



Door County
Land & Water Resource
Management Plan
2006 - 2010

Prepared by the
Soil & Water Conservation Department

Without love of the land, conservation lacks meaning or purpose, for only in a deep and inherent feeling for the land can there be dedication in preserving it.

-Sigurd F. Olson

“We end, I think, at what might be called the standard paradox of the twentieth century: our tools are better than we are, and grow better faster than we do. They suffice to crack the atom, to command the tides. But they do not suffice for the oldest task in human history: to live on a piece of land without spoiling it.”

-Aldo Leopold

Everyone lives downstream from someone else.

- Anonymous

DOOR COUNTY

**LAND & WATER RESOURCE
MANAGEMENT PLAN**

Prepared by the
Door County Soil & Water Conservation Department
and approved by the
Door County Land Conservation Committee

2006-2010

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Table of Contents

PART 1. Introduction	1
Purpose	1
Executive Summary.....	2
 PART 2. Land and Water Resource Needs	 8
Resource Discussion and Status	8
Physical Settings and Geology.....	8
Soils.....	15
Groundwater	17
Surface Water.....	17
Door County Demographics	20
Assessment of Areas of Concern.....	21
Major Watershed Basins	21
Priority Watersheds.....	22
High Priority Areas	23
Significant Habitat and Natural Areas	26
Strategic Planning and Public Input/Participation.....	34
Group Meetings and Discussion	34
Discussion of Findings.....	34
Identification of Specific Land & Water Resource Needs	37
Significant Accomplishments.....	38
 PART 3. Plan of Implementation Addressing Resource Management Needs.....	 40
Agricultural Implementation	40
Voluntary Implementation	40
Upper Door Priority Watershed	40
Red River/Sturgeon Bay Priority Watershed.....	42
Farmland Preservation Program	43
Nutrient Management Program.....	45
Chapter NR 243 Program.....	46
Targeted Runoff Management Program	47
Agricultural Performance Standards & Prohibitions	48
Strategy for Implementation of Agricultural Standards (Identification of Priority Farms)	50
Volunteer Participation.....	50
Required Landowners/Operators.....	51
Red River/Sturgeon Bay Priority Watershed	51
Geographic Prioritization	51
Adoption of Ordinances	53
Urban & Rural Non-Agricultural Implementation	53
Voluntary Implementation	53
Stormwater Runoff Management & Construction Site Erosion Control	53
Village of Ephraim Stormwater/Construction Site Erosion Control Ordinance	55
Nonmetallic Mining Controls and Reclamation	56
Soil Erosion Control on County Department Projects	57
Beach Contamination Source Identification Program	58
Well Abandonment Program.....	60

Wellhead Zone of Contribution Protection Programs	61
City of Sturgeon Bay	62
Village of Sister Bay	63
Village of Maplewood	64
Technical Assistance to Landowners/Operators, Interested Groups, and Other Governmental Units.....	65
General Resource Management Assistance to the Public	65
Assistance to Other Municipalities	65
Research Assistance to Universities and Other Agencies Pertaining to Door County’s Resources	66
County Water Pollution Abatement Cost-share Program.....	66
Other SWCD Programs	67
Tree Sales & Planting	67
County Buffer Program.....	68
Conservation Reserve Enhancement Program.....	69
Wildlife Damage Abatement and Claims Program/Nuisance Animal Technical Assistance	71
Aggressive Invasive Non-Indigenous Species Control.....	72
Lead & Arsenic Contaminated Sites.....	73
Land Information Modernization Program.....	74
Information & Education.....	75
PART 4. Goals, Program Assessment and Plan Updates of the LWRMP.....	77
Introduction	77
Resource Goals.....	77
Program Goals.....	78
Progress Assessment	83
Program Updates	88
PART 5. Summary Work Plan and Fiscal Management	90
Work Plan.....	90
Fiscal Management.....	100
PART 6. Plan Adoption Process	102
APPENDIX A Soil Associations.....	104
APPENDIX B Surface Water Summaries.....	106
APPENDIX C Public Input Data	109
APPENDIX D Notice of Public Hearing.....	111
APPENDIX E Conservation Practices.....	112
APPENDIX F Appeal Process	113
BIBLIOGRAPHY	114
GLOSSARY.....	117
ACRONYMS.....	120

Figures

Figure 2-1. Location map of Door County	10
Figure 2-2. Generalized geologic map of Door County	11
Figure 2-3. Generalized cross section of the Door Peninsula illustrating gentle inclination of the bedrock and the northwest facing escarpment	11
Figure 2-4. Common karst features found in Door County which affect groundwater	12
Figure 2-5. Bedrock geology cross section in northern Door County	13
Figure 2-6. Lobes of the late Wisconsin Glacier in Wisconsin	14
Figure 2-7. Glacial deposits in Door County	14

Tables

Table 2-1. Population Trends.....	20
Table 2-2. Industry Trends.....	20
Table 2-3. Agriculture Trends.....	21
Table 2-4. Approximate land use distribution.	35
Table 2-5. Door County Shoreline Development as percent of total shore frontage.....	36
Table 3-1. Details of municipal wells within the Village of Maplewood limits.....	64
Table 5-1. Short-term and long-term work plan summary	91
Table B-1. Summary of flowing surface water morphology and biology	106
Table B-2. Lake summary information and water chemistry	107

Maps

General soil map of Door County	16
Watersheds and Basins of Door County	19
Significant Wildlife Habitat & Natural Areas Reference Map.....	33
Geographic Prioritization for Implementation of the Agricultural Performance Standards and Prohibitions.....	52

Part 1

Introduction

CONTENTS

- 1.1 Purpose
- 1.2 Executive Summary

1.1

Purpose

The Door County Soil & Water Conservation Department is created under the authority of Chapter 92 of Wisconsin Statutes. Chapter 92 gives the SWCD the responsibility for the administration of the County soil and water conservation program and the authority to exercise the powers granted to the Land Conservation Committee. The legislative declared policy of the State in Chapter 92 is to halt and reverse the depletion of the State’s soil resources and pollution of its waters.

In the fall of 1996, conservationist professionals assembled to deliberate the redesign of Wisconsin’s nonpoint source pollution programs. From this conference, the county land and water resource management plan concept was proposed. Promoted by the Wisconsin Land and Water Conservation Association and the Wisconsin Association of Land Conservation Employees and supported by DATCP, DNR, and USDA NRCS, Chapter 92.10 of the Wisconsin Statutes was amended in October 1997 through Wisconsin Act 27; which required counties to develop land and water resource management plans.

The Door County Land and Water Resource Management Plan was developed to identify the resource needs of Door County, establish goals to meet these needs, and to initiate a course of action to attain these goals. The intent of this plan is to form strategies and methods that discern the correct management plans to properly manage the landscape and protect and improve water and other resources in Door County.

The proceedings of this plan include strategy development, design, and implementation that emphasize cooperation and integration of the public and various agencies and officials to accomplish a common goal. This plan should serve as a guide to streamline the decision-making process, coordinate program administration, and better utilize federal, state, and local funding. The plan is meant to be versatile to allow for adaptation as changing laws are adopted and brought into practice.

As the work plan in Part 5 (pages 90 to 98) of this document allocates, the objectives to reach the goals stated in this plan are anticipated to be implemented within the next two to three years. The long-range scope (10 years) of many of these goals will be dictated by a combination of decisions made in the capacity of this document and by new statutes

and laws which are currently in the legislative process. Due to these facts, the process to revise the Door County Land and Water Resource Management Plan will occur on a 5-year basis to update the plan with the current status of the objectives and to ensure compliance with state and federal standards. The work plan and its associated activities will be updated every two years. A yearly evaluation of the plan will be conducted to ensure ample progress is made toward reaching plan goals.

1.2

Executive Summary

The Door County Land and Water Resource Management Plan was composed in accordance with the requirements set forth in Chapter 92 of the Wisconsin Statutes. From the assessment of the existing and potential conditions of the natural resources in Door County in preliminary chapters, this plan identifies current challenges, creates goals, and establishes strategies to reach these goals to protect the land and water resources of Door County. This plan has incorporated federal, state, and local agencies, as well as the general public, to aid in the identification and formation of the goals stated within and will coordinate with these agencies and individuals to implement strategies and processes to attain these goals.

The format and organization of the Door County Land and Water Resource Management Plan is intended to sequentially give a brief history and background, the current status, and an intended goal and plan of action to achieve these goals. Subsequent to the narrative of each topic in Part 3, an outline of the goal and objectives for the topic will allow the reader to easily identify the specific goal and strategies.

The intent of the executive summary is to give an overview of the various sections of the Door County Land and Water Resource Management Plan. For a more in-depth description of the topics in this plan, the reader should go to the corresponding section. Brief summaries of the topics contained within this plan are as follows:

Part 2. Land and Water Resource Needs

Resource Discussion and Status

The unique geography, geology, and soils of Door County present many challenges in protecting the land and water resource needs. The geology is comprised of dominantly Silurian-aged dolomite. This fractured, calcareous bedrock is easily modified by the dissolution of the bedrock into karst features. These karst features, combined with the relatively thin soil layer found through much of the county, create a high potential for groundwater and surface water contamination.

Assessment of Areas of Concern

The entire county is located within The Lakeshore Basin which is comprised of the Upper Door Watershed, the Red River/Sturgeon Bay Watershed, the Ahnapee River Watershed and the Stony Creek Watershed. Each of these watersheds contains several surface watersheds as well as significant habitats that rely on protection of their associated resources to maintain their integrity.

Strategic Planning and Public Comment

To identify and address the concerns and needs of Door County's land and water resources for the purposes of this update, the group of participants involved in the Strategic Planning Exercises for the original document were surveyed and invited to an informational/public input meeting. This process provided a sense of priorities and an acknowledgement of ideas given by the participants. This process also gave the participants an opportunity to provide input on the resource concerns of Door County, including their ranking relative to the original plan. The top issues of concern that were identified throughout this process were groundwater quality, development/population pressure associated with changing land use practices, and proper human/animal waste disposal. The groundwater quality issue was the dominant concern displayed by these results.

Identification of Specific Land & Water Resource Needs

In addition to the public participation & input process, discussions were conducted with representatives of various other natural resource management agencies and organizations to obtain their opinions and input. The identification of the resource needs of Door County is the basis for the SWCD programs that are to address the corresponding resource needs. A priority was established for these resource needs and this prioritized list will remain the guidance to SWCD programs to protect the land and water resource needs of Door County.

Significant Accomplishments

The original Land and Water Resource Management Plan developed in 1999, as is the case with this update, set goals and objectives associated with each of the programs administered by the Door County Soil and Water Conservation Department. The items in this section were listed in the work plan for the 1999 Land and Water Resource Management Plan and have been completed to provide a mechanism for implementation of the objectives to meet the goals of their associated programs.

Part 3. Plan of Implementation Addressing Door County's Resource Management Needs

Agricultural Implementation

With the creation of the *Agricultural Performance Standards and Animal Waste Storage Ordinance*, the SWCD has prepared a strategy to implement action that best suits the natural resource needs of Door County through addressing operations in violation of statewide performance standards and prohibitions. Current programs such as the Upper Door and Red River/Sturgeon Bay Priority Watersheds, the Farmland Preservation Program, the Nutrient and Pest Management Program, the Targeted Runoff Management Program and the NR 243 Program address water quality and soil erosion goals appropriate for Door County's resource needs. It will be operation within the framework of these existing programs as well as addressing the priority of voluntary landowners not associated with such programs that will be necessary for implementation of the statewide performance standards and prohibitions.

The SWCD is planning a four-point, simultaneous approach to implementation of the statewide performance standards and prohibitions. This approach will include priority for voluntary participation, for operations mandated by regulation to comply, for landowners within current Priority Watershed areas, and for landowners throughout the county in areas designated through Geographic Prioritization. Adoption of future ordinances may also be necessary to effectively implement the requirements of the statewide performance standards and prohibitions and sufficiently address the natural resource concerns of Door County.

Urban & Rural Non-Agricultural Implementation

The landscape of Door County is rapidly developing as both commercial and private building structures are being constructed or altered. In addition, the construction or alteration of roads, combined with nonmetallic mining operations to supply construction materials, has significant impact on the surface of the land and water resources. In an effort to address conservation measures to these land-altering activities, the SWCD has assessed the current laws, policies, agency roles, and enforcement of these issues. In many cases, the laws and policies are overlapping, confusing, and have gaps that allow the inefficient implementation of land and water conservation practices. The SWCD will further decipher and define these laws, policies, and agency roles then initiate courses of action to remedy deficient areas.

The Beach Contamination Source Identification Program will be an important component of SWCD efforts to address the resource concerns of Door County. Work with the sampling, reporting, information and education and the continued work on source identification will be crucial to determine relationships between shore activities and their impact on the ground and surface water quality of Door County.

Due to a combination of the shallow soils, karst features, and fractured bedrock aquifers of Door County, a high potential for groundwater contamination exists. Municipal and private wells in Door County have had a history of nitrates, bacteria, and other contaminants. This has caused great public concern for a safe drinking water supply in Door County. In an attempt to protect the municipal water supplies, which serve a large portion of Door County's residents, SWCD efforts will be made to facilitate the cooperative development and implementation of wellhead protection plans for the municipal water supplies of Door County. These wellhead protection plans will implement measures to protect the areas of the county that contribute groundwater to the wells of the municipal water systems. The creation of the *Wellhead Protection Plan – Sturgeon Bay Utilities Municipal Wells* has provided a means for implementing appropriate best management practices to address water quality concerns within the Zone of Contribution for the City of Sturgeon Bay. In addition to protecting municipal zones of contribution, the SWCD has developed, with the Sanitarian Department, a process of performing sanitary surveys to protect both municipal and private wells from degradation, as well as surface water degradation.

Technical Assistance to Landowners/Operators, Interested Groups, and other Governmental Units

Assistance to the public is a significant service provided by the SWCD and an important tool for achieving proper resource management in Door County. This assistance is not

associated with specific program efforts, but addresses the resource needs of the general public, Universities, and other agencies and municipalities. It is important that the SWCD maintain a personnel resource base of diverse knowledge and expertise in natural resources to most efficiently serve the public in the role of technical assistance. Technical Assistance to the public is a high priority and a valuable service provided by the SWCD that will be continued.

County Water Pollution Abatement Cost-share Program

The Water Pollution Abatement Cost-Sharing Program Policy was designed to provide cost-share funding to landowners toward the cost of installing practices designed to abate water pollution. These county cost-share funds may also be used for other SWCD conservation projects with approval from the LCC. In addition, SWCD cost-share funding may also be used to replace some state funds, within limitations of SWCD annual maximums, when limitations on state funding sources occur. To be eligible for the program, there must be a decided probability that the proposed project will significantly reduce existing or potential water pollution. Priority for funding is currently on a voluntary basis, where landowners that first seek funding receive earliest funding. Revision of this policy may be necessary as some landowners may be mandated by future regulation. The SWCD will continue to provide funding to landowners through the County Water Pollution Abatement Cost-share Program.

Other SWCD Programs

To further address the resource needs of the general public, the SWCD offers technical assistance and programs to assist the public to protect the land and water resources of Door County.

- The SWCD annually provides nursery stock for purchase by the general public and distributes them in spring. In addition, tree protectors and weed control mats are sold and the rental of herbicide sprayers and planters is available.
- The County Buffer Program was developed to offer incentives to landowners to install vegetative buffers along surface water bodies as well as adjacent to features that might provide conduit flow to groundwater resources. The Conservation Reserve Enhancement Program is a joint Federal-State-County program with similar goals.
- The SWCD will assist landowners that report on a voluntary basis crop damage and/or loss from four species: goose, deer, bear and turkey. The assistance provided to the landowner is offered through both crop damage abatement and processing of wildlife damage claims.
- Exotic species are a natural resource concern due to the detrimental effects that they can impose on both native fauna and flora. The SWCD, with The Nature Conservancy, DNR and other entities, have developed the Door County Invasive Species Team to address the priority concerns/species in the county.
- In the early 1900s until the 1940s, lead arsenate was the primary insecticide used to control insect damage in cherry and apple orchards. Door County has been engaged in a continued effort to remediate sites with elevated levels of lead and arsenic in soils at abandoned mixing sites, orchards, and fruit processing plant wastewater discharge points. The SWCD will continue to provide technical assistance in the form of site

identification for interested parties and will continue to seek approval of funding for clean up of mixing sites and fruit processing plant wastewater discharge points.

- The SWCD has representation on the Door County Land Information Technical Committee (LITC) which has the responsibility to develop an integrated Geographic Information System for Door County. The SWCD will continue participation in the LITC and complete both countywide and pilot goals, as well as perform custodial responsibilities for SWCD Global Information System layers (i.e. soils, geology, etc) as specified in the Modernization Plan.

Information & Education

In addition to the various informational brochures and pamphlets that the SWCD supplies to the general public, the SWCD plans to integrate efforts with the UW-Extension office to provide information and education on a given resource goal or need. The SWCD will instill cooperative efforts with UW-Extension new programs for education on conservation and environmental protection to landowners, including informational mailings to reach the mass public on seasonal issues.

Part 4. Goals, Program Assessment, and Plan Updates of the LWRMP

The path taken by the SWCD to address concerns for the protection of the natural resources of the county will be through a series of goals, long and short-term, that will be implemented through existing and future programs as well as through assistance to both voluntary and regulated landowners. The resource goals of this plan are broad topics that reflect the land and water resource needs of the county. The program goals presented are specific tasks that will serve as vehicles necessary for working toward the overall goals necessary to protect Door County’s land and water resources.

A progress assessment of the Land and Water Resource Management Plan will directly reflect the program goals and their accomplishments. Short-term assessment of progress will be an annual assessment of program goals while long-term assessments will be more comprehensive as there are program updates as well as revisions to the Land and Water Resource Management Plan.

Part 5. Summary Work Plan and Fiscal Management

Work Plan

The Door County Land and Water Resource Management Plan includes short-term and long-term work tasks, which are implemented in phases, to accomplish the goals stated within the Plan. Short-term work tasks are estimated to be accomplished in two to three years; where as, long-term work tasks are considered ten-year work tasks. In several situations, the short-term work task is a strategy to identify the long-term solution to the resource need and thus the long-term work task. Both the long-term, as well as the short-term, work plans will require periodic revision due to changing resource needs and program designs and demands.

Fiscal Management

The operating budget of the SWCD is presently comprised of approximately 30% County appropriations and 70% outside grant funds. The short-term work tasks stated in this plan are expected to be accomplished within the current resources available. Due to

changing programs, as well as changing funding sources, it is unrealistic to project beyond the year 2006 for long term work tasks at this time.

Part 6. Plan Adoption Process

The Door County Land and Water Resource Management Plan was developed over several months of 1999. The process involved input gathered from a series of planning meetings that included representatives of interested parties including: community members from each County Board Supervisory District; elected officials from the county’s municipalities; county, state and federal agency professionals; and private organizations.

To prepare for this update of the original Land and Water Resource Management Plan, the same group of representatives was surveyed to determine their opinion of the current status of Door County’s resource concerns. The results of the survey and the associated rankings can be found in Appendix C of this document. The survey provided a representation of resource concerns for 2005 and revealed that the top nine concerns are the same as those in 1999.

PART 2

Land, Water & Related Resource Needs

CONTENTS

- 2.1 Resource Discussion and Status
- 2.2 Assessment of Areas of Concern
- 2.3 Strategic Planning and Public Comment
- 2.4 Identification of Specific Land & Water Resource Needs
- 2.5 Significant Accomplishments

2.1

Resource Discussion and Status

2.1.1 Physical Setting and Geology

Door County is located in northeastern Wisconsin and comprises most of a narrow peninsula that extends into Lake Michigan to form Green Bay (Figure 2-1). The peninsula on which Door County is situated is a cuesta with a west-facing scarp and eastward dipping back slope that forms the western portion of the Niagaran Escarpment, a reef complex consisting of Silurian and Ordovician-aged dolomites and shales (Figure 2-2).

The uppermost bedrock unit in Door County is Silurian-aged dolomite, a calcareous rock with high concentrations of magnesium. Below the Silurian Dolomite lie Ordovician-aged dolomites and shales (Figure 2-3). Underlying the Ordovician units are the sandstones of the Cambrian.

The dolomite is highly fractured and modified through dissolution by water. Solution activity has produced enlarged vertical crevices and horizontal bedding planes as well as a prominent karst landscape. Karst features or solution features, such as sinkholes, swallets, and collapse features, are numerous throughout the county and are potential conduits for surface water to enter the aquifer with little filtration or attenuation of contaminants (Figure 2-4). The nature of the bedrock as well as very shallow soils both provide little filtration of contaminants entering the drinking supply, which for most of the county lies in the Silurian Dolomites.

The aquifer in the Silurian Dolomites can be divided into two hydrologically connected subaquifers. The upper or Niagaran aquifer exists within the Engadine Dolomite, Manistique Formation, and the Burnt Bluff Group. The lower or Alexandrian aquifer resides in the Mayville Dolomite. The Ordovician-aged Maquoketa Formation consists

of a layer of shale beneath the Mayville. The shale acts as a confining unit, or aquaclude, between the Silurian aquifers and the Ordovician aquifer below (Figures 2-3 and 2-5).

During the Pleistocene epoch the Door County Peninsula was glaciated numerous times, two glacial advances have been recorded which occurred during the Late Wisconsin Age. During these glacial advances, the Green Bay Lobe expanded in a southeasterly direction out of the present day Green Bay Basin and across the entire peninsula and the Lake Michigan Lobe advanced on the east side (Figure 2-6).

The advance of the Green Bay Lobe is thought to be responsible for glacial features such as drumlins, moraines, and eskers found in the county. The Niagaran Escarpment was also accentuated during this time as less resistant Ordovician dolomites and shales were scoured out of the Green Bay Basin. Evidence of the Lake Michigan Lobe can be seen along the eastern shore of Door County in the form of ancient shorelines that were formed as water levels fluctuated during glacial advances.

A thin till unit named the Liberty Grove Member, a buff-colored pebbly loam with a high carbon content, is the prominent till type deposited in Northern Door County during the older Woodfordian advance. The second recorded advance, the Greatlakean, deposited a fine-grained reddish till referred to as the Glenmore till throughout the southern part of the county. Lacustrine sediments can be found along the shorelines of Green Bay and Lake Michigan (Figure 2-7).

Figure 2-1. Location map of Door County.

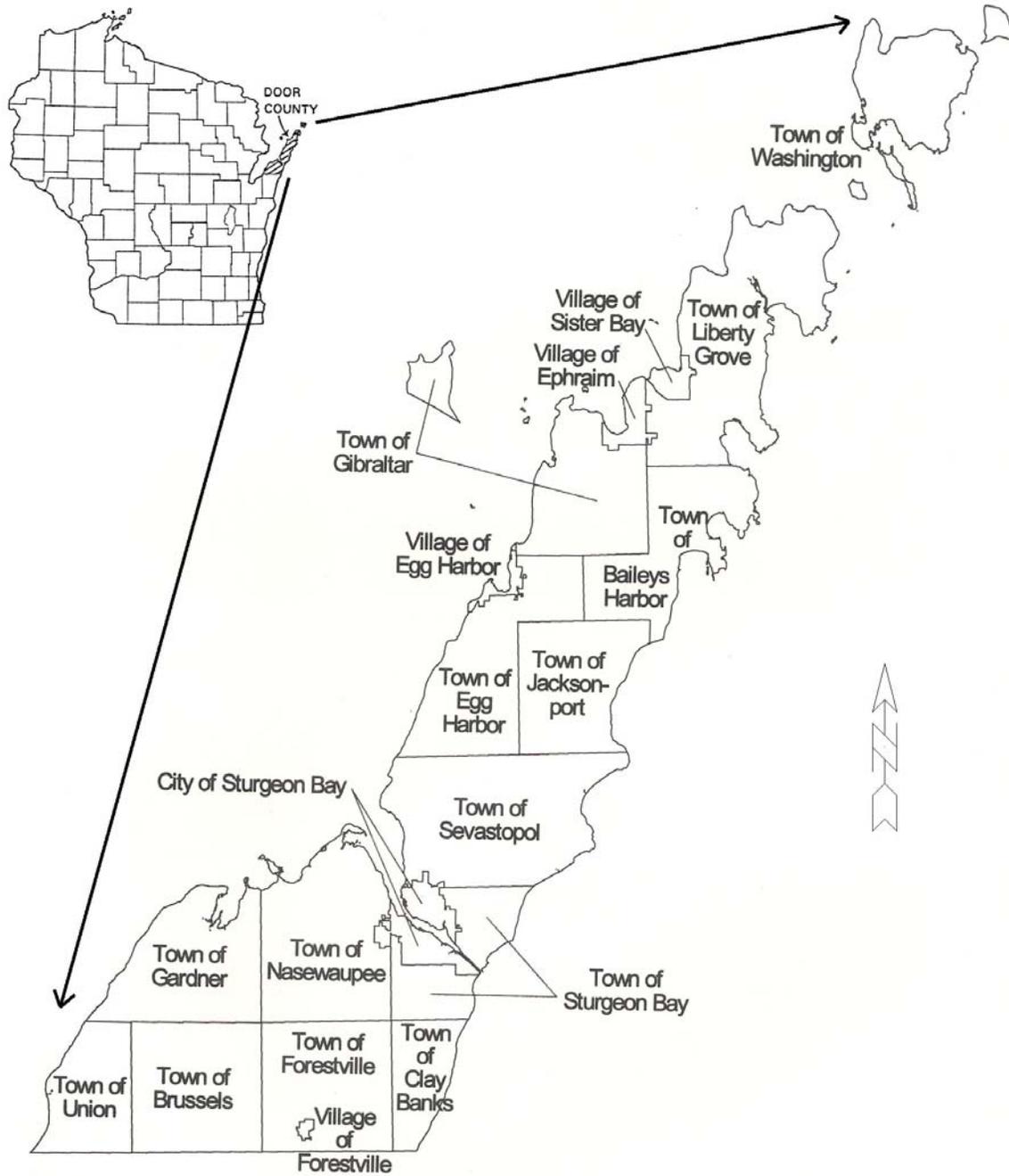


Figure 2-2. Generalized geologic map of Door County.

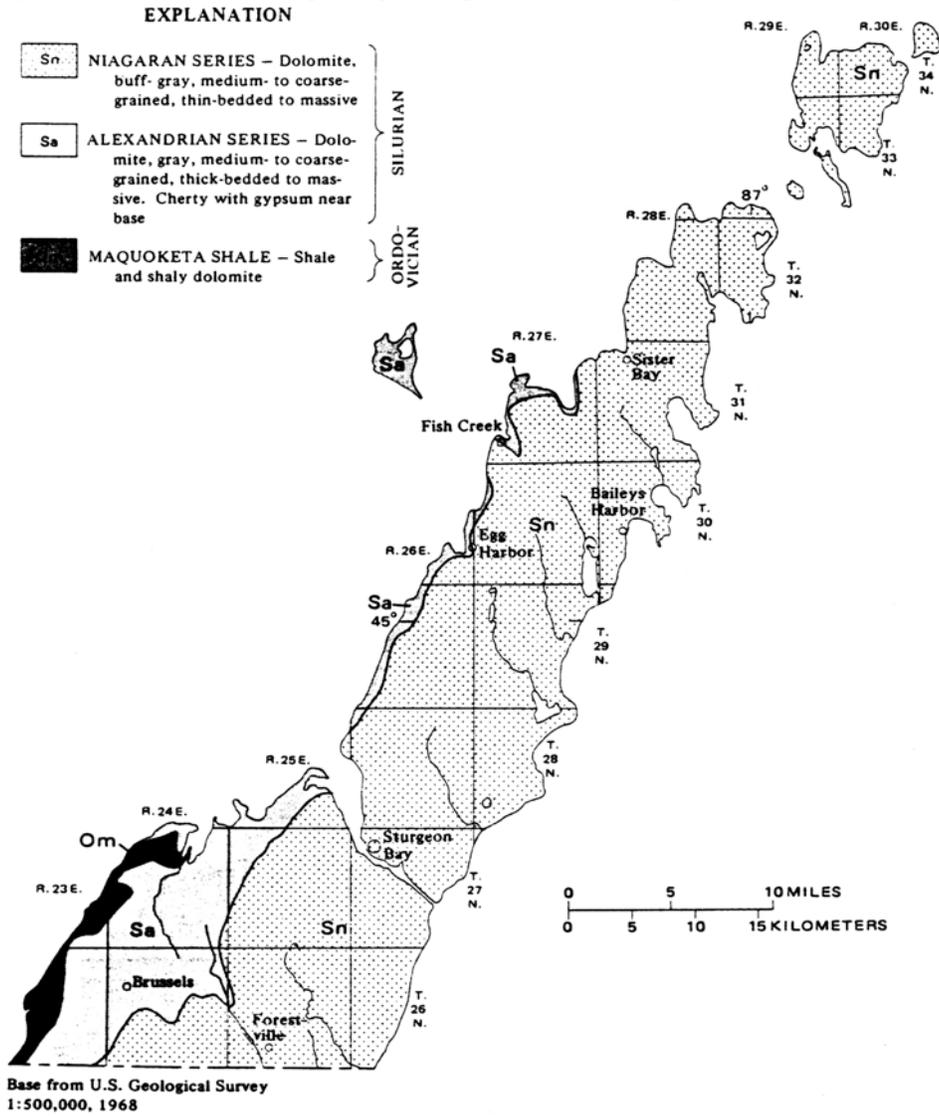


Figure 2-3. Generalized cross section of the Door Peninsula illustrating gentle inclination of the bedrock and the northwest facing escarpment.

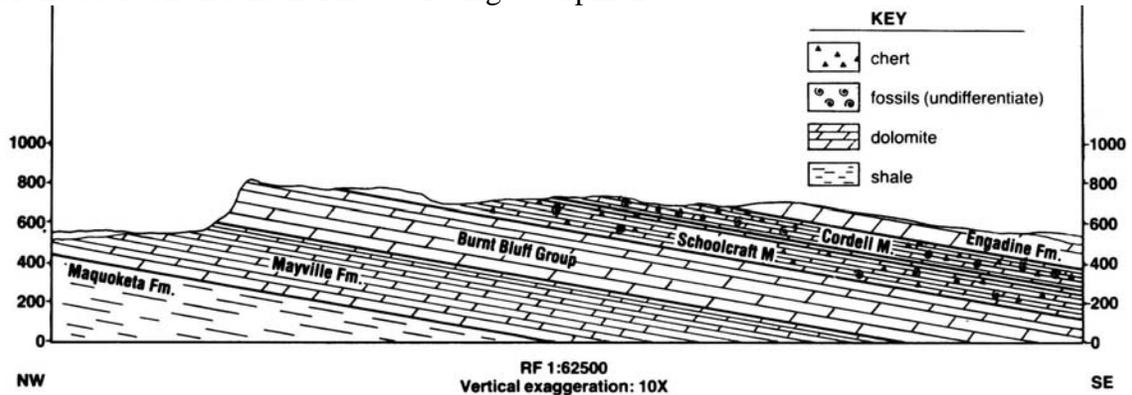


Figure 2-4. Common karst features found in Door County which affect groundwater.

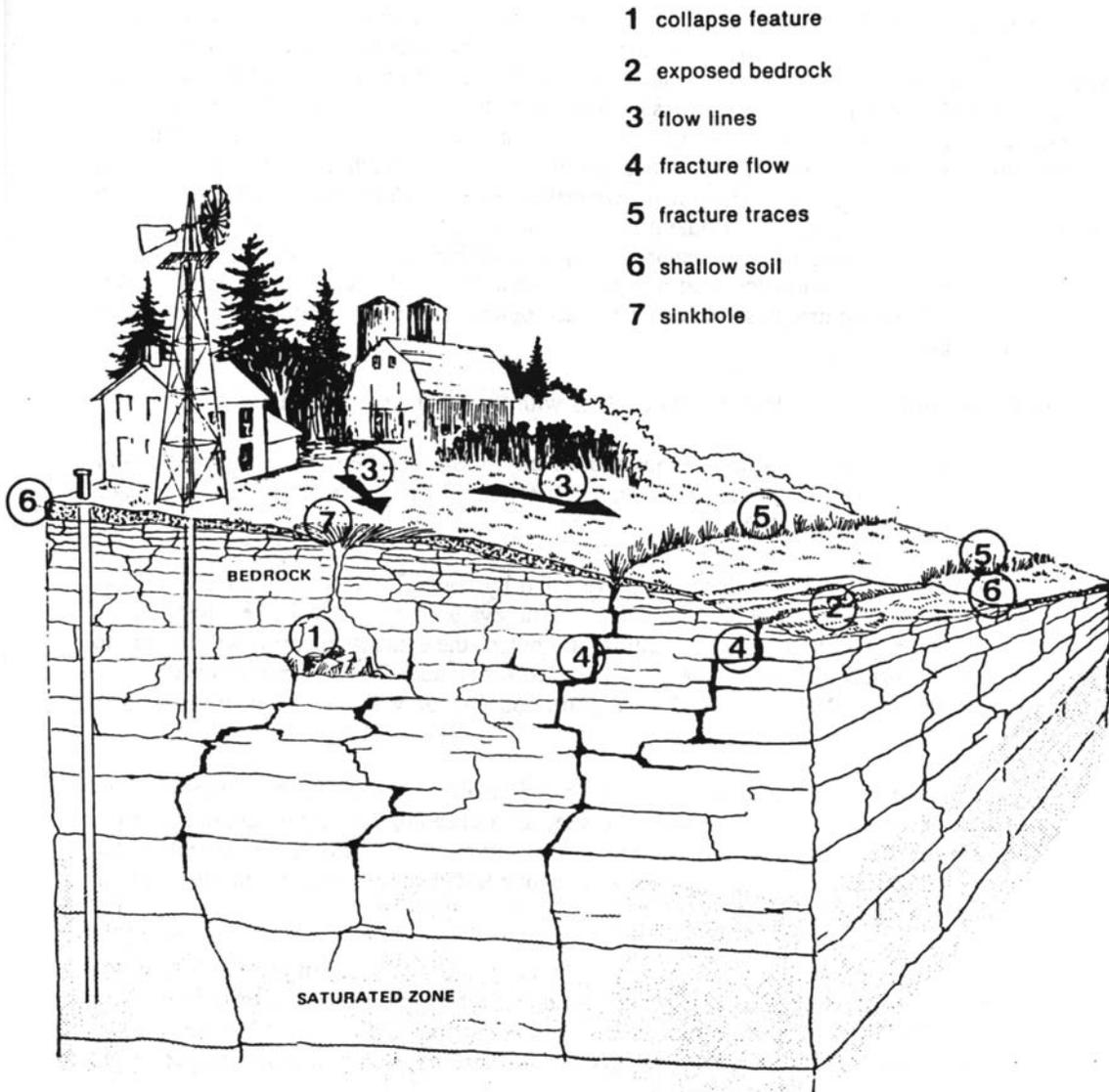


Figure 2-5. Bedrock geology cross section in northern Door County.

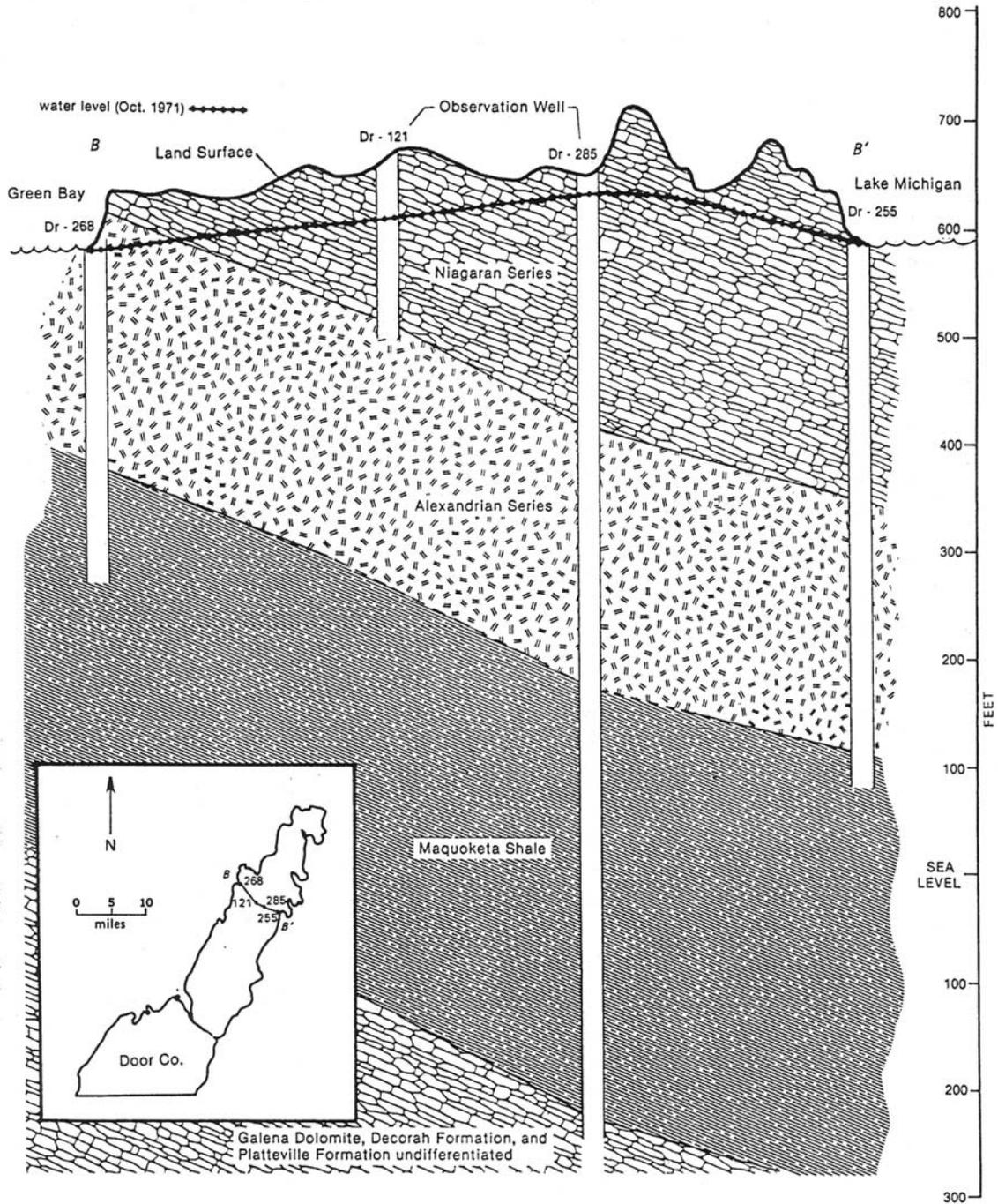


Figure 2-6. Lobes of the late Wisconsin Glacier in Wisconsin.

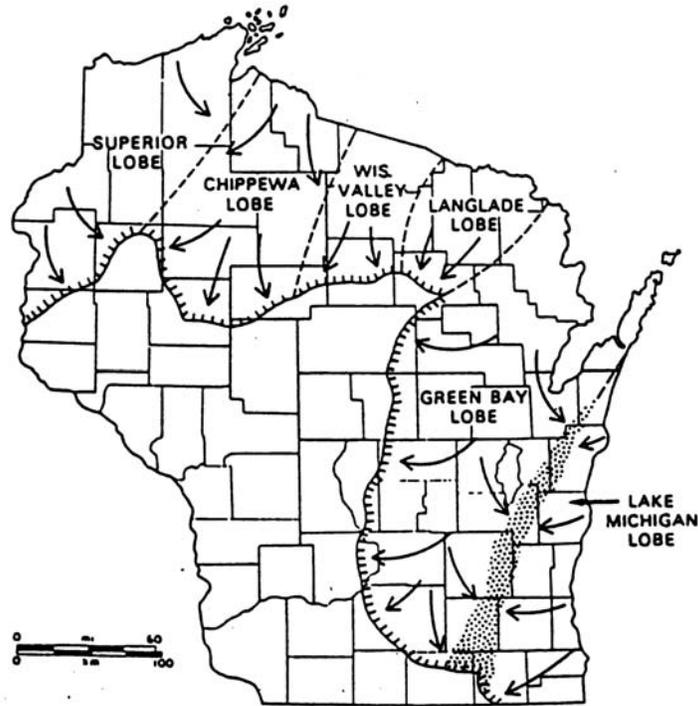
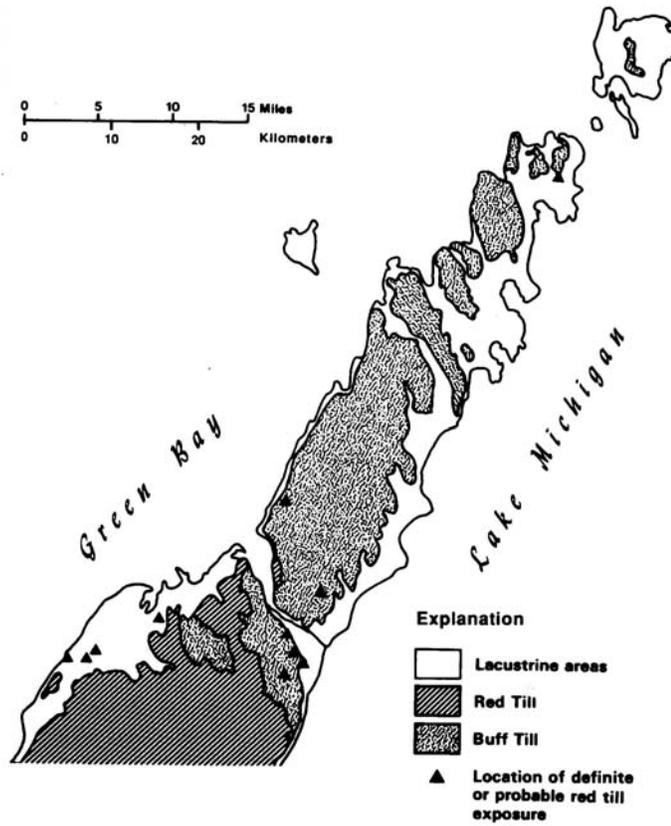


Figure 2-7. Glacial deposits in Door County.



2.1.2 Soils

The unique qualities of the soils of Door County result in many land use and water quality concerns. Many of the soils of the county are very shallow, especially in the northern two-thirds of the peninsula; 22% of the soil in the county is less than 18 inches in depth, and an additional 17% is between 18 to 36 inches in depth. The shallow depth of soil to the underlying fractured bedrock presents many problems with suitability of septic system absorption fields, agricultural practices, and construction development.

The soils of Door County originate from glaciation, bedrock weathering, and fluvial activity. The majority of the soils are formed in glacial till; but a smaller portion is also formed in outwash sand and gravel or lacustrine sediment. Due to the calcareous nature of the parent material that these soils originated, the soils of Door County are characteristically alkaline.

There are 75 different soil types found throughout Door County. Soil types with similar inherent properties are grouped into six general soil associations (Map on page 16). These six soil associations can be used to determine the large-scale suitability for certain types of land use, planning, and management. The six major soil associations found in Door County are:

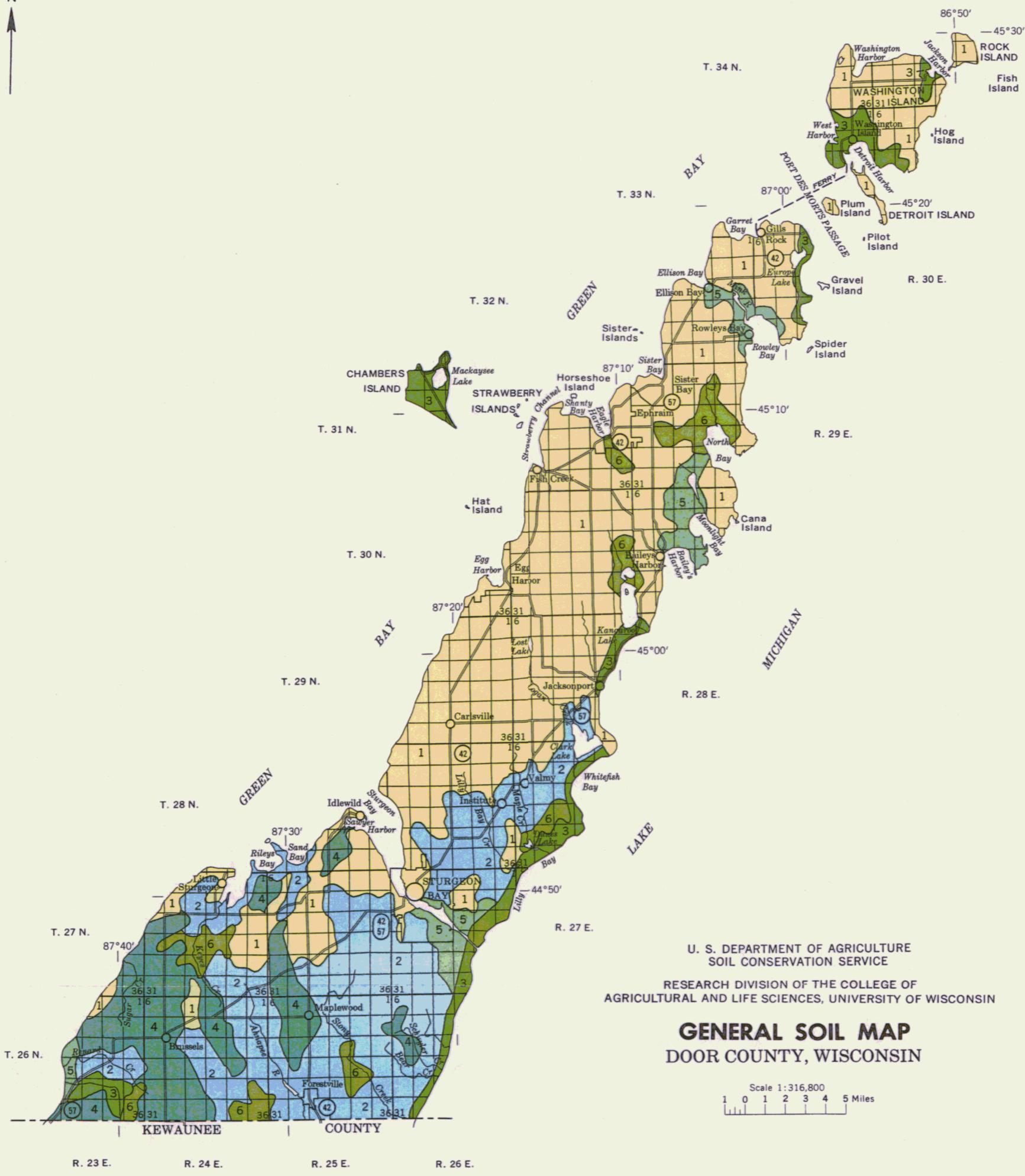
- Summerville-Longrie-Omena association
- Emmet-Solona-Angelica association
- Rousseau-Kiva-Markey association
- Kewaunee-Kolberg-Manawa association
- Deford-Yahara Variant-Carbondale association
- Carbondale-Cathro association

A description of the properties of these six soil associations can be found in Appendix A.

The most recent results for the Door County Transect Survey (2002) indicate 88% of the county's 91,450 acres of cropland has a soil erosion rate less than or equal to "T". The average "T" rate for the county is calculated at 3.8 tons/acre/year with the average soil erosion rate being 1.2 tons/acre/year.

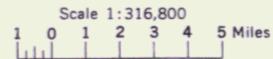
As these results indicate, soil erosion from cropland is not a high priority as a threat to Door County's cropland resources. In spite of this, the Door County Soil and Water Conservation Department ensures that all landowners working with the department have soil erosion rates less than "T" on all of their cropland. As the county implements the Statewide Standards and Prohibitions, all cropland in the county will be certified for compliance with the requirement to meet "T" with respect to soil loss.

While soil loss as it relates to cropland productivity is not a concern within the county, sediment delivery to both ground and surface water resources remains a concern. A variety of land uses has contributed to increased sediment delivery within certain basins, watersheds and habitats. Specific areas of concern for sediment delivery are listed in the resource assessment section of this plan.



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
RESEARCH DIVISION OF THE COLLEGE OF
AGRICULTURAL AND LIFE SCIENCES, UNIVERSITY OF WISCONSIN

GENERAL SOIL MAP
DOOR COUNTY, WISCONSIN



SOIL LEGEND

- 1** Summerville-Longrie-Omena association: Shallow to deep, well drained, nearly level to moderately steep soils that have a sandy loam or loam subsoil over sandy loam or fine sandy loam till or dolomite bedrock
- 2** Emmet-Solona-Angelica association: Deep, well drained to poorly drained, nearly level to sloping soils that have a loamy sand to silt loam subsoil over sandy loam or loam till
- 3** Rousseau-Kiva-Markey association: Deep, well drained and moderately well drained, gently sloping and sloping soils that have a fine sand or sandy loam subsoil over sand or sand and gravel outwash, and very poorly drained, nearly level organic soils
- 4** Kewaunee-Kolberg-Manawa association: Deep and moderately deep, well drained and somewhat poorly drained, nearly level to moderately steep soils that have a dominantly silty clay subsoil over silty clay till or dolomite bedrock
- 5** Deford-Yahara Variant-Carbondale association: Deep, poorly drained, nearly level soils that are underlain by fine sand outwash or that have a silt loam subsoil over stratified lake sediments, and very poorly drained, nearly level organic soils
- 6** Carbondale-Cathro association: Very poorly drained, nearly level organic soils

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Compiled 1977

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

2.1.3 Groundwater

The primary source of drinking water for Door County residents comes from our groundwater resource. Although surrounded by Lake Michigan and Green Bay waters, nearly all wells are supplied by groundwater sources. This resource impacts a large majority of the county population. The groundwater, due to the geology of the county, is readily impacted by surface activities and surface waters. Land uses, thin soils over fractured bedrock, soils with high permeability rates, karst features, and closed depressions all contribute to the high potential for groundwater contamination. These factors are also the primary reasons for the rapid movement of the groundwater giving Door County aquifers an extremely quick recharge time. The quality of the groundwater resource is a high concern to the people of Door County as a result of the characteristics described. The sensitivity of the resource is highlighted throughout the Land and Water Plan.

Relatively little consistent information/data exists on the status of groundwater in Door County because of the high numbers of private wells. A large amount on the status of the groundwater is based on historical events, limited times of monitoring and professional judgement. Past evidence does exist on well contamination. Municipal wells for Sturgeon Bay have had bacterial contamination in the past and some current wells require ozone-disinfecting treatment. Other wells in Door County have had a high incidence of bacteria, nitrate and in some portions of the county, lead and arsenic. A long history of contamination concerns from various events is still evident in the residents of the area.

2.1.4 Surface Water

The surface water resources consist of 38 named streams and 25 named inland lakes in addition to the numerous named/unnamed bays around the Peninsula in Lake Michigan and Green Bay waters. A brief status of the surface waters of the county can be reviewed in Appendix B. The map on page 19 shows the geographic areas delineated for the major watershed boundaries within Door County.

The majority of the streams in the county are short (< 6 miles) and have limited intermittent flow. The width of these streams is generally less than ten feet and the size of the apparent watershed often exceeds the observed flow due to the nature of the County's geology. Even the streams with continuous flow are generally short in route and are warm water biological use class. Most streams flow into Lake Michigan waters. The inland lakes are also rather small in size. Most of the lakes are located in the northern half of the county and are classified as seepage or drainage lakes. Overall, the inland waters have a small area with 'fair' ranked habitats and limited public access. Green Bay and Lake Michigan waters are the most highly used water resource in the area because of the ample fishery and available access primarily for recreation. Beach closures in recent years have brought surface water quality concerns to the forefront of the public attention.

Concerns were voiced in the planning meetings about the use and protection of surface waters. Such things as pollution from outboard engines, gray water discharge, and the effects of exotics on game fisheries and aquatic habitat were noted. The DNR has

developed a list of impaired waters from the Clean Water Act referred to as the 303(d) list. This list highlights the waters that deserve attention from the perspective of water quality improvement and protection. The 2004 303(d) list shows four areas of concern in Door County; the Ahnapee River, Stony Creek, Clarks Lake and Mackaysee lake. The listed waters are often given priority over other surface waters; however, this does not exclude the importance of the protection of non-listed waters.

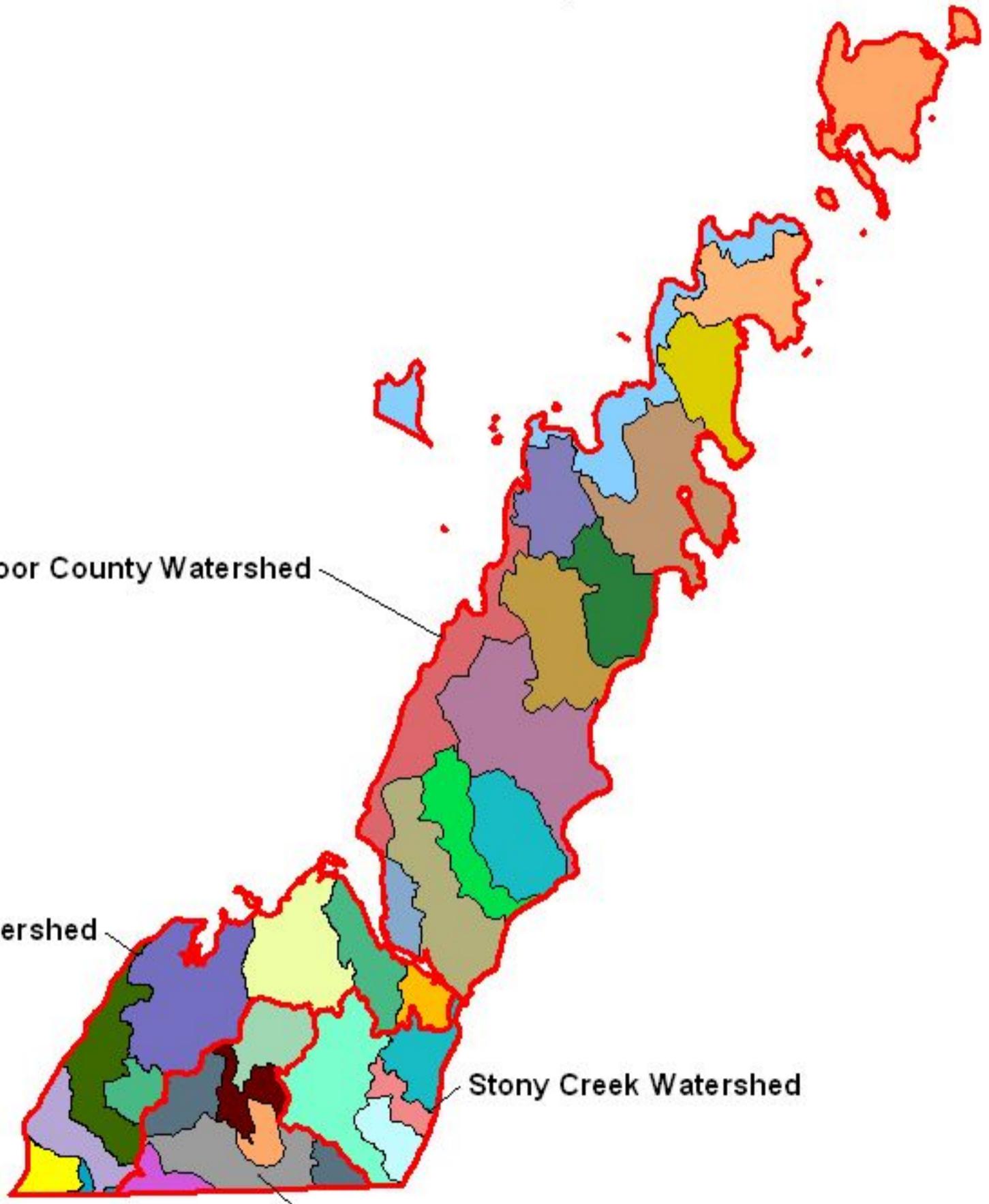
The surface waters also include the significant ephemeral/seasonal waters including 52,559 acres of wetlands (16.7% of the land) and those areas of unnamed lakes and streams. These interface areas of coastal wetlands along with other inland wetland issues received comments most of which pertained to zoning. Wetlands are an important part of Door County in relation to surface water and groundwater. Throughout the landscape they function as buffer areas between upland areas and riparian areas, along with having filtering qualities on water with direct paths to groundwater sources. In past years, Door County has had some of the highest number of Section 404 permit applications of Wisconsin counties, indicating the level of development and human pressure facing those resources, although wetland development has recently slowed.

Major Surface Watersheds of Door County

 Major Door County Basins

Watershed

-  Ahnapee River
-  Bear Creek
-  Big Creek
-  Brussels Depression
-  Fabry Creek
-  Fish Creek
-  Forestville Millpond
-  Geisel Creek
-  Green Bay
-  Heins Creek
-  Hibbards Creek
-  Keyes Creek
-  Kolberg/Forestville
-  Larson Creek
-  Lily Bay Creek
-  Little Creek
-  Logan Creek
-  Maplewood Swamp
-  Mink River
-  Mud Lake
-  North Green Bay
-  Red River
-  Renard Creek
-  Rosiere
-  Silver Creek
-  Schuyler Creek
-  Stony Creek
-  Strawberry Creek
-  Sturgeon Bay
-  Sugar Creek
-  Three Springs Creek
-  Washington Island
-  Woodard Creek



Upper Door County Watershed

River/Sturgeon Bay Watershed

Stony Creek Watershed

Ahnapee River Watershed

2.1.5 Door County Demographics

Door County, established in 1851, is home to approximately 28,000 year round residents as well as a seasonal population whose size fluctuates throughout the year. The county seat is the City of Sturgeon Bay. The county consists of the city, fourteen towns and four villages covering the 492.02 square miles of the Door Peninsula. The following tables are illustrative of trends in population, industry and farming within the county; categories important to this plan as they have the ability to impact goals and objectives of many of the resource concerns.

Table 2-1 Population Trends (Source: State of Wisconsin, Demographic Services Center)

Municipality	1990 Census	2000 Census	Percent Change
Baileys Harbor	780	1,003	28.6
Brussels	1,042	1,112	6.7
Clay Banks	379	410	8.2
Egg Harbor (Town)	1,019	1,194	17.2
Egg Harbor (Village)	183	250	36.6
Ephraim	261	353	35.2
Forestville (Town)	999	1,086	8.7
Forestville (Village)	470	429	-8.7
Gardner	1,025	1,197	16.8
Gibraltar	939	1,063	13.2
Jacksonport	689	738	7.1
Liberty Grove	1,506	1,858	23.4
Nasewaupee	1,798	1,873	4.2
Sevastopol	2,552	2,667	4.5
Sister Bay	675	886	31.3
Sturgeon Bay (Town)	853	865	1.4
Sturgeon Bay (City)	9,176	9,437	2.8
Union	721	880	22.1
Washington	623	660	5.9
County Total	25,690	27,961	8.8

Table 2-2 Industry Trends (Source: US Census Bureau, Census 1990 & Census 2000)

Industry	1990 Census % of Total	2000 Census % of Total	Percent Change
Agriculture, Forestry, Fishing and Hunting, and Mining	7.8	4.5	-3.3
Manufacturing	8.0	10.0	2.0
Wholesale Trade	23.0	18.8	-4.2
Retail Trade	2.2	1.4	-0.8
Transportation and Warehousing, and Utilities	21.7	13.5	-8.2
Information	--	1.4	--

Finance, Insurance, Real Estate and Rental	4.7	5.2	0.5
Professional, Scientific, Management, Administrative, and Waste Management	8.0	6.2	-1.8
Educational Services	6.5	6.2	-0.3
Health Care and Social Assistance	5.8	8.9	3.1
Arts, Entertainment, Recreation, Accommodation and Food Services	1.4	13.8	12.4
Other Services (except Public Administration)	4.6	4.1	-0.5
Public Administration	2.5	3.2	0.7

Table 2-3 Agriculture Trends (Source: USDA Ag Census Data; 2002, 1997, 1992, 1987 & 1982)

	2002	1997	1992	1987	1982
Number of Farms	877	861	910	990	1,150
Land in Farms	135,128 Acres	136,149 Acres	146,000 Acres	156,000 Acres	173,600 Acres
Average Size of Farm	154 Acres	158 Acres	160 Acres	158 Acres	151 Acres

2.2

Assessment of Areas of Concern

2.2.1 Major Watershed Basins in Door County

The four major basins that exist in Door County are part of the larger Lakeshore Basin. The Lakeshore Basin encompasses all of Door, Kewaunee and Manitowoc Counties and portions of Brown and Calumet Counties.

Basin wide, the predominant land use is as follows: 68% agriculture, 13% forests, 1% urban development, 6% grasslands and 12% wetlands. The Lakeshore Basin is a diverse mix of islands, forests, wetlands, sand dunes and ridge/swale complexes that provides habitat to many rare, threatened and endangered plants and animals.

The following Environmental and Social Concerns have been recognized for the entire Lakeshore Basin:

- Loss of aquatic habitat and open land to development, pollution threats to surface waters and contamination of drinking and groundwater.
- Water quality problems from in-place pollutants, dams and both urban and agricultural runoff
- Preservation of biodiversity and protection of endangered and threatened species

- Protection of large contiguous blocks of forestland, grassland and wetland that serve as habitat for mammals, birds and amphibians
- Exotic nuisance species, stocking issues, declining fishing opportunities and inadequate boat access
- Monitoring of wildlife populations, water quality and ecosystem function

In 2000, the Lakeshore Basin Partnership Team developed a list of what they felt were the most pressing issues impacting the natural resources within the entire basin. The list below is the prioritized list that was developed; items 2 and 3 were determined to have equal priority.

1. Loss of riparian buffers
2. Inadequate identification and protection of wetlands, wetland corridors and groundwater recharge areas
3. Need for better land use planning and improved local zoning
4. Inadequate management and protection of woodlots
5. Absence of stewardship ethic
6. Loss of small farms and/or conversion to large farms
7. Contamination of drinking water
8. Illegal dumping of toxins
9. Loss of biodiversity
10. Loss of shoreline habitat

The four major watersheds within the Lakeshore Basin are the Upper Door Watershed, The Red River/Sturgeon Bay Watershed, The Ahnapee River Watershed and the Stony Creek Watershed. These basins and the watersheds that they are comprised of can be viewed as part of the surface water map on page 19 of this document.

The Red River/Sturgeon Bay and the Upper Door Watersheds are Priority Watersheds that are described in section 2.2.2 of this document.

The Ahnapee River and Stony Creek Watersheds are 303(d) listed waterbodies that are described in section 2.2.3 of this document.

The following sections in this chapter describe watersheds and significant habitat areas that comprise the Lakeshore Basin. Specific concerns that can be found in the descriptions that follow mirror both the concerns developed for this plan and those developed by the Lakeshore Basin Partnership Team.

2.2.2 Priority Watersheds

Red River/Sturgeon Bay Priority Watershed

The Red River/Sturgeon Bay Watershed was designated as a priority watershed in 1992 under the DNR's Wisconsin Nonpoint Source Water Pollution (NPS) Abatement

Program. The Red River/Sturgeon Bay Watershed is a 139 square-mile (89,215 acre) drainage basin, which is a sub basin of the Twin-Door-Kewaunee Basin.

The Red River/Sturgeon Bay Priority Watershed lies within the counties of Door (78%), Kewaunee (13%) and Brown (9%). The watershed is primarily agricultural with 53,538 acres (60%) comprised of cropland, farmsteads/pastures, and conservation reserve land. The largest business associated with agricultural land use is dairy farming, with the average farm being approximately 259 acres.

The greatest threat for agricultural pollutants is the improper handling, storage and disposal of animal waste. The most common groundwater pollutants are bacteria and nitrates.

Upper Door Priority Watershed

The Upper Door Watershed was selected as a priority watershed under the DNR's Wisconsin Nonpoint Source Water Pollution (NPS) Abatement Program and was administrated and implemented by the SWCD from 1984 to 1996. The Upper Door watershed includes all land north of the Sturgeon Bay shipping canal including Washington and Chambers Islands and comprises approximately 181,341 acres (283.4 square miles).

The southern portion of the watershed, an area from the canal north to a line drawn approximately from Fish Creek to Baileys Harbor, is predominantly agricultural. Agriculture exists to a lesser degree north of this line. This project was the first large-scale watershed in the state selected to primarily address the impacts of nonpoint source pollution on groundwater quality.

The most common groundwater pollutants determined for the Upper Door Watershed are bacteria and nitrates. Sources for nonpoint pollution are partly thought to be derived from the improper handling, storage and disposal of animal waste. Other suspected nonpoint sources in the watershed septic systems and the associated land spreading sites and landfills.

The general objectives of the Upper Door Priority Watershed were to: Protect the beneficial uses of groundwater; decrease the frequency of contaminated wells; improve or protect the water quality of streams or lakes within the project area and the near shore waters of Lake Michigan and Green Bay.

2.2.3 High Priority Areas

303(d) Listed Impaired Waters

The following water bodies are listed on the 2004 list of Impaired Waters based on criteria established in Section 303(d) of the 1972 Clean Water Act. These water bodies are not meeting water quality standards, including both water quality criteria for specific substances or designated uses. Each state is required to submit a list every two years.

Ahnapee River

The Ahnapee River is a low gradient stream with 8.5 miles in Door County. The Ahnapee headwaters are spring fed and the river drains a primarily agricultural landscape. The river is impounded by a dam to create the Forestville Millpond, a 65-acre impoundment near the village of Forestville. The Ahnapee continues to flow south from Door County and ultimately empties into Lake Michigan in the city of Algoma in Kewaunee County. The Ahnapee River contributes to the source water for the City of Green Bay Public Drinking water supply. Environmental problems as a result of impacts from PCBs, sediments and nutrients have resulted in a high nonpoint source ranking for the Ahnapee River. The watershed is susceptible to groundwater contamination due to shallow soils and fractured dolostone bedrock. Monitoring in 1993 revealed elevated levels of nitrates and bacteria in several wells.

Stony Creek

Stony Creek is a 13.6-mile, relatively low gradient creek that has been ditched in some sections. The upper 11 miles of the Stony are classified as a Warm Water Fish Forage community while the lower 5 miles are classified as Cold Class II water. The streams of the Stony Creek watershed contribute to the source water for the City of Green Bay Public Drinking water supply. Land use in the Stony Creek Watershed is primarily agricultural with improper handling storage and disposal of animal waste considered a serious potential source of nonpoint pollution. The watershed is susceptible to groundwater contamination due to shallow soils and fractured dolostone bedrock. Monitoring in 1993 revealed elevated levels of nitrates and bacteria in several wells. The Stony Creek watershed was given a high groundwater ranking for selection as a priority watershed project. Habitat loss as a result of impacts from sedimentation has resulted in a high nonpoint source ranking for Stony Creek.

Clarks Lake

Clarks Lake is an 864-acre drainage lake with a 25 square mile watershed. The lake is fed by Logan Creek and seepage from groundwater. Water levels are controlled by an outlet dam that drains to Lake Michigan via Whitefish Bay Creek. There is extensive development on the lake with both seasonal and year round homes, many with on-site septic systems. Clarks Lake is listed as an Impaired Water with a Fish Consumption Advisory due to PCBs.

Mackaysee Lake

Mackaysee Lake is a 347-acre landlocked, spring-fed lake on Chambers Island off the west shore of Door County in Green Bay. The lake is listed as an Impaired Water with a Fish Consumption Advisory due to Mercury.

Outstanding Resource Waters

The following water bodies are surface waters designated as Outstanding Resource Waters as outlined in NR102.10. Outstanding Resource Waters have the highest value as a resource with excellent water quality and high quality fisheries.

Logan Creek

Logan Creek is a 5.4 mile stream that originates at Lost Lake and flow southeast to Clarks Lake and has a drainage area of 12 square miles. The corridor of Logan Creek is largely flanked by a wetland complex consisting of lowland cedar and black ash. Land use along the corridor consists of cropland, stump pasture, pasture and orchards. Overall the stream quality is fair for most of the stream with a designation as a Warm Water Fish Forage community, but .4 miles are ranked as Class I and .25 as Class II. Logan Creek has a high nonpoint source ranking for impacts to habitat.

Mink River

The Mink River is a fresh water estuary that drains extensive wetlands and discharges to Rowleys Bay in Lake Michigan. The 880 acre area surrounding the estuary is comprised of a unique blend of wetlands, lowland forests, emergent aquatics, northern sedge meadows, alder thickets, shrub-carr, hard springs and spring runs and beach. The Mink River is thought to be the last pristine estuary on the Upper Great Lakes and one of the few high-quality estuaries remaining in the United States. The Nature Conservancy owns much of the wetland area adjacent to the river. The wetlands of the Mink River estuary have been found to be a breeding area of the Hines Emerald Dragonfly, a rare insect known to exist in only two other locations in the world.

Exceptional Resource Waters

The following are water bodies designated in NR 102.11 as surface waters which provide valuable fisheries, hydrologically or geologically unique features, outstanding recreational opportunities, unique environmental settings and which are not significantly impacted by human activities.

Hidden Springs Creek

Hidden Springs Creek is a one-mile long, spring-fed creek that originates in the Ephraim Swamp and empties into Green Bay in the Village of Ephraim. The stream is classified as a Class I Trout Stream with a high nonpoint source ranking.

Keyes Creek

Keyes Creek is a 7-mile perennial stream that originates in a network of springs, flows through the Gardner Swamp Wildlife Area and discharges into Little Sturgeon Bay in the bay of Green Bay. The lower reaches are classified Warm Water Forage Fish Community and Warm Water Sport Fish Community while the upper reaches are Class I and II Trout Waters. The 12 square mile watershed of Keyes Creek is a sub watershed of the Red River/Sturgeon Bay Watershed and is largely made up of an agricultural landscape. Portions of the stream have been ditched and pasturing near the stream is a common activity. Runoff samples have high levels of bacteria in the stream as well as dissolved oxygen levels in excess of water quality standards. Keyes Creek has a high nonpoint source ranking with sedimentation, nutrient input and stream bank erosion being contributing factors.

2.2.4 Significant Habitat and Natural Areas

The following are brief descriptions of areas designated in a collective effort by individuals with the goal of preserving Door County's communities of plants and animals and their habitats. Please refer to the document [A Guide to Significant Wildlife Habitat and Natural Areas or Door County, Wisconsin](#) for a more in-depth analysis of each area and a more detailed discussion of the specific resource concerns.

Ahnapee River Corridor

This corridor is approximately 5,200 acres and is comprised of a complex consisting of the Ahnapee River, Keyes Creek, Brussels Hill and Gardner Swamp. This corridor provides a continuous habitat passage from the Kewaunee County line north to the waters of Green Bay. Most of the surrounding land is woodlots or farmland. The greatest threats to this area are nonpoint source pollution from agriculture and development pressure along the Ahnapee River floodplain and the contiguous nature of the surrounding corridor. The four-lane expansion of Highway 42/57 also poses a threat to the headwaters of the Ahnapee River and threatens to cut off many of the source streams in the watershed.

Black Ash Swamp

The Black Ash Swamp is approximately 5,000 acres in Door and Kewaunee County with approximately 2,100 acres in Door County. This area is the largest contiguous block of forested land in southern Door County and represents an extremely significant ecological habitat. The land surrounding this area is primarily agriculture. Threats that exist for the Black Ash Swamp are poor logging practices threatening its ecological value, an increasing Gypsy Moth population and poor agricultural practices.

Delwiche-Sand Hill Pineries & Fabry Creek Complex

This significant area is a forest known for its large diameter native red pine and white pine trees. This, in conjunction with the 3.7-mile Fabry Creek, forms a 930 acre complex in southern Door County. On the western edge of the Niagara Escarpment, this complex forms a major north-south running wildlife corridor. The surrounding land use for this area is predominantly natural forest area with some agricultural cropland and pasture and some logged woodlots. The most immediate threat to this natural area is the upcoming expansion of Highway 42/57. Water samples have revealed other threats as agricultural practices leading to considerable contribution of nutrients, sediment and bacteria to Fabry Creek. This creek also lacks necessary buffers; as portions have been ditched and pastured and are in close proximity to feed lots.

Renard Swamp

Renard Swamp is a 1,570 acre wetland habitat near the bay of Green Bay in southern Door County. Three significant habitats comprise this complex; a southern hardwood swamp, mesic-wet beach ridges and Renard Creek. This area, with its mixed upland forest and creeks with their associated drainage ways, is a significant stand of intact southern hardwoods in relatively undisturbed condition. The surrounding land use is primarily woodlots with little cropland. Some sections of Renard Creek are primarily pasture and cropped land with little buffering. Threats that exist within this complex are

poor logging practices, sedimentation and introduction of organic pollution to Renard Creek from agricultural practices and the spread of exotic plant species.

Stony Creek Wetlands Complex

The Stony Creek Wetlands Complex is situated in southeastern Door County and envelops approximately 6,370 acres. This complex is the largest creek system in southern Door County with Stony Creek and its associated wetlands and upland areas. Flooded hardwood swamps and perennial wetlands merge to form the main branch of Stony Creek that flows into large tracts of wetland and open emergent marshes and ultimately flows through a forested terrace with steep banks. This ecologically significant wetland system is thought to be the second most important wildlife heritage area in southern Door County. The land use throughout the Stony Creek Complex is a mix of second growth forest patches, active farmland and extensive wetlands. Threats to this area include encroachment from agriculture and residential development, contamination from nonpoint source pollution, susceptibility of groundwater due to shallow soils and fractured dolostone bedrock and the spread of aggressive exotic plant species.

Brussels Hill/Keyes Creek/Gardner Swamp Complex

This area features a prominent landmark in southern Door County in the Brussels Hill, an expression of the Upper Ordovician and Silurian bedrock that forms the Niagara Escarpment. Karst formations such as exposed creviced bedrock, sinkholes and pit caves are prominent in this area. The 7,215 acres comprised in this complex are largely contiguous tracts of forests, wetlands and dolostone karst features. The Gardner Swamp area is adjacent to the Brussels Hill and is comprised of 5 square miles of wetlands, sugar maple dominated forests, upland islands and lowland forests. 1.5 square miles of the swamp are designated as the Gardner Marsh State Wildlife Area. The Gardner Swamp area is dissected by Keyes Creek as it flows from the Brussels hill and outlets in the bay of Green Bay in Little Sturgeon Bay. Land use surrounding this area is primarily agriculture with some woodlots and residential areas. The threats to this area include pressures from increased residential and commercial development as a result of proximity to the cities of Sturgeon Bay and Green Bay, water quality degradation from substandard septic systems and agricultural sources and the decline of open spaces due to development.

Hungry Settlement Marsh

This area is a 375 acre association of bog, alder thicket and tamarack swamp located in south central Door County. This complex is mostly surrounded by upland forest and wetlands and appears to be an intact community well buffered and free of non-native species with little human disturbance. This marsh feeds part of Stony Creek via a small tributary. The land surrounding this complex is largely cropland and rural residential. Because of the bog nature of this area, there is little threat of development or road construction.

Southern Lake Michigan Shoreline

This region covers approximately 16 lineal miles along the Lake Michigan shoreline and comprises an area of approximately 16,200 square miles. This site is a diverse association

of sand dunes and swale forests, open to forested wetlands, bedrock outcrops and upland mixed conifer hardwood forests. This extensive mix of forest, lakes, streams and shoreline is an ecologically significant holding with an impressive arrangement of biological diversity and natural landforms. Several natural areas have been designated within this area, most significantly Whitefish Dunes State Park and the Nature Conservancy's Shivering Sands project.

The Shivering Sands area is a 4,000 acre complex of shoreline, sand ridge/swale forests, northern lowland conifer and conifer/hardwood forests, upland conifer forests, fens, marshes, bog-like wetlands, lakes and streams and dolostone cliff environments. Dunes Lake is the largest of three lakes within the Shivering Sands area. This lake is 81 acres and is fed by Geisel Creek and several springs and outlets to Lake Michigan via Shivering Sands Creek. Two shallow embayment lakes; Schwartz (28 acres) and Arbter (16 acres) lie to the north of Dunes Lake.

Lily Bay Creek is a 7-mile stream that runs through primarily agricultural lands and small woodlots before it discharges to Lake Michigan at Lily Bay. This area is comprised of low-forested swamps and upland sandy ridges. This corridor is an important ecological corridor connecting the lakeshore with interior portions of the peninsula.

Kellner Fen is a 60-80 acre open wetland bounded by a sand ridge or dune and swale complex, a white cedar swamp and a conifer hardwood forest. The land surrounding this area is largely woodlots and other natural areas with some orchards, old fields and a landscape nursery.

The Sturgeon Bay Ship Canal was constructed in the 1870s through an area of extensive ridges and swales. This area is a mix of dry sites containing pine, hemlock and birch and lowlands between the ridges with cedar, green ash and alder. Land use in this area is predominantly recreational in the heavily forested areas near the canal and more agriculture away from the shore.

The Clay Banks area is a section of approximately 1.5 miles of relatively undeveloped shoreline. Mixed cedar and hardwoods cover this area as wetlands in lowland areas provide drainage to Lake Michigan via several small creeks. Land cover is mostly wooded along the shoreline with a few residential homes and some areas of recreational land. Inland areas consist of agricultural land.

The threats to the Southern Lake Michigan Shoreline are largely pressures from development as well as invasion of exotic species and poor logging practices. Poor agricultural practices are a potential threat to wetland and surface water areas.

Sawyer Harbor/Lost Creek & Larson Creek Watersheds Complex

This complex is located in west central Door County and is approximately 4,590 acres. Together with the Stony Creek Wetlands Complex, this site provides a contiguous habitat corridor from the bay of Green Bay to Lake Michigan. This habitat corridor is essential for the protection of surface and groundwater quality. The large lowland cedar and ash swamps provide an important terrestrial habitat while the surface waters discharging to the bay of Green Bay at Sawyer Harbor and Sand Bay are important for that important fish spawning area of Green Bay. Sawyer Harbor is heavily influenced by recreational activity due to its sheltered nature and its close proximity to Potawatomi State Park. The surrounding land use for Sawyer Harbor is largely recreational with some residential areas. Lost Creek is a 2.5 mile stream with a 2.2 square mile watershed that is comprised

mostly of cropland. A golf course and the county landfill are in close proximity to this stream. Larson Creek is a 4 mile intermittent stream that originates in Cunningham Swamp and flows through predominant cropland and pasture with some residential areas before discharging to the bay of Green Bay at Sand Bay. Larson Creek is part of an 8.9 square mile watershed. Threats to this complex are agricultural practices, residential growth from the City of Sturgeon Bay and sedimentation to wetlands. Sinkholes and other solution features in this complex pose a threat to water quality due to nonpoint sources of pollution.

West Branch Whitefish Bay Creek Corridor

The West Branch Whitefish Bay Creek Corridor is a 2,150 acre complex of upland forests and lowland swamps. The West Branch of Whitefish Bay Creek is 4.8 miles in length and originates from an area of natural springs and a small ephemeral pond and flows south to Whitefish Dunes State Park. This corridor is ecologically significant due to the contiguous nature of the riparian habitat as well as several intact forest types and wetlands in the headwaters and throughout the entire site. The surrounding land use for this corridor is predominantly cropland with some woodland and plantation forests. The primary threats to this habitat are poor agricultural practices and contamination to the stream as well as residential development.

Bay Shore Bluff Lands

This area is located along the western shore of Door County on the bay of Green Bay and comprises approximately 3,250 acres. The prominent feature of this site is the Niagara Escarpment resulting in many karst features such as caves and sinkholes throughout the area. The Door County Land Trust owns a 124 acre tract of land along the bluffs that has been designated as a State Natural Area. This area lends itself to a large diversity of habitat types consisting of hardwood swamps, open cliff faces and dry mesic forests. The tracts at the base of the escarpment hold many seeps and areas on the north end consist of springs and ponds. These habitats also support a large number of rare or uncommon species. Land use surrounding this area is largely cropland, woodlots and orchards with some residential areas and recreational land. The Spring Lane Hardwood Swamp is a 15-acre spring-fed swamp that is drained by several sinkholes. This area is predominantly wooded with fewer instances of residential, cropland and orchards. Threats to this area are predominantly related to development in the form of loss of forest cover, destruction of bedrock, filling of wetlands and karst features and increased impervious surfaces. Other threats include poor logging practices, invasive species, Gypsy Moth invasion and increased deer herbivory as subdivisions increase.

Logan Creek/Lost Lake Corridor

This corridor comprises approximately 4,950 acres that includes Logan Creek, a 5.4-mile Outstanding Water Resource and Lost Lake, a spring-fed, shallow, marl-bottomed seepage lake. The significance of this site is the quality of Lost Lake and the presence of several species that hold state significance. This corridor is made up of a diverse wetland complex north of Lost Lake and an extensive conifer forest along Logan Creek. The surrounding land use for this area is cropland, stump pasture, pasture and orchards.

Threats to this corridor include runoff from agricultural practices and grazing of livestock near the creek as well as future residential expansion.

Bay to Lake Wildlife Corridor

This large corridor encompasses approximately 15,200 acres in north central Door County and covers an area from Peninsula State Park on the west shore and extends in two branches to the eastern shore.

The first branch of this corridor includes the Fish Creek Watershed, including the 1.5-mile Fish Creek and forested wetlands with the prominent feature being the Niagara Escarpment; Thorp Pond, a 6.4 acre lake with no defined inlet or outlet and its associated wetlands that connect to the Fish Creek watershed; and Hibbards Creek, a 7.4 mile stream originating southeast of Thorp Pond as a series of springs and wetlands and outlets to Lake Michigan north of Jacksonport. Hibbards Creek drains a 21.9 square mile and its stream corridor consists of wetlands, conifer swamps, dry-mesic woodlands and ridge-swale complexes. Land use in this branch of the corridor ranges from woodlots, idle farmland, orchards and single family residences on the west end to primarily agriculture and residential on the east shore.

The second branch of the Bay to Lake Wildlife Corridor consists of the Piel Creek-Kangaroo Lake system. This system lies in a shallow trough of the Niagara Escarpment that extends from Fish Creek to Lake Michigan. Piel Creek is a 2.5 mile stream originating in a large wetland complex and flows to the north end of Kangaroo Lake. Numerous springs discharge to the creek and several are present where it discharges to the lake. Kangaroo Lake is an embayment lake created by the sand deposition and dune formation following recession of post-glacial lakes and regional post-glacial rebound. The lake is dissected by a causeway with three culverts connecting the north end with the south. Hines Creek, a one-mile stream draining through a ridge-swale complex, provides the outlet for Kangaroo Lake and connects it to Lake Michigan. Meridian Park is situated at the south end of Kangaroo Lake. The surrounding land use for this branch of the Bay to Lake Wildlife Corridor is largely woodlands in the Piel Creek corridor with extensive development along the shores of Kangaroo Lake. The north end of the lake remains undeveloped with much of the property owned by The Nature Conservancy and the Door County Land Trust.

Threats to this corridor include poor agricultural practices in the corridor of Hibbards Creek with nonpoint runoff and pasturing near the stream being a concern, development near Thorp Pond and Kangaroo Lake, residential development and the associated road pressures in the Piel Creek corridor, poor logging practices, recreational vehicle use and invasion of exotic species.

Ephraim/Baileys Harbor Forest Corridor & North Bay Lowlands

This large complex comprises 11,100 acres in northeastern Door County and is a complex of natural area projects and preserves held by The University of Wisconsin-Green Bay, the Ridges Sanctuary, The Nature Conservancy, The Door County Land Trust and the Wisconsin Department of Natural Resources. This area is made up of cedar swamps, glacial landforms and a forest corridor with few roads. Ephraim Swamp is a lowland swamp that extends from the west shore of Door County at Eagle Harbor to the

southeast towards Baileys Harbor. Hidden Springs Creek, an Exceptional Resource Water, originates in Ephraim Swamp and outlets to the bay of Green Bay. The Baileys Harbor Forest Corridor continues from the perimeter of Ephraim Swamp to the Lake Michigan shoreline. This area consists largely of lowland swamp species such as black spruce, tamarack and white cedar. Two creeks flow into this swamp; Hidden Brook Creek, which follows and ridge/swale system and an unnamed stream that flows into Mud Lake, a 155 acre drainage lake that empties into Lake Michigan at Moonlight Bay via Reibolts Creek. The North Bay Lowlands/Three Springs area comprises 4,700 acres and contains 8,500 feet of shoreline along North Bay in Lake Michigan, a very significant stretch of pristine shoreline in the county. This area contains several rare species including the federally endangered Hines emerald dragonfly. Land use in this corridor ranges from cropland, recreational public land and natural areas surrounding Ephraim Swamp to predominantly woodlots in the Baileys Harbor Forest Corridor and the Lake Michigan shoreline. Threats that exist to this large corridor include fragmentation of habitat from residential development, disruption of surface water and groundwater flow regimes, recreational vehicle use, poor logging practices and nonpoint sources of pollution from sewage, road maintenance and poor agricultural practices.

Mink River/Rowley's Bay System

This area comprises approximately 2,900 acres and contains the Mink River Estuary, an Outstanding Resource Water and State Natural Area, with much of the surrounding property owned by The Nature Conservancy. The upland segments of this system are scattered with abandoned cropland and orchards mixed with some scattered active agriculture and some low density residential areas while the lower segments are largely undisturbed wetlands and marshes with sand ridges and swales near the Lake Michigan shoreline. Threats to this ecologically significant system include contamination to groundwater that supplies the system through failing septic systems or increased nutrient loading, invasive species and pressures resulting from development.

Europe Lake Forest Area

This system is made up of 1,700 acres of northern mesic forest and features Europe Lake, Wisconsin Bay and Table Bluff. Europe Lake is a 273 acre seepage lake separated from Lake Michigan by a dolostone ledge and sand dune topography. The southern edge of the forest area and the lake is bordered by Newport State Park, this with a portion designated as Europe Bay Woods State Natural Area creates a significant ecological habitat of forest, wetland and shoreline habitat. The land use surrounding this area is primarily natural areas with some idle cropland, orchards and residential lots. The predominant threat to this area is pressures from development including fragmentation.

Grand Traverse Islands

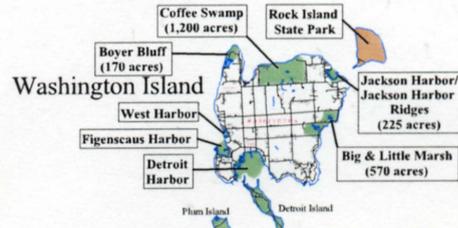
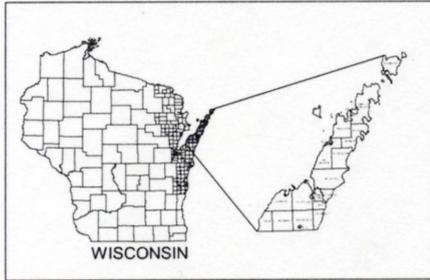
This system is made up of the collection of all major islands in the surrounding waters of Door County. Most of these 19 islands are underlain by Silurian dolostone which outcrops on the shoreline and occasionally in the interior. Washington Island contains areas designated as State Natural Areas: Jackson Harbor Ridges, Big Marsh, Little Marsh and Coffee Swamp as well as 850 acres of wetlands. Rock Island is a state park with a

large portion, Rock Island Woods, designated as a State Natural Area. Collectively, these islands have been inventoried and found to contain 64 rare species of animals, invertebrates and plants among 18 natural community types. Threats that exist for these islands include forest management practices, deer herbivory, invasive species, domination by colonial water birds on some smaller islands and human pressures from development and recreation on some of the larger islands.

Significant Wildlife Habitat & Natural Areas Door County, Wisconsin Reference Map



3 0 3 6 Miles



Proposed Conservation Project Areas
 State Owned Lands/Parks & Project Areas
 Private/Other Conservation Areas

Reference Map - Wildlife Habitat & Natural Areas

Source: Bay-Lake Regional Planning Commission, 2003.

Note: Site boundaries are approximations.

2.3

Strategic Planning and Public Input/Participation

2.3.1 Group Meetings and Discussions

In 1999, the original Door County Land and Water Resource Management Plan was developed. To identify and address the concerns and needs of Door County's resources, a number of group meetings and discussions were arranged. The strategic planning exercises, facilitated by the University of Wisconsin- Extension Community Development Educator and the Soil and Water Conservation Department, were designed to address the question, "*What are the most important soil, water and other natural resource issues facing Door County over the next decade?*" This planning process provided a sense of priorities and an acknowledgement of ideas given by those attending.

Six meetings held throughout the county during the summer of 1999 collected input from each person attending. The representative groups included: people nominated by County Board members in each of three districts of the county (Southern Door held in Brussels, Central Door held in Sturgeon Bay and Northern Door held in Baileys Harbor); non-profit organizations; partner agencies and elected officials. Approximately 70 people took part in this series of exercises each representing a larger public entity by delegate authority. Additional information was gathered in the same manner from two meetings from the SWCD staff and the Land Conservation Committee. Detailed results and their rankings can be reviewed in the 1999 Land and Water Resource Management Plan.

The top issues identified at the group meetings were **concerns of groundwater quality, development pressure/population pressure consolidated within the concern of changing land use practices and proper waste disposal (i.e. septic failure, manure management...)**. Although other concerns were raised, these were the three findings that are most apparent.

To prepare for this update of the original Land and Water Resource Management Plan, the same group of representatives was surveyed to determine their opinion of the current status of Door County's resource concerns. The results of the survey and the associated rankings can be found in Appendix C of this document. The survey provided a representation of resource concerns for 2005 and revealed that the top nine concerns are the same as those in 1999.

2.3.2 Discussion of Findings

The most reoccurring concern of the county residents is the safety of Door County's drinking water supply represented under the topic of **groundwater quality**. 72 % of the surveys returned placed groundwater protection and improvement as the most important resource concern for Door County. Not only was this an apparent concern of the public, but this need is also identified and supported by contamination records and research. The impacts of nutrients reaching drinking water, sediment sources impacting groundwater, proper disposal of solid waste, improper sanitary systems, proper well abandonment and surface water contamination/pollution reaching groundwater supplies continue to top the lists of concerns that people have regarding the groundwater quality of

Door County. It is understood that the importance of this is obvious because of the limited recharge time of the drinking water supply due to the nature of the area's geology. An extremely large number of people can be affected in a relatively short span of time.

The second greatest concern resulting from the meetings and surveys centered on **land use changes in various forms including development pressure and human use pressure on local resources**. Door County has had four land use surveys completed for the unincorporated parts of the county in 1964, 1975, 1979 and most recently 1992, all of which varied in purpose, used different methodologies and had differing classifications. The total percentage of developed land rose steadily with each subsequent survey. Additional shoreline development, development along inland bluffs and rural subdivision growth all contributed to the trend. Total amounts of farmland decreased over the extent of the surveys, however, from 1979 to 1992, the ratio of idle farmland to active farmland rose. Maintaining an agricultural resource base and “the right to farm” has been a consistent message from the public at meetings and in the survey results. The trend of the existence of small farms coming out of production and undergoing subdivision or having to expand to remain in the market was and still is a significant concern among the farming community. Table 2-4 shows the approximate land use distribution in the county. Agricultural uses are concentrated primarily in the southern areas and areas of the central interior portion of the county. Forested land is more evident in the northern reaches of the peninsula and those areas adjacent to the Lake Michigan side of the county, a large portion of this area is held in state parks, natural areas and non-profit reserves.

Table 2-4. Approximate land use distribution (1992).

Land use	Acres	Percent of Total
Agricultural	119,498	38%
Forest	62,725	20%
Surface Water	3,370	1.1%
Residential/Commercial/Manufacturing	75,714	24%
Swamp and Waste	16,102	5%
Tax exempt	21,285	7%
Total Land in Door County	314,560*	100%

* Not all land use categories are included.

Within the concern of human use on local resources, development along the shoreline was highlighted. Many people voiced their concerns not only on the construction in general, but the possible overlooked zoning violations, the increased number of “trophy homes” and the negative effects that are impacting surrounding waters, and in certain cases, the aesthetic Door County cliffs. Table 2-5 is provided as a means to show general trends. The figures are approximate, but do indicate that considerable shoreline has been developed. Land use impact concerns raised from the issues surrounding development were listed as the second highest concern in the 1999 informational meetings as well as the 2005 surveys.

Table 2-5. Door County shoreline development as percent of total shore frontage. *Lake Michigan and Green Bay Shoreline (mainland and Washington Island only)*

	<u>Private</u>	<u>Incorporated</u>	<u>Public</u>	<u>Undeveloped</u>
1962	29.6	7.0	7.3	56.1
1992	48.4	10.3	14.7	26.6

Inland Lakes Shoreline (Clark, Kangaroo, and Europe Lakes)

	<u>Private</u>	<u>Incorporated</u>	<u>Public</u>	<u>Undeveloped</u>
1962	32.8	---	0.5	66.7
1992	56.1	---	8.6	35.3

The third most apparent concern raised in the public meetings and surveys was that of **waste management, both animal and human**. As a result of previous human impact concerns in the 1999 plan, the SWCD cooperated with the Sanitarian Department enacting a countywide comprehensive sanitary survey. This survey, beginning in 2002 and continuing through 2004, has included properties in nearly every township of Door County evaluating nearly 1000 septic systems. Evaluating these 988 properties resulted in a passing rate of 79% and a failure rate of 21%. The Sanitarian Department intends to continue the comprehensive survey and estimates evaluating over 10 sections of land that may encompass nearly 500 developed properties in 2005. The results of the comprehensive sanitary survey reflect the results of the county’s long-standing (1986) ordinance evaluating septic systems at the time of property transfer with a current passing rate hovering around 80% and a failure rate of around 20%. Sanitation concerns are not the direct responsibility of the SWCD although their impacts are directly related to natural resource concerns. The SWCD makes efforts to refer violations and reports questionable circumstances to the Sanitarian Department. Some concern from the public stems from the amount of older septic systems prone to failure that may not have been evaluated thus far. Their concern lies in the fact that the status of many systems appears to be unknown. Extrapolating the current data may reveal an accurate description to the number of failing systems in unsewered areas anticipated to pass and/or fail in upcoming sanitary surveys.

Animal waste concerns from the meetings were very general and apparent in comments such as ‘better manure management’. The public is aware of the impacts that animal waste run-off can impose on water quality, but a focus item concerning run-off was not mentioned. The grazing of stream banks and the contamination to surface waters from agricultural wastes were also listed as a public concern items under animal waste. Implementation of the Statewide Performance Standards and Prohibitions will focus on many of these concerns and will be addressed throughout the county in Chapter 23, Door County Code: *Agricultural Performance Standards and Animal Waste Storage Ordinance*.

2.4

Identification of Specific Land & Water Resource Needs

An important component of the Land and Water Resource Management Plan is the identification of land and water resource needs of Door County prior to the development of goals and objectives to address those needs. The previously discussed planning and public participation and input process effort was one step in the 1999 process of identifying the specific land and water resource needs of Door County. In addition to this, discussions were conducted with representatives of various other natural resource management agencies and organizations to further solicit their opinions and input. This process was duplicated in 2005 through a survey of natural resource professionals.

The information and data available in numerous publications and other documents were also reviewed (see Bibliography). One example of such information is a survey in a Southern Door Townships newsletter. The survey, performed in the fall of 1998 in the townships of Brussels, Forestville, Gardner, Nasewaupsee, and Union, addressed water quality issues generated at town meetings throughout the summer. The results of the survey, 1,678 of 4,821 were returned, showed very strong support from residents and property owners for water quality protection. One issue posed was “Large developments should be required to show what effect they will have on the water quality and quantity of surrounding wells.” The people who agreed or strongly agreed to this concept represent approximately 90% of the responses. The issue which stated, “Septic systems should be monitored, and those which are failing should be replaced”, prompted approximately 65% of the respondents to state that they agreed or strongly agreed. Lastly, the knowledge and assessment of the conditions and threats to the natural resources of Door County held by the professional staff of the Soil and Water Conservation Department was reviewed and utilized.

This section details the Land & Water Resource Management Plan’s summary of Door County’s major resource needs. The resource needs are listed in order of priority, however many of the concerns are interconnected and can be addressed concurrently. Groundwater protection and improvement is an immediate and apparent concern based on the unique geology of the County. The protection of the groundwater resource can impact nearly all surface land use activities. Other resource needs, can be categorized into biological concerns as threats to habitats and species. The prioritized identified major land and water resource needs of Door County are:

- Groundwater protection and improvement
- Impacts of development on natural resources
- Human waste management
- Animal waste management
- Surface water protection
- Stormwater management
- Soil Erosion Control; agricultural and construction site
- Non-metallic mine reclamation
- Invasive species

The identification of the resource needs of Door County is the basis for the SWCD programs that are to address the corresponding resource need. The three highest priority resource needs are also the three issues of greatest concern identified at the public meetings and in the surveys. The prioritized list has and will continue to provide guidance to SWCD program direction but does not include all the resource needs of Door County.

2.5

Significant Accomplishments

The original Land and Water Resource Management Plan developed in 1999, as is the case with this update, set goals and objectives associated with each of the programs administered by the Door County Soil and Water Conservation Department. The following items were listed in the work plan for the 1999 Land and Water Resource Management Plan and have been completed to provide a mechanism for implementation of the objectives to meet the goals of their associated programs.

- *Farmland Preservation Program Soil and Water Conservation Standards*
All Wisconsin counties with landowners claiming tax credits in the Farmland Preservation Program have been required to update the Soil and Water Conservation Standards required for compliance. Door County completed this update to reflect the Agricultural Performance Standards and Prohibitions and these standards were adopted by the Wisconsin Land and Water Conservation Board on November 30, 2004.
- *Chapter 23 - Agricultural Performance Standards and Animal Waste Storage Ordinance*
Door County has developed the Agricultural Performance Standards and Animal Waste Storage Ordinance as a tool to implement the water quality rules promulgated in DNR NR 151 and update the existing Animal Waste Storage Ordinance created in 1987. The ordinance was developed throughout 2004 through a series of input sessions and a public hearing. The Door County Board adopted the ordinance on August 24, 2004 and it has been codified as Chapter 23, Door County Code.
- *Door County Invasive Species Team*
The initiative and involvement of the SWCD in invasive species education and control took a more noticeable and formal form in 2001 with the development of the Door County Invasive Species Team or (DCIST). The SWCD took a coordinating role in bringing various partners and stakeholders together to address the issue of habitat degradation and decreases in biodiversity as natural resource threats in Door County. After a series of meetings and discussions about what the group can and should do, the DCIST began forming sub-groups to try to manage specific topics. By the end of 2001, DCIST had nearly 30 partners of groups, businesses or private individuals all within Door County.

- *Sanitary Survey*
In 2001, a cooperative effort was established between the Sanitarian Department and the SWCD to identify and prioritize the areas of Door County which failing septic systems have the highest potential to contaminate groundwater.

- *Chapter 36 – Nonmetallic Mining Ordinance*
The Door County Nonmetallic Mine Reclamation Code, Chapter 36, was adopted by the Door County Board of Supervisors May 22, 2001. The provisions of this chapter are administered by the SWCD. The reclamation ordinance is intended to create a reclamation program only. It neither regulates active mining process nor has any effect upon local zoning decisions such as those related to the approval of new mine sites. The process of siting a mine continues to be a local matter governed under existing zoning procedures by local authorities.
To continue operating, operators or owners of all existing mines were required to submit an application for a reclamation permit by August 1, 2001.
A reclamation plan must be approved by an agreed upon date and within three years for existing mines or prior to operating a new mine. The reclamation plan will ensure acceptable final site reclamation to a desired and permitted land use in compliance with the uniform reclamation standards. An irrevocable letter of credit or other form of financial assurance is required from the mine operator or owner based on the estimated cost to implement the reclamation plan. The money is to be in place to make certain that the County of Door can obtain the funds necessary to perform site reclamation in the event of a default.

- *City of Sturgeon Bay Wellhead Protection*
An effort has been initiated to protect the Wellhead Protection Areas (WHPAs) that contribute water to the five active City of Sturgeon Bay municipal wells. The wellhead protection project is a joint effort between the SWCD and Sturgeon Bay Utilities. A Wellhead Protection Plan was developed with the assistance of an Ad Hoc Governmental Unit Advisory Committee and a Technical Advisory Committee. The purpose of the Wellhead Protection Plan is to identify and assess various options, incentives, and tools to protect the WHPAs.
The plan was finalized with implementation option recommendations from joint Land Conservation Committee/Utilities Commission, public comment, Technical Advisory Committee, and Ad Hoc Governmental Unit Advisory Committee.
In the year 2003 the Wellhead Protection Plan approvals were as follows:
 - Plan adoption by Land Conservation Committee – 1/6/03
 - Plan adoption by Utilities Commission. – 2/10/03
 - Plan adoption by County Board – 2/25/03
 - Plan adoption by City Council – 3/4/03

Part 3

Plan of Implementation Addressing the Resource Management Needs of Door County

CONTENTS

- 3.1 Agricultural Implementation
- 3.2 Urban & Rural Non-Agricultural Implementation
- 3.3 Well Abandonment Program
- 3.4 Wellhead Zone of Contribution Protection Programs
- 3.5 Technical Assistance to Landowners/Operators, Interested Groups, and Other Governmental Units
- 3.6 County Water Pollution Abatement Cost-share Program
- 3.7 Other SWCD Programs
- 3.8 Information and Education

3.1

Agricultural Implementation

3.1.1 Voluntary Implementation

The SWCD currently offers technical assistance to landowners that are interested in voluntarily addressing the natural resources needs of their property. This will remain the preferred and priority approach to implementing best management practices in Door County. The key to this strategy is providing landowners with assistance in planning, designing and installing conservation measures appropriate for their resource management needs.

The assistance to landowners interested in voluntary conservation projects will not rely on whether the property is located within the boundaries of a large, designated geographic area-based comprehensive project or not. It is imperative that the voluntary landowners' needs are addressed. Non-program assistance as well as continued assistance to landowners through SWCD programs will be necessary to provide a more complete approach to protecting the natural resources of Door County and achieving compliance with statewide performance standards and prohibitions.

3.1.2 Upper Door Priority Watershed

The Upper Door Watershed was selected as a priority watershed under the DNR's Wisconsin Nonpoint Source Water Pollution (NPS) Abatement Program and was administrated and implemented by the SWCD from 1984 to 1996. The Upper Door watershed includes all land north of the Sturgeon Bay shipping canal including Washington and Chambers Islands and comprises approximately 181,341 acres (283.4 square miles).

The southern portion of the watershed, an area from the canal north to a line drawn approximately from Fish Creek to Baileys Harbor, is predominantly agricultural. Agriculture exists to a lesser degree north of this line. This project was the first large-scale watershed in the state selected to primarily address the impacts of nonpoint source pollution on groundwater quality.

The general objectives of the Upper Door Priority Watershed were to: Protect the beneficial uses of groundwater; decrease the frequency of contaminated wells; improve or protect the water quality of streams or lakes within the project area and the near shore waters of Lake Michigan and Green Bay.

Status of the Upper Door Priority Watershed

The project was considered a success for a number of reasons. First, in conjunction with other conservation programs, the project goals relating to animal waste control were met or exceeded. Secondly, the project was successful in increasing the awareness of nonpoint source pollution problems and led many landowners to voluntarily seek assistance.

Another indication of success which the program achieved was heightened awareness of other groundwater quality issues such as: the need for municipal sewage treatment, development of a county wide ordinance to update or replace private septic systems at the time property is sold, and the need to stabilize lead arsenic mixing sites.

Current economics are one of the controlling factors involved in a project requiring landowner cooperation. Economic conditions such as those in the late 1980's and early 1990's generated some reluctance toward participation in the program, as many landowners were uncertain as to whether they would remain in business in the near future. Many of these landowners did eventually sign cost-share contracts and fulfilled their agreements. The project also illustrated that agricultural/animal waste practices necessary for groundwater protection are expensive and, without adequate financial assistance, are difficult for landowners to install.

Through landowner contact, it has been determined that approximately 90% of the landowners will continue to manage their projects as they were intended after their contracts expire. The remaining 10% are planning to modify their practices due to outgrowing facilities, design modifications, expansion of their operation, or the decision to discontinue farming.

Although surface water was not targeted by this particular project, the SWCD is currently inventorying and evaluating upland erosion in this and other areas of Door County and including it as an integral part of water quality goals in other plans, as required in the statewide performance standards and prohibitions.

Goals of the Upper Door Priority Watershed

All of the contracted practices in the Upper Door watershed have operation and maintenance agreements that last for either a 10 or 20-year period. During the operation and maintenance period it is the role of the SWCD to visit landowners and inspect BMPs to insure compliance with requirements of the practice.

Some of the elements considered during inspection are: signs of off-lot feeding when required to feed on the constructed barnyard area; whether manure storage and collection basins are emptied; implementation of a nutrient management plan; condition of pasture areas; and overall maintenance of gutters/downspouts, filter strips, and fencing requirements.

Overall most of the practices installed in the Upper Door watershed are well managed. It is the goal of the SWCD to continue working with landowners and others to continue to promote practices such as nutrient management and high residue management to comply with standards dealing with water quality and soil erosion.

Following the required operation and maintenance period, the SWCD will continue to provide technical assistance to landowners to properly address the resource management needs of their property, even after the formal contract has expired.

Goals: Implement water quality and soil erosion goals to comply with statewide standards and prohibitions.

To continue proper resource management by landowners during and after prescribed operation and maintenance periods.

Objectives:

- Continue annual visits to inspect installed BMPs and insure compliance with Operation and Maintenance agreement conditions as well as statewide performance standards and prohibitions.
- Continue to promote Nutrient Management and erosion reducing field practices such as High Residue Management and Cover Cropping.
- Provide technical assistance to landowners to address resource management needs.

3.1.3 Red River/Sturgeon Bay Priority Watershed

The Red River/Sturgeon Bay Watershed was designated as a priority watershed in 1992 under the DNR's Wisconsin Nonpoint Source Water Pollution (NPS) Abatement Program. The Red River/Sturgeon Bay Watershed is a 139 square-mile (89,215 acre) drainage basin, which is a sub basin of the Twin-Door-Kewaunee Basin. The Red River/Sturgeon Bay Priority Watershed lies within Door (78%), Kewaunee (13%), and Brown (9%) Counties. The watershed is primarily agricultural with 53,538 acres (60%) comprised of cropland, farmsteads/pastures, and conservation reserve land. The largest business associated with agricultural land use is dairy farming, with the average farm being approximately 259 acres.

Objectives of the program are to: improve water quality and safeguard wells by reducing nutrients, sediment and bacteria loading from urban areas, animal lots, improperly stored manure, milkhouse waste, and eroding farm fields; maintain water quality goals within the well head zone of contribution for the city of Sturgeon Bay; stabilize flow rates of creeks in the watershed; and maintain woodland corridors and buffers.

Status of the Red River/Sturgeon Bay Priority Watershed

In 2004, the ninth full year of implementation of the Red River/Sturgeon Bay Priority Watershed was completed. Through 2004, the SWCD has been able to sign 170 cost-share agreements in the Red River/Sturgeon Bay Priority Watershed. By comparison, a total of 109 were signed in the Upper Door Priority Watershed.

Financial uncertainty due to unknown state long-term funding has also posed a challenge to the project. Due to the uncertainties, the SWCD has amended cost-share agreements with landowners to shift monies from state to local sources. Door County has provided cost-share funds for many low cost BMPs and will continue to do so.

Goals of the Red River/Sturgeon Bay Priority Watershed

The goals of the Red River/Sturgeon Bay Priority Watershed remain to protect the quality of both groundwater and surface water and reduce soil erosion. It will continue to be a priority for the SWCD to provide technical assistance and cost sharing to landowners to implement the goals of the watershed plan and insure compliance with the statewide standards and prohibitions.

Goal: Protect water quality and reduce soil erosion through implementation of watershed goals and compliance with statewide standards and prohibitions.

Objectives:

- Provide technical assistance and cost sharing to landowners to implement goals of the watershed plan and insure compliance with statewide standards and prohibitions.
- Continue to secure additional funding from Sturgeon Bay Utilities for BMP installation in the Zone of Contribution for the City of Sturgeon Bay municipal wells.

3.1.4 Farmland Preservation Program

The Wisconsin Farmland Preservation Program, as outlined in Chapter 91 of the Wisconsin Statutes, is designed to identify and protect agricultural areas from urban sprawl and unplanned development. Through orderly land use planning and development, promoting soil and water conservation, and providing tax relief to farmland owners who are enrolled in the program, it is the intent of the program to maintain land in agricultural use.

To be eligible for the Farmland Preservation Program, the land in question must either reside in a district zoned for exclusive agriculture, or a farmland preservation agreement

or a transition agreement must be signed. In addition to these stipulations, other requirements necessary for a landowner to receive tax credits are:

- The land must comprise at least 35 acres.
- The landowner must be a Wisconsin resident.
- The land must have produced at least \$6,000 in gross farm profits in the previous year, \$18,000 in the previous three years, or must be enrolled in the Conservation Reserve Program (CRP).

Status of the Farmland Preservation Program in Door County

In 1982, after an initial “start up” phase, Door County began participation in the Farmland Preservation Program. In 1984, the Door County comprehensive zoning ordinance was amended to include an exclusive agricultural zoning district. Only one town, Clay Banks, adopted the exclusive agricultural zoning district. Door County currently has approximately 12,200 acres of land enrolled in the farmland preservation program. This acreage represents 41 landowners in the exclusive agricultural district and 72 other landowners that have signed agreements.

In the Door County Farmland Preservation Plan, adopted in 1982, evaluation methods are established to determine eligibility for the Farmland Preservation Program. Initial acceptance into the program and subsequent reviews of plans depend on compliance with soil and water conservation standards promulgated by Wisconsin Statute 92.105. The Soil and Water Conservation Standards required for all landowners claiming tax credits through the Farmland Preservation Program were updated in November of 2004. Landowners with Farmland Preservation Agreements signed before the adoption of the new standards must follow the old standards adopted by Door County and stated in Section III of the Door County Soil and Water Conservation Policy, which require participants to maintain soil erosion rates equal to or lower than tolerable levels for each field. In addition, surface water runoff on all cropland shall be delivered to a legal outlet or natural watercourse without creating gullies. Participants in the Town of Clay Banks, and all landowners that sign agreements after the date that the new standards were adopted, must follow the new Soil and Water Conservation Standards; these standards include the Statewide Agricultural Performance Standards and Prohibitions.

Goals of the Farmland Preservation Program in Door County

The goals of the SWCD with respect to the Farmland Preservation Program are to continue the program and in doing so, ensure compliance with Statewide Agricultural Performance Standards and Prohibitions. Implementing the Farmland Preservation Program also promotes agricultural use on agricultural land, a concept necessary to prevent the adverse effects of urban sprawl and fragmentation of Door County’s land and water resources.

Goal: Encourage sound farm practices through compliance with Agricultural Performance Standards and Prohibitions as well as reduce urban sprawl and fragmentation through the preservation of farmland.

Objectives:

- Continue to implement program to promote agricultural use on agricultural land.
- Promote soil erosion control through program standards for all participants.
- Ensure participants in Exclusive Agriculture areas are compliant with Agricultural Performance Standards and Prohibitions.
- Ensure all new participants are compliant with Agricultural Performance Standards and Prohibitions.
- Revisit landowners to update conservation plans and ensure compliance.

3.1.5 Nutrient Management Program

The purpose of the Nutrient Management Program is to develop plans that control the amount, source, form, location and timing of plant nutrient applications, including application of organic wastes, commercial fertilizers, soil reserves and legumes, in order to provide plant nutrients while minimizing the movement of nutrients to surface water and groundwater. Excess application of nutrients, particularly nitrogen and phosphorus, can result in water quality problems such as eutrophication of surface water bodies and introduction of nitrates into groundwater.

Specifications of this standard include following the NRCS 590 Standard, University of Wisconsin fertilizer recommendations and Wisconsin-certified soil-testing labs. Nutrient management plans are required of a landowner when regulated by a county ordinance, a Wisconsin Pollution Discharge Elimination System Permit, a state cost shared manure storage, on lands draining to outstanding or exceptional resource waters designated in ch. NR 102 or lands located in source water protection areas defined in s.NR 243.03, or on lands located in watersheds draining to impaired waters that DNR has listed pursuant to 33 USC 1313 and 40 CFR 130.7, (if the impairment relates to excessive nutrients), by January 1, 2005, on other lands by January 1, 2008, and on all new cropland as described by s.NR 151.09 (4)(b).

Status of the Nutrient Management Program in Door County

The Door County SWCD began the development of a comprehensive Nutrient Management Program in the spring of 1994. The program has received a high level of acceptance.

Door County currently has approximately 120,000 acres of cropland. In 2004, 68 plans covering 18,066 acres were submitted and approved by SWCD staff.

Past funding for Door County’s nutrient management program has been generated from several sources, however overall funding has been limited and is thus a hindrance for compliance and voluntary efforts.

Goals of the Nutrient Management Program in Door County

One key goal in making the nutrient management program more efficient will be to have landowners prepare their own plans in an open house/workshop type setting. With the education and guidance from the SWCD and the UW-Extension County Agriculture Agent, landowners that prepare their own plans will have a better understanding of the

contents and requirements of his/her plan as well as resulting in more efficient implementation.

The SWCD will also continue the education of the adverse effects of winter spreading of manure in high hazard or environmentally sensitive areas, to prevent runoff of pollutants due to minimal soil attenuation and infiltration during those months.

Goal: Protect Door County’s water resources by reducing nonpoint pollution caused by improper nutrient management.

Objectives:

- Increase voluntary program participation.
- Provide education to landowners on the benefits of nutrient management
- Provide education to landowners for development and implementation of their own nutrient management plans.
- Eliminate winter spreading of manure in high hazard or environmentally sensitive areas.
- Support efforts that eliminate any applications of liquid manure during frozen or snow covered conditions.
- Implement Nutrient Management in accordance with the schedules outlined by the Statewide Performance Standards and Prohibitions identified in NR 151 and ATCP 50.

3.1.6 Chapter NR 243 Program

Chapter NR 243 of the state administrative rules was designed to address animal waste management. The purpose of NR 243 is to address nonpoint sources of water pollution due to animal waste sources. In addition, NR 243 outlines the criteria by which the DNR may issue a permit to operations that discharge pollutants to waters of the state. This permit process is referred to as the Wisconsin Pollutant Discharge Elimination System (WPDES). DNR authority to put this chapter into effect is derived from Chapter 283, Wisconsin Statutes.

In the event that a livestock operation is determined to discharge pollutants to waters of the state, the DNR will serve the operation with a Notice of Discharge (NOD). The NOD outlines several things:

- The nature of the discharge;
- A list of governmental or private sources available to possibly provide technical and financial assistance;
- One or more measures necessary to correct and control the discharge;
- A reasonable time period for implementing necessary corrective measures.

The role of the SWCD in the NR 243 program has been to provide technical assistance in the design and implementation of management practices determined to be necessary for remediation of discharge sources outlined in the NOD. The SWCD also provides assistance through cost-share agreement preparation/payment and fiscal management.

Status of the NR 243 Program in Door County

The SWCD handles approximately two to four NODs per year. Technical assistance from the SWCD is applied to some of the NODs but others are resolved before further compliance is required and require no further assistance.

The NR 243 Program, as it exists, is cumbersome and complaint-driven, as a result resources are not always directed toward the greatest needs and the process is often slow. With respect to Door County, NR 243 is not well suited to address the topic of groundwater and is very dependent on DNR staff. The DNR currently has limited staff time to adequately address all of the needs propounded by the NR 243 program and as a result the program is often limited by the expertise of the responding agent.

There is currently one farm in Door County with a WPDES permit. The Soil and Water Conservation Department has assisted this process with technical support for BMP installation as well as consultation for nutrient management purposes.

Goals of the NR 243 Program in Door County

The SWCD will continue technical assistance for landowners that are issued NODs and required to comply with the NR 243 program. Technical assistance will also continue for landowners involved in the WPDES permitting process.

It is anticipated that implementation of the statewide standards and prohibitions will bring some priority and uniformity to the regulatory matters addressed in the Chapter NR 243 Program.

Goal: Protect Door County’s water quality through proper animal waste management within the capabilities of the NR 243 Program.

Objectives:

- Continue technical assistance to landowners that receive NODs.
- Provide technical assistance to landowners on issues addressed by revisions to the NR 243 Program.
- Continue assistance to the DNR and the DATCP in implementation of the NR 243 Program in Door County.
- Educate the public to prevent water quality issues before remedial action is required.
- Work with the DNR and the DATCP to provide them with a better understanding of the need for urgency and attention to groundwater when addressing Door County’s resources.

3.1.7 Targeted Runoff Management Program

The Department of Natural Resources administers the Targeted Runoff Management Grant Program to provide cost-share assistance for control of polluted runoff from both urban and rural sites. The grants that are awarded through this program are typically used to address water quality problems associated with high-priority resources. The grants awarded through this program are on a competitive basis, ranked against other projects on a statewide basis.

With the Red River/Sturgeon Bay Priority Watershed Project (which ends in 2007), the TRM Program is a primary source of funding to provide cost share assistance to install BMPs and address water quality concerns in the many high priority areas that exist. Door County will be depending on this program as a staple for enforcement of the Statewide Standards and Prohibitions in upcoming years

Status of the Targeted Runoff Management Program in Door County

Door County has utilized grants awarded through this program since 2002. Two projects have been installed and three more are approved and planned for installation.

The TRM Program has proven to be an important tool in the ability to approach landowners and install quality practices in areas of concern. The projects for which grant monies from this program were used most likely would not have happened cooperatively without the ability to offer cost share assistance through the TRM Program.

Goals of the Targeted Runoff Management Program in Door County

Door County will continue to pursue grants through the TRM Program to offer cost sharing to implement statewide standards and prohibitions.

Landowners with projects for which these grants are awarded will continue to receive technical assistance from the SWCD to ensure compliance with statewide standards and prohibitions.

Goal: Address Door County’s water quality needs through the Targeted Runoff Management Program

Objectives:

- Target high priority areas to ensure compliance with statewide performance standards and prohibitions within these critical areas.
- Secure funding through the TRM Program to facilitate implementation of statewide standards and prohibitions when other sources are not available.

3.1.8 Agricultural Performance Standards and Prohibitions

To improve the protection of water resources from nonpoint source pollution, 1997 Wisconsin Act 27 modifies Sections 92 and 281 of Wisconsin Statutes requiring the development of performance standards for agricultural and non-agricultural nonpoint source water pollution.

The statewide standards and any county developed standards must address the Animal Waste Advisory Committee Prohibitions (281.16(3)). The Door County Land and Water Resource Management Plan is designed to follow the guidelines outlined in the statewide performance standards and prohibitions.

The Door County Soil and Water Conservation Department completed the Agricultural Performance Standards and Animal Waste Storage Ordinance in the fall of 2004. This

comprehensive ordinance was created to address the Statewide Performance Standards and Prohibitions and was adopted by the Door County Board of Supervisors on August 24, 2004 and codified as Door County Code Chapter 23.

This ordinance also includes a revision of the 1987 Animal Waste Storage Ordinance. This update assures that all activities relating to animal waste storage and transfer will comply with agricultural performance standards as well as technical standards necessary for the SWCD to ensure sound construction and repair practices consistent with the water quality goals of Door County.

The following activities are subject to the ordinance and will be the focus of the Door County Soil and Water Conservation Department in upcoming years:

Agricultural Performance Standards

- **Sheet, Rill and Wind Erosion**
- **Manure Storage Facilities**
 - New Construction and Alterations**
 - Closure**
 - Failing and Leaking Existing Facilities**
- **Clean Water Diversions**
- **Nutrient Management**
 - Oct. 1, 2003 for New Croplands**
 - Jan. 1, 2005 for High Priority Areas such as Impaired, Exceptional or Outstanding Waters and Source Water Areas**
 - Jan. 1, 2008 for all others**

Manure Management Prohibitions

- **No Overflow of Manure Storage Facilities**
- **No Unconfined Manure Pile in a WQMA**
- **No Direct Runoff from a Feedlot or Stored Manure into Waters of the State**
- **No Unlimited Access by Livestock to Waters of the State**

Landowners found to be noncompliant will be required to install Best Management Practices to meet the statewide agricultural performance standards and prohibitions. A list of Best Management Practices can be found in Appendix E of this document.

Activities related to implementation of the standards and prohibitions will include the following:

Information /Education

- **Press Releases with UW-Extension Ag Agent**
- **Speaking Engagements**
- **Land Owner Contacts**

Inventory/Assessment for Compliance Status

- **Four Point Approach to Identify Priority Farms (See Section 3.1.9)**

Tracking

- **Documentation (Assistance Notes, Pictures)**
- **GIS Tracking Layer (ArcView)**
 - Polygons delineating all inventoried property
 - Attributes of all pertinent data

Notification/Enforcement (*Sections 1.33 and 1.34, Chapter 23-Door County Code*)

- **Compliance/Non Compliance Letter Generated**
- **Discussion with Landowner**
- **Notification Letter Sent Certified Mail**
- **Technical Assistance to propose necessary BMPs to achieve compliance**
- **Offer of cost-sharing (when available)**
- **Establish Compliance Period**
- **LCC Informed of Landowners Receiving Notification**
- **Seek financial assistance to offer cost-sharing to landowners/operators to install BMPs to achieve compliance**
- **Develop cost-share agreements with landowners/operators and provide technical assistance to install BMPs to achieve compliance**
- **Provide assistance to DNR to issue notices if requested**
- **Refer non compliance to DA when requested to do so by DNR**

An appeal may be filed by a person aggrieved by a decision made in writing by the Door County SWCD. The appeal must be filed and the appeal fee must be paid within 30 days of the issuance of the decision. After the review, the Land Conservation Committee must provide its written determination within 45 days. A chart depicting the appeal process can be found in Appendix F of this document.

3.1.9 Strategy for Implementation of Agricultural Standards (Identification of Priority Farms)

To ensure effective implementation of the requirements of this plan, the Door County SWCD has developed a strategy to assist landowners to comply with statewide performance standards and prohibitions. The effort to implement the statewide standards and prohibitions will initiate a transition in the SWCD programming from an emphasis on large, geographic area based comprehensive projects to programs focusing on implementation of the standards and prohibitions on an individual landowner basis to identify Priority Farms and address the natural resource needs of Door County. This implementation of the required agricultural standards will be accomplished through a simultaneous effort of four categories.

Voluntary Participation

Regardless of location in the county, voluntary landowners seeking compliance without previous designation by the SWCD will acquire priority status and will receive priority attention through available technical assistance and cost sharing.

Required Landowners/Operators

Landowners with operations that are new or expanded since October 14, 1997 (in accordance with Ch. 281.16(3) (e)), will be required to comply with statewide standards and prohibitions regardless of cost sharing availability. Providing technical assistance to landowners with required action shall remain a priority of the SWCD.

Red River/Sturgeon Bay Priority Watershed

Landowners within the Red River/Sturgeon Bay Priority Watershed are currently eligible for state, and in the ZOC, Sturgeon Bay Utilities cost sharing. The Red River/Sturgeon Bay Watershed will be a priority area for both cost-sharing and technical assistance because it is an area where the resources to implement the standards and prohibitions are in place. In addition, the watershed has already been identified as an area where abatement of nonpoint source water pollution is critical.

Geographic Prioritization

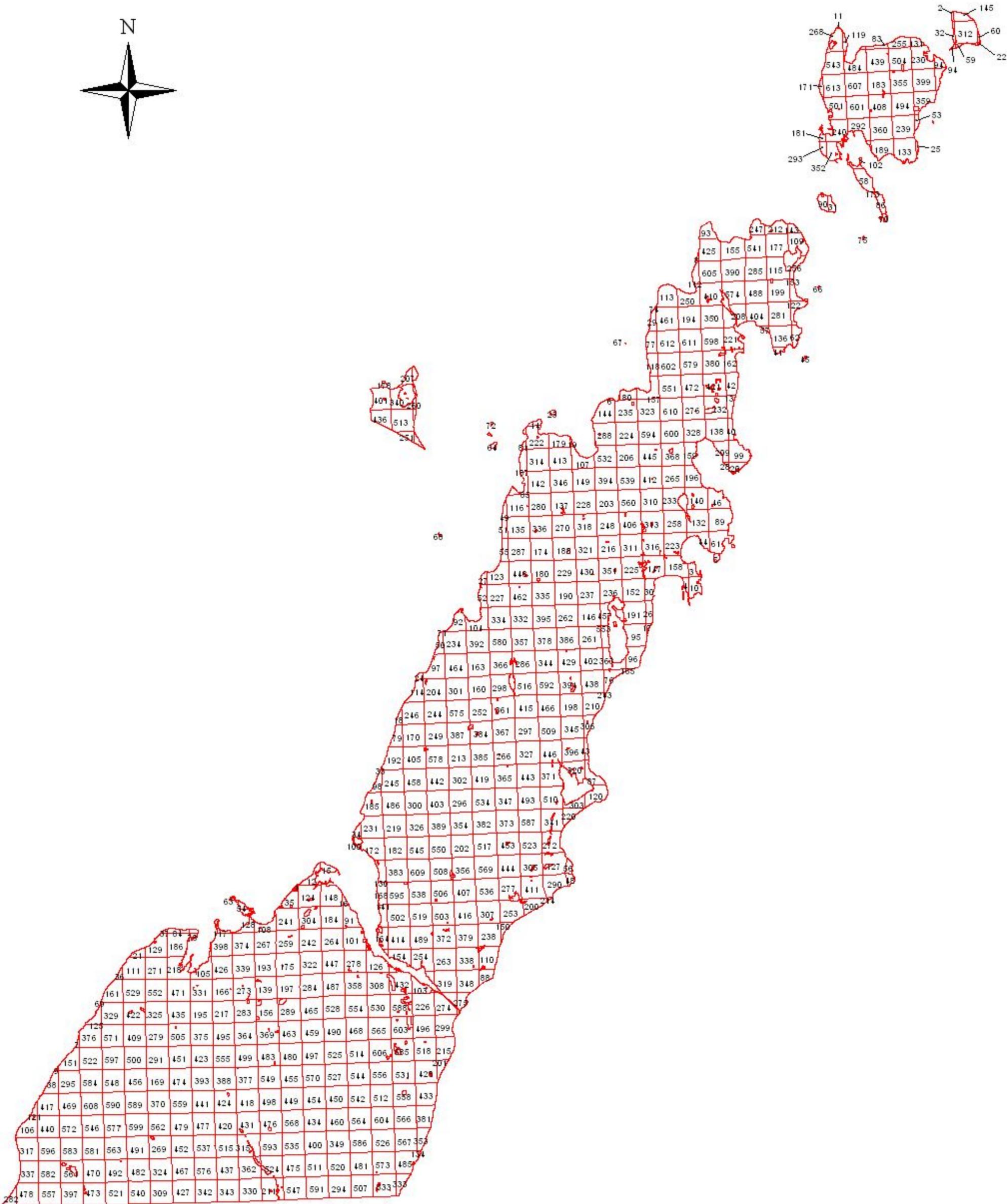
In addition to the efforts outlined above, and as resources permit, the SWCD will begin geographically prioritized implementation throughout the county by section based on resource needs that exist. The ranking for each section in the county will be based on four factors: depth to bedrock, depth to water table, soil attenuation and existence of a surface water quality management area. Each of these factors was given equal weight in a formula to generate a number from 0 – 4 for each section in the county, four being the most critical and zero being the least. The sections in the county were then ranked from those having a score of four down to those with zero. Identification of Priority Farms and implementation of the standards and prohibitions in these areas will then take place in an incremental process, starting with the most critical and moving from one section to another in a systematic fashion (Map on page 52).

Goal: Implement the agricultural performance standards and prohibitions to identify Priority Farms and meet Door County's land and water resource needs.

Objectives:

- Address Door County's resource needs through implementation of Chapter 23, Door County Code.
- Use a four-point, simultaneous approach to implement statewide performance standards and prohibitions.
- Monitor the adequacy of the Agricultural Performance Standards and Animal Waste Storage Ordinance to address future Door County's resource needs and revise as necessary to continue comprehensive coverage of resource concerns.
- Review Animal Waste Storage Permit applications to ensure compliance with standards and prohibitions and Door County's resource protection goals.
- Administer Inventory, Tracking and Notification/Enforcement of SWCD findings with respect to Chapter 23.

Geographic Prioritization for Implementaton of the Agricultural Performance Standards and Prohibitions



3.1.10 Adoption of Ordinances

In order to effectively implement the requirements of the statewide standards and prohibitions through the methods described above, the adoption of ordinance(s) designed to protect the quality of Door County's natural resources will be necessary. While the Chapter 23 ordinance is viewed as a comprehensive document to address the implementation of standards and prohibitions, it will be necessary to address future concerns that are considered as potential threats to Door County's resources.

The intent of the LCC in the development and adoption of ordinance(s) will be to invite all interested parties, including farm groups, environmental groups, other agencies, and private citizens, to voice their input and concerns with respect to the proposed ordinance(s). Public input and LCC guidance will be utilized by the SWCD in drafting applicable ordinance(s).

One goal of this effort, as expressed as a topic of interest by the Door County Land Conservation Committee, will be to explore an ordinance that administers the siting of large livestock facilities on a local level. Current legislation on this topic is in the final stages on a state level. It is the intent of the Door County Soil and Water Conservation Department to monitor this topic and explore the possibility of creating a vehicle for local guidance on this matter.

3.2

Urban & Rural Non-Agricultural Implementation

3.2.1 Voluntary Implementation

In an effort to address conservation measures to land-altering activities, the SWCD will give preferred priority to landowners, contractors and other agency referrals that are interested in voluntarily addressing the natural resources needs of their property to implementing best management practices in Door County. The key to this strategy is providing landowners, contractors and other agency referrals with assistance in planning, designing and installing conservation measures appropriate for their resource management needs. It is imperative that the voluntary landowners needs are addressed to provide a more complete approach to protecting the natural resources of Door County and achieving compliance with statewide performance standards and prohibitions. This service will be provided on a call-in or walk-in basis.

3.2.2 Stormwater Runoff Management and Construction Site Erosion Control

To meet the requirements of the federal Clean Water Act, the Wisconsin DNR developed the Wisconsin Pollutant Discharge Elimination System (WPDES) Storm Water Discharge Permit Program which is regulated under the authority of NR 216. As part of the EPA National Pollutant Discharge Elimination System (NPDES), the WPDES Storm Water Program regulates discharge of storm water in Wisconsin from construction sites, industrial facilities, and selected municipalities.

On August 1, 2004, the Department of Natural resources received authority through a revision of NR 216 to require landowners of construction sites with one acre or more of land disturbance to obtain permit coverage.

NR 151 includes non-agricultural performance standards that encompass the construction and post-construction phases of new development and redevelopment areas as well as some requirements for developed urban areas. The nonagricultural standards outlined in NR 151 are as follows:

Erosion Control (during construction)

- Reduce sediment by 80%: Prevent sediment tracking onto roads and control runoff from spoil piles

Stormwater Control (post construction)

- Reduce sediment by 80%: Peak discharge for 2 year storm, infiltration (areas with soil with an infiltration rate less than 0.6 inches/hour are exempt) and protective areas (Lakes and streams)
- 40% Total Suspended Solids removal for re-construction sites

Status of SWCD involvement in Stormwater Runoff Management & Construction Site Erosion Control Program

The Door County Zoning Ordinance and Land Division Ordinance regulate various land use activities including in those portions of Door County that are governed by one or both of the ordinances. The projects regulated by the two ordinances can be required to prepare and implement plans including both construction site erosion and stormwater runoff control measures. These activities are site specific and have requirements established by the Resource Planning Committee, Board of Adjustments, the Planning Department or the SWCD. The SWCD has been delegated responsibilities to provide technical review of submitted plans and to inspect the installation of the plan’s components. To refine the SWCD’s role in implementing these responsibilities, an inter-departmental agreement has been implemented between the DCPD and SWCD to clarify roles and responsibilities on various procedures.

The SWCD has a Stormwater Runoff Control Design Criteria Procedural Policy to establish the minimum criteria for urban stormwater runoff control plans prepared by, or reviewed by, the Door County SWCD. This policy considers both runoff quantity and quality impacts in the preparation of the stormwater runoff control plans and the design of detention and retention basins. The availability and/or adequacy of the downstream drainage system and outlet are also considered in the design.

Goals for Stormwater Runoff Management & Construction Site Erosion Control Program

The SWCD will continue to work with contractors, realtors and all interested parties in both the private and public sectors to promote proper construction site erosion and stormwater runoff control. The SWCD will continue to review submitted plans on behalf of the Door County Planning Department as well as administer proper controls its own projects.

Goal: Assure protection of Door County’s ground and surface water resources through proper erosion control and stormwater runoff management.

Objectives:

- Continue to promote proper stormwater runoff and construction site erosion control to public and private professional sectors and interested general public.
- Institute cooperative efforts between agencies to review polices and options to implement programs to establish a more thorough and uniform stormwater runoff management and construction site erosion control program in Door County.
- Inform developers, builders, realtors, public officials, and general public about the impact of stormwater runoff and construction site erosion on soil loss, degradation of water quality and other environmental damage.
- Update developers, builders, and inspectors on stormwater runoff management, erosion control requirements, and effective use of erosion control BMPs.
- Continue to administer proper construction site erosion control and stormwater runoff control on all SWCD projects.
- Continue to review submitted planning via the interdepartmental agreement with the Door County Planning Department

3.2.3 Village of Ephraim Stormwater/Construction Site Erosion Control Ordinance

The Village of Ephraim currently has a Stormwater/Construction Site Erosion Control Ordinance that regulates construction sites within the Village of Ephraim. The ordinance requires that construction sites form a plan to conduct stormwater runoff and construction site erosion management. The ordinance is currently under review and redesign to include technological advances and management improvements.

Status of SWCD involvement in the Village of Ephraim Stormwater/Construction Site Erosion Control Ordinance

It is currently written in the Village of Ephraim Stormwater/Construction Site Erosion Control Ordinance that the SWCD is designated to aid in the review of construction site plans for stormwater runoff and construction site erosion management. The SWCD’s role in assisting the Village was approved by the SWCD’s oversight committee at the time of the ordinance adoption.

Goals for the Village of Ephraim Stormwater/Construction Site Erosion Control Ordinance

The SWCD will continue efforts with the Village of Ephraim in assisting the review of construction site plans regulated by the Village of Ephraim Stormwater/Construction Site Erosion Control Ordinance. The SWCD will also work in conjunction with the Village of Ephraim officials to review the current ordinance and revise the ordinance to contain new technological advances in stormwater management and construction site erosion control.

Goal: Continue efforts with the Village of Ephraim in assisting the review of construction site plans.

Objectives:

- Provide continued review of construction site plans for the Village of Ephraim via the Stormwater/Construction Site Erosion Control Ordinance.

3.2.4 Nonmetallic Mining Controls and Reclamation

Door County has active and inactive nonmetallic mines found scattered throughout the county in both zoned and non-zoned areas. Prior to laws and zoning that implemented requirements for mining operations, location and reclamation plans to prevent surface and groundwater contamination and ensure proper reclamation, mines were developed without regard to their potential adverse impacts and final restoration of the site upon cessation of the mining. Abandoned rock, gravel, and sand quarries were left without reclamation and void of topsoil and vegetation.

Status of Nonmetallic Mining in Door County

Door County’s nonmetallic mines provide needed topsoil, clay, sand, gravel, and aggregate for concrete, asphalt, construction and road building; and dimensional stone for shore land protection, landscaping, building and decorative use

Chapter 36, Door County Code was adopted by the Door County Board of Supervisors on May 22, 2001. This Nonmetallic Mining Reclamation Ordinance gave the Door County Soil & Water Conservation Department regulatory authority over all mining reclamation activity in all municipalities located in Door County. Exceptions are those mining sites less than one acre in size, those located on farms for the owner’s personal use, Department of Transportation borrow sites and those sites regulated under Chapter 30 permits and subject to NR 340.

The operators of all nonmetallic mining sites that operate on or after August 1st, 2001 shall apply for a reclamation permit from the County of Door. Abandoned mines in regions of Door County that are governed by the Door County Zoning Ordinance, as well as those that are not, are not required to institute reclamation efforts to stabilize the site if mining activity has ceased prior to August 1, 2001.

Goals of the Nonmetallic Mining Reclamation Program in Door County

The Door County Soil and Water Conservation Department will continue to work with mine operators on plan approval, modifications and compliance checks. Verifying the necessary financial assurance will also be important, as it is imperative to secure resources for satisfactory reclamation in the future.

Goal: Protect the ground and surface water resources of Door County as well as control of the negative impacts of development through proper reclamation of nonmetallic mines.

Objectives:

- Continue checking submitted plans to ensure compliance with requirements of Chapter 36, Door County Code.
- Continue checking compliance of active mines with requirements of submitted plans.
- Continue requiring the guarantee of financial assurance to facilitate proper resources for reclamation.

3.2.5 Soil Erosion Control on County Department Projects

In an effort to encourage erosion control measures and reduce sediment delivery to the groundwater and surface water of Door County from projects performed by County departments, policies need to be implemented to seed and stabilize recently altered soil surfaces. Upon road construction, alteration or maintenance, roadside ditches are often left bare and a lack of adequate seeding and mulching leads to excessive sheet and channel erosion. In addition to erosion due to County Highway Department road work, the SWCD and the County Parks Department also engage in land disturbances activities which can lead to unacceptable levels of soil erosion if not promptly vegetated. Policies are needed to institute practices to stabilize land-disturbing operations by establishing vegetation and implementing other erosion control practices in a timely fashion.

The Highway Department, in conjunction with the SWCD and The Parks Department, purchased a hydroseeder in 1998 to aid in the seeding of ditches and banks of newly constructed or altered roads to prevent soil loss and attain sediment control. The hydroseeder is a beneficial tool for erosion control at various construction sites and other land altering applications. The hydroseeder, which was purchased from the Finn Corporation, is a machine that seeds bare soil to establish turf to increase soil stability and decrease soil erosion. A combination of seed mixed with various other mulching, binding, moisture retaining and fertilizing agents, allows for rapid germination and growth of turf and retention of grass seed.

Status of Implementing Soil Erosion Control on County Department Projects

The SWCD has continued to work with the Highway Department and the Parks Department to promote proper erosion control on their projects. If the SWCD is going to continue to provide technical assistance to these projects, they must continue to insist on sound erosion control measures.

Goals to Implement Soil Erosion Control on County Department Projects

There is a need for a coordinated effort between the SWCD, Highway Commissioner, Park Director, and associated committees to continue to promote vegetated cover and other stabilization methods on County projects in a timely fashion. The hydroseeder is a valuable tool for implementing this practice.

Goal: Proper erosion control measures will be performed, in a timely fashion, on all land altering projects completed by County departments.

Objectives:

- Promote properly seeded and mulched roadside banks and ditches in conjunction with road construction, alteration, or maintenance; land-disturbing activities and altered or disturbed landscapes.
- Insist on proper erosion control for all projects for which the SWCD provides technical assistance.
- Educate potential operators of the hydroseeder on proper operation and use.
- Inform other construction and conservation related organizations about the benefits and use of the Hydroseeder as a soil erosion reduction practice.

3.3

Beach Contamination Source Identification Program

The purpose of the Beach Contamination Source Identification Program is to identify potential sources of pollutants that may contaminate the beaches. The Door County Public Health Department has been monitoring 28 public beaches in Door County for contamination using *E. coli* as a contamination indicator since 2002. County-wide beach monitoring began in 2002 in response to an outbreak of gastrointestinal illness in swimmers that occurred from swimming at Nicolet Bay beach in Peninsula State Park. The Federal Beach Act also requires that all public beaches be monitored for contamination. Federal Beach Act funds have been used for monitoring beaches in the county.

The Soil and Water Conservation Department (SWCD) began looking for the sources of beach contamination at all 28 monitored beaches in response to county concern of identifying and abating beach contamination sources.

Status of the Beach Contamination Source Identification Program

The preliminary results from Door County's program, and results in many other coastal counties that have beach contamination source identification projects, show that the sources of beach contamination are localized within the immediate watershed of the individual beaches that are contaminated. SWCD has focused source identification work on establishing the different physical characteristics and ambient conditions at each of the 28 monitored beaches to determine the potential for contaminants to travel to and persist at each beach. The watershed, watershed land coverage/use, and surface water conveyance systems (streams and stormwater/runoff) were mapped. The beach morphology for each beach was determined including the beach slope on land and in water and substrate type. Ambient conditions at the beaches were also determined including, temperature, wave height, wind direction, rain quantities, bather loads, and bird populations.

The genetic identity of the *E. coli* contamination at 5 of the 28 beaches has been tested. *E. coli* concentrations were monitored during rainfall events at individual beaches to assist the county in determining which beaches should be closed based on rainfall, before the *E. coli* test results are in (18 hours for test results). SWCD is working with various local municipalities to take samples in the beach watershed and stormwater systems to determine where *E. coli* is coming from.

Recent years have also shown an increase in the green filamentous alga known as *cladophora*. Accumulations on public and private shorelines have become an increased issue with property owners, businesses, property values and the tourism industry of the county.

Goals of the Beach Contamination Source Identification Program

The overall goal of the program is to identify and abate sources of beach contamination. In Door County land use is directly connected to groundwater and beach water quality. Door County's highly fractured bedrock allows surface water to travel quickly through the groundwater system to the beach. The potential pollutants associated with various land uses are also transported to the near shore beach waters by stormwater pipes, paved runoff over paved surfaces, and streams. The solutions to the water quality and beach safety issues are dependent on identifying and abating land based pollutant sources in the entire watershed. Abatement of land based pollutant sources that contaminate near shore waters is essential to the ecological integrity and continuation of recreational swimming in lake water. Efforts with the Wisconsin DNR will continue to identify potential sources or activities resulting in increased populations of *cladophora*.

Goal: Increase the number of beaches where water samples are taken to determine the sources of *E. coli*.

Objectives:

- Collect water samples at all monitored beaches and determine the genetic identity of *E. coli* isolates
- Collect water samples in surface water conveyance systems that are in close proximity to monitored beaches to determine *E. coli* concentrations and identity.
- Continue collecting data on physical and ambient conditions at the monitored beaches

Goal: Increase public awareness of the connections between land use and near-shore water quality.

Objective:

- Continue to report preliminary results from the project in the form of written reports and presentations to county, town, village and city elected officials, administrators, beach/park managers, public works/utilities, sanitarians, the public health department, and the general public.

Goal: Work with local municipalities to abate beach contamination sources.

Objectives:

- Meet with municipalities to establish beach contamination source identification sampling methods and partnerships to fund water sampling for *E. coli* in surface water conveyance systems in the municipality's watershed.
- Establish beach contamination abatement plans with each municipality.

Goal: Continue to identify potential land based activities that contribute pollutants to near shore waters.

Objectives:

- Continue surveying shoreline watersheds for potential pollution sources (e.g. monitor septic systems, streams and stormwater systems within proximity to the shoreline).
- Continue work with the Wisconsin DNR to identify sources/activities leading to increases in *cladophora*

3.4

Well Abandonment Program

The well abandonment program, implemented by the SWCD, relies on staff contacts, DNR Water Quality Specialist reports, and volunteer reporting of unused wells or drillholes for proper sealing. Proper well abandonment involves properly sealing wells that are no longer in use to prevent any contaminants from using a well as a direct route to the groundwater supply. Many well drillers and licensed plumbers in the area are aware of the program and the incentive it provides. County cost-share money is used as an incentive for well owners by reducing the cost to the landowner by reimbursing the landowner a determined percentage of the eligible costs for abandonment. Over the programs eleven-year existence, 464 wells have been abandoned and \$164,839.33 in cost share money was allotted.

Status of Well Abandonment Program in Door County

One limitation to this approach is the cost-share incentive serving as a type of gratuity to those landowners that may, under other circumstances, have been required to abandon the well regardless of the program. In these cases, the purpose of the initiative of the cost-share program is not fully utilized. However, the program is known to the public and concerned residents who act as a type of watch group in assisting the SWCD efforts. In identifying potential wells to be abandoned, well drillers, plumbers and other contractors also encourage property owners to properly abandon their well without the concern of additional costs to their clients in situations where otherwise would have gone unabandoned. The Water Quality Specialists from the Department of Natural Resources have also assisted SWCD in identifying wells that need to be abandoned and wells that maybe eligible for cost sharing.

The voluntary implementation, although functional, tends to omit wells that are disregarded or lost from general lack of knowledge, development, property owners changing or uncooperative landowners. Increasing public awareness of the program importance and the incentives it will provide will be a higher program priority. Well abandonment program information is incorporated into all SWCD educational programs that address water quality. All SWCD Conservation Plans involve inspections of the land area for wells that should be abandoned. Those wells found which are immediate and apparent threats to the groundwater and have uncooperative owners are forwarded to the DNR safe drinking water specialist for required abandonment.

Goals of the Well Abandonment Program in Door County

The program described above provides groundwater quality, health and safety protection for users of Door County’s drinking water. The well abandonment program illustrates County’s initiative to protect its residents while providing a service to the public.

Goal: Groundwater protection through increasing the number of proper well abandonments.

Objectives:

- Continued implementation of the voluntary program with educational emphasis.
- Continue forwarding uncooperative owners of wells which are immediate and apparent threats to groundwater to DNR for required action.
- Maintain the current well abandonment rate and focus on increasing the number through public education and field observations.
- Work with Planning Department on proposal to incorporate a well abandonment requirement into the zoning ordinances.

3.5

Wellhead Zone of Contribution Protection Programs

Wellhead protection has become a crucial aspect of municipal planning in Wisconsin. Amendments to the federal Safe Drinking Water Act in 1986 incorporated wellhead protection programs. Wisconsin State Statute 160.001 establishes the goals to form the base of Wisconsin’s Wellhead Protection Program. The most significant natural resource issue facing the residents and visitors of Door County is a safe drinking water supply.

The aquifer providing most of Door County’s drinking water is made up of highly fractured Silurian dolomite. Vertical fractures as well as horizontal bedding planes provide the primary pathway for a relatively rapid flow of groundwater through this aquifer. The soils that overlie this bedrock are generally shallow and provide limited attenuation of pollutants in the surface water as it recharges the aquifer. This condition is exacerbated by the presence of karst features, which pertains to the dissolution of the bedrock to form conduits that allow surface water to flow directly to groundwater.

Door County’s groundwater resources are recharged from water that infiltrates through the land surface and not from waters of Lake Michigan or the bay of Green Bay. Therefore, activities on the land surface have a large impact on the groundwater quality of Door County.

The sensitivity of Door County’s aquifer has long since been documented. The risk to public health is of great concern. Wells in Door County have a high incidence of bacteria, nitrate and, in some portions of the county, lead. A required effort to protect the Zones of Contribution (ZOC) for municipal wells is a necessity to reduce the chance of contamination of Door County’s municipal water supplies.

3.5.1 City of Sturgeon Bay Wellhead Protection Plan

Historical evidence of well water contamination and degradation has shown the necessity for the protection of the City of Sturgeon Bay's aquifer. Nine of eleven municipal wells in the city have had bacterial contamination, six of which were abandoned. Currently, three of the five active wells require ozone-disinfecting treatment for bacterial contamination.

The Wisconsin Geological and Natural History Survey completed a study to research the boundaries of the Sturgeon Bay Municipal Wellhead Zone of Contribution (ZOC) in 1996 with funding and assistance from the Sturgeon Bay Utilities, the Wisconsin Department of Natural Resources, and the SWCD. This study delineated the land surface area where precipitation and surface waters infiltrate and contribute to the groundwater, which supply the five municipal wells providing the drinking water to the residences and businesses of Sturgeon Bay.

The study also determined the travel times of the groundwater from the point at which it was infiltrated until it reached any one of the five wells. Due to the unique fractured bedrock aquifer, maximum travel times were a remarkable 2 years with mean travel times of approximately 3 months. In comparison to sand and gravel aquifers, the city of Madison, Wisconsin may have mean travel times of 50 to 100's of years to its municipal wells. This comparison is evidence to one of the primary risks of groundwater pollution in Door County.

Status of the Sturgeon Bay Wellhead Protection Plan

The Door County Soil and Water Conservation Department, in cooperation with Sturgeon Bay Utilities, developed the Wellhead Protection Plan for Sturgeon Bay Utilities Municipal Wells in later winter of 2003. This plan was adopted by the Door County Board of Supervisors

One of the challenges of this topic is that the zone of contribution to the municipal wells extends well outside of the city limits. The area of the ZOC includes portions of the City of Sturgeon Bay and the Towns of Egg Harbor Sevastopol, Sturgeon Bay and Nasewaupée. Since the ZOC covers such a large land area and there are numerous types of land use practices in the ZOC, the wells for the City of Sturgeon Bay are extremely vulnerable to contamination.

Goals of the Surgeon Bay Wellhead Protection Plan

The Door County Soil and Water Conservation will continue to address resource needs within the zone of contribution for the City of Sturgeon Bay municipal wells. Inclusion of the ZOC in the Red River/Sturgeon Bay Priority Watershed Project allows for a vehicle to address resource needs as well as assurance of compliance with agricultural performance standards and prohibitions.

Goal: Protect the groundwater resources for the City of Sturgeon Bay municipal wells.

Objectives:

- Provide Information and Education to the public and municipalities about wellhead protection and the impact of activities within the ZOC.
- Address agricultural sources of nonpoint pollution through the Red River/Sturgeon Bay Priority Watershed with additional cost-sharing through Sturgeon Bay Utilities.
- Ensure compliance with standards and prohibitions for all agricultural operations.
- Continue to support the Door County Sanitarian Department with the Sanitary Survey effort within the ZOC.
- Continue representation on the Local Emergency Planning Committee to address spills within the ZOC.

3.5.2 Village of Sister Bay Wellhead Zone of Contribution Protection Program

The Village of Sister Bay began providing public water from groundwater in 1972. The village of Sister Bay’s municipal water distribution system currently consists of three wells. This system provides a water supply for the village of Sister Bay, as well as the Liberty Grove Sanitary District No.1 (LGSD No.1).

Robert E. Lee & Associates, Inc. performed a water study report for the village of Sister Bay in 1995. This study examined the history of Sister Bay’s water use and projected future use rates. Zones of contribution were delineated and found to include portions of the Village of Sister Bay and the Town of Liberty Grove. From this water study report, a Wellhead Protection Plan was formed for the village of Sister Bay.

Status of Protecting the Village of Sister Bay’s ZOC

The village of Sister Bay established a Zoning Ordinance in 1973 which includes requirements to promote and protect public health, control of building sites, control and prevention of water pollution and shore preservation. In addition, the village of Sister Bay has also passed a Wellhead Protection Ordinance in May 1997 to protect the portions of the ZOC’s which lie within the village limits for the two operating wells.

The LGSD No.1 is zoned in accordance with the Door County Zoning Ordinance. At the time of the formation of the proposed Wellhead Protection Plan in 1996, a resolution to the Town of Liberty Grove was proposed to encourage cooperation with future decisions concerning zoning to protect the community groundwater supply.

Goals to Protect the Village of Sister Bay’s ZOC

A wellhead protection challenge occurs for the Village of Sister Bay because the ZOC to the municipal wells extend outside of the city limits. It is necessary to achieve cooperation between County, Village and Town officials to implement the plan in the most efficient way to protect the drinking water supply of the Village. It is crucial to implement these management plans to ensure protection of the aquifer(s) that supply water to the village of Sister Bay and LGSD No.1.

Goal: Protect the drinking water supply for the Village of Sister Bay through cooperative implementation of the Sister Bay Wellhead Protection Plan.

Objectives:

- Continue to identify existing potential sources of contamination to minimize damage to the aquifer.
- Provide Information and Education to the public regarding wellhead protection.
- Implement a Wellhead Protection Plan for the Village of Sister Bay ZOC through cooperative efforts between County, Village and Town entities.

3.5.3 Village of Maplewood Wellhead Zone of Contribution Protection Program

The public water system for a portion of the unincorporated Village of Maplewood, which is administered by the Maplewood Sanitary District #1, provides a water supply to approximately 50 customers. The water supply demands of this system equate to approximately 5,000 gallons per day. This system consists of two wells that are cycled on and off line at 12-hour intervals. Information on these wells can be found in Table 3-3.

Table 3-1. Details of municipal wells within the Village of Maplewood limits.

Village Well #	Location	Total Depth (ft)	Pumping Capacity (gpm)	Comments
1	Cty H, west of Hwy 42	415	100	in service
2	Hwy 42, south boundary of the Village	435	110	in service

A zone of contribution has not been delineated for either of the two wells nor has a Wellhead Protection Plan been developed. It is as important for individuals to have a Wellhead Protection Plan in smaller water systems as it is in large municipal water systems.

Goal: Delineate ZOC and develop a Wellhead Protection Plan for the ZOC of the unincorporated Village of Maplewood public wells.

Objectives:

- Delineate Zones of Contribution and establish a proposed Wellhead Protection Plan to ensure protection of the aquifer for the Village of Maplewood public wells; when resources allow.
- Identify existing potential sources of contamination and form a contaminated spill reaction plan to minimize damage to the aquifer.
- Participate in the implementation of a Wellhead Protection Plan for the Maplewood Sanitary District #1 ZOC.

3.6

Technical Assistance to Landowners/Operators, Interested Groups, and other Governmental Units

3.6.1 General Resource Management Assistance to the Public

Assistance to the public is a significant service provided by the SWCD and an important tool for achieving proper resource management in Door County. Providing this technical assistance also represents a substantial allotment of available staff hours that are not readily attributable to a larger resource program effort.

Assistance to the public occurs in a myriad of forms. This assistance is not associated with specific program efforts, but addresses the resource needs of the general public. Some examples of public assistance are:

- Planning and design of practices.
- Advice to landowners with general resource concerns.
- Provide information from aerial photos, topographic maps, and soil maps.
- Referral to other agencies.

Technical Assistance to the public is a high priority and a valuable service provided by the SWCD that will be continued. It is important that the SWCD maintain a personnel resource base of diverse knowledge and expertise in natural resources to most efficiently serve the public in the role of technical assistance. Maintaining a resource network for referrals to other departments and agencies will also continue to be an important element of the technical assistance provided to the public. Technical assistance to the public will continue as SWCD resources are available and where the service will provide an environmental or conservation benefit.

3.6.2 Assistance to Other Municipalities

Assistance to municipalities occurs in the same manner as assistance to the public with the exception that it is addressing the needs of towns, villages, and cities. Some of the forms of assistance provided to municipalities have been:

- Survey and design of stormwater runoff management practices.
- Construction site erosion control.
- Culvert location.
- Advise on drainage issues.
- Provide technical opinion.

Technical assistance to municipalities will continue as SWCD resources are available and where the service will provide an environmental or conservation benefit. Long term commitments, such as inclusion in an ordinance with a specified role, to a municipality will require the approval of the LCC prior to entering into such an agreement. It will be a priority to continue assistance to municipalities.

3.6.3 Research Assistance to Universities and Other Agencies Pertaining to Door County’s Resources

The SWCD has provided research assistance to the Universities of Wisconsin, graduate research students, Wisconsin Geologic Survey, the DNR, and other agencies. Assistance has included basic local support, active participatory roles and joint proposals and implementation. The cooperation on such projects has fostered valuable working relationships with other natural resource professionals and has provided valuable information.

Research assistance will continue to be an important method of increasing the available resource information pertaining to Door County. The partnerships fostered by these associations will provide future opportunities for information exchange.

Goals: Continue technical assistance to landowners, interested groups, and other governmental units where service will provide a benefit to the land and water resources of Door County.

Continue research assistance to universities and other agencies where service will provide a benefit to the land and water resources of Door County.

Objectives:

- Continue providing technical assistance to the public.
- Continue providing technical assistance to other municipalities.
- Continue providing research assistance to universities and other agencies.

3.7

County Water Pollution Abatement Cost-share Program

Adopted by Door County in 1980, the Water Pollution Abatement Cost-Sharing Program Policy was designed to provide cost-share funding to landowners toward the cost of installing practices designed to abate water pollution. County cost-share funds may also be used for other SWCD conservation projects with approval from the LCC.

Funding from this program may also be used to piggyback cost-share monies from other sources to reduce landowner project costs. In addition, SWCD cost-share funding may also be used to replace state funds when limitations on state funding sources occur.

The County Water Pollution Abatement Cost-share Program is funded through the Door County budget with occasional funding provided through grants for specific projects.

Upon LCC approval of applications, the SWCD provides technical assistance in developing a water pollution abatement plan, advises the recipient of all cost-share options available, and inspects the installation of projects to insure compliance.

To be eligible for the program, there must be a decided probability that the proposed project will significantly reduce existing or potential water pollution. The project must

also be of an enduring nature with cost-share recipients agreeing to maintain and operate the practice for a minimum of ten years. Failure to follow the agreement to maintain the prescribed practice may require the recipient of funds to repay all cost-sharing funds and jeopardize their eligibility for future SWCD, state, or federal cost-sharing and/or technical assistance.

Priority for funding is currently on a voluntary basis, where landowners that first seek funding receive earliest funding. Revision of this policy may be necessary as some landowners may be mandated by future regulation. As a result, mandatory participants may be given priority status.

Based on the anticipation of future regulations, it is also anticipated that mandatory landowner participation will increase. Based on the anticipated increase of participation, it is presumptive that there will be a greater demand on the resources provided by the Water Pollution Abatement Cost-Sharing Program.

Goal: Continue to provide funding to landowners through the County Water Pollution Abatement Cost-share Program.

Objectives:

- Fund projects to reduce existing or potential water pollution.
- Provide piggyback cost-share monies to reduce project costs to landowners.
- Provide cost-share funding to replace state funding when limitations occur.
- Revise policy, as necessary, for priority status of landowners mandated by regulation.
- Anticipate increased demand on the resources of the program due to future regulations.

3.8

Other SWCD Programs

3.8.1 Tree Sales and Planting

The SWCD annually provides nursery stock for purchase by the general public. Orders are accepted through the fall and winter for distribution in spring. Various species are sold depending on the function the landowner is focusing. There are no restrictions on the use of the plants by the purchaser. Some of the species are offered as potted stock, whereas others are offered as bare root stock. In addition, sales of tree tube protectors, to limit damage from animals and weather, and vegetation mats for weed control can be purchased.

In addition to the small order tree sales, the SWCD organizes the delivery of the large scale orders from the state nursery to Door County. Rental of an herbicide backpack sprayer or tree planters are also made available to the purchaser due to the large amounts often ordered. The SWCD tree sale provides a service not available from the DNR Nursery program that requires large orders (1000+) with restricted uses. In 2005, small sale orders included 17 different tree species and 3 native seed mixex being offered where 142 orders were placed and 5,363 trees/shrubs were distributed. The DNR sale

addresses a large-scale need and from 2001 through 2005 there was an average of 70 orders and 292,000 trees per year.

Status of Tree Sales and Planting Program

Historically, the SWCD and DNR tree programs have been independent and strong programs for private lands. In recent years, both programs have been driven by a high demand for nursery stock resulting from the Conservation Reserve Program (CRP). Prior to the CRP, the SWCD maintained a large and successful tree/shrub program. Trends in the tree program point toward forest plantings containing more diverse species mixtures and wildlife habitat plantings that incorporate trees and shrubs as a component of an overall landscape design. The addition of seed mixtures of native plants has also provided an option for landowners to diversify their planting in an environmentally sound fashion.

Goal of the Tree Sales and Planting Program

The SWCD will continue to provide landowner assistance for both large-scale and small-scale plantings. As the needs of those enrolled in the CRP diminish, other program opportunities will be identified. A switch in emphasis from large to smaller scale plantings will be a goal. Incorporating other efforts such as directing seeding in addition to planting stock in any quantity is a proposed effort. Small sale goals are to increase the options for those landowners by providing a diverse native stock within the year and from year to year.

Goal: Increase efforts to satisfy demand of large and small order tree/shrub plantings.

Objectives:

- Identify other programs to incorporate as current programs change.
- Distribute public contact responsibilities based on purchasers' objective.
- Provide more options to public for small and large-scale orders.

3.8.2 County Buffer Program

The Door County SWCD offers a Buffer Program as an incentive for landowners to install vegetative buffers along surface water flow channels, including any channels discharging into sinkholes or crevices.

Buffers benefit water quality by removing pollutants in two ways: by slowing the speed of runoff water and soaking up runoff water into the soil. Buffers benefit water quality by removing nutrients, organic matter and pesticides that enter the water.

Buffers offer many of the same wildlife habitat benefits as wildlife scrapes or ponds. As a transition zone between low moist land and open upland, buffered areas often contain diverse habitat conditions that wetland and upland wildlife need for food, water and shelter. Waterfowl will begin to frequent stream corridors and nest in the natural cover. Deer will bed down in the thicket and birds will nest along grassy spaces. Protecting streams with buffers can also result in increased fish populations. Once sediment is reduced, the stream can begin cleansing itself.

Status of the Door County Buffer Program

The Door County Buffer Program was designed to give the property owner flexibility by choosing one option out of the three different levels. Each option gives the property owner an upfront incentive payment, plus a 70% cost-share rate (reimbursement) on the installation of the buffer.

Below is a breakdown of the incentives:

Design option	Upfront Payment	Installation Cost-sharing	Maintenance
20 ft. width	\$1,000/acre	70%	10 years
35 ft. width	\$1,250/acre	70%	10 years
Design according to Natural Resource Conservation Service Filter Strip Standard 393	\$1,500/acre	70%	15 years

This program offers more flexibility by stating that the designated buffer widths may be exceeded and remain eligible for cost sharing to provide straight boundaries to otherwise meandering areas for ease of management.

Goals of the Door County Buffer Program

The Door County Soil and Water Conservation Department will continue to implement its buffer program to encourage installation of vegetative buffers in sensitive areas to reduce the negative impacts of sedimentation and nutrients to Door County’s water quality. The SWCD will also continue to address the needs of voluntary landowners as well as approach landowners in priority areas with features that may pose a threat to the resources of Door County.

Goal: Protect the ground and surface water resources of Door County through installation of vegetative buffers in sensitive areas.

Objectives:

- Assist voluntary landowners that qualify for the Door County Buffer Program.
- Approach landowners with land that contains potential sources of contamination to ground or surface waters.

3.8.3 Conservation Reserve Enhancement Program

The Conservation Reserve Enhancement Program (CREP) is a voluntary conservation program. It is a joint Federal-state-county and producer partnership designed to conserve soil, to improve and protect water quality, and to create wildlife habitat by restoring natural plant communities on marginal farmland. It combines Federal, state and local resources to target specific state conservation and environmental objectives under the authority of the USDA’s Conservation Reserve Program (CRP). The voluntary nature of this program allows eligible producers in CREP eligible counties to choose a 15-year

conservation agreement or a perpetual easement for which they receive a payment from USDA and the state.

Landowners eligible for the program can receive from \$700 to \$2000 per acre enrolling in CREP. By installing buffer strips, forest buffers, grassed waterways, or by restoring wetlands, they may receive up-front signing payments from both the U.S. Department of Agriculture and from the State of Wisconsin annual payments for each acre enrolled – including annual rental payments, annual incentive payments, and annual maintenance payments cost-sharing of 90% from the USDA and 20% from the State of Wisconsin for eligible installation costs

Status of the Conservation Reserve Enhancement Program in Door County

Since 2001, landowners in the Towns of Brussels, Forestville, and Clay Banks have been eligible to enroll agricultural lands in the Conservation Reserve Enhancement Program. Enrollment in the program has been lower than planned: twenty-four 15-year agreements and four perpetual easements. Current CREP incentives have failed to encourage desired participation in the program, and additional incentives have been proposed in an attempt to increase participation.

Goals of the Conservation Reserve Enhancement Program

The SWCD is seeking additional Department of Natural Resources funding to provide additional incentives to fund additional CREP buffer acres. It is predicted that these additional DNR will facilitate a strong renewed emphasis placed on promoting better, wider and longer-term buffers. An additional incentive would be offered to the landowner based on the total buffer acres being enrolled in CREP; payment for total acreage promotes buffering as much linear feet as possible.

Landowners would be offered additional incentives for planting native vegetation and/or a combination of trees and grasses in the CREP buffer area. Native vegetation and/or a combination of plant types are ways of maximizing the buffer benefits. For doing one or both, landowners will receive cost sharing with the DNR funds. At the time of this plan, current practice requirements do not allow installation of an area of trees then an are of grass. This option is still being explored.

Overall, DNR funds would not only be used to increase the number, linear length, and overall acreage of buffers in Door County, but will also encourage more environmentally beneficial buffers.

Door County will also continue efforts to expand the areas that are eligible to participate in the CREP Program. Efforts are ongoing to add additional townships to achieve wider coverage and to be able to increase the benefits of the CREP Program to suite Door County's resource needs.

Goal: Conserve soil, improve and protect water quality and create wildlife habitat by restoring natural plant communities on marginal farmland.

Objectives:

- Continue to promote buffers in sensitive areas through the CREP Program.
- Seek additional funding for better incentives to encourage maximum benefits from buffers.
- Continue to explore the possibility of expanding the eligible CREP area for Door County.

3.8.4 Wildlife Damage Abatement and Claims Program/Nuisance Animal Technical Assistance

The wildlife damage abatement and claims program (WDACP) is a state program administered through the SWCD. The SWCD assist landowners that report on a voluntary basis crop damage and/or loss from four species: goose, deer, bear and turkey. The assistance provided to the landowner is offered through both crop damage abatement and processing of wildlife damage claims. Preventing wildlife damage is the focus of the program. Assisting landowners with new information and techniques for abatement and administering the abatement plans consumes the largest measure of tasks. When abatement practices are not effective, an assessment can be performed to determine the financial estimate of crop loss. The landowner/operator is then eligible to be compensated for the loss. Approval is based upon available state funds and landowner compliance with their abatement plan.

For wildlife species that are ineligible under the program, information and education on the species and how to possibly remedy the landowners loss from them are given through other technical advice/assistance. Financial assistance is not available. The most common of the ineligible species in Door County are raccoon and gulls.

Status of the Wildlife Damage and Abatement Claims Program

Nearly 90% of time in the program is devoted to damage caused by the large deer population in the county. An increasing number of land owners are also reporting turkey damage. There have not been any well documented cases of extensive turkey damage yet in the program. The success of the venison donation portion of the program has continued to increase over the past five years. The SWCD also works closely with the Conservation Congress members to include options on all aspects of wildlife control and other issues.

Goals of the Wildlife Damage and Abatement Claims Program

The agricultural and ecological damage that some species can cause is a concern for the county. Other assistance through the program will be enhanced by working in conjunction with other cooperating agency representatives to inform more landowners of the options available if damage occurs.

Goal: Expand outreach of program to assist the Door County crop owners in addressing wildlife damage issues.

Objectives:

- Increase assistance provided by the program through increased landowner/operator contact efforts.
- Work with other agencies on program awareness.
- Assist landowners with damage from ineligible species under the program.
- Assist other program pertaining to wildlife damage and management.

3.8.5 Aggressive Invasive Non-Indigenous Species Control

Exotic species, though familiar in our landscape, are a natural resource concern due to the detrimental effects they can impose on both native fauna and flora. Many invasive species take away habitat from native species and may decrease native biodiversity. Controlling invasive species is especially important due to the numerous endangered, threatened, special concern plant species in the region.

Status of the Invasive Non-Indigenous Species Control Program

The SWCD works with The Nature Conservancy, Door County Land Trust, DNR and other entities on developing a program to address the priority concerns/species in the county. SWCD assists in coordinating volunteer groups that map species locations and work on control efforts.

Biological control species, the beetle *Galerucella*, were placed in multiple areas around the county to control Purple Loosestrife. Other biological controls may be possible, but further research and information must be collected.

Goals of the Invasive Non-Indigenous Species Control Program

The overall program will focus on control rather than eradication of certain species including, but not be limited to, Purple Loosestrife, Garlic Mustard, Japanese knot weed, and Eurasian water milfoil. Another major goal of this program is to secure funds for control programs and volunteer coordination throughout the county.

Goal: Work with resource experts and professional agencies to design an exotic control effort, biological and conventional.

Objectives:

- Contact various agencies and independent researchers to gather resource knowledge.
- Continue efforts to locate and control priority invasive species.

Goal: Secure funds for control programs and volunteer coordination throughout the county.

Objective:

- Utilize funding sources from the DNR Aquatic Invasive Species Grants Program and other various funding sources to fund various control projects and overall program coordination.

3.8.6 Lead & Arsenic Contaminated Sites

Since the late 1800s, Door County orchards have been major producers of apples and cherries. During peak production in the 1940s and 1950s, the area consisted of approximately 10,000 acres of cherry orchards and 2,000 acres of apple orchards. In the last several decades, orchard acreage, and likewise processing operations, has substantially decreased.

In the early 1900s until the 1940s, lead arsenate was the primary insecticide used. Starting in the 1940s lead arsenate use was alternated with the use of DDT. The widespread use of lead arsenate ended by 1960; but, it was still sporadically applied until the early 1970s. During its period of use, lead arsenate was brought to mixing stations in powder form and mixed with water to produce a lead arsenate solution for spray application on the fruit trees in the orchard.

Concerns now exist regarding elevated levels of lead and arsenic in soils at abandoned mixing sites, orchards, and fruit processing plant wastewater discharge points. Lead and arsenic levels are highest at the mixing sites and the processing plant wastewater discharge points, which comprise smaller areas resulting in higher concentrations. Spillage that occurred at these sites also contributes to elevated concentration in the soils. Concentrations in orchards are lower but the larger area creates a more widespread contamination problem. Wastewater drainage areas also pose a contamination threat because of lead and arsenic residue that remained on the cherries as they were processed at the plant. Contamination at the various sites and the orchards poses both a threat to drinking water supplies and a direct contact concern.

Status of Lead and Arsenic Contaminated Sites in Door County

Door County has been engaged in a continued effort to remediate contaminated lead and arsenic sites. Some of the more significant, but a small percentage of the total number, abandoned mixing sites were remediated in the late 1980s and early 1990s in a cooperative effort between the state of Wisconsin and Door County.

The current role of the SWCD is to advise property sellers and buyers, realtors, and financial institutions on the location of contaminated sites and provide technical assistance with respect to remediation and potential health concerns.

Chapter ATCP 35 codifies the Agricultural Chemical Cleanup Program (ACCP) created under Section 94.73 Wisconsin Statutes. Although ATCP 35 does not preclude historic spills, there is no precedence for cleanup of historic spills in the program. SWCD inquiries regarding potential program participation have previously been denied. However, more recent inquiries indicate willingness on behalf of DATCP to deem the use of the ACCP for lead and arsenic remediation as eligible.

Goals of Lead and Arsenic Contaminated Sites in Door County

The SWCD will continue to seek approval of funding for clean up of mixing sites and fruit processing plant wastewater discharge points. If approved, eligible costs will

include: planning and implementing the clean up by qualified professional services, costs of soil and groundwater sampling, excavation costs (including back filling and contouring), and costs to collect, handle, transport, treat/dispose of contaminate soil or groundwater.

In orchard areas, the SWCD will continue to provide technical assistance in the form of site identification for interested parties. Maps of orchard locations are available from the SWCD.

Goal: Protect the groundwater of Door County as well as the health of it’s populace from the adverse effects of contaminated historic orchard sites.

Objectives:

- Continue to seek funding for remediation of historic lead arsenic mixing sites.
- Continue to provide site identification of orchard areas to interested parties.
- If the DATCP funding source is available, the SWCD will make an effort to work with landowners toward remediation of identified sites.

3.8.7 Land Information Modernization Program

The SWCD has representation on the Door County Land Information Technical Committee (LITC) which has the responsibility to develop and maintain an integrated Geographic Information System for Door County. The LITC has a membership including representatives from nine County departments. The City of Sturgeon Bay and Sturgeon Bay Utilities also provide non-committee member representation and participation in the land information modernization effort.

The Land Information Modernization Program is long-term County effort, which began a decade ago and will continue for decades to come. It is a process with many organizational and product goals some which are, and will be, an ongoing program responsibility of the SWCD. The County land information modernization efforts are specified in current Land Information Modernization Plan available at <http://map.co.door.wi.us>.

Goal: Continued participation in the Door County Land Information Modernization Program as a LITC member and implement the SWCD product goals.

Objectives:

- Continued participation in the Door County Land Information Modernization Program as LITC member.
- Complete SWCD Pilot project goals as specified in the Modernization Plan.
- Complete SWCD Countywide goals as specified in the Modernization Plan.
- Perform custodial responsibilities for SWCD Global Information System layers (i.e. soils, geology, etc) as specified in the Modernization Plan

3.9

Information and Education

The purpose of the information and education (I&E) component of the department is to provide the general public, schools, and various organizations with current conservation information and education on conservation programs in the department as well as current conservation issues in the county. The I&E strategy is to integrate SWCD efforts with the efforts of the UW-Extension office on a given natural resource goal or need.

Status of the I&E Program in Door County

Currently, the efforts of the SWCD on I&E projects include presentations, training sessions, public hearings, news releases, website information, and publications on various conservation topics including: groundwater quality and protection, geology and soils, stormwater pollutant reduction, stream and lake water quality monitoring, beach contamination issues, watershed mapping, Best Management Practices in watersheds, wetland protections, invasive species identification and control, nutrient management, Farm Land Preservation, Standards and Prohibition Ordinance compliance, and general water quality conservation.

Goals and Objectives of the I&E Program in Door County

The overall goals of the I&E program is to increase the awareness of county residents and visitors on current conservation issues and programs, and to increase their participation in these programs.

Goal: Maintain and increase the number of public presentations on natural resource conservation issues and programs.

Objectives:

- Devote dedicated SWCD staff effort to facilitating an Information and Education program and working relationship with other agencies or public groups.
- Offer conservation education programs to school systems on a seasonal basis.

Goal: Maintain and increase the number of different forms of communication, including publications, website information, presentations, public hearings, and training sessions on natural resource conservation issues and programs.

Objectives:

- Informational mailings and website updates to reach the mass public on seasonal conservation issues (i.e. recharge of groundwater, best times for fertilizing, tillage and residue management...).

Goal: Increase the number of participants in conservation programs and efforts in the county.

Objectives:

- Cooperative efforts with new programs of the UW Extension for education on conservation and environmental protection to landowners.
- Coordinate with the school science teachers and Ecology Clubs to recruit student volunteers for conservation projects.
- Maintain and increase the number of volunteer program for monitoring of surface water resources to be facilitated by the SWCD, in conjunction with the DNR.
- Continue to offer workshops and training sessions for general public on landowner issues (nutrient management, invasive species control, surface and ground water monitoring).
- Offer training sessions on reduction of stormwater runoff in urban areas (e.g. rain gardens, stormwater retention,).

Part 4

Goals, Program Assessment and Plan Updates of the LWRMP

CONTENTS

- 4.1 Introduction
- 4.2 Resource Goals
- 4.3 Program Goals
- 4.4 Progress Assessment
- 4.5 Program Updates

4.1

Introduction

The Door County Land and Water Resource Management Plan (LWRMP) was developed to address concerns for the protection of the natural resources of the county. The direction taken by the SWCD in addressing these concerns will be through a series of goals, long and short-term, that will be implemented through existing and future programs as well as through assistance to both voluntary and regulated landowners. This implementation will primarily involve the execution of practices and conservation measures that will provide the greatest benefit to the land and water resources of Door County.

4.2

Resource Goals

The resource goals of the Door County LWRMP are broad topics that reflect the land and water resource needs of the county. A prioritized list of these needs and associated goals follows:

- Groundwater protection and improvement
Goal: To improve and maintain the drinking water supply for Door County to acceptable State standards.
- Impacts of development on natural resources
Goal: Minimize the adverse effects of fragmentation, urban sprawl, construction site erosion, increased impervious areas and other development pressures on Door County's land and water resources.
- Human waste management
Goal: Reduce the risks to water quality through proper repair/replacement of failing septic systems.

- Animal waste management
Goal: Reduce the risks to water quality through proper storage, handling and disposal of animal waste.
- Surface water protection
Goal: Protect and improve Door County’s surface water resources from nonpoint source pollution and maintain acceptable State surface water quality standards.
- Stormwater management
Goal: Reduce the risk to Door County’s water quality and prevent flooding through proper stormwater runoff management.
- Soil Erosion Control; agricultural and construction site
Goal: Reduce soil erosion rates on agricultural fields through proper soil conservation practices.
Goal: Reduce soil erosion from construction sites through proper soil erosion control measures.
- Non-metallic mine reclamation
Goal: Reduce the impacts to Door County’s water quality and other natural resources from nonmetallic mines through proper operation and/or reclamation procedures.
- Invasive species
Goal: Protect the habitat and biodiversity of Door County’s native fauna and flora through the control of aggressive, invasive non-indigenous species.

Because it is often not possible to link a specific cause and effect for concerns relating to Door County’s resource needs, it is the intent of the SWCD to use the best judgement, most current technology and technical assistance available to install as many practices and conservation measures as possible to remediate/protect the county’s land and water resources. An example of the difficulty of specific cause and effect would be an attempt to determine the specific pollutant source location for a specific contaminated well.

4.3

Program Goals

The program goals presented in the LWRMP are specific tasks that will serve as vehicles necessary for working toward the overall goals necessary to protect Door County’s land and water resources. Some of the goals, and their corresponding objectives, do not illustrate specific strategies (e.g. adoption of ordinances, education efforts) but do signify the need for such actions. The programs and their associated activities can be found in the work plan in Part 5 of this document organized by resource goal.

Upper Door Priority Watershed (3.1.2)

Implement water quality and soil erosion goals to comply with statewide standards and prohibitions and continue proper resource management by landowners during and after prescribed operation and maintenance periods. These goals will be approached through

continued resource management during and after operation and maintenance periods. This will include annual visits to insure compliance as well as continued technical assistance to address landowner's resources needs. These goals will also be addressed through promotion of pollutant and erosion-reducing practices.

Red River/Sturgeon Bay Priority Watershed (3.1.3)

Protect water quality and reduce soil erosion through implementation of watershed goals and compliance with statewide standards and prohibitions. This goal will be approached through continued technical assistance and cost sharing to landowners to install practices complying with watershed goals and statewide standards and prohibitions.

Farmland Preservation Program (3.1.4)

Reduce soil erosion, urban sprawl and fragmentation through the preservation of farmland. This will be achieved through the promotion of agricultural use on agricultural land and compliance with standards and prohibitions through the program standards. Updating the program to accommodate state program revisions and revisiting landowners to update conservation plans will also ensure consistent program goals and resource goals.

Nutrient Management Program (3.1.5)

Protect water resources by reducing nonpoint pollution caused by improper nutrient & pest management. Increasing participation in the program as well as eliminating winter spreading of manure in high hazard or environmentally sensitive areas will approach this goal. A major part of this goal will also be education to landowners to the benefits of nutrient management and to develop their own nutrient management plans.

Chapter NR 243 Program (3.1.6)

Protect Door County's water quality through proper animal waste management within the capabilities of the NR 243 Program. This goal will be approached through technical assistance to landowners that receive NODs, those required to comply with WPDES permits and on issues addressed by revisions to the NR 243 program. Educating the public to prevent water quality issues before remedial action is required will be an integral part of this goal. Assistance to the DNR and the DATCP will continue as well as ensuring DNR and DATCP staffs are cognizant of Door County resource needs.

Targeted Runoff Management Program (3.1.7)

Protect Door County's water quality through implementation of standards and prohibitions in critical areas approached through the TRM Program. The SWCD will continue to utilize the TRM Program to secure funding to address water quality issues as well as provide technical assistance to implement appropriate BMPs.

Agricultural Performance Standards and Prohibitions (Identification of Priority Farms)(3.1.8 & 3.1.9)

Implement the agricultural performance standards and prohibitions to identify Priority Farms and meet Door County's land and water resource needs. A four-point, simultaneous approach will be used to implement the statewide performance standards and prohibitions through Chapter 23, Door County Code. This approach will give

priority to voluntary landowners, landowners required to participate, landowners within the Red River/Sturgeon Bay Priority Watershed, and landowners approached through geographic prioritization throughout Door County. Implementation will include inventory, tracking and notification of all SWCD findings. Chapter 23 also requires landowners to acquire a permit for all animal waste storage and transfer activities. This requirement assures that all construction and repairs will meet the requirements of standards and prohibitions.

Adoption of Ordinances (3.1.10)

Develop ordinance(s) compliment existing ordinances and to adequately address Door County’s natural resources from the adverse effects of nonpoint source pollution. Door County will explore a local siting ordinance to provide guidance in the locating of large agricultural facilities.

Stormwater Runoff Management and Construction Site Erosion Control (3.2.2)

The SWCD will institute cooperative efforts between agencies to more clearly define specific organizational roles and to implement programs to establish more comprehensive stormwater runoff and construction site erosion control programs. Education efforts will include informing developers, builders, realtors, public officials, and the general public about the impact of construction site erosion on soil loss, degradation of water quality and other environmental damage as well as updating developers, builders, and inspectors on erosion control requirements and BMPs.

Village of Ephraim Stormwater/Construction Site Erosion Control Ordinance (3.2.3)

Continue efforts with the Village of Ephraim in assisting the review of construction site plans and aid in the revision and update of the Village of Ephraim Stormwater/Construction Site Erosion Control Ordinance. The efforts of this goal will be approached through continued review of construction site stormwater and erosion control plans.

Nonmetallic Mining Controls and Reclamation (3.2.4)

The Door County Soil and Water Conservation Department will continue to work with mine operators on plan approval, modifications and compliance checks to ensure reclamation activities are being carried out as required in Chapter 36, Door County Code, to reduce impacts to Door County’s natural resources. Verifying the necessary financial assurance will also be important, as it is imperative to secure resources for satisfactory reclamation in the future.

Soil Erosion Control on County Department Projects (3.2.5)

Proper erosion control measures will be performed, in a timely fashion, on all land altering projects completed by County departments. The objectives associated with this goal include promotion of proper erosion control with the Highway Department, Parks Department, SWCD, and other associated organizations that perform land-disturbing activities. Efforts will also include education to construction and conservation related organizations about the benefits of the hydroseeder as a soil reduction practice as well as education on its proper operation.

Beach Contamination Source Identification Program (3.3)

The primary goal of this program is protection of surface water resources through identification and abatement of sources of beach contamination. This goal will be approached through increasing the number of beaches for sampling, increasing public awareness of land use and its impact to water quality and a continued effort to identify land-based activities and potential abatement of negative impacts. Work will also continue with the DNR to identify sources and activities contributing to increased populations of *cladophora*.

Well Abandonment Program (3.4)

Continue to protect groundwater resources through increasing the number of properly abandoned wells. This goal will be achieved through continued implementation of the voluntary program as well as emphasizing education of proper well abandonment. Efforts will also be made to forward uncooperative owners of wells that present an immediate threat to groundwater quality to the DNR. In addition, the SWCD will work with the planning department on a proposal to include well abandonment requirements in the County Zoning Ordinance.

City of Sturgeon Bay Wellhead Protection Program (3.5.1)

The Door County Soil and Water Conservation will continue to address water quality resource needs within the zone of contribution for the City of Sturgeon Bay municipal wells through the Red River/Sturgeon Bay Priority Watershed Project and implementation of agricultural performance standards and prohibitions. Information and Education activities will be crucial to teach landowners about the impact of activities within the ZOC.

Village of Sister Bay Wellhead Zone of Contribution (ZOC) Protection Program (3.5.2)

A cooperative effort between County, Village and Town representatives to implement the Wellhead Protection Plan for the ZOC of the Village of Sister Bay municipal wells will be necessary to address water quality concerns. Objectives will also include an effort to identify potential sources of contamination and a continued effort to provide information and education to the public regarding the impacts of land use to the drinking water supply for Sister Bay.

Village of Maplewood Wellhead Zone of Contribution (ZOC) Protection Program (3.5.3)

Delineate ZOC and develop a Wellhead Protection Plan for the Maplewood Sanitary District #1 public supply wells as resources allow. This goal will contribute to groundwater quality by establishing a process between County, Township, and Sanitary District officials to delineate the ZOC and develop a Wellhead Protection Plan to protect the public wells for the Village of Maplewood. With appropriate resource, efforts will also include identification of potential sources of contamination and development of a contaminated spill reaction plan.

Technical Assistance to Landowners/Operators, Interested Groups, and Other Governmental Units (3.6)

Continue technical and research assistance to landowners, interested groups, other governmental units, and universities where the service will provide a benefit to the land and water resources of Door County. This goal will be implemented by continued assistance to the public, municipalities, universities, and other agencies.

County Water Pollution Abatement Cost-share Program (3.7)

Continue to provide funding to landowners through the County Water Pollution Abatement Cost-share program. The objectives of this goal will be to provide funding for projects designed to reduce existing or potential water pollution as well as piggyback cost-share monies to reduce project costs and replace state funding when cost-share limitations occur. Revisions of the policy will be necessary to provide priority status to landowners mandated to participate through regulation. An additional consideration is that due to future regulations, it is anticipated that there will be a greater demand on the resources of the program, this will require future evaluation of the program and its resources.

Tree Sales and Planting (3.8.1)

Increase efforts to satisfy the demand of large and small order tree/shrub plantings. This goal will be approached through identification of other programs to incorporate as current programs change as well as distribution of public contact responsibilities based on purchasers objective and provide more options to the public for small- and large-scale orders.

County Buffer Program (3.8.2)

Continue to encourage installation of vegetative buffers in sensitive areas to reduce the negative impacts of sedimentation and nutrients to Door County's water quality. The SWCD will also continue to address the needs of voluntary landowners as well as approach landowners in priority areas with features that may pose a threat to the resources of Door County.

Conservation Reserve Enhancement Program (3.8.3)

Pursue additional funding to offer increased incentives to for planting native vegetation and/or a combination of trees and grasses and to encourage an increase in the number, linear length, and overall acreage of buffers in Door County. Efforts will also continue to add additional townships to increase the benefits of the CREP Program to suit Door County's resource needs.

Wildlife Damage and Abatement Claims Program/Nuisance Animal Technical Assistance (3.8.4)

Expand the outreach of the program to assist the Door County populace in addressing wildlife damage issues. This goal will be achieved through increasing assistance to the public through increased landowner contacts as well as working with other agencies to increase program awareness. Program assistance will also grow through assistance to landowners with damage from species that are ineligible under the program and assistance to other programs pertaining to wildlife damage and management.

Aggressive Invasive Non-Indigenous Species Control (3.8.5)

Work with resource expert and professional agencies to design an exotic species control effort, biological and conventional, to be coordinated by the SWCD. The objectives of this goal will include contacting appropriate agencies and independent researchers to gather resource knowledge. The effort to control priority invasive species will remain a matter of importance for the SWCD.

Lead and Arsenic Contaminated Sites (3.8.6)

Protect the groundwater of Door County as well as the health of it's populace from the adverse effects of contaminated historic orchard and mixing sites. The objectives of this goal will be to continue site identification of orchard area for interested parties as well as continue to seek funding for remediation of historic lead arsenic mixing sites. If a funding source is identified, the SWCD will make an effort to work with landowners toward remediation of identified sites.

Land Information Modernization Program (3.8.7)

Continued participation in the Door County Land Information Modernization Program as a LITC member and implement the SWCD product goals. This goal will be accomplished through continued participation as a LITC member as well as completion of the SWCD Pilot and countywide goals specified in the Modernization Plan. It will also be necessary to perform custodial responsibilities for SWCD Global Information System layers (i.e. soils, geology, etc) as specified in the Modernization Plan.

Information and Education (3.9)

Create/renew information and education as an on-going effort within the SWCD. This will be accomplished through the devotion of dedicated SWCD staff to facilitate an Information and Education program and a working relationship with other agencies or public groups. Efforts will also be focused toward cooperative efforts with new programs of the UW-Extension for education on conservation and environmental protection to landowners. In addition, informational mailings will be utilized to reach the public on seasonal issues and time will be allotted for interaction with the public to provide a better understanding of the resources of Door County.

4.4**Progress Assessment**

A progress assessment of the Land and Water Resource Management Plan will be implemented by determining the success of the program goals and accomplishments. Short-term assessment of progress will be an annual assessment of program goals while long-term assessments will be more comprehensive as there are program updates as well as revisions to the Land and Water Resource Management Plan. Because program accomplishments do not always lend themselves to specific, measurable results, there will be key points addressed in each program goal that the SWCD will use to measure each ones success. In many cases, the SWCD will measure accomplishments in a specific program with respect to completing the tasks for 100% of the goal. Each year, an evaluation of positive progress will be made. For example, positive results that can be

shown for installation of best management practices which represent proven, accepted technology for pollution abatement will illustrate progress toward a goal of addressing all activities with potential to impact a given natural resource. The annual report required by DATCP will be completed each year and will help to serve as a guide for assessment of progress. The following is a list of programs and the key points that will be used by the SWCD to assess the progress of long and short-term goals.

Upper Door Priority Watershed (3.1.2)

Short-term:

- ◆ Operation and Maintenance compliance checks.
- ◆ Contracts for erosion-reducing practices (Nutrient Management, High Residue Management, Cover Cropping).

Long-term:

- ◆ Implementation of agricultural performance standards within prioritized areas and high priority areas.

Red River/Sturgeon Bay Priority Watershed (3.1.3)

Short-term:

- ◆ Contracts for Best Management Practices addressing soil and water quality concerns.

Long-term:

- ◆ Assurance of compliance with standards and prohibitions for projects within the watershed.

Farmland Preservation Program (3.1.4)

Short-term:

- ◆ Contracts for landowners enrolled in program.
- ◆ Compliance checks of participants in the program.
- ◆ Compliance with participants in Clay Banks with revised soil and water conservation standards.

Long-term:

- ◆ Update of all participants for compliance with revised soil and water conservation standards.

Nutrient and Pest Management Program (3.1.5)

Short-term:

- ◆ Increase in participation in the program.

Long-term:

- ◆ Landowners developing their own plans.
- ◆ Elimination of winter spreading of manure in high hazard or environmentally sensitive areas.

Chapter NR 243 Program (3.1.6)

Short-term:

- ◆ NODs in Door County addressed and resolved.

Long-term:

- ◆ DNR and DATCP staff cognizant of local resource needs.

Targeted Runoff Management Program (3.1.7)

Short-term:

- ◆ Assist landowners with grant applications to install BMPs through the TRM Program.

Long-term:

- ◆ Address priority areas located through prioritized implementation of standards and prohibition certification process.

Agricultural Performance Standards and Prohibitions (Identification of Priority Farms) (3.1.8, 3.1.9)

Short-term:

- ◆ Landowners assisted through four-point implementation strategy.
- ◆ Administer Inventory, Tracking and Notification/Enforcement process.

Long-term:

- ◆ Landowners assisted through Prioritized Implementation effort.
- ◆ Review and issue permits for construction and repair of animal waste storage and transfer.
- ◆ Revise Chapter 23 as necessary to meet the resource needs of Door County.
- ◆ Maintain Tracking System for compliance/non-compliance.

Adoption of Ordinances (3.1.10)

Short-term:

- ◆ Monitor adequacy of Chapter 23, Door County Code to address Door County’s resource needs.
- ◆ Explore Siting Ordinance to provide guidance in locating large agricultural facilities.

Long-term:

- ◆ Implementation of ordinance(s).

Stormwater Runoff Management and Construction Site Erosion Control (3.2.2)

Short-term:

- ◆ Review submitted plans through interdepartmental agreement.
- ◆ Promote proper erosion and stormwater control on all public and private projects.

Long-term:

- ◆ Education and Information Initiative continuing.

Village of Ephraim Stormwater/Construction Site Erosion Control Ordinance (3.2.3)

Short-term:

- ◆ SWCD review of construction site stormwater and erosion control plans.

Nonmetallic Mining Controls and Reclamation (3.2.4)

Short-term:

- ◆ SWCD review of nonmetallic mining permit applications.

- ◆ SWCD review of operational/reclamation measures.

Long-term:

- ◆ Continued Implementation of Nonmetallic Mining Ordinance.
- ◆ Continued monitoring of financial assurance.

Soil Erosion Control on County Department Projects (3.2.5)

Short-term:

- ◆ Promote proper erosion control practices.

Long-term:

- ◆ Continue promotion of proper soil erosion practices County projects.

Beach Contamination Source Identification Program (3.3)

Short-term:

- ◆ Continue to work with municipalities to abate beach contamination sources.
- ◆ Continue to identify land-based activities that contribute pollutants.

Long-term:

- ◆ Increase Public awareness of the connections between land use and water quality.
- ◆ Increase the number of beaches where water samples are taken.
- ◆ Continue work with DNR on *cladophora*.

Well Abandonment Program (3.4)

Short-term:

- ◆ Wells properly abandoned through voluntary program.
- ◆ Development of County Zoning Amendments.

Long-term:

- ◆ Uncooperative owners referred to DNR.

City of Sturgeon Bay Wellhead Protection Program (3.5.1)

Short-term:

- ◆ Continue support of Sanitary survey efforts.
- ◆ Address water quality needs for landowners through Priority Watershed Program and Sturgeon Bay Utilities.

Long-term:

- ◆ Continue Information and Education efforts.
- ◆ Continue representation on the LEPC to address spills.

Village of Sister Bay Wellhead Zone of Contribution (ZOC) Protection Program (3.5.2)

Short-term:

- ◆ Identify potential sources of contamination.

Long-term:

- ◆ Implementation of Wellhead Protection Plan.
- ◆ Information and Education to public.

Village of Maplewood Wellhead Zone of Contribution (ZOC) Protection Program (3.5.3)

Short-term:

- ◆ ZOC delineated.
- ◆ Development of Wellhead Protection Plan.
- ◆ Potential sources of contamination identified.

Long-term:

- ◆ Implementation of Wellhead Protection Plan.
- ◆ Development of Contaminated Spill Reaction Plan.

Technical Assistance to Landowners/Operators, Interested Groups, and Other Governmental Units (3.6)

Short-term:

- ◆ Assistance provided to public, municipalities, universities, other agencies, and all other interested parties.

Long-term:

- ◆ Assistance provided to public, municipalities, universities, other agencies, and all other interested parties.

County Water Pollution Abatement Cost-share Program (3.7)

Short-term:

- ◆ Cost-share monies provided to landowners for BMPs.
- ◆ Policy revised for regulation mandated applications.

Long-term:

- ◆ Additional funds obtained for increased program demand.

Tree Sales and Planting (3.8.1)

Short-term:

- ◆ Tree orders taken and distributed.
- ◆ Additional small sales product options developed.

Long-term:

- ◆ Large-scale planting program options for post-CRP developed.

County Buffer Program (3.8.2)

Short-term:

- ◆ Assist voluntary landowners.

Long-term:

- ◆ Approach landowners in areas critical to protection of Door County's resources.

Conservation Reserve Enhancement Program (3.8.3)

Short-term:

- ◆ Seek funding for additional incentives.
- ◆ Seek expansion of CREP coverage.

Long-term:

- ◆ Continue promotion of program in sensitive areas.

Wildlife Damage and Abatement Claims Program/Nuisance Animal Technical Assistance (3.8.4)

Short-term:

- ◆ Assistance to landowners increased.
- ◆ Education and Information effort implemented.

Aggressive Invasive Non-Indigenous Species Control (3.8.5)

Short-term:

- ◆ Continue to locate and control priority species.

Long-term:

- ◆ Secure funds for control programs and volunteer coordination.
- ◆ Cooperate with resource experts and independent researchers to design an exotic control effort.

Lead and Arsenic Contaminated Sites (3.8.6)

Short-term:

- ◆ Historic orchard and mixing sites identified for interested parties.
- ◆ Identification of funding source for remediation.

Long-term:

- ◆ Remediation Plan developed.
- ◆ Remediation Plan implemented.

Land Information Modernization Program (3.8.7)

Short-term:

- ◆ SWCD participation in Land Information Modernization Program as LITC member.
- ◆ Custodial responsibilities performed for SWCD Global Information System layers (i.e. soils, geology, etc) as specified in the Modernization Plan.

Long-term:

- ◆ SWCD Pilot goals completed as specified in the Modernization Plan.
- ◆ SWCD Countywide goals completed as specified in the Modernization Plan.

Information and Education (3.9)

Short-term:

- ◆ SWCD staffperson dedicated to renewed program effort.
- ◆ Assistance from UW-Extension staff increased.

Long-term:

- ◆ Volunteer Surface Water Monitoring Program established.

4.5

Program Updates

The Land and Water Resource Management Plan is designed with the understanding that program changes can and will occur. It is both understood and anticipated that a Plan update will be required as program changes occur.

A revision of the Land and Water Resource Management Plan will be necessary in 5 years. This will be necessary as county resource needs and program opportunities change. When a revision is necessary, an assessment will be made of goals, objectives, accomplishments, and status of programs. Once assessed, the success of the goals and objectives will be determined and appropriate revisions will be implemented to more adequately address Door County's changing resource needs. Short-term goals of this plan reflect a work plan of 2 years; long-term goals cover a period of up to 10 years. Because of changing resource need, available programs, budget constraints and available staff time the work plan for the short-term goals listed above and in the table in Part 5 of this document will be updated every 2 years.

Part 5

Summary Work Plan and Fiscal Management

- 5.1 Work Plan
- 5.2 Fiscal Management

5.1

Work Plan

The Door County Land & Water Resource Management Plan includes both short-term and long-term work tasks to accomplish the goals of the plan. In several areas the short-term work task is a strategy to identify the long-term solution to the resource need and thus the long-term work task. Some of the other work tasks are singular efforts and are not preceded by a solution identifying process; thus many of these can be implemented immediately. Either way the work tasks are designed to accomplish the goals of the plan.

The numerous identified work tasks require a phased approach of implementation to accomplish within the resources available. This section sets forth the phased implementation. The phased approach within existing resources is estimated to require two to three years to implement all of the short-term work tasks. It is the intent of this plan to accomplish the short-term tasks within the available annual SWCD staff hours. The presentation of the phased implementation of short-term and long-term work tasks does not preclude, or rule out, the utilization of additional resources to expedite the implementation.

The long-term work tasks are the actual implementation of conservation and environmental protection programs to accomplish the goals of the Land & Water Resource Management Plan. The processes of implementing the program efforts for purposes of this plan are considered ten-year work tasks. A long-term work task projection beyond the ten-year period is unrealistic considering the ever-changing conservation programs designs and demands. Likewise the threats to Door County's natural resources continue to present themselves in changing form as the quantity and diversity of the resource users increases in volume and intensity. Consistent with the discussion of the dynamic nature of the conservation and environmental needs, it is also anticipated that during the ten year period, changing resource needs will require revision to the work tasks identified in this plan and their schedule of implementation. The actual schedule of implementation for the long-term work tasks will be contingent upon the available funding resources to support the proposed activities. Limitations on available funding resources will require a long-term work task implementation period of a greater length.

The following Table 5-1 illustrates the program efforts included in the Land & Water Resource Management Plan with a designation of either short-term or long-term effort. In addition in some cases the anticipated/planned year of implementation is also noted.

The location of the plan discussion of each item is included in the Program column and should be referred to for additional information. The Table does not summarize all the components of the Plan contents and does not include all of the ongoing daily program activities of the SWCD. All of the programs and the associated activities that follow have been organized by the resource goal that they address. There is overlap within the table as many programs address several resource goals within the county. **Information regarding the 2005 budget is also included with the short term goals. The budget for 2006 is anticipated to be similar. A discussion of fiscal management is included in Section 5.2 following the work plan. All Short-Term Activities within this work plan are considered to be High Priority Activities.**

Table 5-1. Short-term and long-term work plan summary.

<i>PROGRAM</i>	<i>SHORT-TERM ACTIVITIES (High Priority Activities) SWCD 2005 Budget: \$1,714,141 30% County 70% Outside Grants Anticipated 2006 Budget Similar</i>	<i>LONG-TERM ACTIVITIES</i>
Resource Goal: Groundwater Protection and Improvement		
Upper Door Priority Watershed (3.1.2)	* Continue to ensure compliance with ongoing Operation and Maintenance Requirements	*Inventory status of compliance with statewide standards and prohibitions
Red River/Sturgeon Bay Priority Watershed (3.1.3)	*Immediate Implementation	*Inventory status of compliance with statewide standards and prohibitions
Farmland Preservation Program (3.1.4)	*Immediate Implementation *Ensure participants in Exclusive Agriculture areas are compliant with Agricultural Performance Standards and Prohibitions	*Ensure all new participants are compliant with Agricultural Performance Standards and Prohibitions
Nutrient Management Program (3.1.5)	*Immediate Implementation	*Inventory and determine compliance for all cropland by 2010
NR 243 (3.1.6)	*Assist expanding and emerging farms to meet requirements of WPDES Permit program	
Targeted Runoff Management Program (3.1.7)	*Implement current grants to install necessary BMPs to meet water quality goals	*Continue to seek grants to maximize potential funding for implementation of Agricultural Performance Standards and Prohibitions
Implementation of Agricultural Standards & Prohibitions (Identification of Priority Farms) (3.1.8 & 3.1.9)	*Four Point Implementation Strategy *Begin Geographic Prioritized Implementation Areas Effort	*Continue Geographic Prioritized Implementation Areas Effort; 2005-2010 *Review the Efficiency and Effectiveness of the Agricultural Performance Standards and Animal Waste Storage Ordinance

PROGRAM	SHORT-TERM ACTIVITIES (High Priority Activities) SWCD 2005 Budget: \$1,714,141 30% County 70% Outside Grants Anticipated 2006 Budget Similar	LONG-TERM ACTIVITIES
Adoption of Ordinances (3.1.10)	*Consider development of an ordinance for Siting of Large Agricultural Operations	
Stormwater Runoff Management & Construction Site Erosion (3.2.2)	*Immediate Implementation *Information and Education initiative	Consider County-wide Storm Water Runoff Ordinance
Village of Ephraim Stormwater/ Construction Site Erosion Ordinance (3.2.3)	*Immediate Implementation	
Nonmetallic Mining Management & Reclamation (3.2.4)	*Ensure Compliance with Approved Plans	*Review New Plans * Review the Efficiency and Effectiveness of the ordinance *Ensure adequate Financial Assurance for Implementation of Approved Reclamation Plans
Soil Erosion Control on County Projects (3.2.5)	*Immediate Implementation *Develop and Adopt County Policies; 2006-2007	
Well Abandonment Program (3.4)	*Immediate Implementation of Voluntary Program *Develop and propose County Zoning Amendments; 2006-2007	
Wellhead Zone of Contribution Protection Programs (3.5)	*City of Sturgeon Bay Wellhead Protection Plan Development; Immediate Implementation *Village of Sister Bay Wellhead Protection; Immediate Implementation *Village of Maplewood Wellhead Protection Plan Development; 2007	*Village of Maplewood Wellhead Protection Plan Implementation; 2006-2010
Resource Management Assistance to the Public and other Municipalities (3.6)	*Immediate Implementation	
Research Assistance (3.6.3)	*Immediate Implementation	
Water Pollution Abatement Cost-Share Program (3.7)	*Immediate Implementation *Revise Policy to Give Priority to Regulation Mandated Applications; 2006-2007	*Obtain Additional Funds to Support Increased Program Demand due to Regulation Compliance Applications; 2007-2008
County Buffer Program (3.8.2)	*Immediate Implementation	
Conservation Reserve Enhancement Program (3.8.3)	*Immediate Implementation	
Lead & Arsenic Contamination (3.8.6)	*Immediate Implementation	
Land Information Modernization Program (3.7.6)	*Continued participation in program as LITC member.	*Complete SWCD countywide goals; 2005-2010

PROGRAM	SHORT-TERM ACTIVITIES (High Priority Activities) SWCD 2005 Budget: \$1,714,141 30% County 70% Outside Grants Anticipated 2006 Budget Similar	LONG-TERM ACTIVITIES
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Information and Education (3.9)	*Devote Dedicated SWCD Staff to Program Effort	
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Resource Goal: Impacts of Development on Natural Resources		
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Farmland Preservation Program (3.1.4)	*Immediate Implementation *Ensure participants in Exclusive Agriculture areas are compliant with Agricultural Performance Standards and Prohibitions	*Ensure all new participants are compliant with Agricultural Performance Standards and Prohibitions
Adoption of Ordinances (3.1.10)	*Consider development of an ordinance for Siting of Large Agricultural Operations	
Stormwater Runoff Management & Construction Site Erosion (3.2.2)	*Immediate Implementation *Information and Education initiative	Consider County-wide Storm Water Runoff Ordinance
Village of Ephraim Stormwater/ Construction Site Erosion Ordinance (3.2.3)	*Immediate Implementation	
Soil Erosion Control on County Projects (3.2.5)	*Immediate Implementation *Develop and Adopt County Policies; 2006-2007	
Beach Contamination Source Identification Program (3.3)	*Implementation of methods to administer Preemptive Closures *Increase Information and Education Efforts	*Continue to Identify Potential Land-Based Activities and Determine Appropriate Abatement
Well Abandonment Program (3.4)	*Immediate Implementation of Voluntary Program *Develop and propose County Zoning Amendments; 2006-2007	
Wellhead Zone of Contribution Protection Programs (3.5)	*City of Sturgeon Bay Wellhead Protection Plan Development; Immediate Implementation *Village of Sister Bay Wellhead Protection; Immediate Implementation *Village of Maplewood Wellhead Protection Plan Development; 2007	*Village of Maplewood Wellhead Protection Plan Implementation; 2006-2010
Resource Management Assistance to the Public and other Municipalities (3.6)	*Immediate Implementation	
Research Assistance (3.6.3)	*Immediate Implementation	
Water Pollution Abatement Cost-Share Program (3.7)	*Immediate Implementation *Revise Policy to Give Priority to Regulation Mandated Applications; 2006-2007	*Obtain Additional Funds to Support Increased Program Demand due to Regulation Compliance Applications; 2007-2008
Land Information Modernization Program (3.7.6)	*Continued participation in program as LITC member.	*Complete SWCD countywide goals; 2005-2010

PROGRAM	SHORT-TERM ACTIVITIES (High Priority Activities) SWCD 2005 Budget: \$1,714,141 30% County 70% Outside Grants Anticipated 2006 Budget Similar	LONG-TERM ACTIVITIES
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Tree Sales and Planting Program (3.8.1)	*Immediate Implementation	
Information and Education (3.9)	*Devote Dedicated SWCD Staff to Program Effort	

Resource Goal: Human Waste Management

Resource Management Assistance to the Public and other Municipalities (3.6)	*Immediate Implementation	
Research Assistance (3.6.3)	*Immediate Implementation	
Information and Education (3.9)	*Devote Dedicated SWCD Staff to Program Effort	

Resource Goal: Animal Waste Management

Upper Door Priority Watershed (3.1.2)	* Continue to ensure compliance with ongoing Operation and Maintenance Requirements	*Inventory status of compliance with statewide standards and prohibitions
Red River/Sturgeon Bay Priority Watershed (3.1.3)	*Immediate Implementation	*Inventory status of compliance with statewide standards and prohibitions
Farmland Preservation Program (3.1.4)	*Immediate Implementation *Ensure participants in Exclusive Agriculture areas are compliant with Agricultural Performance Standards and Prohibitions	*Ensure all new participants are compliant with Agricultural Performance Standards and Prohibitions
Nutrient Management Program (3.1.5)	*Immediate Implementation	*Inventory and determine compliance for all cropland by 2010
NR 243 (3.1.6)	*Assist expanding and emerging farms to meet requirements of WPDES Permit program	
Targeted Runoff Management Program (3.1.7)	*Implement current grants to install necessary BMPs to meet water quality goals	*Continue to seek grants to maximize potential funding for implementation of Agricultural Performance Standards and Prohibitions
Implementation of Agricultural Standards & Prohibitions (Identification of Priority Farms) (3.1.8 & 3.1.9)	*Four Point Implementation Strategy *Begin Geographic Prioritized Implementation Areas Effort	*Continue Geographic Prioritized Implementation Areas Effort; 2005-2010 *Review the Efficiency and Effectiveness of the Agricultural Performance Standards and Animal Waste Storage Ordinance

PROGRAM	SHORT-TERM ACTIVITIES (High Priority Activities) SWCD 2005 Budget: \$1,714,141 30% County 70% Outside Grants Anticipated 2006 Budget Similar	LONG-TERM ACTIVITIES
Adoption of Ordinances (3.1.10)	*Consider development of an ordinance for Siting of Large Agricultural Operations	
Wellhead Zone of Contribution Protection Programs (3.5)	*City of Sturgeon Bay Wellhead Protection Plan Development; Immediate Implementation *Village of Sister Bay Wellhead Protection; Immediate Implementation *Village of Maplewood Wellhead Protection Plan Development; 2007	*Village of Maplewood Wellhead Protection Plan Implementation; 2006-2010
Resource Management Assistance to the Public and other Municipalities (3.6)	*Immediate Implementation	
Research Assistance (3.6.3)	*Immediate Implementation	
Water Pollution Abatement Cost-Share Program (3.7)	*Immediate Implementation *Revise Policy to Give Priority to Regulation Mandated Applications; 2006-2007	*Obtain Additional Funds to Support Increased Program Demand due to Regulation Compliance Applications; 2007-2008
County Buffer Program (3.8.2)	*Immediate Implementation	
Conservation Reserve Enhancement Program (3.8.3)	*Immediate Implementation	
Information and Education (3.9)	*Devote Dedicated SWCD Staff to Program Effort	
Resource Goal: Surface Water Protection		
Upper Door Priority Watershed (3.1.2)	* Continue to ensure compliance with ongoing Operation and Maintenance Requirements	*Inventory status of compliance with statewide standards and prohibitions
Red River/Sturgeon Bay Priority Watershed (3.1.3)	*Immediate Implementation	*Inventory status of compliance with statewide standards and prohibitions
Farmland Preservation Program (3.1.4)	*Immediate Implementation *Ensure participants in Exclusive Agriculture areas are compliant with Agricultural Performance Standards and Prohibitions	*Ensure all new participants are compliant with Agricultural Performance Standards and Prohibitions
Nutrient Management Program (3.1.5)	*Immediate Implementation	*Inventory and determine compliance for all cropland by 2010
NR 243 (3.1.6)	*Assist expanding and emerging farms to meet requirements of WPDES Permit program	

PROGRAM	SHORT-TERM ACTIVITIES (High Priority Activities) SWCD 2005 Budget: \$1,714,141 30% County 70% Outside Grants Anticipated 2006 Budget Similar	LONG-TERM ACTIVITIES
Targeted Runoff Management Program (3.1.7)	*Implement current grants to install necessary BMPs to meet water quality goals	*Continue to seek grants to maximize potential funding for implementation of Agricultural Performance Standards and Prohibitions
Implementation of Agricultural Standards & Prohibitions (Identification of Priority Farms) (3.1.8 & 3.1.9)	*Four Point Implementation Strategy *Begin Geographic Prioritized Implementation Areas Effort	*Continue Geographic Prioritized Implementation Areas Effort; 2005-2010 *Review the Efficiency and Effectiveness of the Agricultural Performance Standards and Animal Waste Storage Ordinance
Adoption of Ordinances (3.1.10)	*Consider development of an ordinance for Siting of Large Agricultural Operations	
Stormwater Runoff Management & Construction Site Erosion (3.2.2)	*Immediate Implementation *Information and Education initiative	Consider County-wide Storm Water Runoff Ordinance
Village of Ephraim Stormwater/ Construction Site Erosion Ordinance (3.2.3)	*Immediate Implementation	
Nonmetallic Mining Management & Reclamation (3.2.4)	*Ensure Compliance with Approved Plans	*Review New Plans * Review the Efficiency and Effectiveness of the ordinance *Ensure adequate Financial Assurance for Implementation of Approved Reclamation Plans
Soil Erosion Control on County Projects (3.2.5)	*Immediate Implementation *Develop and Adopt County Policies; 2006-2007	
Resource Management Assistance to the Public and other Municipalities (3.6)	*Immediate Implementation	
Research Assistance (3.6.3)	*Immediate Implementation	
Water Pollution Abatement Cost-Share Program (3.7)	*Immediate Implementation *Revise Policy to Give Priority to Regulation Mandated Applications; 2006-2007	*Obtain Additional Funds to Support Increased Program Demand due to Regulation Compliance Applications; 2007-2008
Land Information Modernization Program (3.7.6)	*Continued participation in program as LITC member.	*Complete SWCD countywide goals; 2005-2010
County Buffer Program (3.8.2)	*Immediate Implementation	
Conservation Reserve Enhancement Program (3.8.3)	*Immediate Implementation	

PROGRAM	SHORT-TERM ACTIVITIES (High Priority Activities) SWCD 2005 Budget: \$1,714,141 30% County 70% Outside Grants Anticipated 2006 Budget Similar	LONG-TERM ACTIVITIES
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Information and Education (3.9)	*Devote Dedicated SWCD Staff to Program Effort	
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Resource Goal: Stormwater Management

Adoption of Ordinances (3.1.10)	*Consider development of an ordinance for Siting of Large Agricultural Operations	
Stormwater Runoff Management & Construction Site Erosion (3.2.2)	*Immediate Implementation *Information and Education initiative	Consider County-wide Storm Water Runoff Ordinance
Village of Ephraim Stormwater/ Construction Site Erosion Ordinance (3.2.3)	*Immediate Implementation	
Nonmetallic Mining Management & Reclamation (3.2.4)	*Ensure Compliance with Approved Plans	*Review New Plans * Review the Efficiency and Effectiveness of the ordinance *Ensure adequate Financial Assurance for Implementation of Approved Reclamation Plans
Resource Management Assistance to the Public and other Municipalities (3.6)	*Immediate Implementation	
Research Assistance (3.6.3)	*Immediate Implementation	
Water Pollution Abatement Cost-Share Program (3.7)	*Immediate Implementation *Revise Policy to Give Priority to Regulation Mandated Applications; 2006-2007	*Obtain Additional Funds to Support Increased Program Demand due to Regulation Compliance Applications; 2007-2008
Land Information Modernization Program (3.7.6)	*Continued participation in program as LITC member.	*Complete SWCD countywide goals; 2005-2010
Information and Education (3.9)	*Devote Dedicated SWCD Staff to Program Effort	

Resource Goal: Soil Erosion Control; Agricultural and Construction Site

Upper Door Priority Watershed (3.1.2)	* Continue to ensure compliance with ongoing Operation and Maintenance Requirements	*Inventory status of compliance with statewide standards and prohibitions
Red River/Sturgeon Bay Priority Watershed (3.1.3)	*Immediate Implementation	*Inventory status of compliance with statewide standards and prohibitions
Farmland Preservation Program (3.1.4)	*Immediate Implementation *Ensure participants in Exclusive Agriculture areas are compliant with Agricultural Performance Standards and Prohibitions	*Ensure all new participants are compliant with Agricultural Performance Standards and Prohibitions

PROGRAM	SHORT-TERM ACTIVITIES (High Priority Activities) SWCD 2005 Budget: \$1,714,141 30% County 70% Outside Grants Anticipated 2006 Budget Similar	LONG-TERM ACTIVITIES
Nutrient Management Program (3.1.5)	*Immediate Implementation	*Inventory and determine compliance for all cropland by 2010
NR 243 (3.1.6)	*Assist expanding and emerging farms to meet requirements of WPDES Permit program	
Targeted Runoff Management Program (3.1.7)	*Implement current grants to install necessary BMPs to meet water quality goals	*Continue to seek grants to maximize potential funding for implementation of Agricultural Performance Standards and Prohibitions
Implementation of Agricultural Standards & Prohibitions (Identification of Priority Farms) (3.1.8 & 3.1.9)	*Four Point Implementation Strategy *Begin Geographic Prioritized Implementation Areas Effort	*Continue Geographic Prioritized Implementation Areas Effort; 2005-2010 *Review the Efficiency and Effectiveness of the Agricultural Performance Standards and Animal Waste Storage Ordinance
Adoption of Ordinances (3.1.10)	*Consider development of an ordinance for Siting of Large Agricultural Operations	
Stormwater Runoff Management & Construction Site Erosion (3.2.2)	*Immediate Implementation *Information and Education initiative	Consider County-wide Storm Water Runoff Ordinance
Village of Ephraim Stormwater/ Construction Site Erosion Ordinance (3.2.3)	*Immediate Implementation	
Nonmetallic Mining Management & Reclamation (3.2.4)	*Ensure Compliance with Approved Plans	*Review New Plans * Review the Efficiency and Effectiveness of the ordinance *Ensure adequate Financial Assurance for Implementation of Approved Reclamation Plans
Soil Erosion Control on County Projects (3.2.5)	*Immediate Implementation *Develop and Adopt County Policies; 2006-2007	
Wellhead Zone of Contribution Protection Programs (3.5)	*City of Sturgeon Bay Wellhead Protection Plan Development; Immediate Implementation *Village of Sister Bay Wellhead Protection; Immediate Implementation *Village of Maplewood Wellhead Protection Plan Development; 2007	*Village of Maplewood Wellhead Protection Plan Implementation; 2006-2010
Resource Management Assistance to the Public and other Municipalities (3.6)	*Immediate Implementation	
Research Assistance (3.6.3)	*Immediate Implementation	

PROGRAM	SHORT-TERM ACTIVITIES (High Priority Activities) SWCD 2005 Budget: \$1,714,141 30% County 70% Outside Grants Anticipated 2006 Budget Similar	LONG-TERM ACTIVITIES
Water Pollution Abatement Cost-Share Program (3.7)	*Immediate Implementation *Revise Policy to Give Priority to Regulation Mandated Applications; 2006-2007	*Obtain Additional Funds to Support Increased Program Demand due to Regulation Compliance Applications; 2007-2008
Land Information Modernization Program (3.7.6)	*Continued participation in program as LITC member.	*Complete SWCD countywide goals; 2005-2010
Tree Sales and Planting Program (3.8.1)	*Immediate Implementation	
Information and Education (3.9)	*Devote Dedicated SWCD Staff to Program Effort	
Resource Goal: Non-Metallic Mine Reclamation		
Nonmetallic Mining Management & Reclamation (3.2.4)	*Ensure Compliance with Approved Plans	*Review New Plans * Review the Efficiency and Effectiveness of the ordinance *Ensure adequate Financial Assurance for Implementation of Approved Reclamation Plans
Resource Management Assistance to the Public and other Municipalities (3.6)	*Immediate Implementation	
Research Assistance (3.6.3)	*Immediate Implementation	
Land Information Modernization Program (3.7.6)	*Continued participation in program as LITC member.	*Complete SWCD countywide goals; 2005-2010
Information and Education (3.9)	*Devote Dedicated SWCD Staff to Program Effort	
Resource Goal: Invasive Species		
Resource Management Assistance to the Public and other Municipalities (3.6)	*Immediate Implementation	
Research Assistance (3.6.3)	*Immediate Implementation	
Aggressive Invasive Non-Indigenous Species Control (3.8.5)	*Immediate Implementation *Obtain personnel for Implementation	*Control Program Implementation; 2005-2010
Land Information Modernization Program (3.7.6)	*Continued participation in program as LITC member.	*Complete SWCD countywide goals; 2005-2010
Information and Education (3.9)	*Devote Dedicated SWCD Staff to Program Effort	

5.2

Fiscal Management

Presently the operating budget of the SWCD is comprised of approximately 30% County appropriations and 70% outside grant funds. The 2005 SWCD budget is \$1,714,141 with anticipated revenue of \$1,132,535. The 2006 SWCD budget is approximately the same totals and percentage distribution between County and outside grant funding as the 2005 budget. County appropriations provide the funds for the core operations of the SWCD and a combination of long-term and annual grants provide additional support for the implementation of a host of supportive conservation and environmental protection efforts. The majority of the funds included in the SWCD budget are cost-share funds to provide financial assistance directly to landowners in the installation of conservation best management practices. The fiscal support of the SWCD, from combinations of both County sources and outside grant funds, is anticipated to continue for the duration of the implementation of this Plan. It is, and will remain, a necessity that the SWCD actively participate in the task of grant writing and application for the fiscal support of the program to implement the goals of the Plan. Considering the ongoing process of a redesign, and downsizing of, the State program efforts for some conservation and environmental programs the SWCD will be directing even greater efforts towards the obtaining of grant revenue.

Significant portions of the grant funds being received at this time are cost-share money provided for the priority watershed program. The State priority watershed program is being phased and there will no longer be grant funds for large scale priority watersheds available for implementation in Door County, or elsewhere in the State, following the closure of the existing Red River/Sturgeon Bay Priority Watershed and other existing priority watersheds throughout the state.

A significant funding need, required to implement the nonpoint standards and prohibitions, is the availability of cost-share funds. Landowners that have operations in existence prior to October 1, 2002 can not be required to meet the standards and prohibition unless cost-share funds are available to defray their costs. Accordingly, the success of the implementation of the nonpoint standards and prohibitions to protect the natural resources of Door County relies on the availability of supportive cost-share funding. It is anticipated that the cost-share needs will not be addressed by one source of funds, but rather by a combination of sources that will be dynamic and change from year to year. It will be a challenge to provide adequate cost-share funding to effectively implement the nonpoint standards and prohibitions Countywide with the condition that the landowner/operator need not comply unless such funds are available. Upon approval of this Plan, Door County will be eligible for State Land & Water Resource Management Plan implementation funding which can include cost-share funds.

Adequate cost-share funding is not the only fiscal need of the SWCD to implement the goals and objectives of this Plan. Administrative costs, (personnel, equipment, supplies, training, travel and other related items), support the necessary technical service assistance to the public from the SWCD as they manage the natural resources on their land whether

through a voluntary or regulatory program. Presently, and in the future, the funding for the administrative costs of implementing the conservation and environmental goals and programs of the Plan will draw upon a variety of sources. Similar to the revenue sources for cost-share funds the administrative revenue sources will also be both County appropriations and grant funds. Likewise, the revenue sources for administrative costs will be dynamic and change from year to year.

The SWCD presently has personnel staff comprised of eight full-time professional conservationists and two part-time clerical positions totaling available annual hours of 19,448. It is anticipated that the current available staff hours will be constant through 2006. Current program responsibilities will be maintained into 2006 with the early implementation of some of the identified short-term work tasks added and hours shifted to. No significant budget modification in expenditures or revenue from 2005 to 2006 is anticipated. The implementation of some of the yet to be identified long-term work tasks may require additional administrative support but not during 2006. Due to the nature of the summary work plan's approach of developing long-term solutions during the short-term work tasks, it is not possible to estimate future administrative needs, or costs, at this time. However, a need for additional administrative support is not anticipated to implement the short-term work tasks. It is the intent of this Plan to accomplish the short-term work tasks identified in the summary work plan within the current available annual SWCD staff hours. Long-term administrative needs and costs will be determined during the identification and development of the proposed long-term work tasks.

The budget for 2006 is approximately the same as the 2005 budget and is anticipated to be similar for 2007. Unknown future State funding and restricted County tax levy support due to limitations placed upon the County taxing ability in the recently approved State budget bill make actual budget projections beyond 2006 tenuous if not impossible. In actuality the 2006 budget total is still an estimate subject to significant revision.

The Governor's 2006-2007 budget for implementation of Land & Water Resource Management Plans has been prepared and allocates an amount of \$234,411 in 2006 for administration and staffing needs with a similar amount anticipated for 2007. The 2006 grant application will emphasize the implementation of agricultural standards and prohibitions consistent with the Strategy for Implementation of Agricultural Standards (3.1.8) of this plan.

Part 6

Plan Adoption Process

The Door County Land and Water Resource Management Plan was developed over several months of 1999. The process involved input gathered from a series of planning meetings that included representatives of interested parties including: community members from each County Board Supervisory District; elected officials from the county's municipalities; county, state and federal agency professionals; and private organizations.

Information was then gathered by the SWCD and through staff planning sessions and sessions with the LCC a draft was developed. A public hearing was held to receive additional public input then a final draft, approved by the LCC, was sent to DATCP for review and presentation to the state Land and Water Conservation Board.

To prepare for this update of the original Land and Water Resource Management Plan, the same group of representatives was surveyed to determine their opinion of the current status of Door County's resource concerns. The results of the survey and the associated rankings can be found in Appendix C of this document. The survey provided a representation of resource concerns for 2005 and revealed that the top nine concerns are the same as those in 1999.

A chronological history of the plan update is as follows:

- December 14, 2004 – Background of the Land and Water Resource Management Plan was given at the Land Conservation Committee meeting and a discussion was held to determine the appropriate method of gathering public input.
- January 6, 2005 – A Public Input Letter and Survey were sent to the original 70 participants from the 1999 planning sessions.
- January 31, 2005 – A post card was sent to all participants to inquire as to their desire to remain involved.
- February 2, 2005 – Discussion of draft and survey results at the Land Conservation Committee meeting.
- February – April, 2005 – Development of draft plan
- April 14, 2005 – Invitation to all participants to attend an Information/Public Input Meeting
- April 26, 2005 – Invitation to additional resource professionals to review current draft and attend upcoming Information/Public Input Meeting
- May 2, 2005 – Information/Public Input Meeting held
- May 2005 – Revisions of draft
- June 8, 2005 – Review and comment on draft at the Land Conservation Committee meeting
- June 2005 – Revisions of draft

- July 6, 2005 – Review of draft and decision by LCC to set Public Hearing for August 3
- Mid July 2005 – Draft to DNR & DATCP
- July 30, 2005 – First Class II Notice published in the Door County Advocate for the August 3 Public Hearing
- August 1, 2005 – Second Class II Notice published in the Door County Advocate for the August 3 Public Hearing
- August 3, 2005 Public Hearing for draft of Land and Water Resource Management Plan
- August 3, 2005 - LCC Approval of Final Draft pending Public Hearing Revisions
- August 2005 – Final revisions to draft
- August 23, 2005 – Final Draft Plan to DNR & DATCP
- September 1, 2005 – Complete Plan to DATCP and copy to DNR
- October 4, 2005 – Door County Land and Water Resource Management Plan presented to the Wisconsin Land and Water Conservation Board
- October 2005 – DATCP sends letter approving or disapproving plan following LWCB recommendations
- November 2005 – Adoption of the plan by the Door County Board of Supervisors

Appendices

Appendix A Soil Associations

A soil association is a geographic region that has a distinctive pattern of soils in defined proportions. Soils that make up an association are similar in morphology. There are minor soils in each association, which have different properties than the soils making up the association name. These soils are usually found in the particular associations' geographic boundary. Door County is made up of six associations that will be described on the following pages. For a complete description of each soil, see the Door County Soil Survey.

(1) Summerville - Longrie - Omena Association –

Consists of nearly level to moderately steep soils on upland till plains and ridges where bedrock strongly influences topography. This major association makes up approximately 48% of the county.

The Summerville series has approximately 24 percent of the association, Longrie - 24%; Omena - 20%; and minor soils - 36%. Minor soils are Alpena, Bonduel, Bonduel Shallow Variant, Bonduel Wet Variant, Namur, and Solona soils. Controlling erosion and maintaining organic matter content, tilth, and fertility are the main concerns of management for this association with regard to cultivation.

The association is well drained having a sandy loam, or loam subsoil, over a sandy loam or fine sandy loam till or dolomite bedrock. The moderately deep and deep soils are mainly utilized for cultivated crops such as corn, small grains and legumes. The shallow soils are mainly used for pasture or remain wooded.

(2) Emmet - Solona - Angelica Association –

Consists of nearly level to sloping or upland till plains and broad ridges; approximately 23% of the county's land is included in this association.

The Emmet series makes up a majority of the association at 44%, Solona - 16%; Angelica - 10% and minor soils - 30%. Minor soils are Cathro, Omena, Longrie, Namur and Summerville. Controlling erosion and maintaining organic matter content, tilth, and fertility are the main management concerns with regard to cultivation.

The association is well to poorly drained having a loamy sand to silt loam subsoils over sandy loam or loam till. Most well drained soils and artificially drained soils are well suited to crops commonly grown in the county. Undrained wet areas are used mainly for pasture, woodland, and wildlife habitat.



(3) Rousseau - Kiva - Markey Association –

Consists of nearly level to sloping soils on out wash plains, stabilized dunes, beach ridges, and in depressions; occupies approximately 6% of the county and is common to shorelines.

The Rousseau series makes up approximately 28% of the association; Kiva - 16%; Markey - 15%; and the minor soils - 41%. Boyer, Duel, Sisson, Wainola are minor soils.

The soils in this association are generally unsuited to crops commonly grown in the county; therefore, they are mainly used for pasture, woodland and wildlife habitat. Erosion can be controlled by planting a suitable tree species.

(4) Kewaunee - Kolberg - Manawa Association –

Consists of nearly level to moderately steep soils on glacial till upland plains and ridges where, in some places, bedrock (Dolomite) has a strong influence on topography. It occupies approximately 11% of the county.

The Kewaunee series makes up approximately 39% of this association; Kolberg - 15%; Manawa - 14%; and minor soils - 32%. Minor soils are Manistee, Namur, Poygan, Suamico, and Kolberg Variant. This association is well drained to somewhat poorly drained having dominant silty clay subsoil over a silty clay till or dolomite bedrock.

Most of the association is used for cultivated crops such as corn, small grain and legumes. Steeper areas or undrained wet areas are used for pasture, woodland, or wildlife habitat. Management concerns of this association are; controlling erosion, maintaining organic-matter content, tilth and fertility.

(5) Deford - Yahara Variant - Carbondale Association –

Consists of nearly level soils in glacial lake basins and on outwash plains; occupies approximately 5% of the county.

Deford, Yahara Variant and Carbondale soils each make up about 14% of the association. The minor soils, Markey, Rousseau, Wainola and Yahara, make up about 58%. Most of the association is in woodland and wildlife habitat.

(6) Carbondale - Cathro Association –

Consists of nearly level organic soils in glacial lake basins and depressions; occupies about 7% of the county. The Carbondale soils make up about 49% of the association and Cathro soils, 23%. Minor soils, Allendale, Angelica, and Pinconning make up 28%.

Most of this association is poorly suited to common crops of the county. Therefore, most is woodland or wildlife habitat.

Appendix B Surface Water Summaries

Table B-1. Summary of flowing surface water morphology and biology.

	Length in miles	Flow	Width in feet	Gradient in ft/mile	Watershed in acres	Biological Use Class	Substrate	Primary Vegetation	Biotic Index-- highest value	Habitat Ranking
Ahnapee River	6	C	2.5	7.7	117	WWSF	R,G,S	All	5.76	Fair
Bear Creek	4	C/I		33.3				FA	4.24	
Big Creek	13	I	4.5		13				6.55	Fair
Ephraim Creek	1.5	I	9	15	2		R		5.06	Good
Fabry Creek	1	I	4		5.1	LLF				Fair
Fish Creek	1	C	8	15				EV		
Geisel Creek	3.6	C	20	9.7	10	LAL	R,G	All	6.55	Fair
Heins Creek	2.9	C	14	7.8		Cold II			6.22	Fair
Hibbards Creek	5.4	C	15	7.6	17	WWFF, Cold II			6.86	Good
Hidden Spring	1	C	2	10		Cold I		EV	6.25	
Keyes Creek	7		4	8	<30	WWSF, WWFF, Cold I&II			4.2	Good to Fair
Krueger Creek	1	I				LLF	R	FA		Fair
Larson Creek	4	I				WWFF		FA	7.6	Fair
Lilly Bay Creek	3.4	C/I	5	19.1	11	Cold II	S			
Little Creek										Fair
Logan Creek	4.8	C	8	17.7		WWFF, Cold I&II			3.8	Fair
Lost Creek	2.5	I				LLF	Silt	All		Fair
Malvitz Creek	1	I				WWFF, LFF				Fair
May Creek	3	I				LFF	R, Silt	FA	4.04	Fair
Peil Creek							OM	All		
Reibolt Creek										
Renard Creek	6	C	6	35	11.5	WWFF	G, Silt			Poor
Samuelson Creek	1.25	I				WWFF	R	FA		Fair
Schuyler Creek	4	C/I	27			WWFF	R			
Shivering Sands Creek	1.1	I		12.5		WWFF, Cold I				Good
Silver Creek – Brussels		C					G	All	6.5	
Silver Creek – Forestville	5					WWFF	R	FA	4.35	Fair
Silver Creek – Union		I	6				G		4.2	Poor
Stony Creek	13.6	C/I	6	8.5		WWFF, Cold II			6.47	Good
Strawberry Creek	1.6	C	12		5.6		S		4.4	Good
Sugar Creek	9	C/I	9	17.8	14.8		R			Good to Fair
Three Springs Creek	2.3	I	4	10.9				EV,S V	7.87	Fair
Twin Harbors Creek	1	I					R			
Unnamed in SC	2	I					Silt		7.45	
Unnamed in SS										
Unnamed corridor										
Whitefish Bay Creek	1.1	C	28						6.2	Poor
Woodard Creek	4	C/I								Good to Fair

Table B-2. Lake summary information and water chemistry.

	Area	Maximum Depth	Mean Depth	Public Access	Lake Map Available	Lake Type	S.D.F.	Limited Fishery	Bottom Type	Contaminant Advisory	pH	Alkalinity	Chlorophyll a	Total Phosphorous	Chloride
Arbter Lake	16	2				Dg	1.96	•			----	----	----	----	----
Big Marsh	31	2				Dg	1.40				----	----	----	----	----
Bley Pond	5	3				Se	1.68	•	Bedrock		----	----	----	----	----
Bradley Lake (little)	19	7		•		Se	1.42		Sand		----	----	----	----	----
Butler Pond	3	2				Se	3.14	•			----	----	----	----	----
Clark Lake	868	25			•	Dg	1.53		Marl	•	8.37	191	2.08	.012	9.6
Coffee Swamp	2	2				Se		•			----	----	----	----	----
Dunes Lake	80	1				Dg	1.77	•	Muck		----	----	----	----	----
Europe Lake	273	10		•	•	Se	1.38				8.3	135	5.84	.008	1
Forestville Millpond	65	5		•	•	Dg	2.06						33.5	.076	
Kangaroo Lake	1123	12		•	•	Dg	1.89				8.0	183	1.73	.011	3
Krause Lake(mud)	4	24				Sp	1.63	•			----	----	----	----	----
Little Lake	24	6				Sp	2.06	•			----	----	----	----	----
Lost Lake	91	5				Se	2.06				8.8				
Mackaysee Lake	347	27		•	•	Sp	1.18			•	8.2	122	2.0	.02	
Mink River	70	13		•		Sp	2.22		Silt OM		----	----	----	----	----
Mud Lake	155	5		•		Dg	1.83				----	----	----	----	----
Pinney Lake	2	6				Se	2.10	•			----	----	----	----	----
Pluff Pond	1	5				Sp	1.30	•			----	----	----	----	----
Schwartz Lake	30	4				Se	1.43	•			----	----	----	----	----
Thorp Pond	6	3				Dg	1.13	•	OM		----	----	----	----	----
Upper Lost Lake	5	3				Dg	1.80				----	----	----	----	----
Voeks Marsh	19	2				Dg	1.91	•			----	----	----	----	----
Wickman Marsh							3.16	•			----	----	----	----	----
Zoo Lake	1	3				Sp					----	----	----	----	----

Key for Tables B-1 and B-2

Flow

C = continuous flow

I = intermittent flow

C/I = continuous at lower reaches; both intermittent & continuous

Biological Use Class

Cold = Cold Water Community; includes surface waters capable of supporting a community of cold water fish and other aquatic life or serving as a spawning area for cold water fish species.

WWSF = Warm Water Sport Fish Communities; includes surface waters capable of supporting a community of warm water sport fish or serving as a spawning area for warm water sport fish.

WWFF = Warm Water Forage Fish Communities; includes surface waters capable of supporting an abundant diverse community of forage fish and other aquatic life.

LFF = Limited Forage Fishery (intermediate surface waters); includes surface waters of limited capacity because of low flow, naturally poor water quality or poor habitat. These surface waters are capable of supporting only a limited community of forage fish and aquatic life.

LAL = Limited Aquatic Life (marginal surface waters); includes surface waters severely limited because of very low or intermittent flow and naturally poor water quality or poor habitat. These surface waters are capable of supporting only a limited community of aquatic life.

Class I = streams are high-quality streams where populations are sustained by natural reproduction.

Class II = streams have some natural reproduction but need stocking to maintain a desirable fishery.

Class III = streams sustain no natural reproduction and require annual stocking of legal-size fish for sport fishing.

Substrate

R = rock &/or rubble

G = gravel

S = sand

OM = organic matter or soft bottom

Primary Vegetation

EV = Emergent vegetation

FA = Floating aquatic vegetation

SV = Submergent vegetation

Biotic Index Value = a value given a stream based on the composition of aquatic invertebrates and their corresponding levels of tolerance to pollution. The scale ranges from 0-10 where higher values correspond to decreased water quality. This may also be referred to as the Hilsenhoff index.

Lake Type

Dg = Drainage Lakes; primary water source is overland flow from relatively large watersheds that are high flushing making them least sensitive to shoreland-derived pollutants. Permanent inlet and outlet streams are present.

Se = Seepage Lakes; water sources are primarily rainfall and groundwater. Watersheds are generally small and very low flushing making them sensitive to shoreland-derived pollutants. They have no inlet or outlet (land locked).

Sp = Spring Lakes; primary water source is groundwater. Watershed size is relatively small. They have permanent outlets with substantial flow, but seldom have inlet streams. These high volume outlets make them rather insensitive to shoreland-derived pollutants.

S.D.F. = Shore Development Figure; the ratio of the length of the shoreline of a lake to the circumference of a circle having the same area as the lake. This is a method used to express the degree of irregularity of a shoreline. The number is never less than 1.0 since that is the value of a perfect circle.



Appendix C Public Input Data

Participants in the Public Input for the Determination of Door County's Top Resource Concerns

*Designates a member of the Resource Professional Group

Roy	Aiken	Door Property Owners Association
Allan	Alexander	Supervisory District 1
Roger	Anderson	Supervisory District 6
Scott	Bader	Door County Board of Realtors
Robert	Batal	Supervisory District 4
Bill	Baudhuin	Door County Home Builders Association
Dick	Baudhuin	Conservation Congress
William	Berglund	Town of Gardner
Denise	Bhirdo	Village of Sister Bay
John	Birmingham	Conservation Congress
Gary	Bley	Supervisory District 15
Laurel	Braatz	Department of Natural Resources*
Kenneth	Bradbury	WI Geological & Natural History Survey*
Bill	Brey	Natural Farmers Union
Larry	Brickner	National Farm Organization
Dan	Burke	Door County Land Trust*
Paul	Burton	Village of Ephraim
Bill	Chaudoir	Door County Economic Development Corporation
Imogene	Christensen	Supervisory District 9
Dale	Cihlar	Supervisory District 3
Daniel	Cihlar	Town of Sturgeon Bay
Galen	DeJardin	Town of Brussels
Gary	DeNamur	Supervisory District 8
Mary Ann	DuBois	Supervisory District 4
Joel	Eggert	Supervisory District 13
Bernard	Ellenbecker	Supervisory District 11
Ron	Fassbender	Department of Natural Resources*
Wayne	Fischer	Supervisory District 12
Robert	Florence	Door County Planning Department*
Bob	Gamble	Supervisory District 7
Mike	Grimm	Nature Conservancy*
Dave	Gruber	Natural Resources Conservation Service*
Nathan	Gunnlaugsson	Town of Washington
Charles	Henriksen	Northeast Wisconsin Commercial Fishing Association
Dennis	Hickey	Supervisory District 17
Betty	Hilbert	League of Women Voters
Gerald	Hintz	Supervisory District 13
Jave	Hughes	Supervisory District 18
Tim	Jessen	Supervisory District 20
Elayne	Johnson	Supervisory District 19
Bruce	Karsten	Supervisory District 6
Leroy	Klein	Town of Union
Larry	LePorte	Door County Health Department*
Leroy	Liebe	Town of Nasewaupsee
Randy	Maedke	Supervisory District 2
Gerald	Martens	Town of Egg Harbor
Charles	Massart	Supervisory District 1
Bob	Merline	Supervisory District 18
Jerry	Neinas	Supervisory District 2
James	Nelson	Supervisory District 19
George	Pinney	Door County Parks Department*
Bernadette	Rainsford	Supervisory District 20
Tim	Rasman	Department of Natural Resources*
Bill	Ruff	Department of Natural Resources*
Bob	Ryan	Town of Clay Banks
Dave	Schartner	Supervisory District 16
Pat	Scieszinski	Supervisory District 9
Don	Sitte	Town of Baileys Harbor
Jerry	Smith	US Army Corps of Engineers*
Greg	Smith	Supervisory District 15
Mary	Standish	Supervisory District 16
Robert	Starr	City of Sturgeon Bay
Ron	Stieglitz	UWGB College of Environmental Sciences*



John	Teichtler	Door County Sanitarian*
John	Thenell	Supervisory District 11
Gerald	Uecker	Town of Forestville
Tom	Utzinger	Supervisory District 17
Dan	Vandertie	Farm Bureau
Jerome	Viste	Door County Environmental Council
Dan	Viste	Supervisory District 3
Cindy	Weber	Supervisory District 8
George	Whitford	Supervisory District 5
Leo	Zipperer	Town of Sevastopol

Survey Results

Resource Concern	Ranking											Not An Issue
	1	2	3	4	5	6	7	8	9	10	11	
<i>1999 Concerns in Descending Order</i>												
Groundwater Protection and Improvement	32	6	3	2	0	1	0	0	0	0	0	0
Impacts of Development on Natural Resources	8	14	4	3	7	3	2	1	0	0	0	2
Human Waste Management	0	11	14	6	2	4	3	3	1	0	0	0
Animal Waste Management	1	4	9	12	8	5	4	0	0	1	0	0
Surface Water Protection	1	7	6	9	12	4	3	1	0	0	0	1
Stormwater Management	0	1	2	3	3	14	11	5	2	1	0	2
Soil Erosion Control; Agricultural and Construction Site	0	0	2	4	5	3	15	10	3	0	0	2
Non-Metallic Mine Reclamation	1	0	0	1	2	1	2	16	21	0	0	0
Invasive Species	1	1	3	3	4	6	2	6	15	2	0	1
<i>Additional Concerns from 2005 Surveys</i>												
Ag Land Protection	0	0	0	0	0	1	0	0	0	0	0	0
Beach Contamination	0	0	1	1	0	0	0	0	0	0	0	0
Ozone Air Pollution	0	0	0	0	0	0	0	0	0	1	0	0
Protection through Zoning not Easement	0	0	0	0	0	1	0	0	0	0	0	0
Permanent Structures	0	0	0	0	0	0	0	0	0	1	0	0
Ground and Surface Water Monitoring	0	0	0	0	0	0	0	0	0	0	1	0
Phosphorus & Nitrate Discharge from Municipal Systems	0	0	0	0	0	0	0	0	0	1	0	0
Contamination from Fertilizers	0	0	0	0	0	0	0	0	0	1	0	0
Energy Demand (Alternative)	0	0	0	0	0	0	0	1	0	0	0	0



Appendix D

NOTICE OF PUBLIC HEARING

The Door County Land Conservation Committee (LCC) will be holding a public hearing for the Door County Land and Water Resource Management Plan. The hearing will be held at 8:30 a.m. on Wednesday, August 3, 2005, in the County Board Conference Room of the Door County Courthouse. The plan identifies Door County's land and water resource concerns and develops goals that will guide Soil and Water Conservation Department (SWCD) programs in the protection of those resources. The LCC is inviting input from the public and copies of the proposed Land and Water Resource Management Plan are available at the SWCD office, located on the 1st floor of the Door County Courthouse, between 8:00 a.m. and 4:30 p.m., Monday through Friday or call (920) 746-2214.

Published July 28 and July 30, 2005.

STATE OF WISCONSIN
DOOR COUNTY

update will be presented and the public may ask questions of the Land Conservation Committee and Soil and Water Conservation Department Staff. Immediately after the informational session, a formal public hearing will be held. Interested parties may give oral testimony. Written testimony will also be accepted at the Door County Soil and Water Conservation Department, 421 Nebraska Street, Sturgeon Bay, WI 54235-0670 (Fax 920-746-2369) until 4:00 p.m. on August 2, 2005. Anonymous correspondence will not be accepted.

The LCC is inviting input from the public and copies of the proposed Land and Water Resource Management Plan are available at the SWCD office, located on the 1st floor of the Door County Courthouse, between 8:00 a.m. and 4:30 p.m., Monday through Friday or call (920) 746-2214.

July 28, 30/2 Times
**PUBLIC HEARING
BEFORE THE DOOR
COUNTY LAND CONSER-
VATION
COMMITTEE**
Door County, Wisconsin
A public hearing will be held by the Door County Land Conservation Committee on Wednesday, August 3, 2005 at 8:30 a.m. in the County Board Conference Room (A-324) of the Door County Courthouse, 421 Nebraska Street, Sturgeon Bay, Wisconsin, to give consideration to the update of the **Door County Land and Water Resource Management Plan**. The plan identifies Door County's land and water resource concerns and develops goals that will guide Soil and Water Conservation Department (SWCD) programs in the protection of those resources.
A brief summary of the

Fiducit of Publication

Deane M. Watermolen, being duly sworn, doth depose and say that he (she) is an authorized representative of the Door County Advocate, a semi-weekly newspaper, published in Sturgeon Bay, Door County, Wisconsin, and that an advertisement of which the annexed is a true copy, taken from said paper, was published therein on

July 28
30

(Signed) Deane M. Watermolen (Title)

Subscribed and sworn to before me this 30th day of July, 20 05

Jenni L. Jaen
Notary Public, Door County, Wisconsin
AUG 28 2005

My Commission expires _____, 20____

No. Lines 67 No. Times 2 Affidavit Fees \$ 1.00
Printers Fees 50.07
Total \$ 51.07

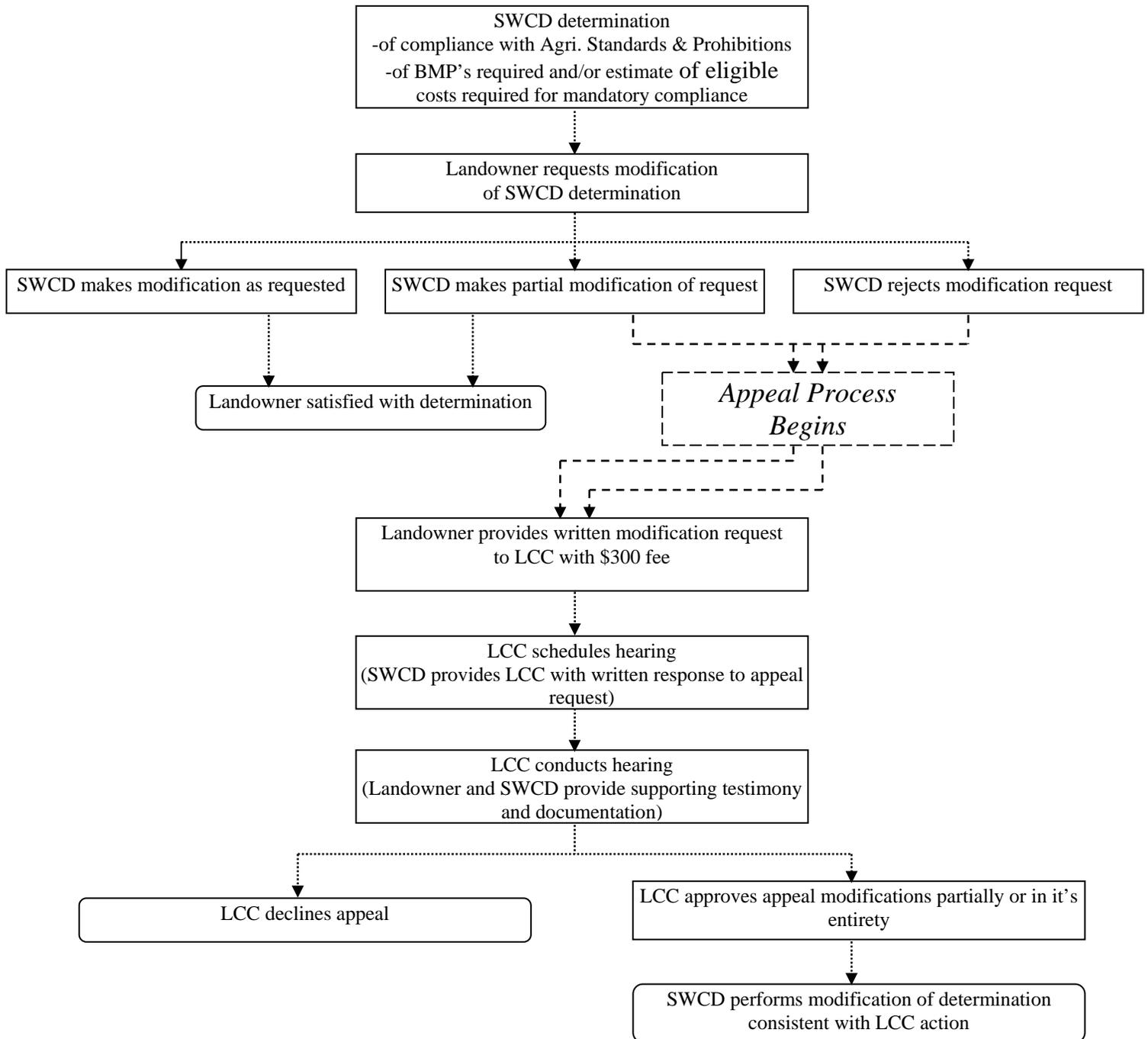


Appendix E

Conservation Practices Available to Meet the Agricultural Performance Standards and Prohibitions

Agricultural Performance Standard or Prohibition	Effective Date	Conservation Practices
Cropland soil erosion must meet tolerable soil loss (T) calculated by RUSLE 2	October 1, 2002	Install contour buffer systems, crop rotation, conservation tillage, no-till planting, contour strip cropping, and contour farming. Related practices: grade stabilization structures, grassed waterways, critical area stabilization, and lined waterways.
Construct, maintain and proper closure of manure storage facilities to prevent animal waste overflows and leakage.	October 1, 2002	Follow NRCS standards for construction, maintenance and closure using technical standards 313 (Waste storage facility), 360 (Closure of waste impoundments), 634 (waste transfer system)
Runoff shall be diverted away from contacting feedlots, manure storage areas and barnyard areas within a Water Quality Management Area	October 1, 2002	Install roof runoff management systems, earthen diversion and underground outlets
The application of manure, commercial fertilizer and other nutrients shall conform with a Nutrient Management Plan	Effective: 2003 for new operations 2005 for land within high priority watersheds 2008 for all cropland	Develop and implement annual nutrient management plan for applying all nutrients. All soil tests must be completed by DATCP approved lab. Apply nutrients according to UWEX A-2809 publication. Install conservation practices to reduce runoff and nutrient loading.
Manure Management Prohibitions <ol style="list-style-type: none"> a. No overflow from manure storage facilities. b. No unconfined manure stacks with Water Quality Management Areas. c. No direct runoff from feedlots and manure storage facilities to waters of the state. d. No unlimited access of livestock to shore lands that prevents maintenance of adequate sod cover. (Livestock facilities) 	October 1, 2002	Design and construct facilities to technical standards, maintain existing facilities, repair or replace facilities, as needed. <ol style="list-style-type: none"> a. Relocate manure stacks to more environmentally safe areas. Construct storage facility. b. Install barnyard runoff control systems, roof runoff management systems, wastewater treatment strips, relocate animal feeding facilities. c. Install access roads and cattle crossings, watering facilities, livestock fencing, riparian buffers, prescribed grazing, stream bank protection.

Appeals Procedure for the Implementation of Agricultural Standards and Prohibitions



Bibliography

- Bachhuber, J.A. and W. Schuster. 1987. *Nonpoint Source Control Plan for the Upper Door Priority Watershed Project*. Wisconsin DNR and Door County SWCD.
- Bay-Lake Regional Planning Commission. *An Inventory and Assessment of the Resources of the Niagara Escarpment in Wisconsin*. 2001.
- Bay-Lake Regional Planning Commission. *Significant Wildlife Habitat & Natural Areas Door County, Wisconsin*. 2003.
- Bradbury, Kenneth. 1989. *Door County and the Niagra Escarpment Foundations for the Future*. Wisconsin Academy of Sciences, Arts and Letters.
- Bradbury Kenneth, R. Todd W. Rayne, Maureen A. Muldoon and Peter D. Roffers. 1998. *Application of a Discrete Fracture Flow Model for Wellhead Protection at Sturgeon Bay, Wisconsin*.
- Bertrand G., Jean Lang and John Ross. 1976. *The Green Bay Watershed; Past, Present, Future*. University of Wisconsin Sea Grant Program.
- Deller, H. and P. Stoelting. 1986. *Wisconsin's Door Peninsula and Geomorphology*. The Wisconsin Geographer, vol2, pp. 29-41.
- Department of Natural Resources
Chapters: NR 135, NR 151, NR 216, NR 299, and NR 340.
- Department of Natural Resources. 2001. *The State of the Lakeshore Basin*. PUB WT 667 2001.
- Department of Natural Resources. 1995. *Twin Door-Kewaunee Basin Water Quality Management Plan*. Wisconsin Water Quality Management Program.
- Department of Natural Resources. 1993. *Wisconsin Construction Site Best Management Practices Handbook*.
- Department of Natural Resources, DATCP, and the Door County Land Conservation Department. 1996. *Nonpoint Source Control Plan for the Red River/Sturgeon Bay Priority Watershed Project*.
- Door County Basin Water Quality Management Plan. 1990.
- Door County Code Number 21.15 (Sanitary Systems). 1986.
- Door County Land Division Ordinance. 1998.

Door County Chapter 23 *Agricultural Performance Standards and Animal Waste Storage Ordinance*.

Door County Chapter 36 *Nonmetallic Mining Reclamation*.

Door County Planning Department. 1982. *Door County Farmland Preservation Plan: Final Report*.

Door County Planning Department. 1999. *Door County Zoning Ordinance*.

Door County Soil and Water Conservation & Door County Planning Inter-departmental Agreement. 1999.

Door County Soil and Water Conservation & Sturgeon Bay Utilities. *Wellhead Protection Plan – Sturgeon Bay Municipal Wells*. 2003.

Door County Soil and Water Conservation Department, Highway Department, and Parks Department Hydroseeder Agreement. 1999.

Door County Soil and Water Conservation Department. *Door County Land and Water Resource Management Plan*. 1999.

Door County Soil and Water Conservation Department Procedure Policy. 1997.

Door County Soil and Water Conservation Department. *Surface Water Inventory of Door County*. 2000.

Door County Soil and Water Conservation Department. *Water Pollution Abatement Cost-sharing Program Policy*.

Final Report: Wisconsin Lake Management Grant for the Forestville Millpond. 1996.

Gansberg, Mary. 1993. *Nonpoint Source Appraisal Tributaries Entering the North Side of Sturgeon Bay Canal*.

Gansberg, Mary. 1994. *Red River/Sturgeon Bay Surface Water Resource Appraisal Report*. DNR.

Gansberg, Mary. 1996. *Stony Creek Watershed Nonpoint Source Pollution Assessment Report*. DNR.

Grimm, Mike, Laura Hewitt and Brian Holtz. *The Door Peninsula Conservation Initiative: A Resource Guide for Local Conservation Partners with Site Reports*. The Nature Conservancy.

- Johnson, S.B. and R. Stieglitz. 1990. Karst Features of a Glaciated Dolomite Peninsula, Door County. *Geomorphology*, vol. 4, pp. 37-54.
- Lee, Robert E., & Associates Inc. 1996. *Village of Sister Bay Wellhead Protection Plan*.
- Lee, Robert E., & Associates Inc. 1996. *Stormwater Management Plan: Village of Ephraim*.
- Nature Conservancy, The. 1994. *The Conservation of Biological Diversity in the Great Lakes Ecosystem: Issues and Opportunity*.
- Palmquist, John C. 1989. *Wisconsin's Door Peninsula: A natural History*. Perin Press, Appleton.
- Peters, C. A. et al. 1995. *Water Quality in the Western Lake Michigan Drainages, Wisconsin and Michigan*. USGS Circular 1156.
- Thompson, Todd A. and Steve J. Baedke. 1997. *Strand-plain Evidence for late Holocene Lake Level Variations in Lake Michigan*. *Geological Society of America Bulletin* June 1997: v. 109; no. 6; p. 666-682.
- Town of Egg Harbor Ordinance: Chapter 9, Subchapter I, Mining and Quarrying. 1989.
- Schneider, Allan F. 1993. *Pleistocene Geomorphology and Stratigraphy of the Door Peninsula, Wisconsin: Midwest Friends of the Pleistocene 40th Annual Meeting*. University of Wisconsin-Parkside.
- Sherrill, M.G. 1978. *Geology and Groundwater in Door County, Wisconsin, with Emphasis on Contamination Potential in the Silurian Dolomite*. U.S. Geologic Survey Water Supply Paper 2047, Washington D.C.
- Sweeney, Thomas. 1988. *Door County Erosion Control Plan*. Soil and Water Conservation Department.
- Valvassori, Danielle. 1990. *Door County Basin Water Quality Management Plan*. Wisconsin DNR (PUBL-WR-205-90-REV).
- Wiersma, James H. and Ronald D. Stieglitz. 1989. *Lead Migration from Contaminated Sites—Door County, WI*. University of Wisconsin-Green Bay.
- Wisconsin Conservation Department. 1965. *Surface Water Resources of Door County*.
- Wisconsin Department of Commerce Administrative Codes
Chapters: 8, 20, 21, 65 (proposed), 83, 120, 204, 214, 216, 243, 303, and 812.
- Wisconsin State Statutes: Chapters: 59, 66, 92, 101, 145, 160, 254, 281, 283, and 295.

Glossary

Aquifer: A geologic deposit that yields economic supplies of water to wells or springs as a result of its porosity or permeability. Examples include a zone of sandstone, unconsolidated gravel, or jointed limestone.

Bacteria: Single-cell, microscopic organisms. Some can cause disease, but others are important in organic waste stabilization.

Barny: The Wisconsin Barnyard runoff model. A computer model used to assess the water quality impacts of barnyards or feedlots. It was developed by DNR with assistance from NRCS and DATCP.

Best Management Practice (BMP): The most effective, practical measures to control nonpoint sources of pollutants that runoff from land surfaces.

Buffer Strip: Strips of grass or other erosion-resisting vegetation between disturbed area and a stream or lake.

Clean Water Act (Public Law 92-500): The federal law that sets national policy for improving and protecting the quality of the nation's waters. The law set a timetable for the cleanup of the nation's waters and stated that they are to be fishable and swimmable. This also required all dischargers of pollutants to obtain a permit and meet the conditions of the permit. To accomplish this pollution cleanup, billions of dollars have been made available to help communities pay the cost of building sewage treatment facilities. Amendments in the Clean Water Act were made in 1977 by passage of Public Law 95-217, and in 1987.

Conservation Tillage: Also referred Planting row crops while only slightly disturbing the soil. In this way a protective layer of plant residue stays on the surface. Erosion rates decrease to as High Residue Management.

Contaminant: Some material that has been added to the water that is not normally present. This is different from a pollutant, which suggests there is too much of the material present.

Critical Site: A major source of polluted runoff in a watershed project for which best management practices are available but are not currently being used. The watershed plan for a particular project contains the description and the means of identifying critical sites for different pollution sources. Critical sites are so important to the overall success of the priority watershed project that the state has been given authority to require site owners to install and/or use BMP's at identified critical sites.

Dolomite: A Sedimentary rock with a high ratio of magnesium and calcium carbonate (limestone).

Erosion: The wearing away of the land surface by wind or water.

Fecal Coliform: A group of bacteria used to indicate the presence of other bacteria that cause disease. The number of coliform is particularly important when water is used for drinking and swimming.

Groundwater: Underground water, which fills porous geologic formations (**aquifer**) and flows in response to gravity and pressure. Often used as the source of water for communities and industries.

Landowner: In order to simplify this document, the term “landowner” was used as a general term to describe landowner and/or operator.

Nitrate: Nitrogen in fertilizers, animal wastes, and plant residues may be converted to the nitrate form through the action of soil bacteria. If unused by plants, nitrate can move through the soil into groundwater. High nitrate levels in drinking water (> 10 PPM) can create health problems for humans and animals.

Nonpoint Source Pollution: Pollution whose sources cannot be traced to a single point such as a municipal or industrial wastewater treatment plant discharge pipe. Nonpoint sources include eroding farmland and construction sites, urban streets, and barnyards. Pollutants from these sources reach water bodies via runoff, which can best be controlled by proper land management.

Nutrient Management: The management and crediting of nutrients from all sources, including legumes, manure, and soil reserves for the most appropriate application of manure and commercial fertilizers. Management includes the rate, method, and timing of the application of all sources of nutrients to minimize the amount of nutrients entering surface water or groundwater. This includes manure nutrient testing, routine soil testing, and residual nitrogen soil testing.

Phosphorus: A nutrient that, when reaching lakes in excess amounts, can lead to over fertile conditions and algae blooms.

Point Source: Sources of pollution that have discrete discharges, usually from the mouth of a sewer, drain, or pipe.

Pollution: The presence of materials or energy whose nature, location, or quantity produces undesired environmental or health effects.

Prioritized Implementation Areas (PIA): Geographically prioritized units of the County, based on either watershed or geographic boundaries, to establish a ranking method to systematically facilitate implementation of standards and prohibitions throughout the County.

Priority Watershed: A drainage area, roughly about 100,000 acres in size, selected to receive state money to help pay the cost of controlling nonpoint source pollution. Because money is limited, only watersheds where problems are critical, control is practical, and cooperation is likely are selected for funding.

Riparian: Belonging or relating to the bank of a lake, river, or stream.

Runoff: Water from rain, snowmelt, or irrigation that flows over the ground surface and returns to a body of water. Runoff can collect pollutants from air or land and carry them to receiving waters.

Sediment: Soil particles suspended in and carried by water as a result of erosion.

“T” Soil Loss Tolerance: T is the maximum average annual soil loss in tons/acre/year that is permitted on a given soil if it is to remain productive. In general, soil formation equals soil erosion loss at T value.

Uniform Dwelling Code: A statewide building code for communities larger than 2500 residents which specifies requirements for electrical, heating, ventilation, fire, structural, plumbing, construction site erosion, and other construction related practices.

Urban Sprawl: The spreading out of urban areas leading to the encroachment upon and subsequent development of surrounding rural areas.

Watershed: The land area that drains into a lake or river.

Wetland: An area inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a variety of vegetative or aquatic life. Wetland vegetation requires saturated or seasonally saturated soil conditions for growth and reproduction. Broad wetland categories include: Marshes, Northern Sedge Swamps, Shrub Swamps, Conifer and Hardwood Swamps, Peatlands, and Muskeg.

Zone of Contribution (ZOC): A delineated area on the surface of the land from which water recharges from precipitation will contribute to groundwater that will flow to a corresponding well. Soil type and depth, aquifer type and properties, groundwater gradient, well depth and pumping rates, and many other factors determine a zone of contribution for a well.

Acronyms

ACCP	Agricultural Chemical Cleanup Program
AWAC	Animal Waste Advisory Committee
BARNY	Barnyard Pollution Loading Model
BMP	Best Management Practice
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CSA	Cost Share Agreement
CWA	Clean Water Act
DATCP	Department of Agriculture, Trade, and Consumer Protection
DCIST	Door County Invasive Species Team
DCPD	Door County Planning Department
DNR	Department of Natural Resources
EPA	Environmental Protection Agency
I&E	Information and Education
LCC	Land Conservation Committee
LCD	Land Conservation Department
LGSD #1	Liberty Grove Sanitary District #1
LITC	Door County Land Information Technical Committee
LWRMP	Land and Water Resource Management Plan
NOD	Notice of Discharge
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
PIA	Prioritized Implementation Areas
QAT	Quality Assurance Team
R-NUG	Regional Nutrient Management Users Group
SWCD	Door County Soil and Water Conservation Department
SWRM	Soil and Water Resource Management
TRM	Targeted Runoff Management
UDC	Uniform Dwelling Code
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WDACP	Wildlife Damage Abatement and Claims Program
WPDES	Wisconsin Pollution Discharge Elimination System
ZOC	Zone of Contribution