

**CLARK COUNTY
LAND AND WATER
RESOURCE
MANAGEMENT PLAN
2012 – 2016**



***2011 Clark County
Land Conservation Committee and Department***

Clark County Land Conservation Committee

Fritz Garbisch, Chairman and County Board District #27

Larry Fitzmaurice, County Board District #25

Duane Boon, County Board District #23

Donald Koerner, Citizen-at Large

Jim Erickson, FSA Representative

Clark County Land Conservation Department

Matt Zoschke, County Conservationist

Cody Overgard, Engineering Technician II

Janet Wojcik, Conservation Planner

Daisy Gerdes, Part Time Office Assistant

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PLAN SUMMARY

In 1997, Wisconsin Act 27 amended Chapter 92 of the Wisconsin Statutes requiring counties to develop Land and Water Resource Management Plans and utilize them as the main implementation component of Wisconsin's Land and Water Resource Management Program. The intent of this change was to support the local implementation of conservation programming that improves decision-making, streamlines administrative and delivery mechanisms, provides flexibility in obtaining grants and other funding, supports innovation and cost-effectiveness in conservation best management practice implementation, ensures economic and environmental accountability, and creates and defines mechanisms to expend local, state, and federal funds to protect Wisconsin's land and water resources. Ultimately, the land and water resource management planning program strives to conserve soil productivity, enhance water quality, and protect the quality and quantity of related natural resources.

Many opportunities were provided to the public to gather their input, including a natural resources opinion survey mailed to over 1,500 households, five citizen advisory meetings attended by more than 150 people, and two public hearings located in the northern and southern parts of Clark County. The opinions gathered from the survey and the meetings were presented to the Land Conservation Committee during the months of June, July, and August. The Clark County Land Conservation Committee, after much discussion and deliberation, agreed on the following goals:

1. Reduce Sediment and Nutrient Delivery to Surface Water.
2. Reduce Nutrient and Other Contaminant Delivery to Groundwater.
3. Maintain the Health and Viability of the Animal and Plant Communities.
4. Maintain the Functionality of the Existing Hydrologic Infrastructure.
5. Increase Efforts to Inventory the Water Resources.

These goals were incorporated into the Land and Water Resource Management Work Plan for 2012-2016. This list of goals will guide local natural resource professionals as they perform the following activities:

- Develop a coordinated effort to resolve identified issues and concerns.
- Determine the roles of agencies in implementing the work plan.
- Implement strategies that support the conservation programs for the local community.
- Secure funding for the management of the natural resource base in Clark County.

To meet the goals established in the Clark County Land and Water Resource Management Plan 2012-2016, citizens can assist by participating in existing, as well as new Federal, State, and Local conservation programs. In order to meet the requirements in NR151.09, NR151.095, and ATCP50.08, cost-share funding for landowners will be needed for the installation of conservation best management practices (BMP) that control nonpoint source pollution from soil erosion and nutrient runoff.

Additionally, the implementation of this five-year work plan is dependent upon having available staff at the Clark County Land Conservation Department to assist landowners with the technical

assistance needed to implement the BMPs. Where possible, the Clark County Land and Water Resource Management Plan 2012-2016 will coordinate conservation efforts with other conservation agencies and thereby improve program delivery efficiency and effectiveness at all levels of government.

Chapter 1: Introduction

Background: Clark County first developed a Land and Water Resource Management Plan in August of 2000. This revision is in response to Wisconsin 1997 Act 27, which amended Chapter 92 to require counties to develop the plans.

Plan Development and Citizen Participation: The Clark County Land Conservation Department convened meetings with natural resources management professionals and local citizens to gather opinions and assist in the development of the plan.

Public Input: Public hearings were held on October 25th at the Neillsville Courthouse Auditorium and October 26th at the Clark County Health Care Center. Public comments were accepted at any time, in any manner, up until one week before the final draft of the plan was submitted to DATCP and DNR for review.

Related Resource Management Plans: Information regarding the natural resources in Clark County were obtained from WDNR Basin Plans, Priority Watershed Implementation Plans, Clark County Plans, and local Lake Management Plans.

Cooperating Agencies and Organizations: The agencies and organizations that have worked cooperatively with the Land Conservation Committee on different projects and programs are listed.

Chapter 2: County Setting, Natural Resources, and Trends

General Characteristics: Clark County is located in West Central Wisconsin, is 1,215 square miles in size with 45 local units of government and a population of 34,684. It is predominantly a rural county with an economy that revolves around the agriculture, manufacturing, and recreation industries.

Regional Perspective: Clark County is bordered by Taylor, Chippewa, Eau Claire, Jackson, Wood, and Marathon Counties.

History and Development: Clark County was common ground for Chippewa, Menominee, Winnebago, and Sioux Indians. Clark County was originally covered in white pine and was logged off near the turn of the 20th century. Agriculture soon moved in after the logging ceased.

Climate: In Clark County, winters are very cold and summers are fairly warm. In winter, the average temperature is 16 °F and in summer the average temperature is 67 °F. Total annual precipitation is about 31 inches. Average snowfall is 40.6 inches.

Soils: Most of the soils in Clark County formed partially in glacial till or glacial outwash. Many formed in residuum from sandstone and sandstone/shale. Some soils formed in lacustrine deposits, alluvium, or organic material.

Land Cover: Between the years 2001 and 2006, there was no appreciable change to any one class of land cover.

Forest: Approximately 43 percent of the county is forested, making up 334,368 acres including privately and publicly owned lands.

Farmland and Agriculture: There are an estimated 2,170 farms in Clark County with 440,376 acres of farmland. Clark County leads the state in number of dairy farms and milk cows.

Physiography, Relief, and Drainage: About 95 percent of the county is in the Central Plain Region and the rest is in the Northern Highland Region. Clark County was subject to three glacial advances. The highest elevation in Clark County is 1,460 feet, northeast of Dorchester and the lowest elevation is about 883 feet, near Lake Arbutus.

Geology: Cambrian rocks of the Mount Simon Formation underlie the majority of Clark County. The bedrock geology of the county consists mainly of upper Cambrian age sandstone. Precambrian crystalline rock underlies the northernmost and eastern portions of the county.

Watersheds: Clark County is located within three major river basins and has 13 distinct WDNR designated watersheds. Clark County has also designated watersheds.

Wetlands: There are 100,338 acres of wetland in Clark County or 12.9 percent of the total acres in the county, according to WDNR data.

Surface Water Features: There are no natural lakes in Clark County, only man-made reservoirs. There are three major waterways in Clark County: the Black River, the Yellow River, and the Eau Claire River. There are six currently listed impaired water bodies and one previously listed impaired watershed in Clark County, according to the WDNR. There are no outstanding resource waters listed by the WDNR in Clark County. Within Clark County, the only exceptional resource water listed is an unnamed creek (17-5 T24N R1E), a branch of the Cunningham Creek.

Groundwater: Groundwater is the source of all drinking water in Clark County. Clark County is moderately susceptible to groundwater contamination. 11% of the wells tested in Clark County exceeded the ES of 10 mg/L of nitrates. Additionally, 20% of the wells tested in Clark County were found to contain coliform bacteria. Most of Clark County is located in a region of Wisconsin that is considered to be groundwater quantity deficient. Many private and public drinking water wells in this area yield low amounts of water, about 2 to 5 gallons per minute.

Air Quality: Clark County is considered to be an attainment area.

Habitat and Ecology: The Land Legacy Report, released by the WDNR in 2006, identifies places that are critical in meeting conservation and recreation needs in the future. Threatened

and endangered species exist in Clark County. Clark County also has numerous aquatic and terrestrial invasive plants and animals. Unique and wilderness-like landscapes exist in Clark County. Pollution impacts on habitat and the local ecology are from point and nonpoint source discharges.

Agricultural and Natural Resource Trends and Outlook: It is anticipated that farmland trends for Clark County over the next five years will lead to increased pressure to convert farmland to other uses. The size of the average farm will continue to show increases. Dairy herd sizes will continue to increase. The number of dairy farms will continue to decline. Demand for forest products is predicted to increase, while forests managed for timber harvest are expected to decrease.

Land Use: Private resource land is the largest land use in Clark County at 76 percent, while public resource land makes up 17 percent. The remaining 7 percent is equally divided between intensive use areas, such as residential, commercial, industrial, and transportation corridors.

Existing Clark County Development Regulations: Clark County and its communities currently administer a variety of codes and ordinances related to natural resources. These include: Shoreland/Wetland Zoning Ordinance, Floodplain Ordinance, Private Onsite Wastewater Treatment System Ordinance, Non-Metallic Mining Reclamation Ordinance, Animal Manure Management Ordinance, and Land-spreading of Petroleum Contaminated Soil Ordinance.

Chapter 3: Land and Water Resource Conditions

Basins/Geography: Clark County consists of three major drainage basins. They are the Black-Buffalo-Trempealeau River Basin, the Lower Chippewa River Basin and the Central Wisconsin River Basin.

Exceptional and Outstanding Resource Waters: There are no outstanding resource waters listed by the WDNR in Clark County. There is one short segment of an unnamed stream in southeast Clark County designated as an exceptional resource water because it is a classified trout stream. Other streams are in the process of being classified as trout water, including Black Creek, Dickison Creek, Halls Creek, Scott Creek, and Sterling Creek.

Impaired Waters: There are six currently listed impaired water bodies and one impaired watershed previously listed in Clark County, according to the WDNR. They include Mead Lake, Lake Arbutus, Black River, Rock Dam Lake, Sherwood Lake, and the Wolf River. The Upper Yellow River Watershed was previously listed as impaired.

Watersheds: There are 13 WDNR watersheds in Clark County that drain to three major river basins.

Chapter 4: Environmental Issues and Concerns

Natural Resources Opinion Survey: In early May of 2011, a three question "Natural Resources Opinion Survey" was mailed out to over 1,500 county households, and also to each local unit of government. The survey had a 27% return rate.

Natural Resources Management Professionals Meeting: The meeting was held on Tuesday, May 31st, 2011 at the Clark County Courthouse Auditorium in Neillsville, Wisconsin.

Citizen Advisory Meetings: Citizen advisory meetings were held in five different locations in Clark County over the course of two months. The meetings occurred on June 7th at the courthouse auditorium in Neillsville, July 12th at the Withee Town Hall, July 23rd at the Hewett Town Hall, July 29th at the Mead Town Hall, and August 1st at the Farm Bureau Meeting in Neillsville.

Natural Resource Management Goals: The results of these natural resource professional and citizen meetings were presented to the Clark County Land Conservation Committee for review at their June, July, and August 2011 regularly scheduled meetings.

Chapter 5: Goals and Objectives

The management of the natural resources of Clark County is grouped into the following main categories: Surface Water, Groundwater, Wildlife: Flora and Fauna, Wetlands and Riparian Corridors, and Water Resources Inventory. The following goals represent the priority work plan focus for the Clark County Land Conservation Committee and its department for the next five years:

1. Reduce Sediment and Nutrient Delivery to Surface Water
2. Reduce Nutrient and Other Contaminant Delivery to Groundwater
3. Maintain the Health and Viability of the Animal and Plant Communities
4. Maintain the Functionality of the Existing Hydrologic Infrastructure
5. Increase Efforts to Inventory the Water Resources

Each goal, in the five-year work plan for the Clark County Land Conservation Department, has specific objectives and actions that will be used to ensure the success in meeting the goals.

Chapter 6: Runoff Management Performance Standards and Prohibitions

Performance Standards: Effective October 1, 2002, and amended in 2010, NR151 set forth minimum performance standards and prohibitions for achieving nonpoint source pollution control. The role of the Clark County Land Conservation Department is to assist landowners in planning, designing, and installing conservation plans and conservation best management practices that meet NR151 standards.

Local Implementation Strategy: The Clark County Land Conservation Department has developed an information and education strategy, as well as a priority farm identification process to inform landowners of the runoff management performance standards and prohibitions. The strategy also describes the methods for compliance determination, enforcement, and appeals.

Cost-Share Assistance: Cost-share funds will be made available to landowners through the County's Soil and Water Resource Management Program. The Land Conservation Committee has established a cost containment policy to equitably distribute the limited cost-share funds.

Best Management Practices: The list of conservation best management practices that are eligible to receive cost-share assistance under the Clark County Soil and Water Resource Management Program are numerous and subject to Land Conservation Committee approval.

Chapter 7: Coordination with Other Resource Management Plans and Programs

To meet the goals established in the Clark County Land and Water Resource Management Plan 2012-2016, citizens can assist by participating in existing, as well as new Federal, State, and Local conservation programs. There are numerous programs available to landowners to help them comply with the NR151 requirements established by the WDNR. The Clark County Land Conservation Department will make an effort to coordinate the implementation of programs with other local, state, and federal agencies.

Chapter 8: Evaluation and Monitoring

The Land Conservation Department has developed a strategy to evaluate and monitor the goals of the work plan including surface water-sediment delivery, surface and groundwater-nutrient delivery, wildlife: flora and fauna, wetlands and riparian corridors, and water resources inventory. The Clark County Land Conservation Department utilizes a Geographic Information System (GIS) developed by the County's Land Information Office.

Chapter 9: Information and Education Strategy

Implementation of the Clark County Land and Water Resource Management Plan will depend heavily upon a successful information and education program.

Work Plan: 2012-2016

The work plan is for the program years 2012-2016. The work plan states the goals, objectives, and actions that will be taken during the implementation of the plan. It also shows who is responsible for conducting the actions and what the anticipated level of staff hours and funding will be needed to accomplish the goals.

Comments or suggestions should be directed to the Clark County Land Conservation Department, 517 Court Street, Courthouse, Room 102, Neillsville, WI 54456. Additional information is also available online at the Clark County government web site at <http://www.co.clark.wi.us>

Chapter 1

Introduction

Background

Clark County is a rural, agriculturally-orientated county, dependent upon the wise management of the local natural resources to provide agriculture, industry, and tourism with an economic base to maintain and create jobs in order to strengthen the local economy. The Clark County Land and Water Resource Management Plan is a five-year work plan that provides direction to natural resource managers, local government elected officials, and landowners/citizens of Clark County on how Clark County's natural resources will be managed over the next five to ten years.

In 1997, Wisconsin Act 27 amended Chapter 92 of the Wisconsin Statutes, requiring counties to develop Land and Water Resource Management Plans and utilize them as the main implementation component of Wisconsin's Land and Water Resource Management Program. The intent of this change was to support the local implementation of conservation programming that improves decision-making, streamlines administrative and delivery mechanisms, provides flexibility in obtaining grants and other funding, supports innovation and cost-effectiveness in conservation best management practice implementation, ensures economic and environmental accountability, and creates and defines mechanisms to expend local, state, and federal funds to protect Wisconsin's land and water resources. Ultimately, the land and water resource management planning program strives to conserve soil productivity, enhance water quality, and protect the quality and quantity of related natural resources.

Clark County first developed a Land and Water Resource Management Plan in August of 2000. The Clark County Land and Water Resource Management Plan was revised in 2006 to include a work plan that covered 2007-2011. The third and most current revision will have an implementation timeframe of 2012-2016, with the possibility of extending the work plan for additional five years covering 2017-2021. Since the approval of the original Land and Water Resource Management Plan, several significant changes have occurred locally and at the state level that will impact how Clark County will implement its soil and water conservation programs. These changes include:

- Use value assessment has been fully implemented in Wisconsin affecting local land use decisions.
- Passage of NR151, and subsequent revision in 2010, creating runoff management standards and prohibitions for agriculture, construction, and transportation facilities.
- Passage of ATCP50 further refining Wisconsin's land and water resource management program delivery and NR151 implementation.
- Creation of ATCP51 legislation that regulates the siting of new and expanding livestock operations.
- Wisconsin's Farmland Preservation Program was updated and renamed Wisconsin's Working Lands Initiative.
- The Heart of America's Dairyland Agricultural Enterprise Area was approved for designation in 2011.
- WDNR's Priority Watershed Program was phased out and all priority watershed projects were completed.

- Revisions to NR243 that regulates operations with 1,000 animal units or more that discharge pollutants to the waters of the state in the event of a rainfall greater than the 25 year, 24 hour storm.
- Revisions to NR216 that require all construction sites 1 acre or large to obtain a stormwater and erosion control permit before any landscape disturbance begins.
- The Clark County Animal Manure Management Ordinance was recreated to include regulation and enforcement of the NR151 Manure Management Prohibitions and require annual updating of nutrient management plans for permitted manure storage facilities.
- Clark County is participating in the Conservation Reserve Enhancement Program that affects five towns.
- The Land Conservation Department closed out the Upper Yellow River Priority Watershed Project in 2004 and the Coon Fork Lake Watershed Project in 2010.
- The Land Conservation Department began implementing the Mead Lake Watershed Total Maximum Daily Load in 2010.
- Farm and livestock numbers remain fairly consistent with an increasing number of farms owned by Mennonite and Amish families and an increasing number of farms operating according to a WPDES permit.

Plan Development and Citizen Participation

The Clark County Land and Water Resource Management Plan was compiled from numerous information sources including the Inventory and Trends Report, Wisconsin DNR Basin Plans, Farmland Preservation Plan for Clark County, the National Agricultural Statistics Service and others. Natural resources managers from the local county, state, and federal agencies and citizens also provided valuable information regarding environmental concerns in Clark County.

Natural Resources Management Advisory Meeting

To initiate the Clark County Land and Water Resource Management Plan revision process, natural resources managers from county, state, and federal agencies were invited to participate in a roundtable discussion regarding environmental concerns and issues in Clark County. The natural resources managers were responsible for all or portions of Clark County in their assigned duties and jurisdictions. The purpose of the Natural Resources Management Advisory Meeting was to bring forth environmental issues and concerns that, in their professional opinions, were important for the protection and welfare of the citizens of Clark County. The list of environmental issues and concerns developed by the committee also served as a starting point for the participants at the Citizen Advisory Meetings to review and comment on. Those individuals that were invited to participate in the Natural Resources Management Advisory Meeting included:

- DNR Private Lands Forester
- DNR Water Resources Management Specialist
- DNR Runoff Management Specialist
- DNR Basin Supervisors
- DNR Wildlife Biologist
- DNR Conservation Warden
- DATCP Senior Engineer
- NRCS District Conservationist

- USDA – Farm Service Agency CED
- U.S. Fish and Wildlife Wetland Biologist
- USDA APHIS Animal Damage and Abatement Specialist
- Clark County Forest and Parks Director
- Clark County Planning and Zoning Administrator
- Clark County Emergency Management Director
- Clark County Parks and Recreation Manager
- Clark County GIS Specialist
- Clark County County Conservationist
- Clark County Conservation Planner
- Clark County Engineering Technician
- Clark County Land Conservation Committee
- UW – Extension Soils and Crops Agent
- UW – Extension Dairy and Livestock Agent
- UW – Extension Basin Educator: Lower Chippewa River
- Clark County Land Conservation Committee
- Clark County Board Members

The individuals met on Tuesday, May 31st, 2011 at the Clark County Courthouse Auditorium in Neillsville, Wisconsin to discuss Clark County’s environmental issues and concerns. A list of their top concerns was created to assist participants in the citizen advisory meetings and provide general guidance to the Land Conservation Committee.

Natural Resources Opinion Survey

In early May of 2011 a “Natural Resources Opinion Survey” was mailed out to over 1,500 county residents and, also to each local unit of government. The survey had a 27% return rate. A copy of the mailed survey and a summary of the results are located as *Appendix A*.

Citizen Advisory Meetings

Citizen advisory meetings were convened to provide guidance and an opportunity for the general public to provide opinions in regard to the revision process of the Land and Water Resource Management Plan. A total of five meetings were held in different locations within Clark County. The meeting locations and dates were Neillsville (two meetings in different locations) June 7th and August 1st; Town of Hewett, July 23rd; Town of Mead, July 29th; and Town of Withee, July 12th. Participants at the meetings consisted of individuals representing the following interests:

- County Board Supervisors
- Dairy Farmers
- Cash Crop Farmers
- Certified Crop Advisors
- Agribusiness Owners/Operators
- Agricultural Lenders
- Building Contractors
- Realtors

- Town Board Supervisors
- Technical College Educators
- Lake District Commissioners/ Lake Association Members
- Agricultural Organization Members
- Sportsman Club Members

At each of these meetings, participants reviewed the environmental issues and concerns list developed from information gathered at the natural resources management advisory meeting, the natural resources opinion survey results, and the previous citizen advisory meetings. Issues and concerns were added to the list by participants at each of the citizen advisory meetings. These issues and concerns were brought to the attention of the Land Conservation Committee at the June, July, and August meetings. The Land Conservation Committee reviewed all of the issues and concerns based on their relative level of importance as demonstrated by the level of discussion at each of the citizen advisory meetings. The committee then selected the five most important issues that they felt needed to be addressed by the Clark County Land and Water Resource Management Plan. The goal statements listed in Chapter 5 were developed directly from the information gathered at the citizen advisory meetings.

Public Input

The general public was given opportunities to review and comment on the Land and Water Resource Management Plan. Articles were published in the UW-Extension Newsletter informing landowners of the plan revision, how to obtain a draft copy of the plan, and where to send comments about the plan. The newsletter has a circulation of 1,600 landowners in Clark County. A draft copy of the plan was also posted on the Clark County website at www.co.clark.wi.us/ClarkCounty/departments/landconservation

A public hearing was held on October 25th at the Neillsville Courthouse Auditorium and October 26th at the Clark County Health Care Center to provide information regarding the Clark County Land and Water Resource Management Plan 2012-2016. The public hearing notice was published for one week in all five county newspapers. Public comments were requested at the hearing. However, in order to make certain that every citizen had ample opportunity to comment on the plan revisions, public comments were accepted at any time, in any manner, up until one week before the final draft of the plan was submitted to DATCP and DNR for final review.

Related Resource Management Plans

During the development of the Clark County Land and Water Resource Management Plan, issues, concerns, needs, goals, and objectives from previous natural resource management plan documents were reviewed. Those documents are listed in the reference section of the plan. However, there were some key documents with specific data, observations, and objectives that served a larger role. These include:

- The State of the Black-Buffalo-Trempealeau Basin
- The State of the Lower Chippewa River Basin
- The State of the Central Wisconsin River Basin

- Inventory and Trends Report for Clark County (2003 & 2009)
- Upper Yellow River Priority Watershed Project (1992)
- The Coon Fork Lake Management Plan (2004)
- Lake Arbutus Management Plan (2007)
- Mead Lake Management Plan (2010)
- Mead Lake Total Maximum Daily Load (2009)
- North Fork Eau Claire River Watershed Plan (2010)
- Clark County Outdoor Recreation Plan (2009-2013)
- Clark County Land and Water Resource Management Plan (2007-2011)
- Clark County Forest, 15 Year Comprehensive Land Use Plan (2006-2020)
- Clark County Forestry Ecological Management Plan (2005)
- Clark County Natural Hazards Mitigation Plan (2010)
- Clark County Agricultural Study Farmland Preservation Plan (1982) and revision (2004)

Cooperating Agencies and Organizations

The following agencies and organizations have worked cooperatively with the Land Conservation Committee and Department on different projects and programs over the years. They have served as partners and provided assistance to the Land Conservation Committee.

- USDA – Farm Service Agency
- USDA – Natural Resource Conservation Service
- U.S. Army Corp of Engineers
- U.S. Fish and Wildlife Service
- Wisconsin Department of Natural Resources
- Wisconsin Department of Agriculture, Trade and Consumer Protection
- University of Wisconsin – Extension Services
- Clark County Planning and Zoning Department
- Clark County Emergency Management
- Clark County Forestry and Parks Department
- Clark County Highway Department
- Clark County Land Information Office
- Clark County Health Department
- Mead Lake District
- Lake Arbutus Association
- Clark County Farm Bureau
- Dairy Business Association
- Ruffed Grouse Society
- Pheasants Forever
- Black River Sportsman’s Club
- Abbotsford Sportsman’s Club
- Central Wisconsin Fin, Fur, and Feather
- Chequamegon Bird Club

Chapter 2

County Setting, Natural Resources, and Trends

General Characteristics

Clark County, Wisconsin is located in West Central Wisconsin. Geographically, Clark County is very large (1,215 square miles) and is host to 45 local units of government that include seven cities, five villages, and thirty-three towns. With a 2010 census population of 34,684 and a total land area of 1,215 square miles, population density in Clark County is low with an average density of 28.5 people per square mile. Clark County is predominantly a rural county with an economy that revolves around the agriculture, manufacturing, and recreation industries.

The foundation of Clark County is based in agriculture, particularly the dairy industry. Dairy processing and agri-business are very important to county residents as employment opportunities and as a way of life. Clark County also maintains a strong manufacturing base. Many Clark County manufacturers produce equipment specific to the dairy industry. More than 250 agribusinesses provide services to the local agricultural community.

State Highway 29, one of Wisconsin's most important east/west transportation routes, traverses northern Clark County. The incorporated Cities and Villages of Abbotsford, Colby, Curtiss, Owen, Withee, and Thorp all benefit from interchange access to this four-lane highway that connects Green Bay to Minneapolis/St. Paul. Numerous railways cross Clark County and provide an efficient means to transport agricultural commodities to regional processors.

The cornerstone to Clark County's recreation industry is the 133,000 acre Clark County Forest. The county-owned forest provides residents and visitors a variety of recreational opportunities including hunting, camping, ATV riding, snowmobiling, hiking, biking, skiing, and horseback riding. The Clark County Forest is managed as a sustainable resource and generates opportunities for the forest products industry as well. Considerable private holdings of forest land exist throughout the county. Private forest land generates additional recreational and economic opportunities for land owners and provides valuable wildlife habitat. The county's major water feature is the scenic Black River, which flows north to south through the entire length of the county before it empties into Lake Arbutus.

Clark County is also home to a sizable and growing Amish and Mennonite population that adds to the County's rural agricultural character. These communities maintain traditional methods of farming, craftsmanship, and living. Almost half of Clark County's 2,170 farms are owned by Amish or Mennonite. Most of these farms are small dairy farms; some include sawmills and greenhouses.

Regional Perspective

Clark County is bordered by Taylor, Chippewa, Eau Claire, Jackson, Wood, and Marathon Counties. Within those counties, twenty-two townships and six (6) incorporated communities share borders with Clark County (See Map 2-1). While the region is generally known for its

agricultural base and small rural communities, there are several significant urban centers located within the region, including the Cities of Marshfield, Eau Claire, and Wausau. State Highway 29, which runs through the northern portion of Clark County, is a significant travel route from the Minneapolis and St. Paul region in Minnesota to eastern portions of Wisconsin. Clark County is located within the West Central Wisconsin Regional Planning Commission's jurisdiction along with Barron, Chippewa, Dunn, Eau Claire, Polk, and St. Croix Counties.

History and Development

The area now known as Clark County was common ground for the Chippewa, Menominee, Winnebago, and Sioux Indians. It was divided into three parts by the treaty of 1825; one part went to the Chippewas, and another went to the Winnebagos. The third remained neutral. By 1837, all of their land had been ceded to the United States.

Pine forests, consisting mostly of white pine, were abundant along the Black River in the mid 1800's. The first logging and lumbering activities within the present boundaries of Clark County were initiated in 1844. As others expanded these activities, logging and lumbering remained the main enterprises until surpassed by agriculture near the turn of the 20th century.

Clark County was created from part of Jackson County in 1853. It was named in honor of General George Rogers Clark of Revolutionary War fame. The present county boundaries were not established until 1875, when Taylor County was formed.

The development of Clark County was hastened by railroad construction. The first railroad line was built through the southwestern part of the county by the West Wisconsin Railway Company in 1869. Another railroad soon passed through the northeastern part of the county.

Agriculture increased as more land was cleared by logging activities. The early farmers raised crops for their own use. The first creameries and cheese factories were established in the 1880's. By 1895, when the logging industry was beginning to decline, factory manufacturing of cheese and butter was becoming more important. The City of Colby is the birthplace of Colby cheese. Logging is still important to the local economy, but it has been surpassed by dairy farming as the major economic contributor to the local economy.

The general population trend for Clark County has varied. Each census for several decades after the county was created in 1853 showed an increase in population. The highest total was recorded in 1920, when 35,120 people were counted. After this, the number of residents shifted downward. In the years after World War II, the population increased slowly. In 2010, the population was 34,900. The population trends in Clark County are generally similar to those of the State; the population has tended to decline in rural areas, but increase in urban areas. However, the Cities of Neillsville, Colby, and Abbotsford have all experienced declines in population. Many of those residents have moved into rural residential areas. Currently 16.5 percent of the county's population is associated with rural farming, 35.2 percent is associated with incorporated cities and villages, and 48.3 percent is associated with rural residential.

Climate

The Soil Survey of Clark County, Wisconsin (1993) states that Clark County winters are very cold and summers are fairly warm. The short frost-free period during the summer months limits cropping mainly to corn, forage, and small grain. Precipitation is fairly well distributed throughout the year and reaches a peak in the summer. Snow covers the ground much of the time from late fall through early spring.

The anticipated first frost is around September 23rd and the anticipated last frost is around May 19th.

In winter, the average temperature is about 16° F and the average minimum temperature is 5.5°F. In summer, the average temperature is 67°F and the average maximum temperature is 80°F.

The total annual precipitation is about 31 inches. Of this total, about 23 inches, or 74 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 19 inches.

The average seasonal snowfall is 40.6 inches. On the average, 66 days of the year have at least one inch of snow on the ground. The number of days with snow varies greatly from year to year.

The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and in winter. The prevailing wind is from the west or northwest. Average wind-speed is highest in spring at 11 miles per hour.

Soils

The use and management of soil has many impacts on the communities in Clark County. Soil is the foundation that all other ecosystems depend on, including plant life, wildlife, streams, wetlands, and lakes. Soils may also pose limitations to our use of the land in activities such as agricultural production, forestry, building development, and road construction.

Most of the soils in Clark County formed partially in glacial till or glacial outwash. Many formed partially in residuum derived from the underlying sandstone or interbedded sandstone and shale bedrock. Some soils formed in lacustrine deposits, alluvium, or organic material.

Glacial till is unstratified, unsorted glacial debris consisting of clay, silt, and sand. It may contain gravel, cobbles, stones, or boulders. There were three or more glacial ice advances into Clark County. They are distinguished by at least three different tills having different textures and slightly different landforms with drainage patterns in different states of development. These tills are the parent material for different soils.

The USDA – Natural Resources Conservation Service, formerly known as the Soil Conservation Service (SCS), has grouped the soils of Clark County into eleven major soil associations. Their location can be seen on Map 2-2.

1. Freeon-Newood-Barronett Association

Deep and very deep, nearly level to moderately steep, poorly drained and moderately well drained, loamy and silty soils on moraines, glacial lake plains, and stream terraces.

♦ Current land cover: These soil types are found in the northwestern reaches of Clark County and are primarily used as farmland.

♦ Other important features: Areas of prime agricultural soils may be included within this association where steep slopes are not limiting.

2. Loyal-Withee-Marshfield Association

Very deep, nearly level to sloping, poorly drained to moderately well drained, silty soils on ground moraines.

♦ Current land cover: These soil types are found extensively throughout the northern and eastern portions of Clark County and are primarily used as farmland.

♦ Other important features: Areas of prime agricultural soils can be found within this association where steep slopes and excessive wetness are not limiting features.

3. Withee-Kert-Hiles Association

Moderately deep and very deep, nearly level to sloping, somewhat poorly drained and moderately well drained, silty soils on ground moraines and pediments.

♦ Current land cover: These soil types are found extensively throughout the east-central portions of Clark County and are primarily used as farmland.

♦ Other important features: Prime agriculture soils are dominant within this association.

4. Fairchild-Elm Lake-Ludington Association

Moderately deep, nearly level to moderately steep, poorly drained to moderately well drained, sandy and mucky soil on pediments. These sandy soils formed from residuum derived from the underlying sandstone and shale.

♦ Current land cover: These soil types are found throughout western and southwestern Clark County and are predominantly forested.

♦ Other important features: Native forest species were mixed coniferous and deciduous including oak, aspen, birch, and pine.

5. Simescreek-Rock Dam Association

Very deep, nearly level and gently sloping, moderately well drained to excessively drained, sandy soils on pediments and stream terraces.

♦ Current land cover: These soil types are found in western Clark County and are mostly forested.

♦ Other important features: Very droughty soils best suited for coniferous trees.

6. Boone-Elevasil-Tarr Association

Moderately deep and very deep, nearly level to very steep, well drained to excessively drained, sandy soils on pediments and stream terraces. These sandy soils formed from residuum derived from the underlying sandstone.

♦ Current land cover: These soil types are found in southwest Clark County and mostly in cropland.

♦ Other important features: Very sandy and steep soils are erosion prone and best suited as woodland.

7. Hiles-Kert-Veedum Association

Moderately deep, nearly level and gently sloping, poorly drained to moderately well drained, silty and mucky soils on pediments. These silty soils formed from residuum derived from the underlying sandstone and shale.

♦ Current land cover: These soil types are found in southeastern portions of Clark County and are currently used for both farmland and forest.

♦ Other important features: Areas of prime agriculture soils can be found within this association where excessive wetness is not a limitation.

8. Flambeau-Merrillian-Fallcreek Association

Moderately deep and very deep, nearly level to moderately steep, somewhat poorly drained and moderately well drained, loamy soils on ground moraines and pediments.

♦ Current land cover: These soil types are found throughout northwestern and west-central Clark County and are currently being used for both farmland and forest.

♦ Other important features: Prime agriculture soils are dominant within this association.

9. Almena -Spencer Association

Very deep, nearly level to sloping, somewhat poorly drained to moderately well drained, silty soils on ground moraines.

♦ Current land cover: These soil types are found in northwestern Clark County and are primarily used as farmland.

♦ Other important features: Areas of prime agriculture soils can be found within this association where excessive wetness is not a limitation.

10. Merrilan-Veedum-Humbird- Association

Moderately deep, nearly level to moderately steep, poorly drained to moderately well drained, sandy and mucky soils on pediments. These loamy and silty soils formed from residuum derived from the underlying of sandstone and shale.

♦ Current land cover: These soil types are found throughout southern Clark County and are predominantly forested.

♦ Other important features: Native forest species were mixed coniferous and deciduous including oak, birch, and pine.

11. Maplehurst-Rib-Menahga Association

Very deep, nearly level and gently sloping, poorly drained to somewhat poorly drained to excessively drained, sandy and silty soils on stream terraces and within glacial landforms known as outwash plains.

♦ Current land cover: These soil types are found in west-central Clark County and are predominantly forested.

♦ Other important features: Native forest species were mixed hardwoods and conifers including oak and pine.

Land Cover

The Clark County Land Information Department assisted the Land Conservation Department with using GIS and land cover data from the US Department of Interior- United States Geological Services website <http://www.mrlc.gov/nlcd2006.php> to compare Clark County's land cover and the change to the land cover over the most recent five-year timeframe. Between the years 2001 and 2006, there was no appreciable change to any one class of land cover. Based on this information, the land cover of Clark County is not expected to change significantly during the next ten years.

The following table summarizes the 2006 land cover for Clark County:

Land Cover Type	Acres	% of Total
Barren Land (Rock/Sand/Clay)	52.95	0.01%
Cultivated Crops	357,087.32	45.79%
Deciduous Forest	291,812.18	37.42%
Developed, High Intensity	215.28	0.03%
Developed, Low Intensity	4,834.01	0.62%
Developed, Medium Intensity	1,116.88	0.14%
Developed, Open Space	28,552.86	3.66%
Emergent Herbaceous Wetlands	13,531.95	1.74%
Evergreen Forest	13,269.73	1.70%
Grassland/Herbaceous	12,102.26	1.55%
Mixed Forest	9,222.85	1.18%
Open Water	2,944.01	0.38%
Pasture/Hay	21,233.42	2.72%
Shrub/Scrub	10,247.26	1.31%
Woody Wetlands	13,660.17	1.75%
Totals	779,883.12	100.00%

The national land cover data base differs from the state land cover database in one important aspect: Wetland land cover is under represented in the national database due to the fact that wetlands are included in other land cover classes, such as cultivated crops, deciduous forest, and grassland, thereby reducing the total amount of wetlands included in the federal database.

Forest

Forest, second only to farmland and pasture in amount of total land cover, is one of the most prominent land cover features found in the county. Forests are also important to the county's resource base, culture, and economy. Forest land serves many functions, adds value to both the local economy and quality of life, and contributes to the county's rural atmosphere. They provide wildlife habitat, recreational opportunities, timber and pulpwood, and educational opportunities. They are connected to many aspects of the local and regional economy. The health and management of these forests have many implications for the county.

Historic Condition

Clark County was almost completely forested before settlement and timber harvesting began in the mid-1800s. Early industry and settlement patterns were tied closely to forest resources. Native forest types varied widely in the County according to the WDNR's map: *Original Vegetative Cover of Wisconsin*. Clark County is located within Wisconsin's tension zone, where southern deciduous forests are intermingled with northern coniferous forest types. Native forest communities included:

Upland Mixed Conifer – Deciduous

- Hemlock, sugar maple, yellow birch, white pine, red pine
- Sugar maple, yellow birch, white pine, red pine
- White pine, red pine
- Aspen, white birch, pine

Deciduous

- White oak, black oak, bur oak, red oak
- Sugar maple, basswood

Forested Wetland

- White cedar, black spruce, tamarack, hemlock
- Willow, soft maple, box elder, ash, elm, cottonwood, river birch

The Clark County Forest was established in 1934 and included 120,000 acres by 1937. Prior to 1934, farming was attempted, with little success, on the lands that became the County Forest. Reforestation was aided by natural regeneration and tree planting by the Civilian Conservation Corp.

Current Condition

Today, approximately 43% of the county is forested, 334,368 acres, including privately and publicly owned lands. See Map 2-3. Privately held forest lands include both individual and corporate owners. Private owners generally manage their forest lands for recreational use, for timber and pulp production, and/or for future development. The Clark County Forest currently covers nearly 133,000 acres and is the 6th largest county forest in the state. According to the *Clark County Forest 15 Year Comprehensive Land Use Plan*, the Forest has recovered from its 1930s condition and is now approximately 85% forested. The Forest now generates significant revenues for the county, primarily through pulpwood harvests.

Farmland and Agriculture

Agriculture is central to the culture, economy, and landscape of Clark County. Estimates on the amount of active farmland in Clark County are approximately 50% of the total land area. According to the UW-Madison report, *Wisconsin County Agricultural Trends in the 1990s* (Jackson-Smith and Finnin, 2001), the total amount of county land in farms and the number of full-time farms has decreased slightly within the 1990s, but now is relatively stable. The 2007

Census of Agriculture reported that there were an estimated 2,170 farms and 440,376 acres of farmland (cropland, pasture, and other associated lands) in the county. The census also reported that total amount of cropland in Clark County is 291,609 acres.

According to the UW-Extension's 2011 publication "Clark County Agriculture: Value and Economic Impact," agriculture supports 7,696 jobs and stimulates \$1.5 billion in sales annually. Each year Clark County receives more than \$400 million in income from agriculture. Dairy farming is the primary type of farming in Clark County. Clark County ranks second in Wisconsin for milk production behind Marathon County, but first for number of dairy farms and number of cows. The county ranks in the top twenty dairy-producing counties in the nation. Clark County's agribusinesses support dairying with sixteen processing plants, five feed suppliers, and numerous milking equipment and agricultural implement dealers and manufacturers. The total amount of revenue generated from the combination of on-farm milk production and off-farm milk processing sales exceeds \$1 billion. Other types of farming, including Christmas trees, fruits and vegetables, nursery and floriculture add \$1.6 million to the local economy. Direct sales of produce to consumers through on-farm stands, farmer's markets, pick-your-own, and community-supported agriculture contributed an additional \$369,000 in direct-marketing sales. One of Wisconsin's largest produce and nursery auctions is located near Withee. Game farms, tree farms, and other specialty crops make productive use of the land as well.

Recently, the energy production economy has tapped into agriculture's natural resources to use crops and waste products to develop fuel for energy production. Corn, beans, manure, and whey all have potential to contribute to the production of electricity and fuels to support the larger economy. Clark County currently has two methane digesters located on dairy farms and an ethanol plant located close-by in Stanley, Chippewa County. Many farmers have been producing their own biodiesel that is used on-farm in the agricultural machinery. Whey, a by-product of the milk processing industry, will be used in the future to create ethanol in Clark County.

The most recent Census of Agriculture (2007) reported the top five agriculture commodities in Clark County based on value of sales as follows: 1) dairy products; 2) cattle and calves; 3) grain; 4) other crops and hay; and 5) fruit, nuts, and berries. The total value of all agricultural products sold in 2007 exceeded \$275,000,000. Clark County ranks in the top five Wisconsin counties for several agricultural commodities including dairy, livestock, and crop production (Wisconsin Agricultural Statistics, 2010). Clark County also ranks on the top ten Wisconsin counties for most other agricultural products, including corn for grain, corn for silage, soybeans, alfalfa, and small grains.

State Rankings

- Milk Cow Herds #1
- Milk production #2
- Oats #2
- Hay #3
- Cattle and calves #3

Crop Production

Over the long term, the levels of crop production have been relatively stable for the vast majority of commodities. Yearly fluctuations are common based on changes in the commodity pricing, production costs (seed, equipment, etc.), and weather. A significant long-term trend has been a steady climb in soybean production. In 1990, Clark County produced 40,400 bushels of soybeans. According to the *2010 Wisconsin Agriculture Statistics* report in 2009, there were 30 times more soybeans produced, a reported 1,120,000 bushels. The *2007 Census of Agriculture* data reports other crop acreage in Clark County:

- Farms 2,170 units
- Land in farms 440,376 acres
- Total cropland acres 291,609 acres
- Corn for grain 69,621 acres
- Corn for silage 34,131 acres
- Wheat for grain 4,176 acres
- Oats for grain 8,419 acres
- Barley for grain 2,074 acres
- Soybeans for grain 29,484 acres
- Forage 120,340 acres

Dairy

According to the Agriculture Statistics Service, Clark County is the largest dairy county in Wisconsin. The *2010 Wisconsin Agriculture Statistics* report states that there are 993 dairy herds in Clark County. This represents a slight decrease from 2005 reports which show that Clark County had 1,021 dairy herds. Clark County was the last county in Wisconsin to drop below 1,000 dairy herds. Clark County still has 249 more dairy farms than Marathon County, the second largest dairy county in Wisconsin. The following contains additional information regarding cow numbers and production in Clark County:

- | | <u>2000</u> | <u>2005</u> | <u>2010</u> |
|--|-------------|-------------|-------------|
|--|-------------|-------------|-------------|

Other Livestock and Poultry

Although Clark County has a strong and stable dairy industry, other farm operations that produce beef cattle, hogs, sheep and poultry also exist. There are over 800 farms in Clark County that besides dairy, raise other animal types. The *2010 Wisconsin Agriculture Statistics* report states that there are 141,000 cattle and calves in Clark County. The *2007 Census of Agriculture* contains information regarding specific animal types:

- | | <u># Farms</u> | <u># Animals</u> |
|--|----------------|------------------|
|--|----------------|------------------|

• Hogs	129	5,209
• Sheep	79	1,549
• Poultry (layers)	326	9,527
• Poultry (broilers)	43	4,004

Agricultural Wastewater and Animal Manure Management

Clark County livestock generate more than 1 billion gallons of manure annually. This is equivalent to the waste generated by 2.5 million people. Because agriculture is so prevalent in Clark County, one of the most significant potential surface and groundwater contamination sources is animal manure and other agricultural wastewater sources. Clark County has approximately 2.07 acres of cropland per livestock equivalent. Both the storage and spreading of livestock manure can contaminate surface and groundwater water if not done properly. Yet, if done correctly, animal manure and agricultural wastewater can recycle agricultural nutrients and provide crops with on-farm fertility, thereby decreasing reliance on off-farm nutrient sources.

Animal manure storage facilities (See Map 2-4) currently in use range from manure pits dug 50 years ago to newly engineered and installed storage structures. Currently, there are 768 known animal manure storage facilities located in Clark County. More facilities are discovered annually. They range in size from 5,000 gallon under-the-barn concrete storage tanks to earthen, plastic, or concrete lined outside pits that store more than ten million gallons of animal manure. Improper liner construction increases the potential for groundwater contamination because permeable soils do not contain the manure and allow it to infiltrate into the ground. Some facilities are designed to be emptied every 21 days and some are emptied once a year. Any facility designed to store less than six months of manure and wastewater may need to be emptied during frozen or snow-covered ground conditions. There is an environmental risk associated with applying manure during frozen, snow-covered, or saturated soil conditions, as the soil is not able to absorb the manure application, thereby leaving the manure more prone to runoff during weather events. Clark County regulates the location, design, and installation of animal manure storages through its Animal Manure Management Ordinance. This ordinance ensures that all new, substantially altered, and abandoned manure storage facilities are done in compliance with approved standards and specifications. The ordinance also requires that permitted storage facilities submit and implement an annual nutrient management plan (NMP). In 2010, 285 NMPs covering 101,974 acres were submitted by Clark County farmers. According to Land Conservation Department records, 376 manure storage facilities were designed and installed after 1985, the year permits were first required, and meet technical standards that were in effect at the time they were built. It is estimated that there are 392 manure storage facilities that do not meet any type of technical standard for design and installation. Since the creation of the ordinance more than fifty inactive manure storages have been properly abandoned.

The State of Wisconsin through NR243 regulates livestock operations with 1,000 animal units or more and those livestock operations with less than 1,000 animal units that have the potential to create pollution discharges that can significantly affect waters of the state.

The WDNR has also created Agriculture Performance Standards and Prohibitions through Wisconsin Administrative Rule NR151. The performance standards and prohibitions were

created to control polluted runoff from farms, as well as other sources, and to help protect Wisconsin’s lakes, streams and groundwater. These standards apply to all farms in Wisconsin.

Agricultural Soil Resources

Soil erosion is one of the largest threats to the long-term sustainability of any agrarian-based society. Once gravity pulls the soil downslope, rarely do natural processes occur that place the soil back upslope. Erosion can be aided by either wind or water. There is renewed interest in controlling soil erosion now that the agricultural economy has become involved in providing biomass for energy production. Many of these biomass crops, currently used to produce ethanol and biodiesel, are annual row crops that leave the soil subject to erosion. However, there is research being conducted in the areas of utilizing sod-forming perennial crops to generate biomass fuel. Furthermore, the concept of farming to “T” or tolerable soil erosion amounts has been adopted by many federal, state, and local conservation agencies as the sustainable soil practice. Most soils in Clark County have a “T” value of 5 tons/acre/year. Some soils have a lower “T” value of 3 tons/acre/year. However, soil erosion that occurs at even the “T” rate may not be sustainable for the soil resource into the future. Many soils have lost more than half of their original topsoil depth due to the process of erosion. Soil that is delivered to waterbodies and waterways carries nutrients that stimulate plant growth. Significant algal blooms can impede recreation in lakes, rivers, and streams. When algae die and decompose, these processes can also lower the dissolved oxygen content of the water stressing the fishery and other aquatic life. Eroded soil, or sediment, also degrades habitat needed for fish and other wildlife.

The following table summarizes the Clark County Soil Erosion Transect Survey data for the years 2008-2011 for 263,652.0 cropland acres. The average soil loss is determined using the RUSLE2 computer program.

Watershed	≤ “T”	1-2 “T”	2-3 “T”	> 3 “T”	Avg. “T” value
South Fork- Eau Claire	87.79%	10.14%	2.07%	0.00%	1.8
Popple River	94.21%	4.65%	1.15%	0.00%	1.8
North Fork- Eau Claire	95.32%	3.68%	1.00%	0.00%	1.5
Eau Pleine River	91.07%	8.04%	0.89%	0.00%	2.3
Five Mile & Wedges Creeks	98.08%	1.92%	0.00%	0.00%	1.1
Yellow River	95.56%	4.00%	0.44%	0.00%	1.7
O’Neill & Cunningham Creeks	92.25%	7.04%	0.55%	0.16%	1.7
Cawley and Rock Creeks	92.06%	6.88%	0.95%	0.11%	1.8
Clark County Total	93.30%	5.79%	0.88%	0.03%	1.8

From the above data, the average “T” value for the period of 2008-2011 is 1.8 tons/acre. This equates to a total soil loss of 524,896 tons annually. The general trend is toward more, not less, soil loss due to water erosion, as the soil erosion transect survey data shows that “T” values have been increasing in all of Clark County’s watersheds. The data also shows that more rows crops and less sod-forming crops are being planted in recent years. This change in cropping history may be a contributing factor to the increase in soil erosion. The change in storm intensity may also play a role in the increase in soil erosion. Time is an important soil formation factor: Any present soil loss will not be fully gained back through natural processes in a generation.

The type and amount of tillage, used by farmers, influences the potential for soil erosion to occur. Less soil disturbance, or in other words less tillage, decreases the potential for soil erosion due to the fact that the soil is covered with crop residue making the soil less prone to rainfall impact, rainfall and snowmelt water detachment, and runoff water transport.

The following table summarizes the tillage-type data collected for 263,652.0 cropland acres during the Clark County Soil Erosion Transect Survey (2008-2011) in each of the watersheds.

Watershed	No residue	Mulch < 30% residue	Mulch > 30% residue	No Till ≤ 30% residue	No Till ≥ 30% residue	No tillage
South Fork- Eau Claire	12.39%	23.31%	5.05%	0.00%	2.98%	55.28%
Popple River	18.03%	32.96%	6.09%	0.00%	1.62%	41.29%
North Fork- Eau Claire	17.85%	27.60%	3.90%	0.00%	0.97%	49.68%
Eau Pleine River	16.07%	37.50%	8.04%	0.00%	4.46%	33.93%
Five Mile & Wedges Creeks	5.77%	21.15%	7.69%	0.00%	0.00%	65.38%
Yellow River	18.86%	45.18%	4.39%	0.00%	3.07%	28.51%
O'Neill & Cunningham Creeks	16.56%	30.84%	6.01%	0.16%	1.62%	44.81%
Cawley and Rock Creeks	16.74%	28.85%	7.93%	0.11%	3.74%	42.62%
Clark County Total	15.28%	30.92%	6.14%	0.03%	2.31%	45.19%

The above data shows that nearly 50% of the soils in Clark County are managed with ≤ 30% residue cover leaving the soil prone to erosion by wind and water. The typical dairy rotation has at least one sod-forming perennial crop in the rotation, normally alfalfa. During those years, the soil is not disturbed and the tillage is listed as “none.” Sod-forming perennial crops decrease the potential for erosion because during those crop years the soil is left undisturbed.

Prime Agricultural and Cropped Soils

Map 2-5 displays information regarding prime agricultural soils in Clark County. Prime agricultural soils are identified by the Natural Resource Conservation Service as those soils with the fewest limitations for agriculture operations. Limitations to agriculture include high erodibility, extreme wetness, low moisture holding capacity, and low productivity. Some soils are characterized as “prime when drained” and would be well suited to agriculture if extreme wetness can be overcome with drainage. Prime agricultural soils dominate northeast and east central Clark County. Several towns have more than 90% prime farm soils including the Towns of Beaver, Colby, Fremont, Green Grove, Hoard, Loyal, Mayville, Sherman, Unity, and Withee. Nearly 60% of the soil in Clark County as a whole is considered prime farm soil.

Town	Prime Farm Soil Acres	% of Land Area
Colby	20,629	98.8
Mayville	20,113	96.6
Fremont	21,690	96.2
Hoard	21,517	94.9
Loyal	20,978	94.4

Sherman	20,982	93.8
Green Grove	21,764	93.7
Unity	20,577	92.6
Beaver	21,294	92.0
Withee	20,353	90.2
Hixon	19,223	89.0
York	19,994	86.6
Longwood	19,425	85.3
Reseburg	19,491	84.8
Eaton	18,355	84.4
Warner	18,220	81.3
Thorp	17,353	77.1
Grant	15,503	67.9
Worden	15,380	66.6
Weston	14,127	60.9
Lynn	13,961	60.8
Pine Valley	9,815	45.6
Mead	10,217	44.8
Butler	7,654	33.4
Washburn	4,381	18.9
Seif	4,231	18.3
Mentor	3,912	17.1
Levis	3,323	14.4
Sherwood	1,940	8.4
Hewett	1,109	4.8
Foster	381	0.8
Dewhurst	82	0.4
Clark County	458,557	59.6

Map 2-6 displays the amount of cropped farmland for all towns within Clark County as identified by an existing land use inventory. Towns with the greatest acreage of cropped farmland include Beaver, Colby, Fremont, Grant, Green Grove, Loyal, Mayville, Reseburg, Sherman, Thorp, Unity, Withee, and York. According to the *2006 National Land Cover Survey*, the total amount of cropland, including pasture, in Clark County is about 357,696 acres or 46% of the total land cover. Data for individual towns in Clark County are as follows:

Town	Cropland and Pasture (ac.)
Beaver	16,940
Butler	1,528
Colby	16,564
Dewhurst	596
Eaton	14,199
Foster	528
Fremont	15,734
Grant	15,288
Green Grove	15,477

Hendren	10,446
Hewitt	1,124
Hixon	14,329
Hoard	13,840
Levis	5,457
Longwood	14,381
Loyal	18,969
Lynn	9,394
Mayville	18,496
Mead	5,116
Mentor	5,314
Pine Valley	10,692
Reseburg	17,759
Seif	3,319
Sherman	16,516
Sherwood	2,845
Thorp	16,882
Unity	15,837
Warner	13,645
Washburn	6,578
Weston	11,360
Withee	17,318
Worden	13,714
York	18,139

Physiography, Relief, and Drainage

Clark County is in two physiographic regions. About 95 percent of the county is in the Central Plain Region, and the rest is in the Northern Highland Region, according to the Soil Survey of Clark County, Wisconsin. The Northern Highland region makes up a narrow strip in the northern and northeastern parts of the county along the Taylor and Marathon County lines. The Central Plain region makes up the rest of the county.

The Central Plain is underlain by Cambrian sandstone. South of Neillsville and in the southwestern part of the county, the Central Plain is mostly driftless, and thus the sandstone is near the surface. The landscape is mostly level and gently sloping and has many wet areas and some sandstone mounds (monadnocks) that range from a few feet to several hundred feet above the plain. Along the Black River, the underlying Precambrian igneous and metamorphic rocks are exposed where the Cambrian sandstone has eroded away. North of Neillsville, the Central Plain consists mostly of glacial drift over Cambrian sandstone. The landscape consists mainly of level and gently sloping ground moraine with many areas of moderately well drained and somewhat poorly drained soils. A few monadnocks exist in this region.

The Northern Highland region is an asymmetrical dome dominated by Precambrian igneous and metamorphic bedrock. In most places, glacial drift overlies the bedrock. The landscape is mostly

a level or gently sloping ground moraine with many areas of moderately well drained and somewhat poorly drained soils. A few monadnocks exist in this region.

Clark County was subject to three glacial advances. The very northern part of the county was glaciated between about 25,000 and 95,000 years ago. These glacial margins of advance were called the Harrison and Hamburg. The central part, and the majority, of the county was glaciated between 790,000 and 25,000 years ago. This glacial margin is called the Nasonville and is evident around County Highway G. The southern quarter of Clark County was glaciated much earlier, probably around 2,400,000 and 790,000 years ago. This glacial margin is associated with the Marshfield Advance and can be driven over on State Highway 10, just east of Neillsville.

Relief in Clark County is largely controlled by glacial features and by the bedrock. The highest elevation, 1,460 feet, is northeast of Dorchester in the northeast corner of the county. The lowest elevation, about 883 feet, is along the shore of Lake Arbutus in the southwestern part of the county. Most of the county's elevation ranges from about 1,100 to 1,200 feet. Local differences in elevation are generally less than 100 feet. The greatest local difference is between the top of Bruce Mound (1,355 feet) and the nearby shore of Lake Arbutus (about 883 feet).

Most of Clark County is in the Black River drainage basin. The Black River flows south through the central part of the county and is part of the Mississippi River drainage system. The northwestern and west-central parts of the county are drained by the Eau Claire River, which is part of the Chippewa River drainage system. The eastern edges of the county are drained by the Eau Pleine and Yellow Rivers, which are part of the Wisconsin River drainage system.

Geology

According to the *Bedrock Geology of Wisconsin, West-Central Sheet*, prepared by the Wisconsin Geological and Natural History Survey, there are a variety of rock types found within Clark County. Cambrian rocks of the Mount Simon Formation underlie the majority of Clark County. The majority of the county has a depth to bedrock of 0 to 15 meters and is described as having good to excellent outcrop, particularly on hillsides, road cuts, and in river valleys.

The bedrock geology of the county consists mainly of Upper Cambrian age sandstone. Precambrian crystalline rock underlies the northernmost and eastern portions of the county. The sandstone has been eroded away, exposing the crystalline rock along the Black River and its tributaries. The Cambrian sandstone is generally less than 50 feet thick in the majority of the county. The exception is the southwestern portion of the county, where the most recent glacier activity has not eroded away the sandstone. In this area, the sandstone is more than 50 feet thick.

Watersheds

A watershed can be defined as an interconnected area of land draining from surrounding ridge tops to a common point, such as a lake or stream confluence with a neighboring watershed. All

lands and waterways can be found within one watershed or another. The Clark County Land Conservation Department has delineated and designated watersheds are shown in Map 2-7. The Clark County designated watersheds are based on county specific waterbodies, such as Mead Lake, Black River, or Rock Creek. The WDNR has also delineated and designated watersheds in Clark County. WDNR watersheds are shown on Map 2-8. Both designations are accurate and correct and in many cases the watershed boundaries are the same. However, many state programs are based not on the locally designated watersheds, but more often on the state designated watersheds. In Wisconsin, watersheds vary in scale from major river systems to small creek drainage areas and typically range in size from 100 to 300 square miles. River basins encompass several watersheds. There are 32 river basins in Wisconsin which range in size from 500 to over 5,000 square miles. Wisconsin's 32 river basins are then divided into 23 geographic management units. These units, or "GMUs", are the basis for the WDNR Watersheds and form the land unit around which many state-funded conservation cost-share grant programs are implemented.

Clark County is located within three geographic management units (GMUs) including the Lower Chippewa, Black-Buffalo-Trempealeau, and the Central Wisconsin GMU. Within these GMUs, Clark County is located within three different river basins including the Upper Wisconsin River Basin in the eastern portion of the county, the Black River Basin in the central, and the Lower Chippewa River Basin in the west. Within these basins, 13 distinct watersheds can be found. The following table identifies each WDNR designated watershed located within Clark County and displays the square mileage and total percent of county land within each watershed.

DNR Watershed	Square Miles	% of County
Big Eau Pleine (CW18)	21.01	1.72
Black and Hay Creeks (LC15)	13.90	1.14
Cawley and Rock Creeks (BR10)	169.63	13.91
East Fork- Black River (BR07)	91.36	7.49
Halls Creek (BR06)	16.30	1.34
Little Eau Pleine (CW14)	11.76	0.96
North Fork – Eau Claire River (LC17)	110.25	9.04
O’Neill and Cunningham Creeks (BR09)	161.01	13.20
Popple River (BR11)	203.06	16.65
South Fork- Eau Claire River (LC 16)	215.23	17.65
Trappers and Pine Creeks (BR12)	7.90	0.65
Five Mile and Wedges Creeks (BR08)	144.57	11.86
Yellow River (CW05)	53.39	4.38

The following table identifies each county designated watershed located within Clark County and displays the square mileage and total percent of county land within each watershed.

Clark County Watershed	Square Miles	% of County
Eau Pleine River	32.8	2.7
Popple River	159.4	13.1
Wolf River	34.1	2.8
North Fork- Eau Claire River	76.4	6.3
Black River	163.1	13.4
Mead Lake	98.3	8.1

Rock Creek	79.0	6.5
South Fork- Eau Claire River	72.3	5.9
Yellow River	53.4	4.4
Rock Dam Lake	58.4	4.8
Wedges Creek	124.3	10.2
Cawley Creek	41.9	3.4
O'Neill Creek	60.4	5.0
Cunningham Creek	63.0	5.2
East Fork- Black River	89.9	7.4
Halls Creek	12.5	1.0

Wetlands

According to Wisconsin State Statutes, Chapter NR103, wetlands are areas where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and has soils indicative of wet conditions. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants (hydrophytes) and promote the development of characteristic wetland (hydric) soils.

Wetlands may be seasonal or permanent and are commonly referred to as swamps, marshes, fens, or bogs. Wetland plants and soils have the capacity to store and filter pollutants ranging from urban and residential stormwater to chemicals and fertilizers to agricultural wastewater and manure. Wetlands provide storage of flood waters preventing damage to developed areas. Wetlands can make lakes, rivers, and streams cleaner and drinking water safer. Wetlands also provide valuable habitat for fish, plants, and animals. In addition, wetlands can also provide the replenishment of groundwater supplies. Groundwater discharge is common from wetlands and can be important in maintaining streamflows, especially during dry months.

According to the WDNR, there are 100,338 acres of wetland in Clark County or 12.9% of total acres in the county. Most of the wetlands in Clark County are associated with woody cover, such as forested and shrub wetlands. However, emergent wet meadows also represent a significant percentage of the total amount. The minimum digital map unit size for wetland in Clark County is five acres. Many ecologically-functional wetlands are smaller than five acres. Some of these smaller, but functionally important wetlands located on the edges of cropland are being altered by ditching or tiling to lower the water table to increase the success of a crop harvest. WDNR mapped wetlands for Clark County is shown in Map 2-9.

Surface Water Features

Lakes

There are no natural lakes in Clark County, only man-made flowages. All lakes listed in the table below have been identified as drainage lakes by WDNR. These lakes have both an inlet and an

outlet where the main water source is stream drainage. Most lakes in Clark County are impoundments located on streams and rivers. Clark County has numerous private ponds. Most of these waterbodies enhance the recreational, wildlife, and/or aesthetic values of property. Clark County water features can be seen on Map 2-10. The following table is a summary of the lakes that are found within or partially within Clark County.

Lake Descriptions, Clark County

Lake Name	Surface Area (acres)	Maximum Depth	Public Access	Abundant and Common Fish Species
Abbot Ranch Flowage	17	6		
Arbutus Lake	839	50	BR	N. pike, walleye, SM bass, panfish
Beaver Flowage	5	6		
Carter Pool	4	2		
Dorchester Park Pond	13	6		Trout
Emerson Lake (Humbird Pond)	33	8	BR	Panfish
Granton Park Pond	1	8		
Iron Run Flowage	7	6		
Mead Lake	320	16	BR	Walleye, LM bass, panfish
Neillsville City Pond	1	6		
Owen Pond	18	8		Panfish
Rock Dam Lake (Hay)	118	10	BR	LM bass, panfish, N. pike
Sherwood Lake	117	9	BR	LM bass, panfish, N. pike
Simes Creek Flowage (Willow)	1	8		
Snyder Lake	20	10	BR	LM bass, panfish
Sportsman Lake	285	12	BR	N. pike, LM bass, panfish
Spruce Lake	6	4		
Unnamed, T24N R03W S19-10	40	8		
Unnamed, T24N R04W S24-13A	20	5		

Source: Wisconsin Department of Natural Resources, 2001 Revision to Wisconsin Lakes Book.

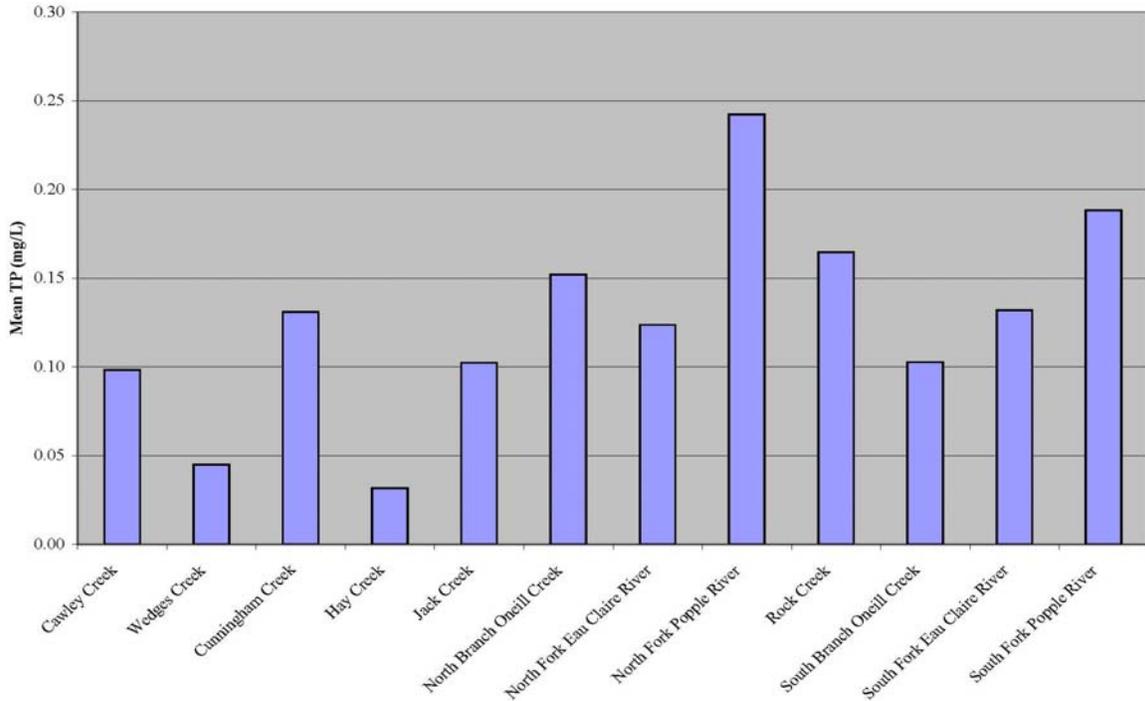
Rivers and Streams: Quality

Limited information is available regarding rivers and streams in Clark County. The U.S. Geological Survey has gauged water levels on many of these waterways since the early 1900s, but little biological research has taken place on Clark County streams. Very few Clark County streams are considered suitable for trout, and trout streams have traditionally received the highest priority for biological research. Recently, the WDNR has increased their efforts to establish baseline monitoring data for many of the streams and lakes in Clark County.

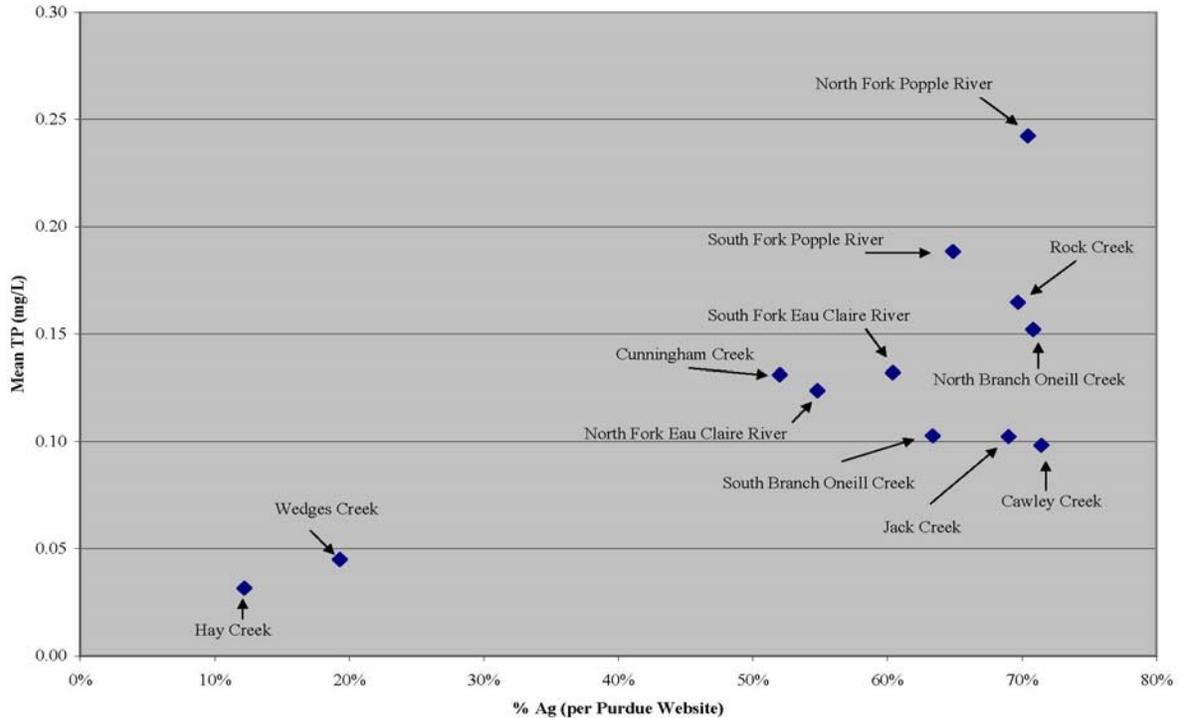
The Clark County Land and Water Resource Management Plan 2007-2011 listed water monitoring as a high priority activity. In 2008, the Clark County Land Conservation Department, with assistance from the WDNR, conducted a pour-point, base-flow analysis of select watersheds in Clark County. Each site was sampled four times during the lowest flow periods of the summer. Grab samples and stream flow data were collected to assist in developing a unit load calculation. Data was further analyzed with consideration to the type of land use within each watershed. The purpose of the study was to develop a baseline of data for agricultural and forested watersheds that could be used to compare the effect of land use on the water quality of

each watershed. Reference sites were established to assist in data calibration. The following tables and graphs were prepared by the WDNR using data collected by the Land Conservation Department.

The following graph relates to amount of phosphorus present in the water column.



The following graph relates phosphorus in the water column and land use.



Rivers and Streams: Temperature

In 2008, 2009, and 2010, the Clark County Land Conservation Department collected temperature data on select cold/cool water streams in the county to better understand the potential for sport-fishery development. The following table summarizes the temperature data collected during those years.

<u>Stream</u>	<u>2008 Avg °F</u>	<u>2009 Avg °F</u>	<u>2010 Avg °F</u>
Black Creek at Hwy MM	64.45	60.22	No data
Jack Creek at Miller Ave.	65.83	62.85	65.60
North Branch- O'Neill Creek at Hwy K	69.74	66.24	No data
Norwegian Creek at Sterling Ave.	65.63	62.09	64.52
Rocky Run Creek at Rock Creek Rd.	68.24	64.97	No data
Sterling Creek at Tieman Ave.	64.64	61.23	No data

The optimum temperature for coldwater sport fishery is between 55-66°F. Temperatures above 68°F for long durations or temperatures above 81°F for short durations will lead to coldwater sport fish mortality. Temperature above 53°F inhibits egg development and may lead to spawning failure.

Rivers and Streams: Major Waterways

All Clark County rivers, streams, and creeks eventually flow to these major waterways:

Black River

The Black River is the most significant and recognized river system in Clark County, flowing from north to south directly through the center of Clark County. The Black River begins at the outlet of Black Lake in Taylor County. It flows nearly 200 miles until reaching the Mississippi River and flows centrally through Clark County. The U.S. Geological Service has gauged flows of the Black River at Neillsville from 1905 to 1909, then again from 1913 until present. The river is designated a trout stream for the first 18 miles in Taylor County. The remainder of the river contains most of Wisconsin's game fish, including muskellunge, northern pike, walleye, bass, catfish, and several pan fish species. The river is specifically known for its walleye, smallmouth bass, and musky fishing. Recreational use of the Black River has increased over the years. Canoeing and kayaking are the two major recreational uses of the river.

Two dams impound water on the Black River. The Black River Falls dam creates the Black River Flowage. Moving 13.5 miles upstream, the Hatfield Dam creates Lake Arbutus. The Black River Flowage is a long narrow 200 acre body of water, which is no more than a deepening of the Black River. By contrast, Lake Arbutus is an 840 acre impoundment with two county parks, a state park, and many single family homes on its shores.

Yellow River

The Yellow River converges from many feeder streams that interlace the agricultural areas of east-central Clark County. The vast majority of the Yellow River flows through Marathon, Wood, and Juneau Counties where it finally empties into the Wisconsin River. The Yellow River is classified as a warm water sport fishery.

The Upper Yellow River Watershed, which is partially located in Clark County, is classified by the WDNR as an impaired water resource with high priority for improvement funding. The WDNR document *The State of the Central Wisconsin River Basin* (2002) identifies animal waste runoff as a major contributor to the poor water quality. The erosive properties and steep slopes of the surrounding soils are also major contributors.

Eau Claire River

Both the North and South Forks of the Eau Claire River flow through northwestern Clark County and the Clark County Forest before they join with the main stem of the river. The North Fork originates in Taylor County and flows 48 miles to converge with the South Fork. The South Fork originates in Clark County and flows 40 miles. The Eau Claire River then continues 34 miles west until it empties into the Chippewa River in the City of Eau Claire. The Eau Claire River is classified as a warm water sport fishery.

Mead Lake is an impoundment on the South Fork of the Eau Claire. This lake is listed as a 303(d) waterbody and has a Total Maximum Daily Load developed for it. The primary sources of pollution in the Mead Lake Watershed are non-point in origin. Decreasing the delivery of sediment and phosphorus to the lake has been identified as the principle focus for improving water quality within the lake. Some sediment within the lake bed also contains phosphorus, which can be released into the water. Other major flowages on the Eau Claire River outside of Clark County include Lake Altoona and Lake Eau Claire.

Eau Pleine Reservoir

About 20,000 acres of Clark County drain to the Eau Pleine Reservoir located in Marathon County. The reservoir is subject to low oxygen conditions during the year. Significant fish kills have occurred in the reservoir. In order to develop a better understanding of the causes of the low oxygen conditions a Task Force was established by Marathon County in 2010. The Big Eau Pleine Task Force has representation from all levels of government and numerous private interests. The implementation of conservation practices which reduce sediment and nutrient loading into the reservoir will become important for improving water quality within the reservoir.

Impaired Waters

The listing of waters under the Clean Water Act (s. 303(d)) must, under current U.S. Environmental Protection Agency (EPA) requirements, occur every two years. This list identifies waters, which are not meeting water quality standards, including both water quality criteria for specific substances or the designated uses, and is used as the basis for development of Total

Maximum Daily Loads (TMDLs) under the provisions of section 303(d)(1)(C) of the Act. The 303(d) list has been characterized as an impaired waters list.

There are six currently listed impaired water bodies and one impaired watershed previously listed in Clark County, according to the WDNR (See Map 2-11). These waters are listed within Wisconsin's 303(d) Program, managed by the WDNR's Bureau of Watershed Management. They include Mead Lake, Lake Arbutus, Black River, Rock Dam Lake, Sherwood Lake, and the Wolf River. The Upper Yellow River Watershed was previously listed as impaired. A comprehensive water quality study conducted in 2011 in the Yellow River Watershed will be used to prepare a TMDL for Dexter Lake located in Wood County.

The Wolf River is listed due to an unknown pollutant causing low dissolved oxygen levels. Rock Dam Lake, Lake Arbutus, and Sherwood Lake are listed because of mercury fish consumption advisories. A 6.5 mile stretch of the Black River between Rock Creek and County Highway H is also listed due to low levels of dissolved oxygen and unknown nonpoint pollutants. The rest of the Black River is listed because of mercury levels.

Mead Lake is identified as a high priority due to pH, sediment, and excessive nutrient inputs. This water body receives nonpoint sources of pollution. A TMDL is being implemented in the Mead Lake Watershed. The TMDL recommends a decrease in phosphorus (P) and sediment loading into Mead Lake by 30% in order to increase body-contact recreation and decrease harmful and nuisance algae blooms. A two year study (2002-2003) of water quality in Mead Lake and the South Fork Eau Claire River was conducted by the U.S. Army Corps of Engineers (USACE 2005). The study focused on external P loading (suspended sediments and nutrients from the South Fork Eau Claire River), internal P fluxes from lake sediments and in-lake water quality. Mean total P concentrations of the South Fork Eau Claire River ranged between 0.115 and 0.123 mg/L and accounted for 54% of the total P load to Mead Lake. The USACE study found that on average 83% of the P load originated from direct drainage and tributaries to Mead Lake. Tributary P loading accounted for 87% and 78% of the measured P load in 2002 and 2003, respectively. In contrast, internal P loading from sediment accounted for about 12% and 21%, respectively, of the 2002 and 2003 measured P inputs. The seasonal (May – September) suspended sediment load to Mead Lake was estimated at 428 and 189 tons in 2002 and 2003, respectively. The annual sediment load was estimated at 774 and 609 tons in 2002 and 2003, respectively. Sediments deposited in Mead Lake contribute P to the water column via recycling under anoxia or high pH conditions (both which exist in Mead Lake during summer).

The Mead Lake Management Plan was completed in March 2010 and identifies implementing the following goals, which are essential for improving water quality and restoring the lake for future generations of lake-users.

- Goal 1: Improve water quality and decrease the frequency and intensity of algae blooms by decreasing sediment and phosphorus inputs to the lake.
- Goal 2: Increase natural vegetation to produce a biologically productive shoreland that minimizes erosion and enhances natural aesthetics.
- Goal 3: Maintain a healthy fishery with desirable species and a diverse native aquatic plant community.
- Goal 4: Prevent the expansion and new infestations of invasive and exotic species.

Goal 5: Provide safe and diverse recreational opportunities for all.

Lake Arbutus is an impoundment located on the Black River. All eroded soil, nutrients and other pollutants originating in the watersheds draining to the Black River, eventually make their way to Lake Arbutus. Currently, Lake Arbutus suffers from infrequent algae blooms. Occasionally, these blooms become a nuisance and impede recreation on the lake. Phosphorus is the limiting nutrient for algae. More phosphorus typically leads to more amounts of and more frequent blooms of algae. The range of phosphorous concentrations observed in Lake Arbutus during 1997 and 2005 is on the order of 5 to 50 times greater than recommended levels. WISPRIG (2002) reviewed available Lake Arbutus water quality records for 1990 through 2001 and found that 100 percent of 21 samples from the lake exceeded 0.015 mg/L of phosphorous, with an average concentration of 0.203 mg/L. The WDNR found 0.113 to 0.188 mg/L of phosphorous in near-surface water samples from Lake Arbutus in 1997. The near-surface samples collected during 2005 found 0.083 to 0.163 mg/L of phosphorous in 2005. Water quality samples collected with depth in the water column confirm that sediment on the bed may be a sink, or point of accumulation, for phosphorous. The WDNR data shows 2 to 6 times higher concentrations in the bottom samples compared to the surface samples (averages of 0.247 and 0.783 mg/L). The WDNR notes that 0.025 mg/L of total phosphorous is average for natural lakes and that 0.065 mg/L is average for impoundments. The range of phosphorous concentrations observed in Lake Arbutus during 1997 and 2005 is on the order of 1.3 to 12 times greater than typical Wisconsin impoundment levels. The WDNR's paleoecological studies of the sediment cores recovered from Lake Arbutus provide a history of sediment deposition in Lake Arbutus. The 31-inch core reflects sediment deposition beginning in ~1910. Sedimentation rates prior to 1950 increased slowly from less than 0.18 kg/m²/yr to 0.22 kg/m²/yr. After 1950, the rate of sediment deposition increased rapidly and is currently on the order of 50 to 55 kg/m²/yr. The WDNR notes that the current sedimentation rate is the second highest rate of the 27 hard water lakes studied by the WDNR in Wisconsin. The concurrent increase in the concentrations of chemicals associated with farming indicates that the sediment entering the lake originates with soil erosion and runoff from agricultural lands in Clark County. The increasing sediment deposition suggests that either there is a large increase in the amount of land being farmed in the county, or more likely, an increase in the amount of soil lost from the county's farms. Such an increase in soil loss runs counter to the general emphasis placed on soil management and conservation over the last 50 years. Preventative actions should be taken to better manage the natural resources, specifically the soil within the Lake Arbutus Watershed, so future conservation efforts do not resort to curative actions similar to what is currently occurring in the Mead Lake Watershed.

Outstanding and Exceptional Waters

Wisconsin has classified many of the state's highest quality waters as Outstanding Resource Waters (ORWs) or Exceptional Resource Waters (ERWs). Chapter NR102 lists the ORWs and ERWs. The WDNR conducted a statewide evaluation effort in the early 1990s to determine which waters qualified for ORW and ERW classification. By January 1993, a significant number of waters were added to chapter NR102 as ORWs and ERWs. Of Wisconsin's 53,413 streams and rivers, 254 are designated as ORW, and 1,544 are designated as ERW. Waters designated as ORW or ERW are surface waters, which provide outstanding recreational opportunities, support valuable fisheries and wildlife habitat, have good water quality, and are not significantly

impacted by human activities. ORW and ERW status identifies waters that the State of Wisconsin has determined warrant additional protection from the effects of pollution. These designations are intended to meet federal Clean Water Act obligations requiring Wisconsin to adopt an “antidegradation” policy that is designed to prevent any lowering of water quality, especially in those waters having significant ecological or cultural value.

- **ORWs:** ORWs typically do not have any point sources discharging pollutants directly to the water (for instance, no industrial sources or municipal sewage treatment plants), though they may receive runoff from nonpoint sources. New discharges may be permitted only if their effluent quality is equal to or better than the background water quality of that waterway at all times, no increases of pollutant levels are allowed.
- **ERWs:** If a waterbody has existing point sources at the time of designation, it is more likely to be designated as an ERW. Like ORWs, dischargers to ERW waters are required to maintain background water quality levels; however, exceptions can be made for certain situations when an increase of pollutant loading to an ERW is warranted because human health would otherwise be compromised.

Clark County has no designated ORWs. Within Clark County the only ERW listed is an unnamed creek (17-5 T24N R1E), a branch of the Cunningham Creek, in the Town of Lynn between Division Ave. and County Highway W. This segment of the Cunningham Creek is considered to be a Class II trout stream. Other streams are currently in the process of being classified as trout water, which would result in an ERW designation. These streams would include Black Creek, Dickison Creek, Halls Creek, Scott Creek, and Sterling Creek in Clark County. These waterways are shown on Map 2-12.

Groundwater

Groundwater is the source of almost all drinking water in Clark County and supplies water for many agricultural and industrial processes as well. Groundwater is a limited resource, and both its quality and quantity are important factors. These factors are primarily influenced by local geology and local land use and cover.

Three primary aquifers are present in the County: the sand and gravel aquifer, the sandstone aquifer, and the crystalline rock aquifer. The sand and gravel aquifer is present throughout most of the County at approximately 20 to 50 feet below the ground surface. This aquifer is easily accessible, but it is also the most easily contaminated. The sandstone aquifer is a deep aquifer and is found in the western and southeastern portions of Clark County. Groundwater is fairly abundant in the sandstone aquifer and is generally less susceptible to contamination. The crystalline rock aquifer is also a deep aquifer and is found in the northern and northeastern portions of the County, as well as along the course of the Black River throughout the County. The crystalline rock aquifer yields low to moderate amounts of water and is generally less susceptible to contamination.

Quality

In areas of Clark County, the groundwater is impacted by nitrate and bacterial contamination. Groundwater contamination is most likely to occur where fractured bedrock is near the ground surface, or where only a thin layer of soil separates the ground surface from the water table. What occurs above the surface of the land directly influences what occurs below the surface of the land. According to a WDNR map, *Groundwater Contamination Susceptibility in Wisconsin*, 1989, Clark County is moderately susceptible to groundwater contamination. The Center for Watershed Science and Education- Groundwater Center at the UW-Stevens Point summarized well testing data for Clark County during the twenty year period between 1986 and 2008. Nitrate levels for private wells tested during this time period are shown on Map 2-13. In Clark County 57% of the wells tested exceeded the EPA Preventative Action Limit (PAL) of 2mg/L of nitrates. Identification of the PAL allows intervention that ideally controls contamination before groundwater exceeds the Enforcement Standard (ES) of 10mg/L. 11% of the wells tested in Clark County exceeded the ES of 10 mg/L of nitrates. Certain towns located in the central portion of Clark County exhibited higher levels of nitrate contamination, with more than 20% of private drinking wells exceeding 10mg/L. Nitrate levels above 2mg/L indicate that groundwater is being influenced by human activities and may also indicate other potential problems such as pesticide residues. Acute exposure to nitrates is associated with blue baby syndrome among young infants, but long-term exposure at low levels may increase cancer in adults. Infants less than six months of age and women who are pregnant are the most at risk for experiencing health problems associated with high nitrate drinking water. The most common source of nitrate in groundwater is from fertilizers, both lawn and agricultural. Other sources may include septic systems and animal manure. Additionally, 20% of the wells tested in Clark County were found to contain coliform bacteria. Coliform bacteria are living microorganisms present in human and animal waste. Bacteria can enter wells through loose well caps, well defects (improper grouting or deteriorating well casings), and through cracks in the underground rocks. Coliform bacteria usually do not cause disease themselves, but may indicate that other disease causing microorganisms and pathogens, such as *E.coli*, might have an open pathway to enter the well. Bacteria can cause a variety of flu-like illnesses and even hepatitis. Homeowners should suspect bacteria problems if their water suddenly changes color, becomes cloudy, or has changes in odor or taste. However, sometimes there are no indicators. While nitrates and bacteria are two of the most common water quality problems; unsafe levels of copper and lead can be found in drinking water when corrosive water comes into contact with common household plumbing. Clark County has naturally corrosive water and many homes have copper or lead in their drinking water. More than 85% of drinking water samples tested had copper present and more than 50% contained lead. Copper at high levels can cause digestive disturbances, while high lead levels can cause brain, nerve, and kidney damage, particularly in small children.

Potential sources of groundwater contamination include:

- Chemical and fertilizer storage
- Landspreading of industrial, municipal, and residential wastewater, sludge, and septage
- Animal feedlots and manure storages
- Landspreading of petroleum contaminated soils
- Unused and unabandoned drinking water wells
- Use of manure, fertilizers, and pesticides

- Septic tanks and drainfields
- Underground storage tanks, pipelines, and sewers
- Accidental spills of chemicals, fertilizers, manure, and petroleum products
- Improper disposal of household and agricultural chemical and hazardous waste
- Existing and abandoned landfills and improper disposal of household waste
- Mines, pits, and quarries

Quantity

The Geological Survey Water-Supply Paper 2022 published in 1974 by the U.S. Department of the Interior and the University of Wisconsin Geological and Natural History Survey titled "Water Availability in Central Wisconsin- An Area of Near-Surface Crystalline Rock" reports that most of Clark County is located in a region of Wisconsin that is considered to be groundwater quantity deficient. This survey can be found at http://wi.water.usgs.gov/pubs/water_supply_papers.htm. A map of the area is shown on Map 2-14. Many private and public drinking water wells in this area yield low amounts of water, on the order of 2 to 5 gallons per minute. Soils of low permeability impede downward seepage and promote rapid surface runoff. Crystalline rock at or near the surface, generally covered by thin soil deposits of low permeability, limit the groundwater storage potential. The result is a water-poor area in a water-rich state. Many farms have multiple wells and numerous municipalities are addressing current and anticipated water shortages. Farmland and other open spaces are essential for groundwater infiltration. These types of landscapes are pervious and allow rainwater and snowmelt to infiltrate through the soil profile and contribute to the increase in groundwater quantity. Residential development is often associated with increased impervious surfaces, which limit rainwater and snowmelt infiltration, thereby decreasing the amount of groundwater recharge and increasing the amount of runoff water that may transport pollutants into the surrounding surface waters. The best land use for increasing infiltration of water, and subsequently groundwater quantity, is agricultural, forested, wetland, and other open space lands.

Wellhead Protection

The goal of wellhead protection is to provide adequate public water supply safeguards and to prevent potential contaminants from reaching the recharge areas and wells that supply municipal water systems. This is accomplished by monitoring and controlling potential pollution sources within the land area that recharges those wells.

Wellhead protection planning is administered by the WDNR, as required by the U.S. Environmental Protection Agency (EPA) and the 1986 amendments to the Federal Safe Drinking Water Act. The WDNR is the lead state agency for developing and implementing the Wellhead Protection Program. Wellhead planning is encouraged for all communities and is required when any new municipal well is proposed.

In Clark County, the City of Abbotsford, City of Owen, City of Greenwood, and Village of Granton have WDNR approved wellhead protection plans for at least one of their municipal wells. The City of Loyal, City of Colby, City of Thorp, Village of Withee, Village of Dorchester, and Village of Curtiss have an approved plan that covers all of its municipal wells.

Air Quality

In order to evaluate the quality of the air and to protect the public health, a series of National Ambient Air Quality Standards (NAAQS) has been developed by the U.S. Environmental Protection Agency (EPA) as established in section 109 of the Clean Air Act. According to the Wisconsin Air Quality Report, as prepared by the WDNR, the air pollutants affecting Wisconsin include sulfur dioxide, suspended particulate matter, carbon monoxide, ozone, oxides of nitrogen, lead, sulfates, and nitrates. Clark County is considered an attainment area, which is an area that meets the NAAQS defined in the Federal Clean Air Act.

Habitat and Ecology

Wisconsin's Land Legacy Report

The Wisconsin Department of Natural Resources has developed a report that has been called the "green print" for conservation and recreation over the next 50 years. *Wisconsin's Land Legacy Report*, released in January of 2006, identifies places that are critical in meeting conservation and recreation needs in the future. The report defines which places have the highest priority to protect for the future and why. The areas listed below were identified as being within or partially within Clark County and are included within the study.

Black River Corridor

This area includes the entire corridor of the Black River and the East Fork of the Black River, over 100 miles of large river habitat. It is one of the most undeveloped rivers in the state, which provides for an exceptionally unique opportunity to enjoy the aesthetics of being on a "wild river". In addition, there are many threatened and endangered species along the river corridor. Lowland areas consist of tag alder, sedge meadows, and bogs. Lower reaches of the river consist of native floodplain forest, backwater oxbows, and high quality wetland communities. Many archeological sites are found on the terraces above the Black River floodplain. Upland vegetation consists of jack pine and oak sand barrens changing to oak, maple, and basswood, intermixed with white pine. This corridor provides a connection between the Mississippi River, through the Black River State Forest, and north to the Chequamegon National Forest. In addition to this ecologically important linkage, the Black River is a favorite of canoeists.

Central Wisconsin's Grassland

This large landscape in central Wisconsin extends into eastern Clark County and provides one of the state's best opportunities to maintain and restore habitat for a number of rare grassland birds, including the prairie chicken and sharp-tailed grouse. Mead and McMillan Marsh Wildlife Areas form the core of this large grassland area. These wildlife areas host a variety of vegetative communities including tamarack and black spruce bogs, sedge meadow, upland grass, agricultural areas, various successional stages of timber, and extensive wetlands. The Little Eau Pleine River serves as a natural link between these wildlife areas. Farmland (both active and retired) and individual or multiple home developments dominate the rural landscape. The area is

in close proximity to Stevens Point, Wisconsin Rapids, Marshfield, and Wausau and hosts many recreational activities including hunting of deer, waterfowl, and upland birds; trapping; hiking; berry picking; bird watching; snowmobiling; snow-shoeing; and cross country skiing.

Large Scattered Forest Blocks

Many large blocks of industrial forest provide wood products that are important to Wisconsin's economy. Much of this industrial forest is enrolled in the Wisconsin's Forest Crop Law (FCL) or Managed Forest Law (MFL) programs and provides considerable conservation values and public recreation opportunities. These working forests also harbor many valuable features such as spring ponds, small undeveloped lakes, marshes, and trout streams. Often these lands are large enough to provide visitors with a remote, quiet experience. Many adjoin State, Federal, and County properties. Some of these large blocks of forest are in danger of being divided into smaller parcels and closed to public access. Maintaining these large blocks as working forests will ensure that they continue to meet economic and recreational needs and will also help meet the ecological needs of those species that require large acreages of habitat to survive.

Threatened and Endangered Species

The Wisconsin Department of Natural Resources (WDNR) lists species as "endangered" when the continued existence of that species as a viable component of the state's wild animals or wild plants is determined to be in jeopardy on the basis of scientific evidence. "Threatened" species are listed when it appears likely, based on scientific evidence, that the species may become endangered within the foreseeable future. The WDNR also lists species of "special concern" of which some problem of abundance or distribution is suspected, but not yet proved; the intent of this classification is to focus attention on certain species before becoming endangered or threatened. Another source for information on rare and natural animals and features is the Natural Heritage Inventory Program. The Wisconsin Natural Heritage Inventory (NHI) program is part of an international network of NHI programs. This network was established by The Nature Conservancy and is currently coordinated by NatureServe, an international non-profit organization. NHI programs focus on locating and documenting occurrences of rare species and natural communities, including state and federal endangered and threatened species.

Wildlife habitat can simply be defined as the presence of enough food, cover, and water to sustain a species. The Clark County landscape provides habitat for a variety of plants, birds, mammals, amphibians, reptiles, and fish. Habitat areas within the county are critical components of the state's biodiversity and provide habitat for rare, threatened, and endangered species.

Within Clark County seven plant species are listed as special concern and one species is listed as endangered. Fifteen animal species are listed as special concern, and seven other animal species are listed as endangered or threatened.

<u>Common Name (Plant or Animal)</u>	<u>State and/or Federal Status*</u>
Missouri Rock-Cress	Special Concern
Clustered Sedge	Special Concern
Arrow-Headed Rattle-Box	Special Concern

Rock Clubmoss	Special Concern
Canada Mountain-Ricegrass	Special Concern
Hooker's Orchid	Special Concern
Silky Willow	Special Concern
Sand Violet	Endangered
Northern Gosshawk	Special Concern
Elktoe	Special Concern
Dusted Skipper	Special Concern
Giant Casemaker Caddisfly	Special Concern
Small Square-Gilled Mayfly	Special Concern
Gray Wolf	Special Concern/Endangered*
Blanding's Turtle	Threatened
Persiu Dusky Wing	Special Concern
Least Darter	Special Concern
Wood Turtle	Threatened
Bald Eagle	Special Concern
Minute Moos Beetle	Special Concern
Karner Blue Butterfly	Special Concern/Endangered*
Prairie Vole	Special Concern
Woodland Vole	Special Concern
Sand Snaketail	Special Concern
Vernal Stonefly	Special Concern
Eastern Massasauga	Endangered
Water Shrew	Special Concern
Western Ribbonsnake	Endangered
Greater Prairie Chicken	Threatened

The WDNR also lists important examples of natural community types found in the county. Clark County straddles Wisconsin's tension zone, where southern deciduous forests are intermingled with northern coniferous forest types. For this reason, Clark County's natural communities are very diverse and extremely ecologically important as they bridge the northern pine forest to the southern deciduous forest and prairie. Although these communities are not legally protected, they are critical components of Wisconsin's biodiversity and may provide the habitat for rare, threatened, and endangered species. The native natural community types found within Clark County are as follows: alder thicket, bird rookery, central poor fen, central sands pine-oak forest, dry cliff, dry prairie, emergent marsh, northern dry forest, northern dry-mesic forest, northern sedge meadow, northern wet forest, open bog, southern dry-mesic forest, southern mesic forest, southern sedge meadow, and stream (fast, hard, cold).

Terrestrial and Aquatic Invasive Species

Invasive plants, animals, and disease-causing microorganisms are taking a toll on some of Clark County's lakes, rivers, and landscapes, as well as the local economy and recreation opportunities. Invasive species can alter ecological relationships among native species and can affect ecosystem function, structure, and economic value. The WDNR has been working with citizens and partners to develop ways to prevent and control invasive species. On September 1, 2009, the Invasive

Species Identification, Classification and Control rule went into effect. The Invasive Species Rule (Wis. Adm. Code Chapter NR40) makes it illegal to possess, transport, transfer, or introduce certain invasive species in Wisconsin without a permit. The rule creates a comprehensive, science-based system with criteria to classify invasive species into 2 categories: "Prohibited" and "Restricted". With certain exceptions, the transport, possession, transfer, and introduction of prohibited species is banned. Restricted species are also subject to a ban on transport, transfer, and introduction, but possession is allowed, with the exception of fish and crayfish. WDNR may issue permits for research or public display of any listed invasive species. This comprehensive invasive species law helps prevent new invaders from getting to Wisconsin (and Clark County) in the first place and allows the WDNR to attempt to contain new invasive species before they become established.

Invasive species are plants, animals, and pathogens that are "out of place." A species is regarded as invasive if it has been introduced by human action to a location, area, or region where it did not previously occur naturally (i.e., not native), becomes capable of establishing a breeding population in the new location without further intervention by humans, and spreads widely throughout the new location.

One of the reasons that invasive species are able to succeed is that they often leave their predators and competitors behind in their native ecosystems. Without these natural checks and balances they are able to reproduce rapidly and out-compete native species.

According to the WDNR, Clark County has the following aquatic invasive plant and animal species. Some of these species have been formally classified in NR40.

Waterbody	Species	NR40 Classification
Mead Lake	Curly-Leaf Pondweed	Restricted
North Branch- O'Neil Creek	Rusty Crayfish	Prohibited
Rock Creek	Rusty Crayfish	Prohibited
South Fork- Eau Claire River	Rusty Crayfish	Prohibited
Yellow River	Rusty Crayfish	Prohibited

According to the WDNR, Clark County has the following terrestrial invasive animal species:

Common Name	NR40 Classification
Asian Gypsy Moth	Prohibited
Asian Lady Beetle	Caution
Asian Longhorned Beetle	Prohibited
Butternut Canker Pathogen	Caution
Earthworms	Not Listed
English Sparrow, House Sparrow	Non-Restricted
European Goldfinch	Not Listed
European Starling	Non-Restricted
Feral Domestic Swine	Prohibited
Forest Tent Caterpillar	Not Listed
Gray Partridge	Non-Restricted

Gypsy Moth	Restricted
House Finch	Non-Restricted
House Mouse	Non-Restricted
Mute Swan	Not Listed
Norway Rat	Non-Restricted
Oak Wilt	Not Listed
Pigeon, Rock Dove	Non-Restricted
Ring-Necked Pheasant	Non-Restricted
Sudden Oak Death Pathogen	Prohibited
White Pine Blister Rust	Caution
Wolf/Dog Hybrids	Not Listed

According to the WDNR, Clark County has the following terrestrial invasive plant species:

Common Name	NR40 Classification
Amur Honeysuckle	Prohibited/Restricted
Amur Maple	Not Listed
Aquatic Forget-Me-Not	Not Listed
Autumn Olive	Restricted
Bells Honeysuckle	Restricted
Bird's-Foot Trefoil	Not Listed
Black Bindweed	Not Listed
Black Locust	Not Listed
Blackberries & Raspberries	Not Listed
Bouncing Bet	Not Listed
Boxelder	Not Listed
Bracken Fern	Not Listed
Bull Thistle	Not Listed
Burdock	Not Listed
Butter and Eggs	Not Listed
Canada Bluegrass	Not Listed
Canada Thistle	Restricted
Cattail Hybrid	Restricted
Chicory	Not Listed
Chinese Elm	Not Listed
Common Buckthorn	Restricted
Common Ragweed	Not Listed
Creeping Bellflower	Restricted
Creeping Charlie	Not Listed
Crown Vetch	Not Listed
Curly Dock	Not Listed
Cypress Spurge	Restricted
Dame's Rocket	Restricted
Eastern Cottonwood	Not Listed
Eastern Red-Cedar	Not Listed
Field, Sheep Sorrel	Not Listed

Garlic mustard	Restricted
Giant Ragweed	Not Listed
Glossy Buckthorn	Restricted
Grey Dogwood	Not Listed
Hemp Nettle, Brittlestem	Restricted
Hemp, Marijuana	Not Listed
Hoary Alyssum	Non-Restricted
Honey Locust	Not Listed
Horsetail	Not Listed
Japanese Barberry	Not Listed
Kentucky Bluegrass	Not Listed
Leafy Spurge	Restricted
Morrow's Honeysuckle	Restricted
Motherwort	Not Listed
Mullein	Not Listed
Multiflora Rose	Restricted
Narrow-Leaf Cattail	Restricted
Norway Maple	Not Listed
Orange Daylily	Not Listed
Orange Hawkweed	Not Listed
Orchard Grass	Not Listed
Oriental Bittersweet	Restricted
Ox-Eye Daisy	Not Listed
Phragmites, Common Reed	Restricted
Plumeless Thistle	Restricted
Poison Ivy	Not Listed
Prickly Ash	Not Listed
Purple Loosestrife	Restricted
Quackgrass	Not Listed
Quaking Aspen	Not Listed
Queen Anne's Lace	Not Listed
Raspberry	Not Listed
Red Clover	Not Listed
Red Osier Dogwood	Not Listed
Red-Twig Dogwood	Not Listed
Reed Canary Grass	Not Listed
Russian Olive	Restricted
Scotch Pine	Non-Restricted
Siberian Pea Shrub	Not Listed
Smooth Brome	Not Listed
Spotted Knapweed	Restricted
Staghorn Sumac	Not Listed
Stinging Nettle	Not Listed
Tall Fescue	Not Listed
Tall Hawkweed	Not Listed
Tall or Reed Manna Grass	Prohibited/Restricted

Tansy	Restricted
Tartarian Honeysuckle	Restricted
White Champion	Not Listed
White Clover	Not Listed
White Poplar	Not Listed
White Sweet Clover	Not Listed
Wild Parsnip	Restricted
Wood Nettle	Not Listed
Yellow Iris	Not Listed
Yellow Sedum	Not Listed
Yellow Sweet-Clover	Not Listed

Unique and Wilderness-Like Landscapes

Wilderness and unique landscapes offer a glimpse of what a landscape might have looked like before humans altered the landscape. The federal definition of wilderness is “A *wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and community of life are untrammelled by man, where man himself is a visitor who does not remain.*” Within wilderness areas, there is an attempt made to restrain human influences so that ecosystems can change over time in their own way, free, as much as possible, from human manipulation. These landscapes showcase the geological forces of nature over time and provide solitude and a way for those people, who wish, to retreat from civilization to experience the rare and raw beauty of nature.

Unique and wilderness-like landscapes contribute to the ecologic, economic, and social health and well being of Clark County’s citizens, and those who visit them. The benefits that these areas provide are as diverse as the areas themselves and are highly valued. In addition to providing outstanding opportunities for solitude or a primitive and unconfined type of recreation, these landscapes may also contain ecological, geological, or other features of scientific, education, scenic, or historical value. Overall, these landscapes provide both direct and indirect benefits.

Clark County does not have any land formally designated as wilderness. However, there are many places within the county, where a similar wilderness feeling can be achieved or a unique ecological, geological, scientific, educational, scenic, or historical value exists. Many of these places offer unobstructed countryside and night sky views. These places are located on private lands and public lands owned by the county, state and federal governments. Currently, only the state and federal lands have any sort of protection from development.

Map 2-15 shows the location of some of the unique and wilderness-like landscapes within the county. The following is a list of some of those landscapes in Clark County.

Private Lands

- North Mound, South Mound, Neillsville Mound, Christie Mound, Burdock Mound, Espey Mound, and other monadnocks
- “City of Rocks” on the eastside of Neillsville Mound
- Black River Corridor

- East Fork of the Black River Corridor
- Large blocks of privately owned timber land north of Mead Lake and other areas

Public Lands

County Lands:

- County Forest Lands
- Wildcat Mound in Section 25, Town of Mentor
- Hay Creek Mound in Section 26, Town of Foster North
- Trow Mound in Section 5, Town of Dewhurst
- Bald Peak in Section 19, Town Seif
- Seven Sisters in Sections 7 & 8, Town of Seif
- Levis/Trow Mounds in Sections 9, 10, & 15, Town of Dewhurst
- Sportsman Lake and associated wildlife refuge in Towns of Hixon and Hoard
- Sherwood Lake in the Town of Sherwood
- Winx Flowage Migratory Bird Refuge in Section 24, Town of Pine Valley
- Black River frontage in Sections 7 & 8, Town of Levis

State Lands:

- Blue Swamp State Natural Area Sections 21 & 28, Town of Butler
- Dickison Creek and other trout streams
- Rustic Roads in Town of Green Grove and Town of Hewett
- DOT Wetlands in Sections 31, 32, & 33, Town of Hoard
- Black River State Forest in Towns of Dewhurst and Levis

Federal Lands:

- Bureau of Land Management's Black River Islands

One general characteristic of the Clark County landscape is that the county sits in an important location with regard to whitetail deer populations. Both the Black River corridor and the Clark County Forest serve as important segments in the link between southern and northern Wisconsin deer populations. These "wild" areas provide lanes of travel between major northern forest and southern farmland habitat blocks.

Sources of Pollution

Point Source Discharges

Many industrial processes depend upon the ability to dispose of water they have used by discharging it to a surface water body, typically a river or stream. These discharges are considered to be point-source pollution discharges. The WDNR establishes regulations and monitors compliance of all such discharges. Permits are obtained through the Wisconsin Pollutant Discharge Elimination System program (WPDES). The capacity of these waterways to receive processed water without becoming ecologically impaired is also monitored.

As of October 2011, the following table shows the Clark County operations that were listed by the WDNR as having WPDES permits.

Formal Name of Facility	Type of WPDES Permit
Chili WWTF	Municipal
Clark County Health Care Center WWTF	Municipal
Curtiss WWTF	Municipal
Village of Dorchester WWTF	Municipal
Village of Granton WWTF	Municipal
City of Greenwood Detention Pond	Municipal
City of Neillsville WWTF	Municipal
City of Greenwood WWTF	Municipal
City of Thorp WWTF	Municipal
Village of Unity WWTF	Municipal
Village of Withee WWTF	Municipal
City of Owen WWTF	Municipal
Kerry Ingredients	Industrial
Abbyland Pork Plant - Curtiss	Industrial
Barr Enterprises, Inc	Industrial
Grassland Dairy Products, Inc	Industrial
LaGrander's Hillside Dairy LLC	Industrial
Lynn Dairy Proteins, Inc	Industrial
North Hendren CO-OP Dairy	Industrial
Bach Properties LLC	Agricultural
Dic-Wisco Farms Inc	Agricultural
Calla Ville Dairy	Agricultural
Dietsche Dairy	Agricultural
Badger Holsteins Partnership	Agricultural
Dutch Dairy LLC	Agricultural
Elusive Hill	Agricultural
Erickson Dairy	Agricultural
A&D Meyer Land Co LLC	Agricultural
Norm-E-Lane Dairy	Agricultural

Additionally, many WPDES permit holders that are located outside of Clark County use Clark County as a place to store or landspread their wastewater, sludge, and septage. There are 57 municipal, industrial, and/or residential wastewater generators and/or haulers that land apply in Clark County. There are 68,088 acres approved for landspreading in Clark County. In 2009, about 96 million gallons of wastewater were applied to these approved sites. Currently, there are no manure storages approved to store any of these municipal, industrial, or residential wastes. However, in 2009, more than 14 million gallons were stored in manure storages in Clark County. In response to this reporting inconsistency, the WDNR has created an approval process to assist generators and haulers with locating “safe” places to store these wastes. This approval process requires county involvement in regard to making sure the storages being used meet the current storage standards established in county, state, and federal code.

Nonpoint Source Discharges

Other discharges to waterbodies and waterways are diffuse and non-specific and are considered nonpoint source pollution discharges. Nonpoint source pollution can originate from many sources, including residential lawns, golf courses, parking lots, construction sites, logging operations, and agricultural operations.

WDNR has established NR216 Storm Water Discharge Permits to regulate these discharges. Under subchapter III of NR216, Wis. Adm. Code, a notice of intent shall be filed with the DNR by any landowner who disturbs one or more acres of land. This disturbance can create a discharge of storm water from the construction site to waters of the state and is therefore regulated by DNR. Many of these discharges from smaller sites are considered to be nonpoint source discharges; however WDNR does regulate these stormwater discharges and considers them to have the potential to become point source discharges. NR216 directly address stormwater runoff and indirectly addresses soil erosion. Discharges from construction sites will occur via runoff, but construction erosion control practices that control soil erosion limit the amount of sediment and nutrients in that runoff. Agriculture is exempt from this requirement for activities such as planting, growing, cultivating, and harvesting of crops for human or livestock consumption and pasturing or yarding of livestock, as well as sod farms and tree nurseries. Agriculture is not exempt from the requirement to submit a notice of intent for one or more acres of land disturbance for the construction of structures such as barns, manure storage facilities, or barnyard runoff control systems. (See s. NR216.42(2), Wis. Adm. Code.) Furthermore, construction of an agricultural building or facility must follow an erosion and sediment control plan consistent with s. NR216.46, Wis. Adm. Code, including meeting the performance standards of s. NR151.11, Wis. Adm. Code. An agricultural building or facility is not required to meet the post-construction performance standards of NR151.12, Wis. Admin. Code.

WDNR has also established non-point source pollution performance standards in NR151 and ATCP-50 established the conservation best management practices used to implement the performance standards listed in NR151. A more complete discussion of NR151 is contained in Chapter 6 of the Clark County Land and Water Resource Management Plan

Clark County administers the Nonmetallic Mining Reclamation Ordinance. Improperly reclaimed mines have the ability to create nonpoint source pollution discharges, namely discharges of sediment that affect surface water in Clark County. According to data from the Clark County Planning and Zoning Department, Clark County has 45 permitted mines covering more than 446 acres. Of those acres, approximately 364 acres are considered active. The locations of these mines are shown on Map 2-17. WDNR also maintains an additional non-metallic mining database for those mines permitted under Chapter 30, which are regulated as point source discharges. These mines are typically located within 500' of navigable water and therefore have greater potential for discharges. The WDNR data lists an additional 10 nonmetallic mines operating in Clark County. Recently there has been an increased interest in "frac" sand mining for the petroleum mining industry. It is expected that these types of mineral deposits will be more actively mined in the future to satisfy a growing demand for "frac" sand.

In 2005, a report to the Natural Resources Board of the WDNR, titled "The Wisconsin Buffer Initiative" (WBI) was prepared by the University of Wisconsin-Madison, College of Agricultural

and Life Sciences. This report outlined the impact of nonpoint source pollution of certain watersheds in Wisconsin. The WBI ranked watersheds throughout the state in regards to their potential to meet three management goals after the installation of riparian buffer strips:

1. Improve stream quality
2. Protect and enhance aquatic biological communities
3. Sustain lake water quality.

Furthermore, the research identified, through modeling, which and how those watersheds were most likely to respond to reductions of phosphorus and sediment through the implementation of conservation practices, namely buffer strips in the riparian areas. The outcome of this report was the recommendation that an adaptive management approach be implemented to more precisely design and locate buffers in Wisconsin in order to reduce nonpoint source runoff.

Natural Resource Trends and Outlook

The following trends are anticipated with respect to agricultural for the next five years in Clark County.

- The number of dairy farms will continue to decline and dairy herd sizes will continue to increase resulting in a stable population of dairy cattle.
- Increased interest in cash cropping, specialty crop, and value-added farming.
- Decreased interest in planting sod-forming perennial crops, in favor of planting more annual grain crops.
- Increase in the amount of rural residential development that reduces agricultural economies of scale and increases user conflicts.
- Increase in the amount of cropland managed by non-cropland owners.
- Increase in the number of large dairies operating according to a WPDES permit.

The following trends are anticipated with respect to forest resources within the county.

- Demand for forest products is predicted to increase, while forest lands managed for timber harvest are expected to decrease.
- Continued interest in “living in the woods” will lead to additional forest fragmentation.
- Potential for sales of large blocks of industrial forest land to development entities will grow, especially along waterfront.
- The variety of recreational uses requested in the county forest and parks will increase.
- The number of recreationists attempting to use the county forest and parks will increase.
- Growing public interest and involvement in the county forest will lead the management of the resource further in the direction of accommodating multiple uses.

The following are other anticipated trends with regard to the agricultural, natural, or cultural resources within the county.

- The county’s riverfronts, woodlands, and highland areas will be desired as residential and seasonal use building sites.
- Demand for sand and gravel resources, especially “frac” sand will increase.
- Continued focus on soil nutrient displacement, not soil erosion as the method for resolving water quality problems.

- Challenges to groundwater resources will grow, including an increasing quantity of withdrawals and an increasing amount of potential contamination sources.
- Continued importation and landspreading/storing of industrial, municipal, and residential wastewater, sludge, and septage.
- Increased pressure (draining and filling) on wetlands to convert them to cropland and other non-hydrologic uses.
- Increased presence of terrestrial and aquatic non-native invasive species.
- Confusion about rules and regulations when managing natural resources will continue.

Land Use

Existing Land Use (Current State)

Land use is a means of broadly classifying different types of activities relating to how land is used. The type, location, density and geographic extent of developed and undeveloped lands influence community character, quality of life, public service needs (e.g., roads, utilities, parks, emergency services), tax base, availability of jobs, etc. Existing land use was inventoried using aerial photography, other existing maps, field verification, and input from local communities. The existing land use inventory incorporates land use classifications that were determined to best represent the character and features of the county. For example, there is a high percentage of land enrolled in the Managed Forest Law program, so a unique classification identifies these lands. The following table summarizes Clark County's existing land use.

Existing Land Use Clark County 2001

Land Use Category	Acreage	% of Total
Intensive Land Uses	25,256.5	3.2
Single Family	9,003.7	1.2
Multiple Family	78.6	0.0
Multiple Manufactured Housing	110.0	0.0
Primary Farmstead	5,116.4	0.7
Other Farmstead	1,789.1	0.2
Seasonal Structures	558.4	0.1
Structures with no Residences	601.8	0.1
Commercial	929.7	0.1
Industrial/Manufacturing	689.1	0.1
Active Quarries	925.8	0.1
Transportation/Communication/Utility	506.0	0.1
Government Services	140.9	0.0
Institutional	594.6	0.1
Private Outdoor Recreation	253.6	0.0
Public Outdoor Recreation	653.7	0.1
Cemeteries	201.4	0.0
Undeveloped	3,103.6	0.4
Public Resource Land	135,156.0	17.3
County Forest Lands	130,648.6	16.7
County Resource Lands	3,184.8	0.4
State Resource Lands	1,322.6	0.2
Private Resource Land	594,831.0	76.2
Cropped Farmland	268,385.6	34.4
Managed Forest Lands	38,522.5	4.9
Tree Farm/Horticulture	6,009.6	0.8
Other Resource Lands	281,913.3	36.1
Base Features	25,036.5	3.2
Open Water	5,970.4	0.8
Public Roads	18,253.6	2.3
Railroad ROW	812.5	0.1
Total	780,280.0	100.0

The pattern of land use in Clark County is indicative of a rural agricultural and forest based region with several small incorporated communities providing centers of commerce, services, and cultural resources. Public and private resource lands are dominant on the Clark County landscape, together covering 93.5% of Clark County. Intensive uses, including both urban and rural residential, commercial, industrial, recreational, and institutional uses, occupy only 3.25% of the county's land area. Base features, including waterways, roads, and railroads occupy another 3.25% of the land area. The distribution of agriculture and forest land is strongly connected to soil productivity characteristics. Cropped farmland appears in the northern, central, and eastern quadrants of the county where soil conditions are ideal for agriculture. The wetter and sandier soils of southern and western Clark County, including the Clark County Forest Unit, are far less productive for agriculture and better suited to forest uses.

Residential

Residential development in Clark County consists mainly of single family housing including farmsteads. Limited multiple family housing, manufactured housing, and seasonal housing are also present within Clark County. Concentrated residential development is found primarily in the incorporated municipalities. To a lesser extent, concentrated residential development is found along waterways where the shoreline is privately owned (e.g., Lake Arbutus, Rock Dam Lake, Snyder Lake, and Mead Lake). Scattered residential development is found throughout rural Clark County and generally follows transportation corridors, especially the State Highway 13 and 29 corridors. Some areas of the county have experienced more rural residential development than other areas. Areas adjacent to the county forest and areas located in the northeastern vicinity of Clark County have experienced the greatest amount of rural residential development. In northeastern Clark County, rural residential development has in some cases decreased the agricultural economies of scale associated with large contiguous blocks of cropland. Here, rural residential development has fragmented cropland into smaller parcels that are much less efficient for farmers to profitably manage. These fragmented parcels have been converted to other uses, such as residential and non-farm recreational uses.

Agriculture Connections

Agriculture not only produces food and fiber, but is also linked to many other components of the economy. Agriculture supports equipment and implement manufacturers and dealers, the vegetable and meat processing industries, the construction trade, trucking, veterinary services, genetic research, and many others. Agriculture is connected to Wisconsin's culture and heritage. Barns, cows, cropfields, and silos paint the scene that defines Clark County's rural character.

Agriculture has many considerations relative to the natural environment, both positive and negative. Farms provide green space, wildlife habitat, enhanced groundwater recharge, and nutrient recycling. Farms can also be sources of soil erosion, polluted runoff, odors, and damage to riparian areas. Agriculture is connected to other land uses. The interaction between farms and rural residential development has impacted land values, property taxes, and the right to farm. The distance from farm related services, markets for farm commodities, processing industries, and other critical land uses can determine the long-term success of an agricultural area.

Wisconsin's Working Lands Initiative (WLI) and Agricultural Enterprise Areas (AEA)

In 2011, town officials and citizens from the Towns of Mayville, Colby, Beaver, Unity, and Loyal submitted a petition to the Wisconsin Department of Agriculture, Trade, and Consumer Protection requesting the establishment of the Heart of America's Dairyland Agricultural Enterprise Area (AEA). Map 2-18 shows the boundary of the AEA. The petition was prepared according to s. 91.86 Wis. Stats. Guidance and to meet the requirements established by the Wisconsin Working Lands Initiative. The mission statement of the AEA is "To preserve and promote the agricultural economy and its social, cultural, and economic heritage." More than 150 farms and 30 local agribusinesses and farm organizations supported the petition. The AEA encompassed more than 61,000 acres spread across northeastern Clark County. In total, the land that is associated primarily with agricultural use is approximately 59,469 acres. Clearly, the Heart of America's Dairyland AEA primarily consists of working lands predominately under agricultural management. More than 250 businesses in the immediate area support and rely on agriculture for income. The Heart of America's Dairyland AEA was recommended for formal designation in May 2011. Landowners who own a parcel included in the designated AEA may become eligible for refundable income tax credits. Before the tax credit can be claimed, landowners must be either located in a town zoned for exclusive agriculture or located in an AEA and have signed a voluntary Farmland Preservation Agreement. Landowners can receive higher refunds for meeting both of the previous location requirements. All participating landowners must be in compliance with soil and water conservation requirements listed on the checklist located in *Appendix B*.

Land and Resource Management

Land and resource management takes place under both private and public land ownership. Public and private land and resource management programs are important in preserving the county's rural character and natural resource base. Public ownership of land in Clark County consists of county and state owned lands. There are two voluntary land and resource management protection programs with significant utilization on private lands in Clark County: Managed Forest Law and Conservation Reserve Program.

There are approximately 133,833 acres of county owned forested lands within Clark County. The vast majority is managed as the Clark County Forest, which is managed according to the *Clark County Forest, 15 Year Comprehensive Land Use Plan*. The county also owns 3,185 acres that are not designated under a specific resource protection program, however they are county controlled and will most likely remain as county resource land in the future. These lands are owned by Clark County for the purpose of natural resource management and also include lands within county parks managed for natural environments and passive recreation uses.

Public Resource Lands

Public resource lands include county forest land, other county lands not managed for intensive uses, and state owned land. These areas in public ownership that are managed for passive recreational uses and/or resource extraction occupy 135,973 acres in Clark County. Public resource lands do not include parks, playgrounds, swimming areas, boat launches, or athletic

fields. The most expansive area of public resource land in the county is the Clark County Forest. The Clark County Forest occupies approximately 132,788 acres in western and southern Clark County. Other county resource lands include the area surrounding Sportsman Lake, county owned gravel pits, and other isolated parcels. State resource lands in Clark County include a small segment of the Black River State Forest in the Towns of Levis and Dewhurst, a wetland restoration area along STH 29 in the Town of Hoard, and other scattered parcels. In 2002 the Clark County Board of Supervisors authorized the sale of 567 acres of scattered, county-owned parcels to private buyers. None of the identified parcels were in the Clark County Forest, but were determined to be of limited value to the county. To date, 325 acres have been sold.

County Forest and Recreation

As one of only twenty-nine counties with county forest land, the Clark County Forest is a unique community resource. The landscape of the County Forest supports thriving forest communities and abundant recreational opportunities. Hunting, fishing, hiking, camping, biking, boating, canoeing, kayaking, ATVs, motorcycles, and snowmobiles are all important elements of Clark County's culture and economy that are supported by the County Forest.

Potential conflicts within the realm of recreational forest use must also be taken into consideration when managing forest land. Motorized uses such as snowmobiles and ATVs, use for hunting and trapping, and passive uses like hiking and cross-country skiing all take place on forest lands within Clark County. Adequate separation between potentially conflicting land uses must be maintained in order to ensure continued viability of forests into the future.

Private Lands and the USDA Conservation Private Land Programs

There are approximately 106 farms with 2,680 acres enrolled in the Conservation Reserve, Wetlands Reserve, or Conservation Reserve Enhancement Programs. Each of these programs strive to maintain wildlife habitat, protect soil from erosion, and enhance water quality by allowing landowners to voluntarily not farm marginal cropland and set it aside for other non-agricultural uses. Landowners receive payments for the duration of the set-aside contract.

Private Lands and the Wisconsin Managed Forest Law (MFL)

In 2011, there were approximately 56,618.65 acres of MFL lands within Clark County, but enrollment numbers change yearly. The MFL program is administered by the WDNR. The purpose of the Managed Forest Law is to promote sound forestry management practices by providing property tax reduction incentives to landowners. Wooded parcels at least 10 acres in size are eligible to be enrolled in the program. At least 80% of the land must be productive forest land in order to be eligible for the program. Lands may be enrolled for either 25 or 50 year periods. This requires a long term commitment from the property owners, but also provides long term protection from property tax increases.

Preparation of an approved forestry management plan is required. Practices identified in the plan must be carried out for the duration of the contract period. Mandatory management activities required by the law include cutting mature timber, thinning plantations and natural stands, pine

releases, planting, post harvest treatments, and soil conservation practices. Landowners have the right to close up to 80 acres or 160 acres of their land to the public, depending upon the initial enrollment date, otherwise the land is classified as open, and public access is permitted for hunting, fishing, cross-county skiing, sight seeing, and hiking.

Existing Clark County Ordinances that Affect Natural Resources

Clark County and its communities currently administer a variety of codes and ordinances related to land use. The following is a brief description of the ordinances administered by Clark County that affect local natural resources.

Clark County Shoreland/Wetland Zoning Ordinance

This ordinance contains zoning regulations for the use and development of shoreland and shoreland/wetland areas. Shoreland zoning jurisdiction extends to areas within 1,000 feet of a lake, pond, or flowage, and to areas within 300 feet of a river or stream. Shoreland/wetland jurisdiction applies to wetlands that are at least five acres in area and are located within or partially within the shoreland zone. Counties are required to administer shoreland and shoreland/wetland zoning by the WDNR. The purpose of shoreland zoning is to further the maintenance of safe and healthful conditions, to prevent and control water pollution, and to protect spawning grounds, fish, and aquatic life. This ordinance establishes three zoning districts: Shoreland-Wetland, Recreational-Residential, and General Purpose. Major provisions of this ordinance include:

- Standards for the dimensions of building sites including minimum lot sizes
- Standards for the placement of structures including setbacks
- Permitted and special uses for each zoning district
- Limitations on the removal of shoreline vegetation
- Restrictions on filling, grading, and excavating
- Standards for nonconforming uses, structures, and lots
- Standards for off-street parking and loading
- Land division regulations
- Procedures for administration and enforcement

Clark County Floodplain Ordinance

This ordinance regulates development in areas prone to flooding as mapped by the Federal Emergency Management Agency (FEMA). Counties are required to regulate floodplains by the WDNR. Land uses within the floodplain are limited and subject to specific development and engineering standards to minimize flood hazard. Open space uses are generally preferred to structural uses in the areas with the highest risk for flooding (floodways). Structural uses may be allowed with certain modifications in the areas with a lower risk of flooding (flood fringe). This ordinance applies to all mapped floodplains in the unincorporated areas of the county. Major provisions of this ordinance include:

- Obstructions to the conveyance of floodwaters are prohibited
- Allowed uses in the floodway include farm fields and pastures, loading and parking areas, airport landing strips, etc.
- Structures in the flood fringe must be raised to 2' above the regional flood elevation
- Areas not delineated as floodway or flood fringe require further detailed study before structural uses are allowed

Clark County Private Onsite Wastewater Treatment System (POWTS) Ordinance

The Clark County POWTS ordinance was amended in 2000. This ordinance applies to all areas (incorporated and unincorporated) of Clark County. Major provisions of this ordinance include:

- Structures intended for human habitation, not provided with public sanitary sewer service, must have a POWTS
- The use of a non-plumbing sanitation system (privy, incinerating toilet, etc.) is only allowed when a structure does not have indoor plumbing
- The discharge of wastewater to groundwater or surface waters, bedrock, or the ground surface is prohibited
- The installation of a holding tank is generally only allowed when no other alternatives are available
- Owners of some types of POWTS (i.e., holding tanks are required to maintain a service contract with a certified POWTS maintainer, service their system at least every three years, and report to the county after each servicing
- Authority for inspections and penalties for violations
- Procedures for application and issuance of sanitary permits

Clark County Non-Metallic Mining Reclamation Ordinance

The Clark County Non-Metallic Mining Reclamation Ordinance was originally adopted in 2001 and was last amended in 2011. Under ch. NR135, Wis. Adm. Code, the DNR Nonmetallic Mining Program ensures uniform statewide implementation of nonmetallic mining reclamation requirements. Regulatory authority is provided by local zoning departments. All active mines must have valid reclamation permits, unless exempt. Major provisions of this ordinance include:

- Permit, application, and reclamation plan review requirements
- Submittal of a reclamation plan to achieve post-mining land use that will allow the land to be used for future activities, instead of remaining inactive and unavailable for use
- Requirement for financial assurance to be posted before mining begins to demonstrate that the funds necessary to perform site reclamation exist in the event of a default
- Annual fees assessed based on the amount of disturbance
- Authority for inspections and penalties for violations

Clark County Animal Manure Management Ordinance

The Clark County Animal Manure Management Ordinance was originally adopted in 1985 and was last amended and recreated in 2005. The purpose of the ordinance is to prevent pollution of

water resources, protect the health of Clark County residents, prevent the spread of disease, and promote the prosperity and general welfare of the citizens of Clark County by regulating the management of animal waste. This ordinance applies to all areas (incorporated and unincorporated) of Clark County. Major provisions of this ordinance include:

- Standards for the placement and design of new animal waste storage facilities
- Standards for the alteration and closure of existing animal waste storage facilities
- Standards for the placement of unconfined manure piles
- Requirements for annual nutrient management planning for permit holders.
- Prohibition against grazing of livestock along streams where sod cover cannot be maintained
- Protection standards for wetlands, floodplains, and surface waters
- Procedures for administration, enforcement, variances, and appeals

Clark County Ordinance Regulating the Landspreading of Petroleum Contaminated Soil

This ordinance was adopted in 1997 and enacts the standards found in Wisconsin Administrative Code Chapter NR718. In order to dispose of petroleum contaminated soils by landspreading, maximum allowable contamination levels must not be exceeded, and the method and location for landspreading must meet required standards. This ordinance applies to all areas (incorporated and unincorporated) of Clark County. Major provisions of this ordinance include:

- Permit, application, and review requirements for landspreading of contaminated soil
- Penalties for violations

Copies of Clark County Ordinances can be found in the Clark County Code Book located in the County Clerk's Office, 517 Court Street, Room 307, Neillsville, WI 54456 and also on the Clark County web page.

Chapter 3

Land and Water Resource Conditions

Basins/Geography

Clark County consists of three major drainage basins: the Black-Buffalo-Trempealeau River Basin, the Lower Chippewa River Basin, and the Central Wisconsin River Basin. Clark County has traditionally managed its natural resources by drainage basins and watersheds. This approach has been successful in developing working relationships with adjoining counties and their conservation staff. It has also brought a coordinated effort in resource management with state agencies such as the Wisconsin Department of Natural Resources and Department of Agriculture, Trade, and Consumer Protection. These agencies have used the basin approach of natural resource management for many years. The following is a list of the Clark County River Basins and their watersheds:

Black-Buffalo-Trempealeau Basin

- BR06 – Halls Creek Watershed
- BR07 – East Fork Black River Watershed
- BR08 – Five Mile and Wedges Creeks Watershed
- BR09 – O’Neill and Cunningham Creeks Watershed
- BR10 – Cawley and Rock Creeks Watershed
- BR11 – Popple River Watershed
- BR 12 – Trappers Creek and Pine Creeks Watershed

Lower Chippewa River Basin

- LC15 – Black and Hay Creek Watershed
- LC16 – South Fork Eau Claire River Watershed
- LC17 – North Fork Eau Claire River Watershed

Central Wisconsin River Basin

- UW14 – Little Eau Pleine River Watershed
- UW18 – Upper Big Eau Pleine River Watershed
- UW05 – Upper Yellow River Watershed

Exceptional and Outstanding Resource Waters

Clark County has no designated outstanding resource waters (See Map 2-12). Within Clark County, the only exceptional resource water listed is an unnamed creek (17-5, T24N R1E), a branch of Cunningham Creek, in the Town of Lynn between Division Ave. and County Highway W. This segment of the Cunningham Creek is considered to be a Class II trout stream. Other streams are currently in the process of being classified as trout water, which results in an exceptional water designation. This would include Black Creek, Dickison Creek, Halls Creek, Scott Creek, and Sterling Creek in Clark County.

Impaired Waters

There are six currently listed impaired water bodies and one impaired watershed previously listed in Clark County, according to the WDNR (See Map 2-11). These waters are listed within Wisconsin's 303(d) Waterbody Program, which is managed by the WDNR's Bureau of Watershed Management. They include Mead Lake, Lake Arbutus, Black River, Rock Dam Lake, Sherwood Lake, and the Wolf River. The Upper Yellow River Watershed was previously listed as impaired. A comprehensive water quality study conducted in 2011 in the Upper Yellow River Watershed will be used to prepare a TMDL for Dexter Lake located in Wood County.

Watersheds

All nonpoint source pollution (NPS) rankings and groundwater contamination potential rankings were determined by the WDNR.

Halls Creek Watershed (BR06)

The Hall's Creek watershed is a 16.30 square mile watershed. This watershed is located in the southwest corner of Clark County. The watershed is a mix of agriculture and forested land. The East Fork of Halls Creek is listed as a trout stream by WDNR. One impoundment, Emerson Lake exists on the creek in Clark County. A recent water resource survey conducted by WDNR revealed that several streams rank high regarding problems associated with nonpoint source pollution. The nonpoint source pollution (NPS) stream ranking is high. The groundwater contamination potential ranking is medium. The overall NPS ranking for this watershed is medium.

East Fork Black River Watershed (BR07)

The East Fork Black River is a 91.36 square mile watershed and has 137 miles of streams. This watershed is located in the southeast portion of Clark County and is primarily forested with some agricultural land. One impoundment, Sherwood Lake, exists in the watershed in Clark County. The Clark County Forestry and Parks Department operates a 36 site campground, swimming beach, and picnic areas on Sherwood Lake. The shoreline on the lake is undeveloped. The river empties into Lake Arbutus. Very little water quality or fisheries information is available for streams in this watershed. Many streams are expected to contain forage fish. The major limiting factor for many streams in this watershed is lack of streamflow due to agricultural use. The main branch of the East Fork Black River is fully supporting its potential use and has a low NPS ranking. Many of the tributaries to the East Fork have not been assigned a NPS ranking by the DNR. The DNR has ranked the groundwater contamination potential in the East Fork Black River as being low. The overall NPS ranking is low.

Five Mile and Wedges Creeks Watershed (BR08)

The Five Mile and Wedges Creeks Watershed is 144.57 square miles. It is located in the southwest part of Clark County. It has 244 miles of streams, 266 acres of lakes, and 10,418 acres of wetlands. One impoundment, Snyder Lake, is located in the watershed. The Clark County

Forestry and Parks Department operates a 50 site campground, swimming beach, and picnic areas on Snyder Lake. The shoreline on the lake is highly developed. There are nine main streams that make up this watershed. This watershed is primarily forested with less than 12 percent being in agricultural use. The remaining 88 percent of the land cover is wetlands, forest and residential. Much of the watershed is owned by Clark County and managed as county forest. There are some water quality impacts from agriculture sources including streambank erosion from pasturing, resulting in stream sedimentation and habitat loss. Based on transect survey results from 2011, the average annual soil loss rate for the watershed is estimated at 1.4 tons per acre per year. There are some silvicultural impacts to water quality. There is one industrial point source discharge in the watershed. Snyder Lake is considered to be a high priority for a lake planning grant to develop management activities. The groundwater contamination potential ranking for Five Mile and Wedges Creeks Watershed is low. The overall NPS ranking is low.

O'Neill and Cunningham Creeks Watershed (BR09)

The O'Neill and Cunningham Creeks Watershed have a land area of 161.01 square miles. There are 329.34 miles of streams, 86.59 lake acres, and 9,581.29 wetland acres in the watershed. It is located in the southeast and south central parts of Clark County. The watershed land cover is primarily agriculture which makes up 43 percent of the use along with 13 percent in grassland and 30 percent forested. None of the streams are fully supporting their potential use for fisheries. The O'Neill and Cunningham Creeks Watershed have five point sources of water pollution that discharge into the system. There are two concentrated animal feeding operations in this watershed. The combination of point and nonpoint sources of pollution, as well as low summer base flows have resulted in reported fish kills. Surface water quality in this watershed is impacted by barnyard runoff, construction site erosion, streambank pasturing, and cropland soil erosion. Transect survey results from 2011 estimates that the annual average soil loss rate for this watershed is 2.0 tons per acre per year. The groundwater contamination potential ranking is high for this watershed. The overall NPS ranking is high.

Cawley and Rock Creeks Watershed (BR10)

The Cawley and Rock Creeks Watershed is made up of 169.63 square miles of land. There are 342.79 miles of streams, 108.66 lake acres, and 6,081.99 wetland acres. It is located in the central part of Clark County. Land cover in this watershed consists of 21 percent forest and 55 percent agriculture. There are 21 miles of warm water sport fishery in the watershed and none of the streams are fully supporting their potential use. Municipal and industrial point source discharges have historically degraded water quality in the streams of this watershed. There are three point sources of pollution from municipal and industrial discharges. There are two concentrated animal feeding operations in this watershed. Surface water quality impacts include sedimentation and excess nutrients being delivered to streams, as well as habitat loss from cropland erosion, barnyard runoff, and streambank pasturing. Transect survey data from 2011 estimates that this watershed has an average annual soil loss rate of 2.0 tons per acre per year. Water quality problems are exacerbated due to low baseflows (minimal groundwater recharge) during dry periods. In this watershed, soils with low infiltration potential, increase precipitation and snowmelt runoff causing excessive streambank erosion. The groundwater contamination potential ranking for this watershed is high. The overall NPS ranking is high.

Popple River Watershed (BR11)

The Popple River Watershed is 203.06 square miles in size. It has 386.23 miles of streams, 250.9 lake acres, and 20,350.85 wetland acres. It is located in the northeast part of Clark County. Land cover in this watershed is 45 percent agriculture, 25 percent forest, and 19 percent wetland. One impoundment, Sportsman Lake, is located in the watershed. The shoreline is undeveloped and managed as a wildlife refuge. There are 46 miles of warm water sport fishery in this watershed and 65 miles of streams that are fully supporting their potential use. Low stream flows during dry periods are common in this watershed and limit many of the streams to warm water forage species. Another 20 miles of streams are considered to be threatened by point and nonpoint sources of pollution. There are seven municipal and industrial point source discharges in this watershed. There are also three concentrated animal feeding operations that are permitted under the WPDES program. Surface water quality impacts include stream sedimentation, nutrient delivery, and loss of habitat from cropland erosion and pastured streambanks. The annual average soil loss in this watershed is estimated at 2.3 tons per acre per year according to 2011 transect survey data. Sportsman Lake is considered to be a high priority for a lake planning grant to develop management activities. The groundwater contamination potential ranking for the Popple River Watershed is considered as medium. The overall NPS ranking is medium.

Trappers Creek and Pine Creeks Watershed (BR12)

The Trappers Creek and Pine Creeks Watershed is located in Taylor and Clark Counties. The majority of the watershed is located in Taylor County with 8 square miles in northern Clark County. Water quality conditions for the Trappers Creek and Pine Creeks Watershed in Clark County are more closely associated with water quality conditions in the Popple River Watershed; however the WDNR has not conducted a comprehensive survey of this watershed. In Clark County, less than 50 percent of the land cover in Trappers Creek and Pine Creeks Watershed is in agricultural use and 35 percent is classified as wetlands. Pine Creek and Trappers Creek are high priority candidates for nonpoint source pollution control efforts due to streambank pasturing and barnyard runoff. It is estimated that the annual average soil loss in this watershed is less than 2.0 tons per acre per year. The NPS stream ranking is low. The groundwater contamination potential ranking is medium. The overall NPS ranking is medium.

Black and Hay Creek Watershed (LC15)

The Clark County portion of the Black and Hay Rivers Watershed is 13.90 square miles in size and has 10 miles of streams. It is located in the southwest portion of Clark County. The land cover in this watershed is 65 percent forest, 15 percent agriculture, and 14 percent wetlands. Portions of this watershed support a limited Class III cold water sport fishery. Black Creek is the main tributary that drains to Coon Fork Lake in southeast Eau Claire County. Coon Fork Lake is an impoundment that has a campground, swimming beach, and picnic areas. It is operated and maintained by Eau Claire County. In 2005, the Clark County Land Conservation Department, along with the Jackson and Eau Claire County Land Conservation Departments, received a lake management grant from the WDNR. The lake management grant provided funds to install best management practices within the watershed that would reduce the amount of nonpoint source pollution entering Coon Fork Lake. The lake management grant was completed in 2010. The

goal of the lake management grant was to protect and maintain the water quality of Coon Fork Lake. According to data provided by the *Coon Fork Lake Management Plan* (2004), the average annual soil loss in this watershed is estimated at 1.2 tons per acre per year on agricultural land. Nutrient and bacteria loading to Coon Fork Lake from cropland erosion and barnyard runoff are the most serious surface water quality impacts. The NPS stream ranking is low. The groundwater contamination potential ranking is medium. The overall NPS ranking is medium.

South Fork Eau Claire River Watershed (LC16)

The South Fork Eau Claire River Watershed is 215.23 square miles in land size. There are 421.59 miles of streams, 450.19 lake acres, and 23,719.61 wetland acres in the watershed. It is located in the north central part of Clark County. Land cover in this watershed is 66 percent agriculture and 23 percent forested. There are 16.7 miles of Class III cold water sport fisheries and 50 miles of warm water sport fisheries. The three trout streams in Clark County are Scott Creek, Black Creek, and Dickison Creek. Nearly all tributaries in the South Fork Eau Claire River Watershed are meeting their potential use as a warm water fishery. There are two impoundments, Mead Lake and Rock Dam Lake that support a warm water sport fishery and other recreational activities.

Mead Lake has a surface area of 320 acres and a maximum depth of 16 feet. The lake's watershed is primarily agriculture with some forest and wetlands. Agriculture dominates land use in the northern parts of the watershed, while most of the southern parts of the watershed are managed as forest. Mead Lake has good populations of walleye, bass, musky, and panfish. It is classified as being highly eutrophic and it is listed as an impaired waterbody by the WDNR. The shoreline of Mead Lake is highly developed with seasonal cabins and homes. The Clark County Forestry and Parks Department owns and operates the dam that creates the impoundment. They also own and operate a 71 site campground, swimming beach, and a day-use picnic/playground area.

Rock Dam Lake is another impoundment in the South Fork Eau Claire River Watershed. It has a surface area of 125 acres and a maximum depth of 10 feet. It is classified as being eutrophic and is listed as an impaired waterbody by the WDNR. It has a limited warm water sport fishery, with bass and panfish the primary species. The watershed is primarily forested with numerous wetlands. The shoreline on the lake is highly developed. The Clark County Forestry and Parks Department operates a 150 site campground, swimming beach, and picnic areas on the lake.

Surface water quality in the South Fork Eau Claire River Watershed that drains to Mead Lake is impacted by cropland erosion, pastured streambanks, and low stream flow levels. Transect survey data from 2011 estimates that the South Fork Eau Claire River Watershed has an annual average soil loss of 2.8 tons per acre per year. There is one industrial point source discharge and one concentrated animal feeding operation in the Mead Lake Watershed. A total maximum daily load was established for Mead Lake in 2009. The focus of the TMDL is to reduce phosphorus and sediment input into the lake by 30%. Wetland restoration is considered to be a high priority in the Mead Lake Watershed. Currently, Mead Lake has a nonpoint source lake ranking of high. The NPS stream ranking is low. The groundwater contamination potential ranking for this watershed is classified as being medium. The overall NPS ranking is medium.

North Fork Eau Claire River Watershed (LC17)

The North Fork Eau Claire River Watershed has a drainage area of 110.25 square miles and 230 miles of streams in Clark County. It is located in the northwest part of Clark County. The land cover in this watershed is primarily agriculture at 46 percent with forested acreage making up 41 percent. There are both Class II and Class III cold water sport fisheries, as well as warm water sport fisheries in this watershed. Sterling Creek is listed as a class III trout fishery. The Wolf River, a tributary in the northeastern reaches, is considered to be impaired. It is not supporting its designated use due to low dissolved oxygen levels. There are some concerns with surface water quality in this watershed, both from point and nonpoint sources of pollution. There is one industrial and one municipal point source discharge in the Clark County portion of the watershed. Streambank erosion and pasturing, as well as cropland erosion that cause in-stream sedimentation and aquatic habitat loss are the major nonpoint source concerns. Transect survey data from 2011 indicates that the average annual soil loss rate in this watershed is 1.7 tons per acre per year. Excessive nutrient loading has also impacted the river. The combination of nonpoint and point source nutrient discharges result in low dissolved oxygen levels in streams when base flow is reduced during dry weather periods. The groundwater contamination potential ranking for the North Fork Eau Claire River Watershed is high. The stream ranking is low. The overall NPS ranking is high.

Upper Big Eau Pleine River Watershed (CW18)

The Upper Big Eau Pleine Watershed has a drainage area of 21.01 square miles with 38 miles of streams. It is located in the northeast portion of Clark County. The Clark County portion makes up only 10 percent of the total land volume of the watershed. The land cover is primarily agriculture which makes up 90 percent of the land use. The Upper Big Eau Pleine River Watershed in Clark County has both warm water sport fishing and warm water forage fishing. The Dill Creek segment in the Town of Colby supports warm water sport fishing. Much of Upper Big Eau Pleine River Watershed in Clark County does not meet established water quality goals. The watershed has a “flashy” stream flow pattern that drastically fluctuates in flow between precipitation and snowmelt runoff events. During dry periods, the stream flow is stagnant. During wet periods, stream flows are quick and large amounts of sediment, bacteria, and phosphorus runoff into the streams. Ultimately, these contaminants end up in the Big Eau Pleine Reservoir where they can cause algae blooms that may result in fish kills. Sediment delivery from croplands and nutrient loading from animal waste are considered to be the major nonpoint sources of pollution in the watershed. Transect survey data from 2011 estimates an annual soil loss rate of 3.2 tons per acre per year. Municipal wastewater discharge is the major point source of pollution. There are two municipal point source discharges in the Clark County portion of the watershed. The Upper Big Eau Pleine is currently on the 303(d) list as an impaired water body. A priority watershed project was implemented by Marathon, Taylor and Clark County Land Conservation Departments in 1985 through 1996 for the 6,677 acre Big Eau Pleine Reservoir in western Marathon County. The project was completed in December 1997. Currently, the Upper Big Eau Pleine River has a NPS ranking of high for streams, as well as a high ranking for groundwater contamination potential. The overall NPS ranking is high.

Little Eau Pleine River Watershed (CW14)

The Little Eau Pleine River Watershed has a drainage area of 11.76 square miles with 21 miles of streams in Clark County. It is located in the east-central part of Clark County. The Little Eau Pleine River drains to the DuBay Flowage. The land cover is primarily agricultural which makes up nearly 90 percent of the land use. The Little Eau Pleine River Watershed has both a warm water sport fishery, as well as a warm water forage fishery. The Upper Little Eau Pleine River is affected by cropland soil erosion, animal manure runoff, and streambank erosion. The estimated average soil loss rate is 3.0 tons per acre per year. There is one municipal point source discharge in the Clark County portion of the watershed. A shallow groundwater table in the watershed allows unused herbicides, pesticides, and fertilizers to leach into the groundwater. Surface water quality problems are increased by silty, low permeability soils that increase surface runoff to rivers and streams. The nonpoint source stream ranking, according to the WDNR, is low for the Little Eau Pleine River Watershed. The NPS ranking for groundwater is high. The NPS overall ranking is high.

Upper Yellow River Watershed (CW05)

The Upper Yellow River Watershed is located in the counties of Wood, Clark and Marathon. Approximately 30 percent of the watershed is located in east-central Clark County, about 53.39 square miles. The drainage area of the Upper Yellow River has 92 miles of streams. The land cover is predominantly agriculture, which is 68 percent of the land use. There is one municipal point source discharge and three confined animal feeding operations in the Clark County portion of the watershed. The Upper Yellow River Watershed was funded as a Priority Watershed Project by the WDNR in 1993. It was completed in 2005. The Upper Yellow River watershed was previously listed as impaired. A comprehensive water quality study conducted in 2011 in the Upper Yellow River Watershed will be used to prepare a TMDL for Dexter Lake located in Wood County. Soil erosion is a problem in the watershed. The heavy silt loam soils and long slopes promote rapid runoff. The soils are also poorly drained, which can lead to rapid surface water runoff that carries sediment, bacteria, and phosphorus into the surrounding waterways. Transect data from 2011 estimates that the average annual soil loss rate is 2.0 tons per acre per year. Animal manure runoff from barnyards or pasture occurs on the main tributaries of the Yellow River. In the watershed, 77% of the fish and aquatic life of is assessed as being poor quality. Biotic index values for those streams that have been sampled indicate fair to poor water quality. The NPS stream and groundwater ranking for the Upper Yellow River Watershed is high. The NPS overall ranking is high.

Chapter 4

Environmental Issues and Concerns

In order to have the “Clark County Land and Water Resource Management Plan 2012-2016” accurately represent the opinions of the citizens in Clark County, the Land Conservation Committee (LCC) and its department worked diligently to gather as much local input regarding natural resources management. The tools used to gain public input included one countywide resource survey and five citizens meetings. The LCC felt it would be beneficial to facilitate a discussion in the many diverse communities in Clark County. This approach would allow each individual numerous opportunities to comment on how he/she expected his/her natural resources to be managed, instead of limiting the input to a few individuals serving on a committee.

Natural Resources Opinion Survey

In early May of 2011, a three question “Natural Resources Opinion Survey” was mailed out to over 1,500 county households, and also to each local unit of government. The survey had a 27% return rate. A copy of the mailed survey and a comprehensive summary of all of the results are included in *Appendix A*.

The results of the survey can be further summarized by the following:

- What Local Natural Resources are **You** Most Concerned About?
 1. Groundwater 83%
 2. Lakes/Rivers/Streams 63%
 3. Agricultural Land 58%
 4. Forest/Woodland 50%
 5. Soil 44%
 6. Air 39%
 7. Fisheries/Wildlife 37%
 8. Peace and Quiet 27%
 9. Wetlands 26%
 10. Public Recreational Land 18%

- What are the Biggest Threats to **Your** Natural Resource Concerns?
 1. Agricultural Manure/Waste Storage and Landspreading 61%
 2. Agricultural Cropping Practices 47%
 3. Rural Residential Development 46%
 4. Domestic Solid Waste Disposal 38%
 5. Industrial, Municipal, & Residential Wastewater, Sludge, & Septage 35%
 6. Exotic Invasive Plants and Animal Species 34%
 7. Agricultural Livestock Operations 31%
 8. Wetland/Stream Tiling, Ditching, and/or Filling 28%
 9. Forest Management 27%
 10. Agricultural Land Clearing 26%
 - Fish and/or Wildlife Excessive Harvesting 26%

- What Services should be Emphasized by Local, State, and Federal Conservation Staff?
 1. Groundwater Protection 69%
 2. Animal Manure Management Ordinance Implementation 59%
 3. Drinking Water Well Testing 53%
 4. Surface Water Protection 50%
 5. Water Quality Monitoring of Lakes and Streams 47%
Well Sealing/Abandonment Assistance 47%
 6. Farmland Preservation & Agricultural Economic Development 46%
 7. Tree Planting 45%
 8. Best Management Practice Implementation and Technical Asst. 41%
 9. Nutrient Management Planning 35%
Cost-Sharing and Financial Assistance 35%
 10. Wildlife Habitat Enhancement and Restoration 33%

The information gathered from the survey was used to framework the discussion at each professional or citizen advisory meeting. The survey provided valuable insight into how the citizens of Clark County expected their natural resources to be managed.

Natural Resources Management Professionals Advisory Meeting

The second method used to gather information for the Clark County Land and Water Resource Management Plan revision process was the convening of a meeting for natural resource management professionals to assess the quality of the county's natural resources. The meeting was held on Tuesday, May 31st, 2011 at the Clark County Courthouse Auditorium in Neillsville, Wisconsin. Fifteen people, representing various levels of local, state, and federal agencies, compiled a list of natural resource issues that they believe required the attention of natural resource managers. The following is a list of the natural resource management topics discussed by the participants:

1. Inventorying of Natural Resources vs. Implementation of Conservation Practices
2. Agricultural Preservation and Economic Development
3. Agricultural Expansion and Modernization
4. Changing of the Farmscape and Foodshed
 - WPDES CAFOs and their Expansion
 - Amish, Mennonite, and Small Dairy Farms
 - Absentee Landowners
 - Agricultural Land Rent Increasing
 - Soil Miners and Ditch Tillers
 - Loss of Local Control on Land Base Due to Corporate Contracts
 - Use Value Assessment Affects on Land Management
5. Industrial, Municipal, and Residential Wastewater Storage and Spreading
6. Storage and Land Application of Agricultural Manure/Wastewater
7. Groundwater/Surface Water Quality and Quantity
8. Air Quality: Open Burning and Manure Storage

9. Land Fragmentation: Recreational vs. Working Lands (Forest and Crop)
10. Lack of Enforcement of County and State Codes
11. Financial Incentives and Cost-share
 - Statutory Requirement
 - Positive vs. Negative Incentives
12. Barriers to Conservation Implementation
 - Cost to Individuals vs. Cost to Society
 - Peer Examples/ Peer Pressure/ Personal Motivation
 - Different Standards of Acceptability

The topics can be further summarized into the following main categories:

Water Quality

- Runoff – sediment, nutrients, and animal waste
- Lack of baseline data on surface and groundwater quality
- Storm water runoff and erosion control
- Winter spreading of manure
- Pre-existing manure storage
- Limited nutrient management requirements and implementation
- Failing septic systems
- Shoreland and wetland violations

Forestry

- Gypsy moth, emerald ash borer, oak wilt, and other forestry pest control
- Terrestrial and aquatic invasive species
- Lack of implementation of forestry BMP's

Wildlife

- Agricultural damage by wildlife
- Protection of endangered and threatened species
- Wetland management – habitat development
- Wolf interactions

Air Quality

- Open manure storage
- Illegal burning

Citizen Advisory Meetings

Citizen advisory meetings were held in five different locations in Clark County over the course of two months. The meetings occurred on June 7th at the courthouse auditorium in Neillsville; July 12th at the Withee Town Hall; July 23rd at the Hewett Town Hall; July 29th at the Mead Town Hall; and August 1st at the Farm Bureau Meeting in Neillsville. Each of these meetings was publicly advertised and was organized in a manner that would prove to be essential in

gathering opinions from a diverse group of citizens. The citizen advisory meetings consisted of participants that represented various farmers (dairy, crop, specialty, etc.), lake association/district members, agribusiness owners/operators, agricultural lenders, crop consultants, building contractors, technical college educators, Farm Bureau and Dairy Business Association members, sportsman club members, and county, town, and other local municipality officials. More than 150 citizens attended these meetings and provided valuable input in regards to their natural resources and how they expected them to be managed.

The following is a list of the natural resource and conservation topics discussed at these citizen meetings:

1. Inventorying Natural Resources vs. Implementation of Conservation Practices: Where to Invest Limited Funding and Staffing Resources?
2. Education vs. Encouragement vs. Enforcement
3. Agricultural Preservation and Economic Development
4. Agricultural Expansion and Modernization
5. Soil Erosion
 - Disappearing Grassed Waterways
 - Increased Ditch Tillage
 - Moldboard Plowing vs. No Till
 - Absentee Landowners
 - Shift from Dairy Rotation to Cash Grain Rotation
6. Decrease in the Number of Farms and the Increase in Dairy Herd Sizes
7. Amount of Cattle/Manure vs. Amount of Acres Available
8. Nutrient Management Planning
9. Winter Manure Spreading
10. Loss of Buffers Around Waterways
11. Increasing Levels of Soil Test Phosphorus
12. Decreasing Levels of Soil Test Organic Matter
13. Landspreading and Storage of Manure
14. Landspreading of Industrial, Municipal, and Residential Wastes
15. Feedlot and Feed Storage Leachate and Runoff
16. Alternatives Methods of Farming (Rotational Grazing, Organic, etc.)
17. Storing Other Types of Wastewater other than Agricultural in Manure Storage
18. Ditching, Tiling, and Filling in of Wetlands
19. Shoreland and Streambank Erosion
20. Road Damage from Manure Hauling
21. Sediment/Fertilizer/Pesticide/Pet Waste in Urban Runoff
22. Non-Metallic Mining
 - Groundwater/Surface Water Impacts
 - Conversion to Landfills
23. Open Burning of Household Refuse and Agricultural Plastic
24. Clean Sweep Program for Disposal of Hazardous Waste
25. Groundwater Protection- Baseline data
 - Quality
 - Quantity

26. Surface Water Protection- Baseline Data
 - Mead Lake
 - Lake Arbutus
27. Recreational Land Development and Agricultural Land Fragmentation
28. Beach Closings Due to High Bacteria Counts
29. Drinking Water Well Testing Program
30. Financial Tax Refund Incentives for Conservation vs. Cost-Share vs. Subsidies
31. Agricultural Plastic Recycling
32. Corporate “Rural Cleansing”
33. Private Property Rights vs. Public Water, Wildlife, and Air Quality Rights
34. Workload and Staffing Requirements for the Conservation Department: Too Much to Accomplish with Too Few Staff and Funding Resources- What are the Priorities?

Natural Resource Management Goals

The results of these meetings were presented to the Clark County Land Conservation Committee for review at their June, July, and August, 2011 regularly scheduled meetings. The Clark County Land Conservation Committee, after much discussion and deliberation agreed on the following goals:

1. Reduce Sediment and Nutrient Delivery to Surface Water.
2. Reduce Nutrient and Other Contaminant Delivery to Groundwater.
3. Maintain the Health and Viability of the Animal and Plant Communities.
4. Maintain the Functionality of the Existing Hydrologic Infrastructure.
5. Increase Efforts to Inventory the Water Resources.

These goals were incorporated into the Land and Water Resource Management Work Plan for 2012-2016. Furthermore, these goals will assist Clark County by identifying and prioritizing the major, and agreed upon, natural resources issues and concerns for Clark County. Lastly, this list of goals will guide local natural resource professionals as they perform the following activities:

- Develop a coordinated effort to resolve these identified issues and concerns.
- Determine the roles of county, state, and federal agencies in implementing the work plan.
- Implement strategies that support the conservation programs for the local community.
- Secure funding for the management of the natural resource base in Clark County.

Chapter 5

Goals and Objectives

During the Clark County Land and Water Resource Management Plan (LWRMP) revision process, natural resources management professionals, county citizens, and local government officials have agreed on the following natural resource management goals. These goals also meet the natural resource management planning requirements of Wisconsin Statutes Chapters 92 and ATCP50. Each goal, in the five-year work plan for the Clark County Land Conservation Committee and Department, has specific objectives that will be used to ensure the success in meeting the outlined goals. Objectives in bold text are listed in the work plan and can be potentially accomplished with the limited staff and funding resources of the department. Other objectives listed in this chapter could be accomplished with additional staff and funding resources. The work plan outlines the actions that will be used by the Clark County Land Conservation Department to implement the objectives and successfully meet the goals outlined in this chapter. The following goals represent the priority work plan focus for the Clark County Land Conservation Committee and its department for the five year period of 2012-2016:

1. Reduce Sediment and Nutrient Delivery to Surface Water.
2. Reduce Nutrient and Other Contaminant Delivery to Groundwater.
3. Maintain the Health and Viability of the Animal and Plant Communities.
4. Maintain the Functionality of the Existing Hydrologic Infrastructure.
5. Increase Efforts to Inventory the Water Resources.

Surface Water

Goal 1: Reduce Sediment and Nutrient Delivery to Surface Water.

Objectives

1. **Reduce pollutant loading to surface waters from both urban and rural, nonpoint and point sources of pollution.**
2. **Increase the number of cropland acres that implement nutrient management planning and also address the winter application of manure.**
3. Increase the level of maintenance and repair on animal manure and agricultural wastewater storages.
4. Increase the level of maintenance and repair on storages that are being used to store municipal, industrial, and residential, wastewater, sludge, and septage.
5. Increase the level of maintenance and repair on animal feedlots, barnyards, loafing areas, and other types of drylots and housing.
6. Increase the abandonment of unused manure storages that are actively failing or have not been maintained or constructed according to the requirements and specifications of the local Animal Manure Management Ordinance.
7. **Increase the use of clean water diversions, buffer strips, and/or tillage setbacks that divert, filter, and/or store runoff water to allow for sediment and nutrient deposition.**

8. Encourage landowners to dispose of all unused chemicals and fertilizers in the most environmentally sound manner.
9. **Encourage the adoption of conservation practices that increase soil quality, increase carbon sequestration, enhance soil biology, and reduce soil erosion, and sediment and nutrient delivery from cropland fields, pastures, construction sites, and urban and other intensive use areas.**
10. **Encourage the adoption of conservation practices that reduce nutrient discharges from milkhouse wastewater, silage leachate runoff, and direct deposition of manure into waters of the state.**
11. **Educate landowners about the safe handling and application of fertilizer, manure and other plant nutrients, such as phosphorus and nitrogen.**
12. **Educate residents, contractors, and other local governments about construction site erosion control and stormwater runoff management.**

Groundwater

Goal 2: Reduce Nutrient and Other Contaminant Delivery to Groundwater.

Objectives

1. **Reduce pollutant loading to groundwater from both urban and rural, nonpoint and point sources of pollution.**
2. Increase the number of cropland acres that implement nutrient management planning.
3. **Increase the level of maintenance and repair on animal manure and agricultural wastewater storages.**
4. **Increase the level of maintenance and repair on storages that are being used to store municipal, industrial, and residential wastewater, sludge, and septage.**
5. **Increase the abandonment of unused manure storages that are actively failing or have not been maintained or constructed according to the requirements and specifications of the local Animal Manure Management Ordinance.**
6. **Increase the number of properly sealed and abandoned unused wells.**
7. Encourage the adoption of conservation practices that increase nitrogen sequestration and/or limit the application of animal manure and fertilizers during times of the year when vegetation is not actively growing.
8. **Encourage landowners to dispose of all unused chemicals and fertilizers in the most environmentally sound manner.**
9. Preserve and protect groundwater recharge areas.
10. Educate landowners on the environmental and economic reasons to avoid over-applying nitrogen in amounts that exceed crop nutrient needs.
11. **Educate private and public water supply owner/operators about the importance of wellhead protection planning.**

Wildlife: Flora and Fauna

Goal 3: Maintain the Health and Viability of the Animal and Plant Communities.

Objectives

- 1. Increase the amount of native vegetation being planted for the benefit of wildlife, pollinators, carbon sequestration, riparian habitat, and water quantity and quality.**
- 2. Increase the amount of invasive species inventorying and the level of control to reduce existing populations and limit the establishment of new populations.**
3. Preserve unique and wilderness-like landscapes and support the voluntary efforts of landowners to preserve lands with threatened/endangered species and other values.
- 4. Maintain the biological diversity, ecology, and environmental functions of the landscape by maintaining or increasing the land's capacity for flood storage, groundwater recharge, surface water baseflow contributions, plant growth, wildlife habitat, and overall ecological diversity.**
5. Maintain the capacity of the land to support productive forests and agricultural working lands that provide food, fiber, carbon sequestration, and also to provide for renewable energy production.
- 6. Maintain prime farmland by limiting the impacts of rural residential development.**
7. Maintain sensitive environmental corridors that enhance migration and support food and cover for wildlife.
8. Restore the environmental functions of abandoned and/or degraded lands and support their conversion to other productive uses.
- 9. Educate the public on the importance of diverse ecosystems that cooperate together to function and provide important benefits to all interconnected natural systems.**

Wetlands and Riparian Corridors

Goal 4: Maintain the Functionality of the Existing Hydrologic Infrastructure.

Objectives

- 1. Increase the “net gain” of wetland acres through wetland restoration and creation.**
2. Increase the baseflow to rivers and streams by implementing techniques that increase soil moisture holding capacity, and/or store and infiltrate surface water runoff.
- 3. Preserve existing wetlands, floodplains/flood fringes, riparian corridors, and natural conveyances by avoiding intentional destruction from ditching, tiling, and filling or by seeking alternatives that will not significantly impact the hydrology of the site.**
4. Preserve and/or enhance the landscape's ability to absorb stormwater runoff to limit flooding, streambank and lakeshore erosion, and stream and lake water elevation alterations.
5. Maintain or improve historic groundwater levels and limit the depletion of groundwater and the corresponding impacts to surface water, wetlands, and public/private well water supplies.

6. **Maintain, improve, and/or restore the natural condition of the shoreland corridor, littoral zone, and instream habitat of rivers and lakes.**
7. **Educate the public on the importance of water conservation.**
8. **Educate the public on the interconnection between groundwater and surface water.**

Water Resources Inventory

Goal 5: Increase Efforts to Inventory the Water Resources.

Objectives

1. **Increase water quality and quantity monitoring on surface water resources.**
2. **Increase water quality and quantity monitoring on groundwater resources.**
3. Establish a surface and groundwater monitoring program to monitor and record groundwater elevations and associated stream baseflow conditions at representative locations throughout the county.
4. **Maintain a database of surface and groundwater quality and quantity changes.**
5. **Educate the public about the importance of improving water quality and what actions they can take to preserve clean and abundant water for future generations.**

Chapter 6

Runoff Management Performance Standards and Prohibitions

Effective October 1, 2002, and amended in 2010, NR151 set forth minimum performance standards and prohibitions for achieving non-point source pollution control. The role of the Clark County Land Conservation Department is to assist landowners in planning, designing, and installing conservation plans and conservation best management practices that meet NR151 standards. The following is a list of the Agricultural Performance Standards and Prohibitions.

Performance Standards

NR151.02 Sheet, Rill, and Wind Erosion Performance Standard

All land where crops or feed are grown shall be cropped to achieve a soil erosion rate equal to, or less than, the “tolerable” (T) rate established for that soil.

NR151.03 Tillage Setback Performance Standard

All landowners may not conduct tillage operations that negatively impact stream bank integrity or deposit soil directly into surface waters.

Tillage operations may not be conducted within five feet of the top of the channel of surface waters. Tillage setbacks that are required to be implemented may not be less than five feet or greater than twenty feet.

NR151.04 Phosphorus Index Performance Standard

All landowners shall manage croplands, pastures, and winter grazing areas to achieve a phosphorus index of 6 or less over the eight year accounting period and may not exceed a phosphorus index of 12 in any individual year.

All landowners may not apply nutrients or manure directly through mechanical means to surface waters of the state.

NR151.05 Manure Storage Facilities Performance Standard

All landowners building new, substantially altering, or choosing to abandon their manure storage facilities shall comply with this section.

New or substantially altered manure storage facilities shall be designed, constructed, and maintained to minimize the risk of structural failure and minimize the amount of leakage of the facility in order to comply with the groundwater standards.

Closure of a manure storage facility shall occur when an operation where the facility is located ceases operation, or manure has not been added or removed from the facility for a period of 24 months. The owner may retain the facility for a longer period of time by demonstrating all of the following conditions are met:

1. The facility is designed, constructed, and maintained in accordance with an accepted standard.
2. The facility is designed to store manure for a period of time longer than 24 months.
3. Retention of the facility is warranted based on anticipated future use.

Manure storage facilities in existence as of October 1, 2002, that pose an imminent threat to public health or fish and aquatic life or are causing a violation of groundwater standards shall be upgraded, replaced, or abandoned in accordance with this section.

NR151.055 Process Wastewater Handling Performance Standard

All landowners shall manage their operations in a manner that does not allow for significant discharge of process wastewaters, namely feed leachate and milkhouse wastewater, to waters of the state.

NR151.06 Clean Water Diversions Performance Standard

All livestock producers within a water quality management area shall comply with this section. A water quality management area, as defined by NR151 is the area within 1,000 feet from the ordinary high water mark of navigable waters that consist of a lake, pond, or flowage, except that, for a navigable water that is a glacial pothole lake, the term means the area within 1,000 feet from the high water mark of the lake; the area within 300 feet from the ordinary high water mark of navigable waters that consist of a river or stream; and a site that is susceptible to groundwater contamination, or that has the potential to be a direct conduit for contamination to groundwater.

Runoff shall be diverted away from contacting feedlot, manure storage areas, and barnyard areas within water quality management areas. A diversion to protect private wells is only required when the feedlot, manure storage area, or barnyard area is located upslope from the private well.

NR151.07 Nutrient Management Performance Standard

All livestock and crop producers that apply manure or other nutrients directly or through contract to agricultural fields shall comply with this section.

Manure, commercial fertilizer, and other nutrients shall be applied in conformance with a nutrient management plan. Industrial, municipal, and residential wastewater and sludge must be accounted for in the nutrient management plan. The nutrient management plan shall be designed to limit or reduce the discharge of nutrients and sediment to the waters of the state for the purpose of complying with state water quality standards and groundwater standards.

NR151.005 Performance Standard for Total Maximum Daily Loads

If compliance with a more stringent standard or additional performance standards are required to meet a load allocation in a US EPA and state approved TMDL, the WDNR may promulgate the more stringent or additional performance standards by rule.

NR151.08 Manure Management Prohibitions

The manure management prohibitions have been included in the 1999 revision of the Clark County Animal Waste Management Ordinance. They were also included in the recreation of the Clark County Animal Manure Management Ordinance in 2005. The prohibitions are as follows:

1. No overflow of manure storage facilities.
2. No unconfined manure piles in a Water Quality Management Area.
3. No direct runoff from a feedlot or stored manure into the waters of the state.
4. No unlimited access by livestock to waters of the state, where high concentrations of livestock prevent the maintenance of adequate sod cover or self-sustaining vegetation.

Subchapter III of NR151 contains a list of the non-agricultural performance standards. These standards are intended to limit nonpoint runoff pollution from urban and other residential areas in order to achieve state water quality standards. The following is a list of the Construction Site and Transportation Facility Performance Standards.

NR151.105 Construction Site Performance Standard for Non-Permitted Sites

NR151.11 Construction Site Performance Standard for Sites of One Acre or More

NR151.12 Post-Construction Performance Standard for New Development and Redevelopment

NR151.121 Post-Construction Performance Standard

NR151.122 Total Suspended Solids Performance Standard

NR151.123 Peak Discharge Performance Standard

NR151.124 Infiltration Performance Standard

NR151.125 Protective Areas Performance Standard

NR151.126 Fueling and Vehicle Maintenance Areas Performance Standard

NR 151.13 Developed Urban Area Performance Standard for Municipalities

NR151.14 Turf and Garden Nutrient Management Performance Standard

NR151, Subchapter IV also contains a list of performance standards applicable to transportation facilities, similar to those listed in NR151 subchapter III, except that subchapter IV contains an additional performance standard in regard to swale treatment.

NR151 Local Implementation Strategy

The following is a description of the procedures that the Clark County Land Conservation Department may use to assist landowners in implementing the Chapter NR151 Runoff Management Performance Standards and Prohibitions. This implementation strategy is based on Land Conservation Department staff and funding availability.

Information and Education

The Clark County Land Conservation Department, along with UW-Extension Services and WDNR, will inform all Clark County residents of the requirements of Chapter NR151. This effort will encourage landowners to voluntarily comply with NR151. The Land Conservation Department staff will also make direct contact with landowners during farm visits for other purposes and inform them of the NR151 runoff performance standards and prohibitions.

Priority Farm Identification

With over 2,000 farm operations in Clark County, a prioritization process should be implemented to address the compliance determination requirements of Chapter NR151. Due to a limited amount of staff, the Clark County Land Conservation Committee and Department have developed the following priority farm identification strategy:

First Priority: Landowners who desire to voluntarily implement NR151.

Second Priority: Landowners where valid complaints have been received regarding noncompliance with the Animal Manure Management Ordinance and/or NR151.

Third Priority: Landowners claiming Farmland Preservation Tax Credits.

Fourth Priority: Landowners that have signed voluntary cost-share agreements.

Fifth Priority: Landowners in the Mead Lake, Dexter Lake, or Eau Pleine Reservoir Watershed.

Sixth Priority: Landowners applying for Animal Manure Management Ordinance Permits.

Compliance Determination

On-site evaluations will be the primary means for determining compliance with the Chapter NR151 requirements. These evaluations will be completed using the checklist included as Appendix C. The checklist in Appendix B will be used to determine NR151 compliance for landowners who claim the Farmland Preservation Tax Credit. The information gathered on the checklists will be inventoried using the county geographic information system. Landowners that have participated in the evaluation process will receive the following:

- Copy of the evaluation report with a landowner signature page and/or a certificate of compliance that will be used to demonstrate the landowner's eligibility to claim the Farmland Preservation Tax Credit.
- Letter with instructions on appeal procedures, if the landowner contests the evaluation.
- Recommendations for measures needed to achieve compliance.
- Schedule for achieving compliance with the standards.
- Availability and source of cost-share funds for installing the recommended practices. In most cases, a valid offer of cost-share funding is required to pursue enforcement activities in order to bring a landowner's property into compliance.

Enforcement

Any enforcement actions associated with Chapter NR151 Runoff Management Performance Standards will be the responsibility of the WDNR. Clark County will coordinate with the WDNR to provide assistance and cost-share funding to landowners if it is needed to resolve any noncompliance with Chapter NR151 Runoff Management Performance Standards. Clark County will address noncompliance with the local Animal Manure Management Ordinance. Any landowner that has been verified as noncompliant with Chapter NR151 or the Animal Manure Management Ordinance will be notified in-person and/or by certified mail, of the noncompliance(s) and that they may be subject to an enforcement action pursuant to NR151.09 or local ordinance requirements.

Appeals

Any person aggrieved by a decision of the Clark County Land Conservation Committee and/or Department may file a written appeal of the decision to the Clark County Land Conservation Department, 517 Court Street, Courthouse, Room 102, Neillsville, WI 54456 within 30 days of the decision. A hearing on the appeal shall be commenced within 60 days of the date of the appeal.

Cost-Share Assistance

The Clark County Land Conservation Department provides cost-share funding assistance to landowners who install best management practices through its Soil and Water Resource Management Program. Funding for this program is provided by WDATCP and WDNR. Chapter 7 lists the state and local programs that may be used to obtain cost-share funding for landowners. Federal programs listed in Chapter 7 may be used, if needed. To receive financial assistance, landowners enter into a cost-share agreement with the Land Conservation Department. Cost-share agreements are binding contracts that secure funds for installing best management practices. The cost-share assistance programs are administered by the Clark County Land Conservation Department. The department maintains cost-share agreements in participating landowner files in accordance with approved methods and practices for accounting and record keeping. The department is also responsible for the monitoring the operation, maintenance, and continued functionality of best management practices installed with cost-share funding.

The Land Conservation Committee has established a cost containment policy to equitably distribute the limited cost-share funds. A copy of the Clark County Cost Containment Policy can be found in *Appendix D: Clark County Cost Containment and Cost-Share Procedures*. These procedures are subject to revision at any time the Land Conservation Committee identifies the need to address any inconsistencies between the procedures used to implement the local conservation policies and the state and federal programs that provide landowner cost-share funding and technical assistance.

Best Management Practices

The list of conservation best management practices that may be eligible to receive cost-share assistance under the Clark County Soil and Water Resource Management Program are found in *Appendix D: Clark County Cost Containment and Cost-Share Procedures*. This list does not preclude the addition of other conservation practices in the future, if they are needed to implement the 2012-2016 workplan or achieve compliance with the NR151 Runoff Performance Standards.

Chapter 7

Coordination with Other Resource Management Plans and Programs

To meet the goals established in the Clark County Land and Water Resource Management Plan 2012-2016, citizens can assist by participating in existing, as well as new Federal, State and Local conservation programs. There are numerous programs available to landowners to help them comply with the NR151 requirements established by the WDNR. The following list of conservation programs is not all-inclusive and programs may be added or deleted at a later date subject to the discretion of the Land Conservation Committee. It is the intent of the Clark County Land Conservation Department to utilize all of the following programs to assist county residents.

Federal Programs

1. Environmental Quality Incentives Program (EQIP)
2. Conservation Reserve Program (CRP)
3. Conservation Reserve Enhancement Program (CREP)
4. Grassland Reserve Program (GRP)
5. Wetland Reserve Program (WRP)
6. Wildlife Habitat Incentives Program (WHIP)
7. Conservation Stewardship Program (CSP)
8. State Acres for Wildlife Enhancement (SAFE)
9. Conservation Innovation Grants (CIG)
10. Partners for Wildlife Program

State Programs

1. Working Lands Initiative/ Farmland Preservation Program (WLI/FPP)
2. Targeted Resource Management Program (TRM)
3. Notice of Discharge/Notice of Intent Program (NOD/NOI)
4. Soil and Water Resource Management Program (SWRM)
5. Mead Lake Total Maximum Daily Load Implementation Plan (TMDL)

6. Lake Management and Planning Grants
7. River Management and Planning Grants
8. Aquatic Invasive Species Grants (AIS)
9. Managed Forest Law (MFL)
10. Wisconsin Forest Landowner Grant Program (WFLGP)
11. Agricultural and Household Clean Sweep

County Programs

1. Clark County Animal Manure Management Ordinance
2. Clark County Nonmetallic Mining Reclamation Ordinance
3. Clark County Shoreland Zoning Ordinance
4. Clark County Landspreading of Petroleum Contaminated Soils Ordinance
5. Clark County Agricultural Study Farmland Preservation Plan 1982 and revision 2004
6. Heart of America's Dairyland Agricultural Enterprise Area
7. Clark County Forest, 15 Year Comprehensive Land Use Plan 2006-2020
8. Clark County Outdoor Recreation Plan 2009-2013
9. Clark County Natural Hazards Mitigation Plan 2010
10. PL566 Poplar River Flood Protection Program (Sportsman Lake)
11. Wildlife Damage and Abatement Claims Program
12. Lake Arbutus Management Plan 2007
13. Mead Lake Management and TMDL Implementation Plan 2010

Copies of Clark County Ordinances can be found in the Clark County Code Book in the office of the County Clerk, 517 Court Street, Room 301, Neillsville, WI and also online at the Clark County webpage.

The Clark County Land Conservation Department will make an effort to coordinate the implementation of programs with other local, state, and federal agencies.

Chapter 8 Evaluation and Monitoring

The Clark County Land Conservation Department utilizes a Geographic Information System (GIS) developed by the County's Land Information Office. GIS will be used to inventory farms that have been evaluated for compliance with NR151 standards. Compliance determinations will be linked with parcel identification numbers for future monitoring purposes.

Surface Water- Sediment Delivery

Erosion rates from Clark County crop fields will be evaluated using the soil erosion transect survey method and through the RUSLEII and Snap Plus computer programs.

Accomplishment reports will be submitted to the Land Conservation Committee, as well as, Wisconsin DATCP and WDNR. These reports will summarize the number of cropland acres that had conservation plans developed and/or maintained on them. The report will also show the number and type of best management practices that were installed through the Soil and Water Resource Management Program and other grant programs.

Surface and Groundwater- Nutrient Delivery

The Clark County Land Conservation Department will use the Geographic Information System (GIS) to inventory the number of animal manure storage facilities that were permitted to be constructed, altered, or abandoned during the year. The GIS will also be used to locate crop acres that have implemented nutrient management plans.

An accomplishment report will be submitted to WDATCP, WDNR, and the Clark County Land Conservation Committee and will show the number and type of animal manure management permits that were issued and the number of cropland acres that have implemented nutrient management plans. The report will also indicate the number and type of best management practices that were installed under the Soil and Water Resource Management Program and other grant programs.

Wildlife: Flora and Fauna

An accomplishment report will be sent to WDATCP, WDNR, and the Clark County Land Conservation Committee and will summarize the activities conducted by the Land Conservation Department in regard to invasive species monitoring and inventorying, as well as any control methods used. These reports will also list the number of acres reforested/afforested and the number of acres planted to native prairie and other vegetation. The report will also indicate the number and type of best management practices that were installed under the Soil and Water Resource Management Program and other grant programs.

Wetlands and Riparian Corridors

An accomplishment report will be sent to WDATCP, WDNR, and the Clark County Land Conservation Committee and will summarize the activities conducted by the Land Conservation Department in regard to the number of acres of wetlands restored and the number of acres/linear feet of streambank and lakeshore stabilization projects. The report will also indicate the number and type of Best Management Practices that were installed under the Soil and Water Resource Management Program and other grant programs.

Water Resources Inventory

It is the goal of the Land Conservation Department to increase the level of knowledge about Clark County's surface and groundwater resources. With the assistance of the WDNR, more stream water quality monitoring will be conducted in Clark County. The Land Conservation Department will also apply for grants to fund a groundwater quality and quantity study. An accomplishment report will be submitted to WDATCP, WDNR, and the Clark County Land Conservation Committee and will summarize the number, location, and quality of surface and groundwater samples. Monitoring data will be inventoried in the County's GIS for future reference and evaluation.

Chapter 9

Information and Education Strategy

Implementation of the Land and Water Resource Management Plan will depend heavily upon a successful information and education program. To accomplish this task, it is important that the Land Conservation Department form partnerships with those agencies, departments, and individuals who have the knowledge and ability to educate landowners.

Goals

The focus of the information and education program will be to:

- Create awareness among Clark County landowners regarding the Working Lands Initiative Program and the NR151 performance standards and prohibitions.
- Create awareness among landowners regarding the services provided by the Clark County Land Conservation Department and other cooperating agencies.
- Create awareness among landowners regarding the availability of cost-share assistance programs and who to contact regarding those programs.
- Educate citizens on the function of the surface and groundwater hydrologic cycle.
- Educate landowners on the safe storage, landspreading, and/or disposal of household solid waste, livestock manure, agricultural leachate and wastewater, and industrial, municipal, and residential wastewater and sludge.
- Educate citizens on the importance of retaining and maintaining unique landscapes, unobstructed countryside and night sky views, and peace, quiet, and solitude.
- Inform citizens about rural and urban sources of non-point source pollution.
- Inform residents, contractors, and other local governments about construction site erosion control and stormwater runoff management.
- Inform citizens about surface and groundwater quality and quantity trends.
- Advise landowners regarding the implementation of conservation best management practices that reduce non-point source pollution.
- Advise landowners on the proper use of fertilizers and pesticides.
- Advise landowners regarding the importance of preserving diverse plant and animal communities by controlling and reducing invasive species and other disturbances.

Actions

The following activities will be utilized as a means of creating public awareness and providing information to Clark County citizens:

<u>Activity</u>	<u>Number</u>
Personal Contacts	100 per year
Press Releases	6 per year
Newsletters	8 per year
Workshops	12 per year
Mailings	150 per year
School Presentations	6 per year
Conservation Contest	1 per year
Conservation Camp	1 per year

Evaluation

The information and education program will be evaluated annually to determine the level of effectiveness. As part of the Land Conservation Department's annual accomplishment report, all annual information and education activities will be summarized. These activities will be evaluated by the Land Conservation and UW-Extension Departments. Adjustments in program delivery will be made accordingly based on the evaluation results. Effectiveness will be measured by:

- Citizen Participation at Workshops and Field Days
- Soil Erosion Transect Survey Results
- Technical Engineering Assistance Requested
- Conservation BMP Adoption and Maintenance
- Surface and Groundwater Monitoring Results

Appendix A: Natural Resources Opinion Survey Results

Question 1: What LOCAL Natural Resources are you most concerned about?

	Ag Land	Air	Fisheries/ Wildlife	Forest/ Woodland	Grassland	Groundwater	Lakes/ River/ Streams	Peace/ Quiet	Public Rec. Lands	Soil	Clear Sky Views	Wetlands	Wilderness	Other*
% Chosen	58%	39%	37%	50%	8%	83%	63%	27%	18%	44%	9%	26%	14%	3%

***Other Category Responses**

Drainage of roads in wetlands
Too many rules
Right to farm protection

Question 2: What following items are the biggest threat to your natural resource concerns?

	Ag. cropping practices	Ag livestock operations	Ag. land clearing	Ag. manure/waste storage & landsprd	Constrctn site or road constrctn	Domestic solid waste disposal	Exotic invasive plant and animal species	Fish and/or wildlife excessive harvesting	Forest managmnt	Industrial/municipal sludge & wastewtr disposal	Jet ski and motor boat use	Non-metallic mining/gravel pits-unused and unreclmd	Off-road vehicle use, ATV, RTV, Dirtbikes	Residentl property managmnt	Rural residential develpmnt	Waterfrnt develpmnt	Wetland/ stream alteration, tiling, ditching, and/or filing	Other*
% Chosen	47%	31%	26%	61%	15%	38%	34%	26%	27%	35%	14%	10%	22%	25%	46%	18%	28%	7%

***Other Category Responses**

Roads through wetlands cannot make proper drainage from ditches.
On road use of off road vehicles - no enforcement by county.
Fall tillage of soybean fields.
Larger dairies may face challenges to return manure etc. back on the land where the forage came from without stressing local roads.
The spraying of waste in some areas seems excessive, can you place a limit?
Overpopulation of wolves.
None mentioned.
Need regulation of commercial herbicides and fertilizers.
CAFOs.

Question 3: What services should be emphasized by local, state, and federal conservation staff?

	Animal Manure Mngmnt Ordinance Implemnt.	Best mngmnt practice info and technical assistnce	Constrctn site erosion control assistnce	Cost-sharing/ financial assistnce	Drinking water well testing	Environ. education programs for adults	Environ. education programs for kids	Farmland pres. and agric. economic develpmnt	Forest mngmnt assistnce	Groundwtr protection	Invasive Species	Nutrient mngmnt planning for farmers	Shoreland Zoning Ordinance implemnt.	Shoreland protection educatin./ technical/ financial assistnce	Surface water protection	Tree Planting	Urban stormwtr and erosion control assistnce	Water Quality monitoring of lakes and streams	Well sealing/ abandonme nt assistnce	Wetland enhncmnt and/or restoratr	Wildlife habitat enhncmnt and/or restoratr	Other*
% Chosen	59%	41%	19%	35%	53%	28%	34%	46%	27%	69%	27%	35%	17%	14%	50%	45%	15%	47%	47%	27%	33%	17%

***Other Category Responses**

Roads in wetlands - drainage of ditches
Erosion from farming right up to ditches, especially w/ rental land for corn and beans.
Develop avenues for recycling of feed storage plastics.
Concerns of regulations without checking who's affected.
Common sense, don't over do topics.
Lack of enforcement on ATV trails/ peed, noise, etc.
Warn farmers/consumers of spray effects. Soil life input info. Cost sharing questions?
Biproducs produced by companies (cheese plants) control/ ordinance to protect against noise and odor.
Comments on drinking water testing and water body testing.
Concerned about land spreading manure continually without plowing it under.
Clearcutting should be stopped or timber islands left, landscape looks terrible.
Wood lots removed affects groundsweeping winds./ Manure type concern and where and when spread.
Financial assistance should involve education and plan implementation and should be a cost of owning/using.
Land classification and taxes.
Too many regulations.
Oversee power companies who don't stop stray voltage.
Unreasonable government regulations. Proper land use planning.
No more costly burdensome ordinances.

 #1 Chosen Response
 #2 Chosen Response
 #3 Chosen Response

Appendix A: Clark County Natural Resources Opinion Survey 2011

Clark County is updating its *Land and Water Resource Management Plan* in order to:

- Identify and prioritize the major natural resource issues and concerns for Clark County.
- Develop a cooperative and voluntary public/private effort to solve any natural resource challenges.
- Determine guidance for and the roles of local, state, and federal agencies.
- Develop and implement goals and objectives for local natural resources during the next ten years (2012-2021).
- Secure staffing and cost-share funding for the management of Clark County's natural resources.

In 2006, the following six priorities were developed by the Citizen Advisory Committee:

1. Nutrient runoff from sediment and animal waste.
2. Residential use of fertilizers and pesticides.
3. Lack of baseline data on surface and groundwater quality.
4. Winter spreading of manure.
5. Illegal discharges to streams from non-agricultural sources.
6. Erosion from construction sites and stormwater runoff.

In 2006, the following goals were developed by the Clark County Land Conservation Committee:

- Goal 1: Reduce Sediment Delivery to Surface Waters
 Goal 2: Reduce Animal Waste and Nutrient Delivery to Surface Waters
 Goal 3: Reduce Pollutant Discharges from Urban and Intensive Use Areas
 Goal 4: Increase Efforts to Inventory the Water Resources of Clark County

Your input in the planning process is extremely important. We are looking for your suggestions to help develop the local natural resource goals and objectives. **Please fill out the survey below and return to our office by May 9, 2011.** Thank you for participating and voicing your opinions about Clark County's natural resources.

Matt Zoschke, Clark County, County Conservationist

1) What **LOCAL** natural resources are you most concerned about? (Please rank **top five** concerns, #1 as the highest.)

- | | |
|---|--|
| <input type="checkbox"/> Agricultural Land
<input type="checkbox"/> Air
<input type="checkbox"/> Fisheries and Wildlife
<input type="checkbox"/> Forest and Woodlands
<input type="checkbox"/> Grasslands
<input type="checkbox"/> Groundwater
<input type="checkbox"/> Lakes, Rivers, and Streams | <input type="checkbox"/> Peace and Quiet and Solitude
<input type="checkbox"/> Public Recreational Lands and Trails
<input type="checkbox"/> Soil
<input type="checkbox"/> Unobstructed Countryside/Nightsky Views
<input type="checkbox"/> Wetlands
<input type="checkbox"/> Wilderness and Unique Landscapes
<input type="checkbox"/> Other _____ |
|---|--|

2) What following items are the biggest threat to your natural resource concerns? (Please check all that apply.)

- Agricultural cropping practices** (e.g. soil erosion, nutrient runoff/leaching)
- Agricultural livestock operations** (e.g. noise, odor, location, size, dust, traffic)
- Agricultural land clearing** (e.g. sodbusting, swampbusting)
- Agricultural manure/waste storage and landspreading** (e.g. unpermitted facilities, water pollution)
- Construction site or road construction** (e.g. soil erosion control, stormwater runoff)
- Domestic solid waste disposal** (e.g. open burning of garbage, illegal dumping)
- Exotic invasive plant and animal species** (e.g. displacement of native species, habitat loss)
- Fish and/or wildlife excessive harvesting** (e.g. poaching, not following bag limits)
- Forest management** (e.g. poor forestry practices including harvesting, regeneration, road construction)
- Industrial and municipal sludge and wastewater disposal** (e.g. unpermitted facilities, water pollution)
- Jet ski and motorboat use** (e.g. habitat destruction, noise, user conflicts)
- Non-metallic mining/gravel pits- unused and unreclaimed** (e.g. soil erosion, water pollution, aesthetics)
- Off-road vehicle use- ATV, RTV, Dirtbikes** (e.g. soil erosion, water/air pollution, noise, user conflicts)
- Residential property management** (e.g. lawn fertilizer/chemicals, pesticide use, pet waste)
- Rural residential development** (e.g. loss of farmland/open space, loss of wildlife habitat)
- Waterfront development** (e.g. shoreland erosion, water pollution, loss of solitude, aesthetics)
- Wetland and stream alteration-tiling, ditching, and/or filing** (e.g. water pollution, soil erosion)
- Other** _____

Place
Stamp
Here

**CLARK COUNTY LCD
517 COURT ST., RM. 102
NEILLSVILLE, WI 54456**

PLEASE RETURN BY MAY 9, 2011.

You may fold with above address to the outside, tape, and mail or you may drop it off at our office. Thanks for your help!

3) What services should be emphasized by the local, state, and federal conservation staff? (Please check all that apply.)

- Animal Manure Management Ordinance implementation**
- Conservation best management practice information and technical assistance**
- Construction site erosion control assistance**
- Cost-sharing/financial assistance to landowners for conservation practice installation**
- Drinking water well testing**
- Environmental education programs for adults**
- Environmental education programs for kids**
- Farmland preservation and agricultural economic development**
- Forest management assistance**
- Groundwater protection**
- Invasive species (aquatic and terrestrial plants and animals) information and technical assistance**
- Nutrient management planning for farmers**
- Shoreland Zoning Ordinance implementation**
- Shoreland protection education/technical/financial assistance**
- Surface water (lakes, rivers, and wetlands) protection**
- Tree planting (reforestation and afforestation)**
- Urban stormwater and erosion control assistance**
- Water quality monitoring of lakes and streams**
- Well sealing/abandonment assistance for unused private wells**
- Wetland enhancement and/or restoration**
- Wildlife habitat enhancement and/or restoration**
- Other** _____
- Other** _____

Questions or Comments: _____

Thank you for taking time to complete this survey. Your assistance is greatly appreciated.

The results from this survey will be used to guide the Citizen Advisory Committee as it prepares the Clark County Land and Water Resources Management Plan. If you would like to participate in the Citizen Advisory Committee, please contact the Clark County Land Conservation Department at (715) 743-5102.

Appendix B

**CLARK COUNTY
Agricultural Performance Standards and Prohibitions Verification Checklist for
Chapter 91- Farmland Preservation Program**

Property Description(s): _____
Attach an Air Photo, Plat Map or other drawing to clearly delineate the area investigated with this checklist on this visit.

Landowner(s): _____

Date Evaluated: _____ Acreage (Nutrient Management): _____

LCD Staff Member: _____

Use with the Agricultural Performance Standards and Prohibitions Procedures to complete information for all criteria inventoried. The Agricultural Performance Standards and Prohibitions are established in NR151 and ATCP50, Wisconsin Administrative Code.

Agricultural Performance Standard or Prohibition	Compliant (Yes or No)		Note
	Y	N	
Sheet, rill and wind erosion	Y	N	
1. Cropland soil erosion must meet tolerable rate (T) calculated by RUSLE2.			
Manure Storage Facilities	Y	N	
2. A new manure storage facility must be constructed according to NRCS Standards.			
3. An existing storage facility that has been substantially altered must be altered according to NRCS Standards.			
4. An operation has ceased where a manure storage facility is located. The manure storage facility must be abandoned according to NRCS Standards.			
If not abandoned to NRCS Standards, The facility must meet NRCS Standards. The facility must be designed to store manure for longer than 24 months. The retention of the facility must be warranted based on anticipated future use.			
5. Manure has not been added or removed from a facility for a period of 24 months. The manure storage facility must be abandoned according to NRCS Standards.			
If not abandoned to NRCS Standards, The facility must meet NRCS Standards. The facility must be designed to store manure for longer than 24 months. The retention of the facility must be warranted based on anticipated future use.			
6. A manure storage facility poses an imminent threat to public health or fish and aquatic life or is causing a violation of groundwater standards. The manure storage facility must be upgraded, replaced or abandoned according to NRCS Standards.			

Clean Water Diversions	Y	N	
7. Runoff shall be diverted away from contacting feedlot, manure storage areas and barnyard areas within a Water Quality Management Areas (WQMA).			
Nutrient Management	Y	N	Note
8. The application of manure, commercial fertilizer and other nutrients shall conform with a nutrient management plan according to the following phasing:			
a. All new cropland as of October 1, 2003			
b. All existing cropland as of January 1, 2005 that is located within watersheds containing outstanding waters, exceptional waters, or source water protection areas.			
c. All other existing cropland as of January 1, 2008.			
Manure Prohibitions	Y	N	
9. No overflow of manure storage facilities.			
10. No unconfined manure pile in a Water Quality Management Area (WQMA).			
11. No direct runoff from a feedlot or stored manure into the waters of the state.			
12. No unlimited access by livestock to waters of the state in a location where high concentrations of animals prevent the maintenance of adequate sod or self-sustaining vegetative cover.			

Appendix C

CLARK COUNTY
Agricultural Performance Standards and Prohibitions Verification Checklist for
NR151 Runoff Management

Property Description(s): _____
Attach an Air Photo, Plat Map or other drawing to clearly delineate the area investigated with this checklist on this visit.

Landowner(s): _____

Date Evaluated: _____ Acreage (Nutrient Management): _____

LCD Staff Member: _____
 Use with the *Agricultural Performance Standards and Prohibitions Procedures* to complete information for all criteria inventoried.
 The Agricultural Performance Standards and Prohibitions are established in *NR151 and ATCP50, Wisconsin Administrative Code*.

Agricultural Performance Standard or Prohibition	Compliant (Yes or No)		Note
	Y	N	
Sheet, rill and wind erosion	Y	N	
1. Cropland soil erosion must meet tolerable rate (T) calculated by RUSLE2.			
Manure Storage Facilities	Y	N	
2. A new manure storage facility must be constructed according to NRCS Standards.			
3. An existing storage facility that has been substantially altered must be altered according to NRCS Standards.			
4. An operation has ceased where a manure storage facility is located. The manure storage facility must be abandoned according to NRCS Standards.			
If not abandoned to NRCS Standards, The facility must meet NRCS Standards. The facility must be designed to store manure for longer than 24 months. The retention of the facility must be warranted based on anticipated future use.			
5. Manure has not been added or removed from a facility for a period of 24 months. The manure storage facility must be abandoned according to NRCS Standards.			
If not abandoned to NRCS Standards, The facility must meet NRCS Standards. The facility must be designed to store manure for longer than 24 months. The retention of the facility must be warranted based on anticipated future use.			
6. A manure storage facility poses an imminent threat to public health or fish and aquatic life or is causing a violation of groundwater standards. The manure storage facility must be upgraded, replaced or abandoned according to NRCS Standards.			

Clean Water Diversions	Y	N	
7. Runoff shall be diverted away from contacting feedlot, manure storage areas and barnyard areas within a Water Quality Management Areas (WQMA).			
Nutrient Management	Y	N	Note
8. The application of manure, commercial fertilizer and other nutrients shall conform with a nutrient management plan according to the following phasing:			
a. All new cropland as of October 1, 2003			
b. All existing cropland as of January 1, 2005 that is located within watersheds containing outstanding waters, exceptional waters, or source water protection areas.			
c. All other existing cropland as of January 1, 2008.			
Manure Prohibitions	Y	N	
9. No overflow of manure storage facilities.			
10. No unconfined manure pile in a Water Quality Management Area (WQMA).			
11. No direct runoff from a feedlot or stored manure into the waters of the state.			
12. No unlimited access by livestock to waters of the state in a location where high concentrations of animals prevent the maintenance of adequate sod or self-sustaining vegetative cover.			
Tillage Setback	Y	N	Note
13. Tillage operations are not conducted within five feet of the top of the channel of surface waters.			
14. Tillage operations do not negatively impact streambank integrity or deposit soil directly into surface waters.			
15. Tillage setback area maintained in adequate sod or self-sustaining vegetative cover that provides a minimum 70% coverage.			
Phosphorus Index	Y	N	Note
16. Croplands, pastures, and winter grazing areas shall have a phosphorus index value of 6 or less over the 8 year accounting period.			
17. Cropland, pastures, and winter grazing areas shall not exceed a phosphorus index value of 12 in any individual year.			
18. Manure or other nutrients are not being mechanically applied to surface waters.			
Process Wastewater Handling	Y	N	Note
19. Process wastewaters (i.e. milkhouse wastewater and/or feed leachate) are not significantly discharged to waters of the state.			
TMDL Performance	Y	N	Note
20. Landowner is required to meet a more stringent standard or additional performance standards, established by WIDNR and approved by EPA in a TMDL implementation plan.			

APPENDIX D

COST CONTAINMENT AND COST-SHARE PROCEDURES FOR LAND AND WATER RESOURCE MANAGEMENT PROGRAM

The following procedures have been developed by the Clark County Land Conservation Committee to provide guidance for the bidding, installation, and payment of cost-shared practices installed under Clark County's Soil and Water Resource Management Program. The Land and Water Resource Management Program consists of the Wisconsin Environmental Cost-Share Assistance Network (WECAN) and Soil and Water Technical Engineering Assistance (SWTEA). The following procedures will apply to all conservation practices approved by the Land Conservation Committee that are estimated by department staff to cost \$25,000.00 or more. These procedures are the policy of the Land Conservation Committee and will be adhered to when conducting landowner reimbursement activities for the Soil and Water Resource Management Program.

Bidding Procedures:

1. It is the responsibility of the landowner to solicit bids at their own expense with the assistance of the Land Conservation Department (LCD).
2. All bid solicitations will be advertised in all of the designated county newspapers established by the Executive Committee. The list of county newspapers is kept on-file at the County Clerks office.
3. If deemed appropriate, the LCD will conduct a site showing of the project with prospective bidders.
 - All attempts will be made by the LCD to show the proposed construction site to all prospective bidders on the same day and during the same time period.
 - In cases where a site showing has not been scheduled by the LCD, bidders are responsible for viewing the construction site on their own, after permission has been granted by the landowner.
4. Design plans and bid schedules will be available at the Clark County LCD office and can also be obtained from the landowner at the proposed project site.
5. Contractors must submit all bids on forms provided by the LCD, if any are provided.
 - The landowner and the contractors will be notified of the deadline date for accepting bids.
 - All bids must be sealed and returned to Clark County LCD by the deadline date.
 - A minimum of three qualified bids must be received by the LCD.
 - Bids must be opened at the same time within two weeks after the bid deadline.
 - After the landowner selects the preferred bid, a letter listing the contractors and their bids will be sent to the landowner and to all of the contractors that bid on the project.
6. In order to contain costs, it is the policy of the Land Conservation Committee to cost-share projects based on the lowest submitted bid or combination of bids.
 - If the landowner selects a contractor other than the lowest bidder, it is the landowner's responsibility to pay the difference of the bid at their own expense.
 - The lowest bid price according to design plans will be the official cost when the project is constructed.
 - Any design plan revision will be cost-shared based on any additional cost as agreed to by the

- landowner, contractor, and the LCD.
 - The change in cost-share amount will be recorded on a Contract Change Order Form.
 - Additional work will not be cost shared without a signed Contract Change Order Form.
 - Only contractors who have submitted a qualified bid are eligible for consideration.
 - A qualified bid is determined to be inclusive of the cost-share project and design elements specified in the construction plan.
 - A landowner may personally install all of portions of the cost-shared conservation practice, if the landowner has submitted a qualified bid and is competent to install the practice.
 - The landowner may not select a contractor who did not bid or did not submit a qualified bid.
7. The Land Conservation Committee reserves the right to accept or reject any or all bids, to waive any technicality, and to accept any bid which is advantageous.

Cost-Share Reimbursement Procedures:

1. Project payments cannot be processed until itemized receipts for all expenditures are turned in to the LCD office. A canceled check, or bills marked "paid" and signed/ dated by the contractor shall serve as verification of payment.
 - Cost-share checks will be mailed or delivered to the landowner.
 - A two-party check will be issued for all cost-share projects that exceed \$500.00 in cost-share.
2. All required protective fencing, seeding, fertilizing, and mulching must be completed before the project can be certified for payment.
3. Partial payments on a project can be made if the individual practice components are inspected, certified complete, and "paid" bills have been submitted to the Clark County LCD.
 - Individual practice components must provide independent conservation benefits.
 - Partial payments may not exceed 90% of the total cost-share payment.
4. All bills for cost-shared practices must be delivered to the Land Conservation Department office by the last workday of each month in order to receive payment within 30 days.
5. If the project exceeds \$14,000 in cost-share funding, the cost-share contract shall be recorded with the county register of deeds before any payment is allocated.

LANDOWNER SIGNATURE PAGE

I have reviewed the Clark County Cost Containment and Cost-Share Procedures and understand its contents.

As a landowner, I agree fully to indemnify and hold the County harmless from and against all claims, actions, judgments, costs, and expenses arising out of damages or injuries to third persons or their property, caused by fault or negligence of the landowner, its agents, or employees, in performance of its obligations under this contract.

I have also inspected the proposed construction site for buried utilities and have clearly marked where such utilities exist.

Landowner Signature

Date

RETURN TO: Clark County
 Land Conservation Department
 Courthouse, Room 102
 Neillsville, WI 54456

CONTRACTOR SIGNATURE PAGE

I have reviewed the Clark County Cost Containment and Cost-Share Procedures and understand its contents.

As a contractor, I agree fully to indemnify and hold the County harmless from and against all claims, actions, judgments, costs, and expenses arising out of damages or injuries to third persons or their property, caused by fault or negligence of the contractor, its agents, or employees, in performance of its obligations under this contract.

I propose hereby to furnish materials and labor complete in accordance with the Natural Resources Conservation Service Technical Guide standards and specifications as proposed in the project design plan.

Contractor

Date

NOTE: This signature page must be signed and dated in order for your bid to be valid.

RETURN TO: Clark County
 Land Conservation Department
 Courthouse, Room 102
 Neillsville, WI 54456

2012-2016 COST-SHARE RATES AND MAXIMUM PAYMENTS

STRUCTURAL PRACTICES: COST-SHARE RATES ALLOWED:

Except as provided under NR151.09 sub.(4) or (5), or under s .ATCP 50.56, cost-share rates for the following practices may not exceed the following rates:

1. Manure storage system.....subject to LCC approval
2. Manure storage abandonment.....70
Maximum amount - \$5,000.00
3. Access road or stream crossing.....70
4. Cattle mound.....subject to LCC approval
5. Critical area stabilization.....subject to LCC approval
6. Diversion.....70
7. Field windbreak.....NA
8. Filter strip.....70
9. Grade stabilization structure.....70
10. Heavy use area protection.....70
11. Intensive grazing management.....subject to LCC approval
12. Livestock fencing.....70
13. Livestock watering facility.....70
14. Milking center waste control system.....70
15. Relocating or abandoning animal feeding operations.....subject to LCC approval
16. Roof.....subject to LCC approval
17. Roof runoff system.....70
18. Sediment basin.....70
19. Streambank and shoreline protection.....70

20. Subsurface drain.....70

21. Terrace.....70

22. Underground outlet.....70

23. Waste transfer system.....subject to LCC approval

24. Water and sediment control basin.....70

25. Waterway system.....70

26. Well abandonment.....70
Maximum amount - \$500.00

27. Wetland development or restoration.....50
Maximum amount - \$5,000.00

28. Animal trails and walkways.....70

CROPPING PRACTICES: COST-SHARE RATES ALLOWED

A cost-share grant may include any of the following:

1. Nutrient management\$28.00/acre
 Farms that received prior EQIP are eligible for \$7/acre.
 Farms required by County Animal Manure Management Ordinance are ineligible.
2. Pesticide management for up to 3 years.....subject to LCC approval

The following practices are available only if needed to maintain compliance with NRCS 590 Nutrient Management Standard:

3. One payment of up to \$9 per acre for contour cropping.
4. One payment of up to \$13.50 per acre for strip-cropping.
5. One payment of up to \$7.50 per acre for field strip cropping.
6. One payment of up to \$25.00/acre for cover and green manure.
7. Payments of up to \$18.50 per acre per year, for up to 3 years, for high residue management systems.

REFERENCES

- Census of Agriculture, 2007. United States Department of Agriculture - National Agricultural Statistics Service.
- Clark County Agriculture: Value & Economic Impact, 2011. University of Wisconsin Extension- Cooperative Extension.
- Clark County Forestry Ecological Management Plan, 2005. Clark County Forestry and Parks Department.
- Clark County Natural Hazards Mitigation Plan, 2010. Clark County Emergency Management Department.
- Clark County Forest Fifteen Year Comprehensive Land Use Plan, 2006-2020. Clark County Forestry and Parks Department.
- Clark County Land and Water Resource Management Plan, 2007-2011. Clark County Land Conservation Department.
- Clark County Outdoor Recreation Plan, 2009 to 2013. Clark County Forestry and Parks Department.
- Chippewa County Land and Water Resource Management Plan, 2009-2013. Chippewa County Land Conservation Department.
- Coon Fork Lake Management Plan, November 2004. Eau Claire County Land Conservation Department.
- Department of Natural Resources Website. <http://dnr.wi.gov/>.
- The Economic Impacts of Agriculture in Wisconsin Counties, 2011. University of Wisconsin Extension- Cooperative Extension. Deller, Steven and David Williams.
- Inventory and Trends Report for the Development of Local Comprehensive Plans and the Clark County Comprehensive Plan. November 2003, Foth and Van Dyke and Assoc. Inc.
- Clark County Conditions and Trends Report- Background Information for Comprehensive Planning. January 2009, West Central Wisconsin Regional Planning Commission.
- Lake Arbutus, Wisconsin (1727700) Lake Management Report, 2007. Lake Arbutus Association and Hatfield Sportsman Club.
- Marathon County Land and Water Resource Management Plan, 2011-2015. Marathon County Conservation, Planning, and Zoning Department.

Mead Lake Management Plan, 2010. Mead Lake and Watershed Partnership.

Mead Lake Total Maximum Daily Load, 2008. Wisconsin Department of Natural Resources Bureau of Water Resources Management.

A Nonpoint Source Control Plan for the Upper Big Eau Pleine River Priority Watershed Project. August 1987, Wisconsin Department of Natural Resources Bureau of Water Resources Management.

North Fork Eau Claire River Watershed, 2010 Water Quality Management Plan Update. Wisconsin Department of Natural Resources Bureau of Water Resources Management.

Soil Survey of Clark County, Wisconsin, 1993, United States Department of Agriculture – Natural Resources Conservation Service.

The State of the Black-Buffalo-Trempealeau Basin, May 2002. Wisconsin Department of Natural Resources Bureau of Water Resources Management.

The State of the Central Wisconsin River Basin, April 2002. Wisconsin Department of Natural Resources Bureau of Water Resources Management.

The State of the Lower Chippewa River Basin, 2001. Wisconsin Department of Natural Resources Bureau of Water Resources Management.

Strategic Plan for the Big Eau Pleine River Watershed and Reservoir Draft 2011, Big Eau Pleine Task Force.

Surface Water Resources of Clark County, 1965. Wisconsin Conservation Department.

Surface Water Data Viewer. http://dnr.wi.gov/org/water/data_viewer.htm.

Water Availability in Central Wisconsin- An Area of Near-Surface Crystalline Rock, Geological Survey Water-Supply 222, 1974. United States Department of Interior - United States Geological Services. Bell, E.A. and M.G. Sherrill.

Wisconsin Agriculture in the 1990s: Perspectives from the 1997 Census of Agriculture. 2001. Program on Agricultural Technology Studies, Department of Rural Sociology, University of Wisconsin, Madison. Jackson-Smith, Douglas and Eric Finnin

Wisconsin Agricultural Statistics, 2010. Wisconsin Agricultural Statistics Service, Wisconsin Department of Agriculture, Trade and Consumer Protection.

The Wisconsin Buffer Initiative, 2005. University of Wisconsin-Madison- College of Agricultural & Life Sciences.

Wisconsin Land Legacy Report, 2006. Wisconsin Department of Natural Resources.

2012-2016 CLARK COUNTY CONSERVATION WORK PLAN*

Goal #1 - Reduce Sediment and Nutrient Delivery to Surface Water					
<i>Objective</i>	<i>Actions</i>	<i>Who</i>	<i>When</i>	<i>Est. Staff Hours for 5 yrs</i>	<i>Outcome</i>
1. Reduce pollutant loading to surface waters	A. Provide technical assistance and cost-share funds for the installation of best management practices that reduce pollutant delivery	LCD, NRCS	2012-2016	5,000	Provide \$50,000 annually for cost-share assistance
	B. Assist landowners with meeting the Runoff Management Performance Standards, including landowners participating in the Farmland Preservation Program	LCD	2012-2016	2,500	Assist 35 landowners annually
	C. Administer the Clark County Animal Manure Management Ordinance	LCD	2012-2016	5,000	Issue 15-20 new facility permits and 3-5 closure permits annually
	D. Assist landowners with developing winter manure/wastewater spreading plans	LCD, UWEX	2012-2016	200	Assist 5 landowners annually
	E. Implement Mead Lake TMDL and others	LCD, NRCS, UWEX	2012-2016	1,000	Provide \$75,000 annually for cost-share assistance
2. Increase the number of acres that implement nutrient management planning	F. Continue to require all permitted storage facilities to annually submit an approved nutrient management plan	LCD	2012-2016	1,500	Review and approve annually submitted nutrient management plans
	G. Provide cost-share funds for the implementation of nutrient management plans	LCD, NRCS	2012-2016	200	Provide \$25,000 annually for cost-share assistance
3. Increase the use of clean water diversions, buffer strips, and/or tillage setbacks	H. Provide technical assistance for BMP installation	LCD	2012-2016	500	Assist 5 landowners annually
4. Reduce soil erosion and sediment and nutrient delivery	I. Promote reduced tillage, no-till, and cover crops	LCD, UWEX	2012-2016	200	Assist 15 landowners annually
	J. Conduct the Soil Erosion Transect Survey	LCD, NRCS	2012-2016	500	Conduct survey annually
5. Reduce discharges from milkhouse wastewater, silage leachate runoff, and direct deposition of manure into surface water.	K. Provide technical assistance for BMP installation	LCD	2012-2016	500	Assist 5 landowners annually
6. Educate landowners about the application of fertilizer, manure, and other plant nutrients.	L. Conduct four nutrient management training sessions annually	LCD, UWEX	2012-2016	500	Assist 25 landowners annually
7. Educate residents, contractors, other local governments about construction site erosion control and stormwater runoff management	M. Assist local contractors and local units of government with meeting the stormwater and erosion control requirements in NR216	LCD	2012-2016	100	Assist 5 contractors/ town officials annually
	N. Conduct two training sessions for local contractors and town officials	LCD	2013, 2015	200	Assist 25 contractors/ town officials
Estimated Staff Hours = 17,900; Estimated Staff Costs = \$626,500; Estimated Other Costs = \$750,000					

Goal #2 - Reduce Nutrient and Other Contaminant Delivery to Groundwater					
<i>Objective</i>	<i>Actions</i>	<i>Who</i>	<i>When</i>	<i>Est. Staff Hours for 5 yrs</i>	<i>Outcome</i>
1. Reduce pollutant loading to groundwater	A. Provide cost-share funds for the installation of best management practices that reduce pollutant delivery	LCD, NRCS	2012-2016	see 1.1.A.	Provide \$20,000 annually for cost-share assistance
2. Increase the level of maintenance and repair on animal manure and agricultural wastewater storages	B. Administer the Clark County Animal Manure Management Ordinance	LCD	2012-2016	see 1.1.C.	see 1.1.C.
3. Increase the level of maintenance and repair on industrial, municipal, and residential wastewater storages	C. Administer the Clark County Animal Manure Management Ordinance	LCD	2012-2016	see 1.1.C.	see 1.1.C.
	D. Assist landowners and cooperate with WDNR on the completion of WDNR Form 3400-196 "Notice of Intent to Store Industrial Wastes in Existing Off-Site Manure Structures"	LCD	2012-2016	1,500	Assist 15 landowners annually
4. Increase the abandonment of unused manure storages	E. Administer the Clark County Animal Manure Management Ordinance	LCD	2012-2016	see 1.1.C.	see 1.1.C.
5. Increase the number of properly sealed and abandoned unused wells.	F. Provide technical assistance and cost-share for BMP installation	LCD	2012-2016	see 1.1.A.	Provide \$2,500 annually for cost-share
6. Encourage landowners to dispose of all unused chemicals and fertilizers in the most environmentally sound manner	G. Organize a countywide Clean Sweep every three-four years	LCD, UWEX, P&Z, Health	2014, 2016	250	Provide an environmentally safe alternatives for chemical and other hazardous waste disposal
7. Educate private and public water supply owner/operators about the importance of wellhead protection planning	H. Conduct two training sessions for local residents	LCD	2012, 2015	100	Assist 50 landowners
	I. Provide technical assistance	LCD	2012-2016	500	Assist 15 landowners annually
Estimated Staff Hours = 2,350; Estimated Staff Costs = \$82,250; Estimated Other Costs = \$112,500					

Goal #3 - Maintain the Health and Viability of the Animal and Plant Communities

<i>Objective</i>	<i>Actions</i>	<i>Who</i>	<i>When</i>	<i>Est. Staff Hours for 5 yrs</i>	<i>Outcome</i>
1. Increase the amount of native vegetation being planted	A. Provide technical assistance for BMP installation	LCD, NRCS	2012-2016	500	Assist 25 landowners and provide \$50,000 in cost-share assistance
2. Increase the amount of invasive species inventorying and the level of control	B. Conduct a countywide inventory	LCD	2012, 2015	500	Increase the knowledge of the location of invasive species
3. Maintain the biological diversity, ecology, and environmental functions of the landscape	C. Support CREP, CRP, WRP, SAFE, etc. and provide technical assistance to landowners	LCD, NRCS, FSA	2012-2016	250	Assist 20 landowners
4. Maintain prime farmland by limiting the impacts of rural residential development	D. Assist landowners with Wisconsin Working Lands Initiative Program	LCD	2012-2016	1,000	Assist interested landowners and town officials, as needed
5. Educate the public on the importance of diverse ecosystems	E. Conduct two training sessions for local residents	LCD	2012, 2016	100	Assist 30 landowners
Estimated Staff Hours = 2,350; Estimated Staff Costs = \$82,250; Estimated Other Costs = \$50,000					

Goal #4 - Maintain the Functionality of the Existing Hydrologic Infrastructure

<i>Objective</i>	<i>Actions</i>	<i>Who</i>	<i>When</i>	<i>Est. Staff Hours for 5 yrs</i>	<i>Outcome</i>
1. Increase the "net gain" of wetland acres through wetland restoration and creation	A. Provide cost-share and technical assistance for BMP installation	LCD, NRCS	2012-2016	1,500	Assist 10 landowners and provide \$50,000 for cost-share assistance
2. Preserve existing wetlands, floodplains/flood fringes, riparian corridors, and natural conveyances by avoiding intentional destruction	B. Assist landowners with applying for the proper permits and/or finding alternatives	LCD	2012-2016	500	Assist 10 landowners
3. Maintain, improve, and/or restore the natural condition of the shoreland corridor, littoral zone, and instream habitat of rivers and lakes	C. Provide cost-share and technical assistance for BMP installation	LCD	2012-2016	1,500	Assist 10 landowners and provide \$50,000 for cost-share assistance
4. Educate the public on the importance of water conservation	D. Conduct two training sessions for local residents	LCD	2013, 2015	250	Assist 30 landowners
5. Educate the public on the interconnection between groundwater and surface water	E. Conduct two training sessions for local residents	LCD	2014, 2016	250	Assist 30 landowners
Estimated Staff Hours = 4,000; Estimated Staff Costs = \$140,000; Estimated Other Costs = \$100,000					

Goal #5 - Increase Efforts to Inventory the Water Resources

<i>Objective</i>	<i>Actions</i>	<i>Who</i>	<i>When</i>	<i>Est. Staff Hours for 5 yrs</i>	<i>Outcome</i>
1. Increase water quality and quantity monitoring on surface water resources	A. Develop monitoring sites for streams and lakes with the assistance of WDNR	LCD	2013, 2015	1,500	Increase the number of monitoring sites in Clark County at a cost of \$30,000
2. Increase water quality and quantity monitoring on groundwater resources	B. Conduct a countywide groundwater study	LCD	2012, 2014, 2016	1,500	Increase the number of monitoring sites in Clark County at a cost of \$30,000
3. Maintain a database of surface and groundwater quality and quantity changes	C. Use GIS to map results	LCD	2012-2016	1,000	Increase the accessibility of monitoring data
4. Educate the public about the importance of improving water quality and what actions they can take to preserve clean and abundant water for future generations	D. Conduct a countywide drinking water well sampling program	LCD	2012, 2014, 2016	see 5.1.B.	Assist 250 landowners
Estimated Staff Hours = 4,000; Estimated Staff Costs = \$140,000; Estimated Other Costs = \$60,000					

To Implement the 2012-2016 Work Plan the following resources will be needed:

Total Staff Hours = 30,600

Total Staff Costs = \$1,071,000

Total Other Costs = \$1,072,500

Total Costs = \$2,143,500

*The 2012-2016 work plan does not include the activities and hours required of department staff in order to fulfill their county government employment obligations (i.e. training, administrative, financial, etc.)