time	2007	All
2	SWCD	N/A	Existing staff time	2006-2010	All
3	SWCD, County, BWSR, WD, NRCS	N/A	Local, State, Federal	2006-2010	All
GOAL 1 – Address and reduce soil erosion county-wide					
Objective C: Address point sources of erosion including gully erosion and field inlets					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	SWCD, NRCS, WD	N/A	FBA, Local, Federal	2006-2010	All
2	WD, SWCD, BWSR	\$10,000	State grants	2006-2010	All
GOAL 2 – Reduce streambank and in-stream erosion					
Objective A: Cooperate with agencies to inventory streams/rivers for streambank stabilization needs					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	DNR, SWCD, WD, NRCS	N/A	Existing staff time	2006-2010	All
2	DNR, SWCD, WD, NRCS	N/A	Existing staff time	2006-2010	All
GOAL 2 – Reduce streambank and in-stream erosion					
Objective B: Cooperate with agencies to inventory streams/rivers for grade stabilization needs					
1	DNR, SWCD, WD, NRCS	N/A	Existing staff time	2006-2010	All
2	DNR, SWCD, WD, NRCS	N/A	Existing staff time	2006-2010	All

Priority 4 - FLOOD DAMAGE REDUCTION (FDR)					
GOAL 1 – Commit to County involvement in the FDR process					
Objective A: Continue involvement and representation on Watershed District Project Teams					

Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	SWCD, NRCS	N/A	Existing staff time	2006-2010	All
2	SWCD, NRCS	N/A	Existing staff time	2006-2010	All
GOAL 1 – Commit to County involvement in the FDR process					
Objective B: Identify natural resource enhancement opportunities for FDR projects					
1	SWCD, NRCS	N/A	Existing staff time	2006-2010	All
2	SWCD, NRCS, WD	N/A	Existing staff time	2006-2010	All
GOAL 1 – Commit to County involvement in the FDR process					
Objective C: Investigate issues that conflict with FDR strategies					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	SWCD, WD	N/A	Local	2006-2010	All
2	WD, SWCD, BWSR	N/A	State, local	2006-2010	All
3	WD, NRCS, SWCD	N/A	Local, Federal, State	2006-2010	All
4	WD, Twp. Officers, SWCD	N/A	Local, State	2006-2010	All
5	WD, Twp. Officers, SWCD	\$25,000	Local, State	2006-2010	All
GOAL 2 – Involve communities in FDR process and strategies					
Objective A: Educate the public on FDR issues					
Actions	Primary Responsibility	Cost	Potential Funding Sources	Duration	Watershed
1	WD, SWCD, BWSR	N/A	Existing staff time	2006-2010	All
2	WD, SWCD, NRCS	N/A	Existing staff time	2006-2010	All
GOAL 2 – Involve communities in FDR process and strategies					
Objective B: Challenge communities to address FDR issues					
1	MPCA, WD, SWCD, Cities	N/A	Existing staff time	2006-2010	All
2	MPCA, WD, SWCD	N/A	Existing staff time	2006-2010	All
3	Cities	N/A	Existing staff time	2006-2010	All
4	Cities, WD, SWCD	N/A	Existing staff time	2006-2010	All



BIBLIOGRAPHY

Board of Water and Soil Resources, Conservation Lands Summary, August 22, 2005

Buffalo-Red River Watershed District. 1993. 16th Annual Report.

Clay County Comprehensive Plan. 2000.

Goldstein, R. M. 1995. Aquatic Communities and Contaminants of the Red River of the North Basin, Minnesota, and North Dakota. USGS Water Resource Investigations Report 95- 4047.

Joint Assessment for the Conservation of Wetlands and Grasslands in Minnesota. 2005

Minnesota Department of Natural Resources (DNR). 1997. Clay County Beach Ridges Forum for gravel mining and prairie protection: Final Report & Information Handbook.

Minnesota Department of Natural Resources (DNR). 1997. Minnesota County Biological Survey map series No. 12, Clay County.

Minnesota Geological Survey. 1995. Regional Hydrologic Assessment and Quaternary Geology - Southern Red River Valley, Minnesota. Series RHA-3, Part A. Plate 2.

Minnesota Department of Natural Resources. 2000. Regional Hydrologic Assessment and Quaternary Geology - Southern Red River Valley, Minnesota. Series RHA-3, Part B. Plates 3 and 4.

Minnesota State Demographic Center. 2000 Census Information, Population Projections by County.

Minnesota Pollution Control Agency (MPCA). 2004. Assessment of Surface Water Quality based on the 2004 MN 303(d) Report to the Congress of the U.S.

Minnesota Pollution Control Agency (MPCA). 2004. Assessment of Surface Water Quality based on the 2004 MN 305(b) Report to the Congress of the U.S.

Moorhead Public Service. 1995. Water Emergency and Conservation Plan.

Personal Communication with Arlene Furuseth, MPCA, September 7, 2005.

Pine to Prairie Birding Trail. 2000

Stoner, J. D. 1991. National Water Quality Assessment program - Red River of the North. USGS Water Fact Sheet. Open File Report 91-157.

Stoner, J. D., D. L. Lorenz, G. J. Wiche, and R. M. Goldstein. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota. Water Resources Bulletin 29(4):575-615.

Terracon Environmental, Inc. 1995. Corrective Action Implementation-Commercial East Acres Truck Plaza-MPCA, Glyndon, MN.

Tornes, L. H. and M. E. Brigham. 1995. Pesticide Amounts are Small in Streams in the Red River of the North Basin, 1993-94. USGS Open File Report (USGS) 95-283.

USCOE (U.S. Army Corps of Engineers). 1985. Fargo-Moorhead Urban Study. St.Paul, MN May 1985.

USCOE-DNR. 1995. Environmental Impact Study of Flood Control Impoundments in Northwestern Minnesota (Draft Environmental Impact Statement and Technical Appendices, Vol. 1 and 2).

USDA. 1982. Soil Survey of Clay County. Issued November 1982. Digitized 2003.

Wild Rice Watershed District. 2002. Revised Watershed Management Plan. Prescribed by the Minnesota Board of Water and Soil Resources. December 2002.

PAST ACCOMPLISHMENTS OF LOCAL WATER MANAGEMENT

The following is a sampling of accomplishments through the Clay County Local Water Management Plan

- Provided educational articles pertaining to water quality and wells
- Inventoried and prioritized abandoned wells and other pollution sources in 27 townships
- Provided cost-share funding of over 200 high priority abandoned wells totaling over \$25,000 in cost share funds to Clay County citizens
- Assisted in funding the removal of nuisance beaver and beaver structures (prior to 1998)
- Hosted collections for waste agriculture chemical containers
- Supported waste pesticide collection
- Completed three streambank erosion prevention projects on the Buffalo River
- Provided funding to paint/decal storm drains with “Drains to River” warning to deter dumping of hazardous waste into storm drains
- Inventoried feedlots and underground storage tanks (USTs) within the county
- Completed a well nitrate study in a 30 plus square mile portion of Clay County including Keene, Goose Prairie, Cromwell and Flowing townships
- Completed digitization of Clay County Detailed Soils Study into ArcView coverage and acquired digital aerial photo CDs of FSA photography for Clay County
- Acquired up-to-date computer equipment for County agencies (Planning, Health, SWCD) to allow utilization of new technologies that feature digital information
- Updated County zoning ordinance provisions pertaining to feedlots to reduce potential for pollution of surface waters
- Represented Clay County on the MPCA Red River Basin Water Quality Plan Committee
- Represent Clay County on the Wild Rice Watershed District Project Team
- Represent Clay County on the Buffalo – Red River Watershed District Project Team
- 1998 - Provided \$13,800 of pass through funding for two producers with large acreage of CRP adjacent to native prairie. These producers were offered increased cost share funding to plant a diverse mix of native grasses instead of tame grass mixes. (Glacial Lake Agassiz Interbeach Project – Grassland Stewardship)
- The County’s GPS equipment is used to calculate the acreage and to map CRP buffer strips, wetlands (existing and restored), and to map abandoned wells. GIS is used on a daily basis to locate key features related to Water Management and Wetland Conservation.
- Provided \$5,000 cost share for the digitization of the Clay County Soil Survey

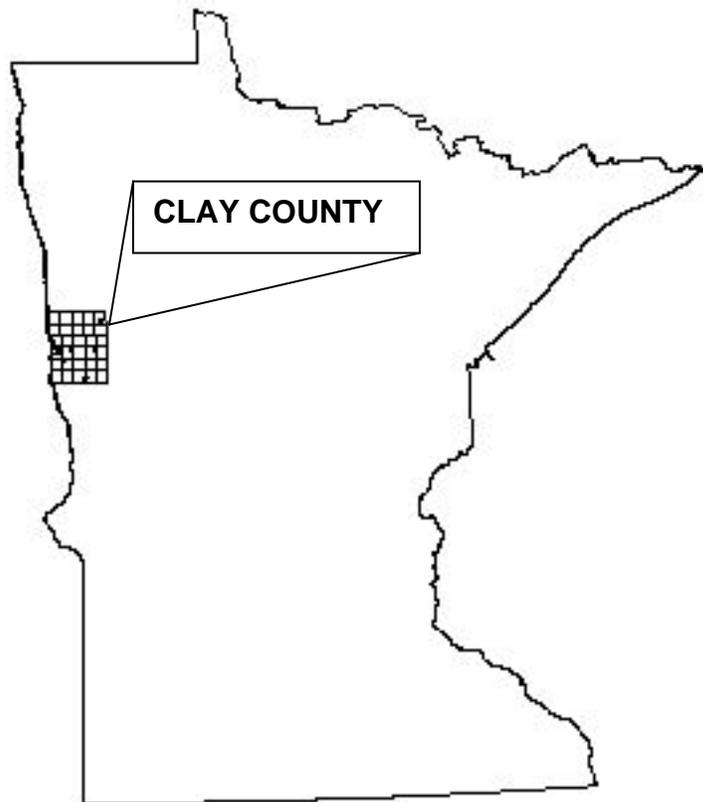
APPENDIX

**THE CLAY COUNTY
PRIORITY CONCERNS SCOPING DOCUMENT**

A precursor to

**THE CLAY COUNTY
LOCAL WATER MANAGEMENT PLAN**

2005



INTRODUCTION

Population and Population Trends: According to the 2000 census, the population of Clay County was 51,229. Clay County has experienced steady population growth from the 1970s through the 1990s. The city of Moorhead, the county seat, comprises 63% of the County's total population. The cities of Dilworth, Barnesville, Hawley and Glyndon comprise another 16% of the County's total population. The remaining population resides outside of these incorporated areas. The State Demographer's Office projects that the population of Clay County will grow 5.6% from 2000 to 2020, from 51,229 to nearly 54,000. A statistic of interest is the change in rural and urban population from the mid 1900s to the late 1900s.

	1940	%	1950	%	1960	%	1970	%	1980	%	1990	%
Rural-Nonfarm	5959	24	7024	23	6864	18	9327	20	13049	26	13198	26
Rural-Farm	9887	39	8469	28	7162	18	5274	11	3609	7	2286	5
Urban	9491	37	14870	49	25054	64	31984	67	32669	67	34938	69

Dominant Land Use and Trends: Clay County encompasses 675,026 acres or 1,054 square miles located in the fertile Red River of the North basin of Northwestern Minnesota. Cultivated land, not surprisingly, amounts to 81.4% of the land use of Clay County. The remaining 18.6% of the land use and cover is made up of a combination of grassland, hayland, or pasture (7.9%), forested land (4.4%), urban and rural development (2.5%), bog/marsh/fen (wetland) (1.6%), water (1.1%), brushland (0.9%) and mining (0.2%).

It is expected that these trends will change slightly with the continued pressures of development, especially close to the Fargo/Moorhead community and along the travel corridors.

Plan Responsibility and Updates: The responsibility of administering and coordinating implementation of the Clay County Local Water Management Plan is assigned to the Clay Soil and Water Conservation District. Input, guidance and direction are provided by the Clay County Local Water Management Plan Advisory Committee. This committee is comprised of citizen, interest group, and local, state and federal government representatives.

The original *Clay County Comprehensive Local Water Management Plan* was locally adopted on June 12, 1990. This first generation plan was very generic, thus the second generation plan was revised and adopted on December 17, 1997 to be more specific to the current resources and needs of Clay County.

The current plan was scheduled to expire on December 31, 2003, however the Board of Water and Soil Resources (BWSR) granted a two year extension. It is expected that the revised plan will be submitted for State approval well ahead of the December 31,

2005 deadline.

List of Priority Concerns: The following priority concerns were identified through prior public meetings, citizen surveys, township surveys and agency input, and ranked in order of concern;

1. **Water Quality Concerns** – Including, but not limited to; impaired waters (TMDLs), groundwater pollution, aquifer protection, nonpoint pollution, delineation of critical/sensitive groundwater areas, water supply, etc.
2. **Natural Resource Enhancement & Protection Concerns** – Including, but not limited to; natural resource preservation in the beach ridge area, stream/river restoration and connectivity, native prairie conservation, wetland and grassland restoration and protection, etc.
3. **Erosion Concerns** – Including, but not limited to; soil erosion (wind and water), streambank erosion, sedimentation of streams and rivers, etc.
4. **Flood Damage Reduction** - Including, but not limited to; flooding, effects of tiling, drainage, etc.

Priority Concerns Identification: The Clay SWCD utilized a survey-based approach to secure citizen input on priority concerns. Citizen input was gathered through surveys in paper format and electronic (internet based survey) format. In addition, all thirty townships were invited and encouraged to submit input. Input was also invited from municipalities, conservation interest groups and local, state, and federal agencies. Lastly, natural resource related concerns were gathered from existing planning efforts and documents including; the Clay Soil & Water Conservation District Annual Plan (adopted March 15, 2004), the Clay County Comprehensive Plan (adopted July 2, 2002), the Buffalo-Red River Watershed District Watershed Management Plan (April 22, 1998 – currently under the review and update process), and the Wild Rice Watershed District Watershed Management Plan (adopted December 17, 2002).

Citizen Input: To date, 43 surveys have been submitted (13 from township representatives). The results of these surveys indicate that citizens believe that Clay County has problems with; (percentages indicate respondents who answered “Strongly Agree or Agree”)

1. Wind erosion, water erosion, and over-application of fertilizers/chemicals in urban areas (78%)
2. Drainage/Stormwater management and development impact/pressure (71%)
3. Flood damage reduction (68%)
4. Contaminated runoff (66%)
5. Over-application of fertilizer/chemicals in agricultural areas (65%)
6. Lack of environmental education (62%)
7. Natural habitat destruction (53%)
8. Declining water clarity and groundwater quantity (51%)
9. Groundwater contamination/abandoned wells (45%)

10. Failing septic systems (40%)
11. Lack of regulations (34%)

Additionally, the respondents of the survey were asked to rank the following natural resources from most threatened to least threatened; groundwater, wetlands, lakes, streams/rivers, other. The results were somewhat inconclusive, but in general show an indication that citizens believe that most threatened resources are;

1. Groundwater and streams/rivers
2. Streams/rivers and Wetlands
3. Lakes
4. Other (farmland, trees)

Local, State and Federal Agency Input: The Clay SWCD solicited and received input from several local, state and federal agency or interest group representatives. These comments were utilized to solidify the citizen input received and to determine the top water resource related concerns Clay County should focus on in the coming decade. The comments received are as follows;

Board of Water & Soil Resources (Pete Waller, Board Conservationist, Fergus Falls, MN)

1. Erosion and sediment control
2. Natural resource preservation and restoration in the beach ridge area of the county
3. Flood damage reduction

Department of Natural Resources (Paul Swenson, NW MN Regional Director, Bemidji, MN)

1. Nonpoint pollution
2. Shoreline development
3. Stream connectivity
4. Stream restoration
5. Water supply
6. Wetland protection / restoration

MN Pollution Control Agency (Lisa Thorvig, Asst. Commissioner, St. Paul Office)

1. Impaired waters / Total Maximum Daily Load (TMDL)
2. Protection and enhancement of all surface waters
3. Delineation of critical / sensitive ground water recharge areas

Moorhead Public Service (Cliff McLain, Water Operations Manager, Moorhead, MN)

1. Groundwater contamination
2. Soil erosion

Natural Resources Conservation Service (Sharon Lean, District Conservationist,

Moorhead, MN)

1. Water quality
2. Soil erosion
3. Flooding

The Nature Conservancy (Brian Winter, Northern Tallgrass Prairie Ecoregion Office, Glyndon, MN)

1. Native prairie conservation
2. Wetland and grassland restoration in the beach ridge area
3. Effects of increased tiling (field drainage tile)

Buffalo-Red River Watershed District (Bruce Albright, Administrator BRRWD, Barnesville, MN)

1. Flooding
2. Drainage
3. Water supply during drought
4. Development on closed basin lakes
5. Water quality
6. Groundwater pollution
7. Erosion and sedimentation along the Buffalo River
8. The need for protection and enhancement of prairie and wetland areas
9. Removal of low-head dams on the South Branch Buffalo River
10. Continuation of agency partnerships / relationships
11. The need for public information and education

Minnesota Department of Health (Mike Howe, Principal Planner, St. Cloud, MN)

1. Support of Source Water Protection Plans
2. Support of monitoring and testing of private wells and the support of a County Geologic Atlas
3. Promotion of proper sealing of unused wells

The results of these surveys and comments from agencies and interest groups were reviewed and utilized by the Local Water Management Advisory Committee to derive four main priorities of concern. These four priorities, in order of priority, are;

1. **Water Quality Concerns** – Including, but not limited to; impaired waters (TMDLs), groundwater pollution, aquifer protection, nonpoint pollution, delineation of critical/sensitive groundwater areas, water supply, etc.
2. **Natural Resource Enhancement & Protection Concerns** – Including, but not limited to; natural resource preservation in the beach ridge area, stream/river restoration and connectivity, native prairie conservation, wetland and grassland restoration and protection, etc.

3. **Erosion Concerns** – Including, but not limited to; soil erosion (wind and water), streambank erosion, sedimentation of streams and rivers, etc.
4. **Flood Damage Reduction** - Including, but not limited to; flooding, effects of tiling, drainage, etc.

These priorities will be the foundation of the *Clay County Local Water Management Plan* for 2006 through 2016. In the coming months, the CLWMP Advisory Committee will;

- request existing information from agencies to help assess priority concerns
- identify goals and objectives to address the priority concerns
- develop a 5-year implementation program for ongoing activities
- Write a water resources management plan containing: 1) Executive Summary, 2) Priority Concerns Assessment, 3) Priority Concerns Goals and Objectives, 4) Implementation Program for the Priority Concerns, 5) Implementation Program for Ongoing Activities, and 6) Appendix.

Six months from the approval date for the *Priority Concerns Scoping Document*, the *Clay County Local Water Management Plan* will be complete. As required by Minnesota Statute, a public hearing will be held to validate the focus of the final plan. The plan will then be submitted for final state review and approval. Once the plan is approved at the state level, it can be adopted by Clay County and implementation program can be initiated.

Priority Concerns Not Addressed by this Plan: Inherently, there are issues and concerns that are unable to be adequately addressed through the Local Water Management Plan. Additionally, some issues and concerns should not be addressed through this plan, but through other entities' plans and implementation programs such as County Planning and Zoning, Watershed Districts, and others. Some of these issues include; agricultural preservation, land use conflicts, resource use conflicts, etc.