Nonpoint Source Pollution Control Plan for the Camp-Center Lakes Priority Watershed Project

This plan was prepared under the Wisconsin Nonpoint Source Pollution Abatement Program by the Wisconsin Department of Natural Resources, the Department of Agriculture, Trade and Consumer Protection, the U.S. Department of Agriculture - Natural Resources Conservation Service and the Kenosha County Office of Planning and Development.

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Nonpoint Source Control Plan for the Camp-Center Lakes Priority Watershed Project

The Wisconsin Nonpoint Source Water Pollution Abatement Program

December 1996

This Plan Was Cooperatively Prepared By:

The Kenosha County Land Conservation Department
The Wisconsin Department of Natural Resources and
Wisconsin Department of Agriculture, Trade and Consumer Protection

Publication WT 476-96

For copies of this document please contact:

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Watershed Plan Credits

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June 6, 1996

IN REPLY REFER TO: 2600

Mr. David Giza
Chair
Camp-Center Lakes Rehabilitation District
c/o W.W. Grainger, Inc.
Lincolnshire, IL 60069-3639

Dear ~~Mr.~~ David Giza:

I am pleased to approve the Nonpoint Source Control Plan for the Camp-Center Lakes Priority Watershed. This plan meets the intent and conditions of s. 144.25, Wisconsin Statutes, and Chapter NR 120, Wisconsin Administrative Code. The plan has been approved by the Camp-Center Lakes Citizens Advisory Committee, the Kenosha County Board, as well as by the Wisconsin Land and Water Conservation Board. My approval of the watershed plan completes the plan approval process as set forth in Wisconsin Statutes and allows the granting of funds through the Nonpoint Source Water Pollution Abatement Program necessary to support the project. I am also approving the plan as an amendment to the Fox-Illinois River Basin Areawide Water Quality Management Plan.

I would like to express the Department's sincere appreciation for your assistance in preparing the plan and developing a cooperative agreement with the USDA Natural Resources Conservation Service to carry out the plan. We look forward to assisting local staff on this important project.

Sincerely,

George E. Meyer
Secretary

c: Becky Wallace, WR/3
Ruth Johnson, SED
Cindy Hoffland, CA/8
Pat Leavenworth, NRCS

Printed on Recycled Paper

George E. Melcher
Director

KENOSHA COUNTY

OFFICE OF PLANNING & DEVELOPMENT

KENOSHA COUNTY CENTER
U.S.H. 45 & S.T.H. 50

PRESERVATION • DEVELOPMENT • CONSERVATION

19600 - 75th Street
Post Office Box 520
Bristol, Wisconsin 53104-0520
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May 28, 1996

RECEIVED
JUN - 3 1996
BUREAU OF WATER RESOURCES

Mr. Kent R. Taylor
Program & Planning Analyst
Department of Natural Resources
101 S. Webster Street
P.O. Box 7921
Madison, WI. 53707-7921

Dear Mr. Taylor:

Please find enclosed a copy of Kenosha County Board of Supervisors' Resolution No. 12 adopting the Nonpoint Source Pollution Control Plan for the Camp/Center Lakes Priority Watershed Project in Kenosha County. It is this department's understanding that Kenosha County must adopt the watershed plan prior to the State of Wisconsin approving the plan. We understand that the State of Wisconsin Land and Water Conservation Board will be meeting on June 4, 1996; and the potential approval of Kenosha County's watershed plan for the Camp/Center Lakes area is on the agenda at that time.

In closing, if I can be of further assistance regarding this matter, please feel free to contact me.

Sincerely,

Larry B. Brumback

LARRY B. BRUMBACK
Director of Division
of County Development

LBB:jmp

Enclosure

Kenosha County

BOARD OF SUPERVISORS

RESOLUTION NO. 12

Subject: Adoption of Nonpoint Source Pollution Control Plan for the Camp/Center Lakes Priority Watershed Project			
Original ☐	Corrected ☐	2nd Correction ☐	Resubmitted ☐
Date Submitted: May 21, 1996		Date Resubmitted:	
Submitted By: Land Use Committee Land Conservation Committee			
Fiscal Note Attached ☐		Legal Note Attached ☐	
Prepared By: Larry B. Brumback Division of County Development		Signature: L. B. Brumback	

WHEREAS, Kenosha County applied for and received a grant for the preparation of a watershed plan for the Camp/Center Lakes area from the Wisconsin Department of Natural Resources; and

WHEREAS, the purpose of the watershed plan was to inventory the sources of nonpoint pollution, such as construction sites, stream banks, and shorelines, and to establish pollution reduction goals; and

WHEREAS, a Camp/Center Lakes citizens' advisory committee, along with a technical steering committee, consisting of representatives from federal, state, county, and the Camp/Center Lakes Rehabilitation District, along with private consultants, assisted in the preparation of the plan; and

WHEREAS, a public hearing was held on the plan on May 6, 1996; and the plan was subsequently approved by the Land Use Committee on May 8, 1996, and the Land Conservation Committee on May 21, 1996; and

WHEREAS, the grant implementation of the plan will be done by the Camp/Center Lakes Rehabilitation District with assistance from the United Stated Department of Agriculture Natural Resources Conservation Services and will not require tax levy dollars;

NOW, THEREFORE, BE IT RESOLVED that Kenosha County hereby adopt the Nonpoint Source Pollution Control Plan for the Camp/Center Lakes Priority Watershed Project;

BE IT FURTHER RESOLVED that a certified copy of this resolution be forwarded to the State of Wisconsin Department of Natural Resources for approval by the State of Wisconsin.

Submitted by:

Thomas J. Gorlinski, Chairman	Leonard Johnson, Chairman
Mark Karow	Michael Marchuk
Brenda Carey-Mielke	Dave Daniels
Mark Modory	Eugene Badtke
Gordon West	
LAND USE COMMITTEE	LAND CONSERVATION COMMITTEE

ADOPTED ☒ DEFEATED ☐ TABLED ☐
AMENDED ☐ ☐ ☐
ATTEST TO BY:
Thomas W Kaltman 5-22-96
COUNTY EXECUTIVE
Nancy Principe 5-22-96
COUNTY CLERK

RESOLUTION No. 12

Presented to County Board

Date MAY 21 1996

Action by County Board

- ☒ Adopted as presented MAY 21 1996
- ☐ Adopted as amended ___-___-___
- ☐ Referred to _____ ___-___-___
- ☐ Defeated ___-___-___
- ☐ Withdrawn ___-___-___

County Board Chairman

Thomas W Kaumann

Presented to County Executive MAY 22 1996

By Nancy Principe
County Clerk

Action by County Executive

- ☒ Approved 5-22-96
- ☐ Vetoed ___-___-___
- ☐ Vetoed in part ___-___
- ☐ Effective without signature

By _____
County Executive

Veto action by County Board

- ☐ Overridden ___-___-___
  Vote ___ to ___
- ☐ Sustained ___-___-___
  Vote ___ to ___

RECEIVED
28 1996
KENOSHA COUNTY
PLANNING AND DEVELOPMENT

This resolution of the County Board is effective as of

___-___-___

_____
County Clerk

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SUMMARY

Introduction

The Camp-Center Lakes Priority Watershed Plan assesses the sources of pollution in the Camp-Center Lakes watershed and guides the implementation of nonpoint source control measures. These control measures are needed to meet specific water resource objectives for Camp Lake, Center Lake, and its tributaries. The primary objective of the project is to reduce nonpoint source pollution to Camp and Center Lakes.

The sources of pollution most commonly found in this watershed include sediment and phosphorus from cropland erosion, eroding streambanks, construction erosion, shoreline erosion, and urban sources. The purpose of this project is to reduce the amount of pollutants reaching the lakes within the Camp-Center Lakes Priority Watershed Project area.

This plan was prepared by the Department of Natural Resources (DNR), the Department of Agriculture, Trade and Consumer Protection (DATCP), the USDA Natural Resources Conservation Service (NRCS), and the Kenosha County Office of Planning and Development. The DNR selected the Camp-Center Lakes watershed as a priority watershed project through the Wisconsin Nonpoint Source Water Pollution Abatement Program in 1993. It joined 74 similar watershed projects statewide in which nonpoint source control measures are being planned and implemented. The Nonpoint Source Water Pollution Abatement Program was created in 1978 by the Wisconsin State Legislature. The program provides financial and technical assistance to landowners and local governments to reduce nonpoint source pollution.

The project is administered on the state level by the DNR and DATCP. The USDA Natural Resources Conservation Service (NRCS) will carry out the project at the local level with grant administration by the Camp-Center Lakes Rehabilitation District. Additional assistance will be provided by the Kenosha County Land Conservation Commitee, Kenosha County Office of Planning and Development, University of Wisconsin–Extension and the Camp-Center Lakes Citizens Advisory Committee.

General Watershed Characteristics

The Camp-Center Lakes watershed drains eight square miles of land in the Town of Salem, Kenosha County, Wisconsin. The watershed drains to the Fox (Illinois) River basin. The Camp-Center Lakes watershed was divided into five smaller drainage areas, called subwatersheds, for planning purposes (see map).

Land use in the watershed, as shown in table S-1, is mainly agricultural, and is currently dominated by row cropping. The watershed population is about 1,500 persons and is growing gradually.

Table S-1. Land Use in the Camp-Center Lakes Watershed

Land Use	Acres	Percent of Watershed
Urban	935	17
Woodlands	900	17
Surface Water	621	12
Wetlands	659	12
Agricultural/Other Open Land	2,295	42
TOTAL	5,410	100

Source: SEWRPC

Water Quality

Camp Lake and Center Lake are degraded by excessive nutrients and sediment, and they are not reaching their highest potential uses, such as fishing and swimming, due to pollution from nonpoint sources. Water quality problems associated with nonpoint sources include loss of fish and invertebrate habitat, turbidity, low water clarity, and nuisance vegetation. Eroding croplands, construction sites, streambanks, and shorelines are the major sources of nonpoint pollution in the watershed. While surface waters are partially impaired, groundwater reserves are plentiful and uncontaminated.

Wetlands have been greatly reduced, but they are still some of the most valuable natural resource features in the watershed. Their principal values include wildlife habitat, fish spawning, reduction of peak runoff and flood flows, and removal of pollutants. Existing wetlands comprise about 659 acres, or 12 percent of the watershed.

Sources of Water Pollution

Consultants working for Kenosha County Office of Planning and Development collected data on all agricultural lands, streambanks, shorelines, channels, and urban lands in the

watershed. These data were used to estimate the pollutant potentials of nonpoint sources. In the Camp-Center Lakes watershed, about 35 percent of the sediment deposited in the lakes annually is derived from agricultural erosion. An estimated 39 percent of the sediment reaching streams originates from streambank erosion. Approximately 17 percent of the total sediment is contributed from construction erosion, 8 percent is derived from eroding shorelines and 1 percent from urban runoff.

The following is a summary of the inventory results:

Cropland Inventory Results

- 1,557 acres were inventoried.
- 1,384 tons of sediment are estimated to be delivered to receiving waters annually from cropland (35 percent of total sediment).

Streambank Erosion Inventory Results

- 9.7 streambank miles were inventoried.
- 1,560 tons of sediment are estimated to reach streams annually from eroding streambank sites (39 percent of total sediment).

Shoreline and Channel Erosion Inventory Results

- 9.2 miles lake shorelines and channels were inventoried.
- 334 tons of sediment are estimated to be delivered to the lakes annually from shoreline and channel erosion (8 percent of the total sediment).

Urban Inventory Results

- 963 acres of urban lands were inventoried.
- 28 tons of sediment are estimated to be delivered to lakes annually from urban lands (1 percent of the total sediment).

Construction Erosion Inventory Results

- 23 acres of construction sites were observed.
- 690 tons of sediment are estimated to erode annually from construction sites (17 percent of the total sediment).

Pollutant Reduction Goals

Sediment

To reduce overall sediment delivered by 56 percent. To meet this goal, the following is needed:

- 38 percent reduction in sediment reaching streams from agricultural lands in the watershed.
- 82 percent reduction in streambank sediment delivered to streams.
- 58 percent reduction in shoreline and channel sediment delivered to the lakes.
- 33 percent reduction in construction site sediment in the watershed.
- 7 percent reduction in sediment from urban lands.

Phosphorus

Reduce overall phosphorus load by 56 percent. To meet this goal, the following is needed:

- 36 percent reduction in phosphorus reaching streams from agricultural lands in the watershed.
- 6 percent reduction in phosphorus from urban lands.
- Achieve sediment goals listed above. Much of the phosphorus in the watershed is attached to and transported by sediment.

Achieving the goals listed above will result in improved recreational and aquatic life values, including swimming and fishing, by increasing water clarity and reducing nuisance algae.

Management Actions

The watershed plan prescribes best management practices (BMPs), actions or structures, that are needed to control nonpoint sources to the pollutant levels described above. Cost-share funds for installing pollutant control measures will be targeted at operations which contribute the greatest amounts of pollutants. Cost-share funds will be available through the Wisconsin Nonpoint Source Water Pollution Abatement Program for certain BMPs. State cost-share rates generally range from 50 to 70 percent. For some BMPs, the state will match additional contributions by local entities, such as the Camp-Center Lakes Rehabilitation District (CCLRD), up to 10 percent of the total cost of the BMP.

The NRCS project staff will contact all landowners who are eligible to receive cost-share funds during the project's implementation. All "critical" category sources of nonpoint pollutants must be controlled to meet project goals. Nonpoint sources in the "eligible" category contribute less of the pollutant load than those in the critical category. They are included in cost sharing eligibility to further insure that water quality goals are met.

The NRCS project staff will assist landowners in applying BMPs. Practices range from alterations in farm management (such as changes in tillage, crop rotations and residue management) to engineered structures (such as field diversions, sediment basins and grade stabilization structures), and are custom-fit to specific landowner situations. Cost-sharable BMPs are listed in Chapter Five of the watershed plan.

The following is a brief description of critical nonpoint pollutant sources (see Table S-2), project eligibility criteria, and BMP design targets for the project.

Agricultural Lands

All agricultural lands contributing sediment at a rate greater than the tolerable soil loss rate "T" and greater than 2 tons per acre per year are designated as critical. This involves an estimated 761 acres on 27 parcels of cropland, or 33 percent of the cropland sediment runoff in the watershed. Eligible category sites will include all lands contributing sediment to streams at a rate between 1 and 2 tons per acre per year or lands eroding at greater than the tolerable soil loss rate "T". This involves 11 percent of the upland sediment in the watershed. The BMPs prescribed for these lands emphasize both improving farm profitability and controlling pollutants.

Streambanks

Six stream reaches with erosion rates of greater than 0.06 tons per foot per year or sites with greater than 130 tons per year are designated critical. Those with erosion rates of between 0.03 and 0.06 tons per foot per year, are in the eligible category. Overall, approximately 1,277 tons of sediment from streambanks need to be controlled to meet project goals in the watershed. There will be a strong emphasis on controlling streambank erosion throughout the watershed.

Shorelines and Channels

Shoreline and channel erosion on Camp and Center Lakes and their interconnected channels contribute about 8 percent of the overall sediment delivered to the lakes. Critical sites for shorelines and channels are those with erosion rates of greater than 10 tons per year. Eligible category sites are those with erosion rates between 2 and 10 tons per year.

Construction Sites

In order to meet project goals, local government will need to address construction erosion control by monitoring erosion control practices, strengthening local ordinances where needed, staffing effective enforcement, informing contractors and developers of what is expected of them, providing technical assistance, and documenting enforcement procedures and ordinance violations. An erosion control information and education strategy is described in Chapter Six of the watershed plan.

Urban Runoff

Urban runoff pollution is such a small portion of the total pollutant load to Camp and Center Lakes that expensive urban BMPs are not warranted. However, to prevent more significant impacts from urban runoff in the future, as the watershed develops, pollution prevention practices such as yard and pet waste control, ditch maintenance, and stormwater management for new development will be needed to meet the goals of the watershed project. Details on this "core" program of activities are outlined in Chapter Five of the watershed plan.

Table S-2. Summary of Critical Sites in the Camp-Center Lakes Watershed

Sources	Units	Total Number of Sites	Estimated Total Number of Landowners
Croplands	761 acres	55 fields	27
Construction Sites	23 acres/year	40 sites/year	Unknown[1]
Streambanks[2]	4.5 miles	6	19
Shorelines	0.7 miles	3	3

[1]Number of construction site landowners is too difficult to estimate accurately.

[2]Streambank erosion sites are greatly elongated with low bank heights and moderate erosion rates. Treatment consists of grading and seeding with only a limited use of low-cost biotechnical treatments such as fiber rolls and A-jax. Traditional and costly riprap structures will seldom be used.

Critical sites criteria:

Cropland: >T and >2 tons/acre/year
Streambanks: >0.06 tons/foot/year or sites >130 tons/year
Shorelines: sites >10 tons/year
Construction Sites: All sites

Funds Needed for Cost Sharing, Staffing, and Educational Activities

DNR will award grants through the Camp-Center Lakes Rehabilitation District (CCLRD) for cost sharing, staff support, and educational activities. Table S-3 includes estimates of the financial assistance needed to implement nonpoint source controls in the Camp-Center Lakes watershed, assuming a 75 percent participation rate of eligible landowners.

Table S-3. Total Estimated Project Costs (over six years in 1995 dollars)

Item	Local Share	State Share
Best Management Practices	$ 93,743	$ 243,121
Local Assistance Staff Support	0	218,400
Other Direct (travel, equipment, supplies)	0	43,680
Easements	0	11,250
Nutrient Management	5,625	5,625
Stormwater Management Planning	18,000	42,000
Construction Erosion Control Practices	34,500	0
Educational Activities	0	12,880
Totals	$ 151,868	$ 576,956

* Estimates based on 75% participation.

Project Implementation

Project implementation is scheduled to begin in summer, 1996 and continue for six years. Individuals, businesses, and governmental units may sign cost-share agreements for the first five years of the project. BMPs must be installed within the six year implementation phase. Any critical category landowner or operator will have three years from the time they are notified of their status to install BMPs. After the three years, cost-sharing will be reduced, and enforcement actions may result. BMPs can usually begin to be installed as soon as a landowner signs a cost-share agreement.

Information and Education

The NRCS will have general responsibility for conducting an information and education program during the project. University of Wisconsin Extension staff in will provide assistance. This program will be active throughout the six years of the project. The activities will include BMP demonstrations, video programs, media presentations, exhibits, newsletters, direct mailings, youth volunteer activities, and watershed fairs.

Project Evaluation and Monitoring

The evaluation strategy for the project involves collecting, analyzing and reporting information to track progress in three areas:

1. **Administrative:** This category includes the progress in providing technical and financial assistance to critical and eligible landowners, and carrying out education activities identified in the plan. NRCS staff will track progress in this area and report to the DNR and DATCP annually.

2. **Pollutant Reduction Levels:** NRCS project staff will calculate the reductions in nonpoint source pollutant loadings resulting from BMPs and changes in land use practices and report to the DNR and DATCP at annual review meetings. A short-term goal (40 percent of the total pollutant reduction goal) is established for the end of the third year of project implementation.

3. **Water Resources:** The DNR will monitor changes in water quality, habitat, and water resource characteristics on a statewide basis. Evaluation monitoring activities will be designed to determine if the proposed BMPs achieve water resources objectives and how landowner participation levels in priority watersheds affect pollutant reduction.

For More Information

If you want more information about the Camp-Center Lakes Priority Watershed Project or a copy of the watershed plan contact one of the following:

Nonpoint Source Program Coordinator
Department of Natural Resources
101 S. Webster Street
Madison, WI 53707-7921
(608) 264-6294

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CHAPTER ONE
Plan, Purpose and Legal Status

Wisconsin Nonpoint Source Water Pollution Abatement Program

The State Legislature created the Wisconsin Nonpoint Source Water Pollution Abatement Program in 1978. The goal of the Program is to improve and protect the water quality of streams, lakes, wetlands, and groundwater by reducing pollutants from urban and rural nonpoint sources. The eight-square-mile Camp-Center Lakes Priority Watershed, located in Kenosha County, was designated a "priority watershed" in 1993. The primary objective of this project is to reduce nonpoint source pollution loads to Camp and Center Lakes and to enhance and protect the water quality of the streams in the watershed.

Nonpoint sources of pollution include: eroding agricultural lands, eroding streambanks and shorelines, erosion from developing areas, and runoff from established urban areas. Pollutants from nonpoint sources are carried to the lakes through rainfall runoff or seepage, and snowmelt.

The following is an overview of the Nonpoint Source (NPS) program:

- The DNR and DATCP administer the program. It focuses on critical hydrologic units called priority watersheds. The program is implemented through priority watershed projects.

- A priority watershed project is guided by a plan prepared cooperatively by the DNR, DATCP and local units of government, with input from a local citizen's advisory committee. Project staff evaluate the conditions of surface water and groundwater, and inventory the types of land use and nonpoint sources of pollution throughout the watershed. The priority watershed plan assesses nonpoint and other sources of water pollution and identifies management practices needed to control pollutants to meet specific water resource objectives. The plan guides implementation of these practices in an effort to improve water quality.

- Upon approval by state and local authorities, local units of government implement the plan. Water quality improvement is achieved through implementation of water pollution control best management practices (BMPs) and the adoption of ordinances. Landowners, land renters, counties, cities, villages, towns, sanitary

districts, lake districts, and regional planning commissions are eligible to participate.

- Technical assistance is provided to aid in the design of BMPs. State level cost-share assistance is available to help offset the cost of installing these practices. Eligible landowners and local units of government are contacted by the lead management agency to determine their interest in voluntarily installing the BMPs identified in the plan. Signed cost-share agreements list the practices, costs, cost-share amounts and a schedule to install management practices.

- Informational and educational activities are developed to encourage participation.

- The DNR and DATCP review the progress of the implementing units of government, and provide assistance throughout the six-year implementation phase of the project. The DNR monitors improvements in water quality resulting from control of nonpoint sources in the watershed.

Project Planning and Implementation Phases

Planning Phase

The planning phase of the Camp-Center Lakes project began in 1993. The planning phase included steps to:

1. Determine the conditions and uses of groundwater, streams, and lakes.

2. Inventory types of land uses and severity of nonpoint sources affecting the lakes and streams.

3. Evaluate the types and severity of other factors which may be affecting water quality. Examples include point source discharges and in-lake nutrient cycling

4. Determine nonpoint source controls and other measures necessary to improve and/or protect water quality.

5. Prepare and gain approval of a program for local implementation of the project so that plan recommendations would be carried out.

Implementation Phase

The implementation phase of the Camp-Center Lakes Priority Watershed Project begins following review of the draft priority watershed plan, a public hearing, and approval by the Kenosha County Board of Supervisors, the Land and Water Conservation Board and DNR.

Public review during plan development occurred primarily through the efforts of the Citizens Advisory Committee and the Watershed Project Team, including its working groups.

During the implementation phase:

1. DNR enters into local assistance agreements with local units of government that have implementation responsibilities identified in the plan. These agreements provide funds necessary to maintain the resources and staff required for plan implementation.

2. In the rural portions of the watershed, landowners of eligible and critical sites are contacted by staff of the NRCS to determine their interest in voluntarily installing best management practices or verify their designation as critical sites. In urban portions of the watershed, local units of government are contacted by the DNR or its designee to discuss in more detail their actions to implement plan recommendations.

3. Cost-share agreement for rural practices are signed by the landowner and the CCLRD, outlining practices, costs, cost-share amounts and a schedule for installation of management practices. In urban areas, a similar process is used. In some cases, the local units of government and the DNR sign agreements for urban practices. In other cases the agreements will be between local units of government and their private landowners. Practices may be installed anytime after a cost-share agreement is signed and within the project implementation phase. Practices must be maintained for at least 10 years. Easements purchased through the Nonpoint Source Program must be for a period of at least 20 years, and in many cases will be perpetual.

Legal Status of the Nonpoint Source Control Plan

The Camp-Center Lakes Priority Watershed Plan was prepared under the authority of the Wisconsin Nonpoint Source Water Pollution Abatement Program described in Section 144.25 of the Wisconsin Statutes and Chapter NR 120 of the Wisconsin Administrative Code. It was prepared through the cooperative efforts of the DNR, DATCP, NRCS, the Kenosha County Office of Planning and Development, other local units of government, and the Citizens Advisory Committee.

This watershed plan is the basis for the DNR to enter into cost-share and local assistance grants with agencies responsible for project implementation and will be used as a guide to implement measures to achieve desired water quality conditions. If a discrepancy occurs between this plan and the statutes or the administrative rules, or if statutes or rules change during implementation, the statutes and rules will supersede the plan. Similarly, this plan is subject to the amendment process under NR 120.08(e) for substantive changes. The DNR will make determination if a proposed change will require a plan amendment. This watershed plan does not in any way preclude the use by local, state or federal governments of normal regulatory procedures developed to protect the environment. All local, state and federal permit procedures must be followed. In addition, this plan does not preclude the

DNR from using its authority under chapters 147 and 144 of the state statutes to regulate significant nonpoint pollution sources in the project area.

A comprehensive water quality management plan for the Fox-Illinois River Basin has been developed by the Southeastern Wisconsin Regional Planning Commission (SEWRPC). The basin plan recognizes the importance of reducing nonpoint sources for improved water quality in the lakes and streams of the Camp-Center Lakes watershed.

This priority watershed plan must be approved by the Kenosha County Board, the Land and Water Conservation Board and the DNR before it can be fully implemented. This watershed is covered under the adopted Areawide Water Quality Management Plan for southeastern Wisconsin prepared by the SEWRPC. Consequently, DNR will request that SEWRPC recommend that the priority watershed plan be approved as an amendment to the adopted Areawide Water Quality Management Plan for Southeastern Wisconsin.

Integrated Resources Management

The DNR has designed and implemented an approach to natural resource management called "integrated resource management." The DNR uses the nonpoint source control program as the foundation for coordinating other departmental environmental quality (solid waste, wastewater, water regulation and zoning, water resources management, water supply) and resource management (fisheries, forest management, parks and recreation, wildlife and endangered resources management) efforts.

This Priority Watershed Plan meets the requirements of Section 144.25 of the Wisconsin Statutes. This statute requires the DNR to develop "an integrated resource management strategy to protect or enhance fish and wildlife habitat, aesthetics, and other natural resources" for priority watersheds.

Stormwater Discharge Permit Program

The Federal Water Quality Act plays an important role in improving water quality in the Camp-Center Lakes watershed. Amendments to the Act, approved in 1987, required large cities, major industries, construction activities of 5 acres or more and potentially other municipalities to apply for a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of pollutants from separate stormwater sewer systems. These permits (called WPDES in Wisconsin) are similar to those issued by the DNR for public and private wastewater treatment plants and industrial dischargers of wastewater.

The DNR, in accordance with regulations issued by the U.S. Environmental Protection Agency (EPA), has responsibility for implementing this permit program. The amendments to

the Act require pollutants in municipal stormwater discharges to be controlled to the "maximum extent practicable." Many of the probable permit requirements overlap with the management actions specified in this plan for improving water quality in the watershed. For example, adequate enforcement of construction site erosion control ordinances are specifically mentioned in the regulations and are identified in this nonpoint source plan as a critical component of the sediment control strategy. Implementation of the priority watershed plan will likely meet this and many other permit requirements.

Importantly, the nonpoint source plan calls for management actions not required in the stormwater management program, including stabilization of eroding shoreline and streambanks. Similarly, the permit program will likely require activities beyond the nonpoint source plan including water quality monitoring of selected storm sewer outfalls by the permittee and adoption of municipal ordinances to control stormwater discharges from lands associated with industrial activities.

The coordinated implementation of the stormwater permit program and this nonpoint source control plan will help ensure that the water quality objectives for the Camp-Center Lakes and its tributaries will be achieved.

Plan Organization

The remainder of this plan is divided into the following chapters:

CHAPTER TWO, "General Watershed Characteristics," is an overview of the cultural and natural resource features with respect to planning and implementation efforts for the priority watershed project.

CHAPTER THREE, "Water Quality Conditions, Nonpoint Sources, and Resource Objectives," characterizes the existing and potential biological and recreational uses of surface waters. The results of the nonpoint source inventories and evaluations and water resource goals and objectives are set.

CHAPTER FOUR, "Management Actions: Control Needs and Eligibility for Cost-share Funding," identifies the level of urban and rural nonpoint source control needed to meet the water resource objectives and identifies the decision criteria and the nonpoint sources eligible for funding under the priority watershed project.

CHAPTER FIVE, "Implementation," describes the means by which local units of government administer the project, estimates a local assistance and management practice cost-share budget, and identifies technical and financial assistance available to local units of government through the project.

CHAPTER SIX, "Information and Education Strategy," presents the methods used to publicize and promote the priority watershed project in order to obtain the highest level of participation among landowners and units of government in the watershed. It describes the

elements, costs, and responsible parties needed to carry out the information and education component.

CHAPTER SEVEN, "Integrated Resources Management Program," presents guidelines for integrating other resource management programs, organizations and activities into the watershed project.

CHAPTER EIGHT, "Project Evaluation," discusses the means for assessing the amount of nonpoint source control gained through installation of best management practices.

CHAPTER TWO
General Watershed Characteristics

Location

The Camp-Center Lakes watershed is an eight square mile drainage area located in the Town of Salem, Kenosha County, Wisconsin. It is situated about 35 miles southwest of the city of Milwaukee and drains to the Fox River which flows in a southerly direction into northeastern Illinois. The watershed drains runoff to Center Lake, Camp Lake, three small tributary streams, and numerous wetland areas. Center Lake is the smallest of the two lakes with a surface area of 129 acres and drains to Camp Lake which has a surface area of 461 acres.

Both Camp and Center Lakes are surrounded by year-round and summer residences. Camp Lake's southern shoreline areas are poorly drained and dominated by emergent vegetation. Center Lake collects stormwater from the northernmost portion of the watershed. The Camp-Center Lakes watershed, divided into five smaller subwatersheds for study purposes, is shown in Map 1. The following is a brief overview of the watershed's cultural and natural resource features important in planning a nonpoint source pollution control effort.

Cultural Features

Population

The population of the Camp-Center Lakes watershed is estimated to be about 1,500 persons. The watershed's population increased by about five percent between 1980 and 1990 while Kenosha County's population rose by only one tenth of a percent. Regional and watershed specific trends suggest that the population will increase gradually over the next 20 years. On the whole, the increase in the watershed's population resulting from 40 to 50 new homes built each year will be offset somewhat by a trend toward smaller average household size.

Land Uses

Table 2-1 summarizes existing land uses in the watershed. The largest rural land use is agriculture, occupying 42 percent of the watershed. The remaining rural land uses include wetlands, surface water and forested lands which together cover 40 percent of the watershed. Low to medium density residential development is the predominant urban land use, covering

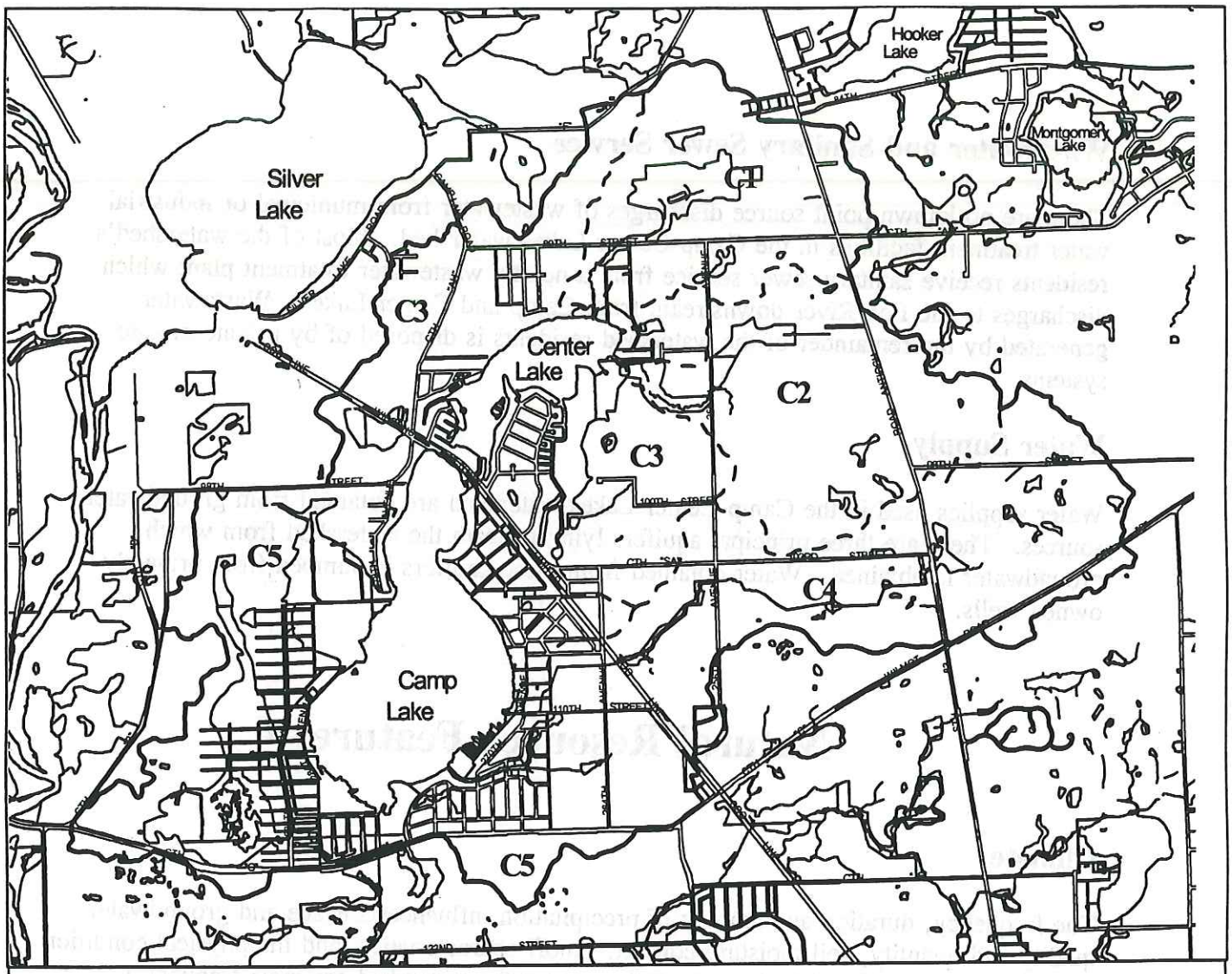
about 10 percent of the watershed area. The remaining non-residential urban land uses currently occupy about 7 percent of the watershed. These include transportation and utilities, recreational, governmental and institutional, industrial, and commercial land uses.

Future urbanization, including conversion to residential, commercial, industrial, highway, governmental and institutional land uses is expected to gradually occur throughout the watershed. These land uses will increase by about 35 percent (1,200 increase) from 1995 to 2010.

Table 2-1. Summary of Land Uses in the Camp-Center Lakes Watershed

Land Uses		Acres	Percent of Total
Urban	Residential	565	10.4
	Commercial	17	0.3
	Industrial	9	0.2
	Governmental/Institutional	19	0.4
	Transportation/Utilities	224	4.1
	Recreational	101	1.9
	SUBTOTAL	935	17.3
Rural	Woodlands	900	16.6
	Wetlands	659	12.2
	Surface Water	621	11.5
	Agriculture/Other Open Land	2,295	42.4
	SUBTOTAL	4,475	82.7
TOTAL		5,410	100.0

Source: SEWRPC



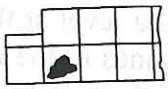
Camp-Center Lakes Watershed
Kenosha County, Wisconsin

Produced for:
- *Kenosha County Land Conservation Committee
- *Kenosha County Planning and Development
- *Town of Salem
- *Camp//Center Lakes Rehabilitation District
- *Wisconsin Department of Natural Resourcwes

Produced by:
- *Natural Areas Ecostystem Management (NAEM)
- *H2GEO Consulting

Legend
- Lake/Pond
- Wetland
- Watershed boundary
- Sub-watershed boundary
- River/Stream
- Road

Description of Sub-watersheds
- C1 - Northern tributary drainage area to Center Lake
- C2 - Eastern tributary drainage area to Center Lake
- C3 - Direct drainage area to Center Lake
- C4 - Eastern tributary drainage area to Camp Lake
- C5 - Direct drainage area to Camp Lake


Watershed Location

0.5 0 0.5 1 1.5 Miles

N

Wastewater and Sanitary Sewer Service

There are no known point source discharges of wastewater from municipal or industrial water treatment facilities in the Camp-Center Lakes watershed. Most of the watershed's residents receive sanitary sewer service from a nearby wastewater treatment plant which discharges to the Fox River downstream from Camp and Center Lakes. Wastewater generated by the remainder of the watershed residents is disposed of by private on-site systems.

Water Supply

Water supplies used in the Camp-Center Lakes watershed are obtained from groundwater sources. There are three principal aquifers lying beneath the watershed from which groundwater is obtained. Water obtained from these aquifers is pumped from privately owned wells.

Natural Resource Features

Climate

The frequency, duration and amount of precipitation influences surface and groundwater quality and quantity, soil moisture content, runoff characteristics, and the physical condition of surface waters. Precipitation events throughout the watershed are most frequently moderate in duration and quantity. An event is defined as a distinct period when precipitation is equal to or greater than 0.1 inch. Approximately 50 events per year occur in the watershed.

The watershed's annual precipitation is an average of 33 inches. The driest months are December, January, and February, with an average of 1.70 inches, 1.44 inches, and 1.08 inches of precipitation, respectively. These are also the months of greatest snow accumulation, when more than 30 inches or 68 percent of the average annual snowfall occurs. The wettest months are June, July, August, and September when more than 15 inches, or 47 percent of the average annual rainfall takes place. Most runoff occurs in March, April, and May when soil is either frozen or saturated.

Topography

Topographic relief in the watershed ranges from about 850 feet above sea level in the northwestern and eastern portions of the watershed to about 740 feet above sea level at the outlet of Camp Lake. The physiographical terrain is defined by rolling moraines in the north with flatter, wetter areas to the south. Surface drainage networks are sometimes poorly

connected, causing several areas of the watershed to be internally drained. In addition, lack of relief in the southwesternmost areas of the watershed combined with an extensive tile drainage network makes delineation of minor subwatersheds difficult.

Soils

The Camp-Center Lakes watershed is on the western margin of the Oak Creek soil formation. The soils in the watershed developed in lacustrine silt and clay, fluvial sand and gravel, and clayey till associated with ice of the Lake Michigan Lobe.

The eastern tributary drainage areas to Camp Lake and Center Lake contain soils of the Morley-Beecher-Askum soil association. They consist primarily of thin clayey till deposits underlain with sand and gravel outwash or loamy and clayey lacustrine sediments. Erosion is a hazard on the Morley soils. Askum soils are hydric and Beecher soils are likely to have hydric inclusions in depressions and drainageways.

Direct drainage to the lakes flows through two soil associations. The west side contains soils of the Fox-Casco soil association. These soils developed in fluvial sand and gravel, and include extensive areas of organic deposits southwest of Camp Lake. The east side contains soils of the Hebron-Montgomery-Aztalan soil association. They developed in loamy and clayey lacustrine sediments. Erosion is a hazard on the Fox, Casco, and Hebron soils. Montgomery soils are hydric and Aztalan soils are likely to have hydric inclusions in depressions and drainageways.

The northern tributary drainage area to Center Lake contains the fluvial sand and gravel deposits that are characteristic of the Fox-Casco Association. Erosion is a hazard on these soils.

Surface Water Resources

Land drainage patterns in the Camp-Center Lakes watershed are delineated as five individual subwatersheds. All convey surface water directly or via tributaries to the lakes. Tributary streams, wetlands, subwatershed divides and the lakes are shown in map 2-1. See tables 3-1 and 3-2 for the general conditions of major water resources in the Camp-Center Lakes watershed.

Lakes

Lakes are the major surface water features within the drainage area. Lakes within the watershed total about 590 acres or 11 percent of the watershed area. The land area to lake area ratio is about 9:1.

Each of the lakes have water control structures. These provide some degree of flood control and recreational benefit, but prolific weed and algae growth and degraded water quality

conditions have progressively impaired recreational uses in both lakes. The water control structures impair upstream migration of forage and game fish and limit navigation.

Table 2-2. Lakes in the Camp-Center Lakes Watershed

Lake	Area (acres)	Mean Depth (ft)	Max Depth (ft)	Tributary Area (mi^2)
Center	129	10	28	3.7
Camp	461	5	17	4.7

Source: DNR

Streams

Intermittent streams in the watershed have a combined length of about 4.8 miles. Streams in the watershed flow only when there is runoff or when groundwater discharge is present. Many of the streams have been extensively modified, channelized or impounded. Where channelization has occurred, habitat for fish and aquatic life has been severely degraded.

Many streams with natural embankments tend to be heavily overgrown with dense woody vegetation. This condition may limit the stream's wildlife potential and results in minor flow modifications where logs and debris accumulate in the channels.

Wetlands

Wetlands are some of the most valuable natural resource features in the watershed. They provide wildlife habitat, fish spawning areas, recreation, flood control and removal of pollutants. They comprise about 660 acres, or 12 percent, of the watershed.

Groundwater Resources

Groundwater resources within the watershed are plentiful and uncontaminated. Three aquifers in the area yield water to water supply wells: the Sand and Gravel aquifer, the Niagara (dolomite and limestone) aquifer, and the sandstone aquifer. An aquifer is an underground rock or soil formation that stores water and conveys it to wells, lakes, and streams. Aquifers in the Camp-Center Lakes watershed are listed here in order of depth below the surface.

Sand and Gravel Aquifer

The sand and gravel aquifer is comprised of surface material deposited from glacial ice that covered the watershed approximately 10,000 years ago. It is unconsolidated soil material with physical and chemical characteristics different from agricultural soils. Groundwater in these deposits occurs and moves in the void spaces among the grains of sand and gravel. Almost all the water supply wells in the Camp-Center Lakes watershed are finished in depths of between 51 to 170 feet within the sand and gravel aquifer.

Niagara Aquifer

The Niagara aquifer occurs beneath the sand and gravel formation. It was deposited approximately 400 million years ago and is up to 400 feet thick. It consists of the Niagara dolomite formation and is underlain by a confining layer of shale (Maquoketa shale). Dolomite is a brittle rock similar to limestone which contains groundwater in interconnected cracks and voids. The Maquoketa shale is derived from impermeable clays and prevents water from moving between the Niagara dolomite and the deeper aquifers. Only a few water supply wells in the Camp-Center Lakes watershed were found that terminate in the Niagara aquifer. The depths of these wells range between 165 and 190 feet.

Sandstone Aquifer

The sandstone aquifer includes all of the Cambrian and Ordivician rocks located between the Precambrian basement rocks and the overlying Maquoketa Shale. Regional geologic and hydrologic conditions generally limit recharge to the sandstone aquifer in the area. The main area of natural recharge to the sandstone aquifer is in Walworth County. No wells were found to be drawing water from the sandstone aquifer in the Camp-Center Lakes watershed.

A review of the Registry of Waste Disposal Sites in Wisconsin (June 1993), the Environmental Repair and Response Program Case Tracking list (April 1994) and the Leaking Underground Storage Tanks Case Tracking list (May 1994) in Kenosha County did not show contaminated or abandoned waste disposal sites or LUST cases in the Camp-Center Lakes watershed.

Archaeological Sites: Coordination with State and Federal Historic Preservation Laws

Projects using state and federal funding, technical assistance, licenses and permits are required by law to consider the effects of their actions on archaeological and historical sites, and historical structures. The watershed project is a joint cooperative effort between federal, state, and county agencies as well as the private landowners who volunteer to participate in the program. As a result, the federal Historic Preservation Act of 1966, as amended, and the state historic preservation statute, s. 44.40, Wis. Stats., have been combined to produce a

cultural resource management program which is both compatible to preserving cultural sites and implementing the watershed project.

There are no known archaeological sites within the Camp-Center Lakes watershed. If new sites are discovered, these areas will need special consideration when structural best management practices are being considered. Streambank or shoreline shaping and riprapping are likely practices that may impact archaeological sites. As discussed above, state and federal laws require preservation of archaeological resources within the framework of the NPS Program.

If a preconstruction inventory reveals an archaeological site and the proposed best management practice may impact the site, an archaeological survey conducted by a qualified archaeologist will need to be completed. The survey will assess the potential of the practice to significantly impact the site. Interim BMPs may need to be considered both before and after the results of the survey. In certain instances a survey may reveal a significant archaeological site which precludes the installation of a particular BMP at that specific site. Cost-share agreements will contain language which nullifies or partially nullifies the cost-share agreement based on the final results of the archaeological survey.

Environmental Corridors

Areas within southeastern Wisconsin having the highest concentrations of natural, recreational, historic, aesthetic and scenic resources are called environmental corridors and are delineated by the Southeastern Wisconsin Regional Planning Commission (SEWRPC). These areas normally include such things as lakes, rivers, streams, wetlands, woodlands, prairies, wildlife habitat areas, wet and poorly drained soils, rugged terrains, and areas of high relief as well as outdoor recreation sites, historic and archaeological sites, and natural and scientific areas. Preservation of these areas is important for improving water quality in the Camp-Center Lakes watershed and the Fox River Basin.

Natural Areas

Natural areas are identified statewide by the Wisconsin Scientific Areas Preservation Council and the DNR's Bureau of Endangered Resources. These areas are within environmental corridors and isolated natural areas. They are tracts of land or water which exhibit pristine pre-settlement conditions and/or contain unique plant and animal communities. While there are no natural areas designated as having statewide, county-wide or local significance, Silver Lake Bog, which borders the Camp-Center Lakes watershed, has been designated a state natural area.

Endangered and Threatened Resources

The status and locations of rare species are tracked by the Wisconsin Natural Heritage Inventory of the DNR's Bureau of Endangered Resources. Included are those that are listed by the U.S. Fish and Wildlife Service and by the State of Wisconsin. The term "endangered" refers to species in jeopardy of extirpation or extinction based on scientific evidence. In the Camp-Center Lakes watershed, the Forster's tern (Sterna forsteri) is classified as endangered.

"Threatened" species are those that appear likely to become endangered in the foreseeable future based on scientific evidence. The redfin shiner (Lythrurus umbratilis), the red-shouldered hawk (Buteo lineatus) and the great egret (Casmerodius albus) are listed as threatened.

In addition, some species merit the status of "special concern". These include species about which some problem of abundance or distribution is suspected but not yet proven. The purpose of this category is to focus attention on certain species before they become endangered or threatened. Included are the pugnose minnow (Opsopoeodus emiliae) and the lake chubsucker (Erimyzon sucetta).

Additional non-resident threatened and endangered species have been observed in or near the Camp-Center Lakes watershed, including the black tern, common tern, snowy egret, American bittern, least bittern, and yellow-headed blackbird (pers. com., Mike Marchuk, 1995).

CHAPTER THREE
Water Quality Conditions, Nonpoint Sources and Resource Objectives

Introduction

This chapter discusses the type and extent of rural and urban nonpoint pollution sources in the Camp-Center Lakes watershed and identifies their observed impacts on lakes and streams. It also establishes water quality improvement objectives for Camp and Center Lakes and their tributaries. These objectives determine the level of nonpoint source pollution control recommended by the plan and become the basis for the pollution control strategy presented in Chapter Four.

The chapter is divided into three sections. The first is a watershed overview, presenting results of the land resources inventory and the water resources appraisal. The second section compares the impacts of each pollutant source for each subwatershed. Finally, the third section presents the water resources objectives and pollution reduction goals to be achieved through the nonpoint source program.

Water Quality Conditions

Lakes

Center Lake and Camp Lake were classified using a standard measurement of lake water quality called trophic state index (TSI). The TSI is an indicator of the degree of eutrophication or nutrient enrichment of a lake and is based on measurements of water clarity, chlorophyll concentration, or total phosphorus concentration.

As shown in Table 3-1, Center Lake has phosphorus TSI values within the range of about 51 to 63, and Camp Lake has phosphorus TSI values within the range of 50 to 61, indicating mildly eutrophic conditions in both lakes. This suggests that nutrient and sediment degradation may impair the lakes' uses such as swimming and fishing. However, lake usage support is more difficult to define because of the variety of recreational uses and public perceptions. Therefore, it is difficult or impossible to classify a lake with respect to use impairment as is done with streams.

Table 3-1. Average Phosphorus Trophic State Indices of Center and Camp Lakes.

Lake	Trophic State Index**				
	9/93	6/94	7/94	8/94	9/94
Center	63	60	54	51	55
Camp	51	61	60	54	50

** Trophic State Index is a measure of lake water quality as determined by water clarity, chlorophyll or total phosphorus concentrations in the water column. Higher numbers indicate nutrient enrichment and reduced water clarity. A TSI of 50-60 indicates lakes are becoming eutrophic, with decreased water clarity, oxygen depleted bottom water during summer, and abundant plant growth.

Source: DNR

Water quality problems attributable to nonpoint sources are shown in Table 3-2 and summarized below. Runoff from farm fields carries sediment, nutrients, pesticides and bacteria. Runoff from near-lake residences, construction sites and other urban areas carries sediment, nutrients, metals, grease, oil, bacteria and assorted debris. Consequently, the lakes and streams become turbid, dissolved oxygen levels fall, and aquatic habitat deteriorates.

Drainage modifications such as ditching and channelizing of streams and wetlands has immediate and long-term detrimental effects on water chemistry, stream base flows, temperature, and fish and wildlife habitat. Channelized streams tend to have uniform velocities and substrates that are unsuitable for many forms of aquatic life, particularly during dry seasons and low flows when insufficient water depths limit aquatic habitat. Drainage of wetland areas has the effect of lowering water tables, reducing base flows in the stream and sometimes creating flooding problems downstream.

Each of the lakes exhibit excessive aquatic weed and algae growth and provide abundant habitat for carp and bullhead. Warming of lake temperatures, periodic low dissolved oxygen levels and discharge of organic matter are other conditions impairing fish habitat. Turbidity in the lakes and channels is intensified by relatively high numbers of bottom-feeding fish.

Currently, municipal wastewater is diverted outside of the watershed, but the impacts of past abuses have continuing effects as nutrients in bottom sediments are resuspended with each seasonal overturn. There are no industrial wastewater discharges in the watershed. However, unintentional spills of toxic materials and inappropriate disposal of waste oil and other pollutants contribute to water quality problems. While there are no municipal wastewater discharges within the Camp and Center Lakes watershed, storm drainage discharges and construction site erosion are major concerns, especially in the developing areas. Street and parking lot runoff regularly contain acute toxicity levels for lead, zinc, copper and cadmium in studies done in Milwaukee and Madison (DNR, 1992).

Table 3-2. Nonpoint Source Impacts on Lakes and Streams in the Camp and Center Lakes Watershed.

Subwatershed	Stream Name	Stream miles	Water Quality Problem	Nonpoint Source Pollutants	Observed & Potential Sources
C1 (Center Lake)	Unnamed	0.6	Loss of fish and invertebrate habitat Turbidity Toxicity (potential) Sedimentation Trophic community imbalances Nuisance vegetation	In-place pollutants Sediment Suspended solids Nutrients Metals Pesticides	Urban runoff Cropland runoff Ditches Channelization Wetland draining and modification Bank debrushing Site disturbances
C2 (Center Lake)	Unnamed	0.7	Loss of fish and invertebrate habitat Turbidity Toxicity (potential) Sedimentation Trophic community imbalances Nuisance vegetation	In-place pollutants Sediment Suspended solids Nutrients Ammonia Metals Pesticides Stream flow fluctuations Low flows Bacteria (potential)	Urban runoff Construction erosion Cropland runoff Ditches Channelization Streambank erosion Wetland draining and modification Tile drainage Bank debrushing
C3 (Center Lake)	Unnamed	0.3	(Lake) Loss of fish and wildlife habitat Loss of recreational and aesthetic uses Low water clarity Nuisance algae	In-place pollutants Sediment Suspended solids Nutrients Pesticides Bacteria (potential)	Urban runoff Construction erosion Cropland runoff Ditches Wetland draining and modification Tile drainage Shoreline erosion
C4 (Camp Lake)	Unnamed	2.4	Loss of fish and invertebrate habitat Potential toxicity Sedimentation Trophic community imbalances	In-place pollutants Low flows Sediment Suspended solids Nutrients Metals Pesticides	Urban runoff Cropland runoff Ditches Channelization Draining of wetlands
C5 (Camp Lake)	Unnamed	0.8	(Lake) Loss of fish and wildlife habitat Loss of recreational and aesthetic uses Low water clarity Nuisance algae	In-place pollutants Sediment Suspended solids Nutrients Pesticides Bacteria (potential)	Urban runoff Construction erosion Cropland runoff Ditches Wetland draining and modification Tile drainage Shoreline erosion

**Loss of aquatic habitat means loss of fish and invertebrate habitat.

Source: DNR

Streams

The tributary streams in the watershed were classified by the DNR according to their potential to support aquatic life uses. The classifications also assess each stream's capability to support these uses assuming that cultural limitations, such as point and nonpoint pollution sources are reduced or eliminated. The streams were classified using the State's stream classification system and supporting water quality criteria contained in Chapters NR 102, 104, and 106 of the Wisconsin Administrative Code.

There are approximately 4.8 miles of intermittent streams with the potential to support limited forage fish communities. Because of the influence of development and agricultural sources of pollution, none of these streams are meeting their full biological potential.

Nonpoint Source Pollutants

Agricultural Runoff

Agricultural nonpoint sources include cropland erosion, pasture land runoff, and farmstead runoff. Collectively, these sources pose a threat to water quality in the lakes and streams of the watershed. In these areas, croplands are the principal sources of sediment and nutrients flowing into the lakes. Agricultural nonpoint source pollution was identified and assessed in all of the subwatersheds where rural land uses occur. These sources are discussed below.

Sediment adversely affects lakes and streams in many ways. It degrades habitat for fish and aquatic invertebrates which are important in the food chain. High sediment concentrations abrade fish gills making fish more susceptible to disease, fills in pools, and degrades fish spawning habitat. Suspended sediment also causes temperature fluctuations that can deplete the oxygen in a stream or lake. Table 3-3 summarizes sediment delivery and phosphorus delivery from the 1,557 acres of agricultural fields that were inventoried.

Table 3-3. Summary of Agricultural Sediment and Phosphorus Delivery for the Camp and Center Lakes Watershed: 1995

Subwatershed	Field Acres Inventoried	Sediment Delivery		Phosphorus Delivery	
		Tons	Percent	Lbs.	Percent
C1 (Center Lake)	247	157	11	1,019	12
C2 (Center Lake)	381	411	30	2,395	28
C3 (Center Lake)	161	142	10	966	11
C4 (Camp Lake)	545	460	33	2,903	33
C5 (Camp Lake)	223	214	16	1,427	16
TOTAL	1,557	1,384	100	8,710	100

Source: H2GEO

About 10,500 tons of soil are eroded annually from productive agricultural lands, of which 2,940 tons leave farm fields as sediment. Of the 2,940 tons leaving farm fields, 1,384 tons reach the lakes. In addition, approximately 8,710 pounds of phosphorus are washed into receiving waters annually from cropland.

About 35 percent of the sediment and 32 percent of the phosphorus affecting lakes and streams in the watershed come from eroding cropland. Most of it originates on cropland with low rates of soil erosion. For example, more than half of the sediment delivered to

surface waters from rural lands originates from croplands that are eroding at less than three tons/acre/year.

Sixty-three percent of the sediment reaching the lakes originates in the C2 and C4 subwatersheds. As the watershed continues to undergo development, cropland sediment and phosphorus delivery should decline. However, without measures to control stormwater runoff and construction site erosion, the new urban areas will become alternate sources of pollution.

Streambank Erosion

Streambanks along 4.8 miles of intermittent streams in the watershed were surveyed. As shown in Table 3-4, the extent and severity of streambank erosion is significant (about 1,560 tons or 39 percent of the total sediment). Most of the erosion was located in the C4 subwatershed. Channelization and upstream modifications appear to be the major causes.

Of the total length of eroding streambanks, the majority is adjacent to rural lands. This includes a growing number of country estate properties and farmettes. A very small percentage of eroding streambanks occur in urban areas.

Table 3-4. Streambank Erosion Inventory Results for the Camp and Center Lakes Watershed.

Subwatershed	Feet of Streambank Inventoried	Sediment Released (Tons/Yr.)
C1 (Center Lake)	6,420	377
C2 (Center Lake)	7,600	439
C3 (Center Lake)	3,400	34
C4 (Camp Lake)	24,966	648
C5 (Camp Lake)	8,678	62
TOTAL	51,064	1,560

Source: Natural Areas Ecosystems Management

Occasionally, excessive streambank vegetation causes a loss of riparian habitat. Stream obstructions can block or redirect the flow and destabilize the banks, and monospecific stands of weedy vegetation that are characteristic of these areas are generally unsuitable for desired species of wildlife.

Shoreline and Channel Erosion

As shown in Table 3-5, about 5.6 miles of lake shorelines and 3.6 miles of channel frontage for Center Lake and Camp Lake were surveyed for erosion. Shoreline stabilization treatments varied. Most landowners used rock, concrete blocks, bricks, wood structures, steel walls or occasionally no treatment at all. Few of the lakeshore areas surveyed exhibited severe erosion potential. Some areas appeared to have sustained minor ice damage, but the overall nonpoint source impact from eroding lake shorelines is small. Camp Lake shoreline, channel and marshland erosion is estimated to be 164 tons per year and Center Lake 170 tons per year, contributing about 8 percent of the sediment load from all sources.

Table 3-5. Shoreline and Channel Erosion Inventory Results for the Camp and Center Lakes Watershed.

Lake	Feet of Shoreline Inventoried	Feet of Channel Inventoried	Sediment Released (Tons/Yr)
Center	13,525	4,950	170
Camp	15,955	14,215	164
TOTAL	29,480	19,165	334

Source: Natural Areas Ecosystems Management

Urban Nonpoint Sources

Urban runoff carries a variety of pollutants to surface water. Some pollutants are specific to urban runoff while others are also found in runoff from agricultural areas. Pollutants found primarily in urban runoff include heavy metals (lead, copper, zinc, cadmium and chromium) and a large number of toxic organic chemicals (PCBs, aromatic hydrocarbons, esters and many others). Other substances in urban runoff that are also found in runoff from rural areas include sediment, nutrients, bacteria and other pathogens, and pesticides.

Runoff from urban areas also affects stream characteristics. For example, as pavement and rooftops prevent rainwater and snowmelt from soaking into the ground, water runs off the surface at a much higher rate. Streams crest at much higher levels than prior to urban development. Consequently, in some areas groundwater recharge is reduced and dry-weather stream flows decrease to below minimum levels needed to sustain fish and aquatic life.

In effect, urban runoff produces "flashy" streams with temperatures and chemical characteristics which limit animal life and recreational uses. Streambank erosion may increase as high and low flow extremes occur. Flooding of adjacent property may also occur, sometimes requiring channelization and/or lining with concrete to accommodate flood

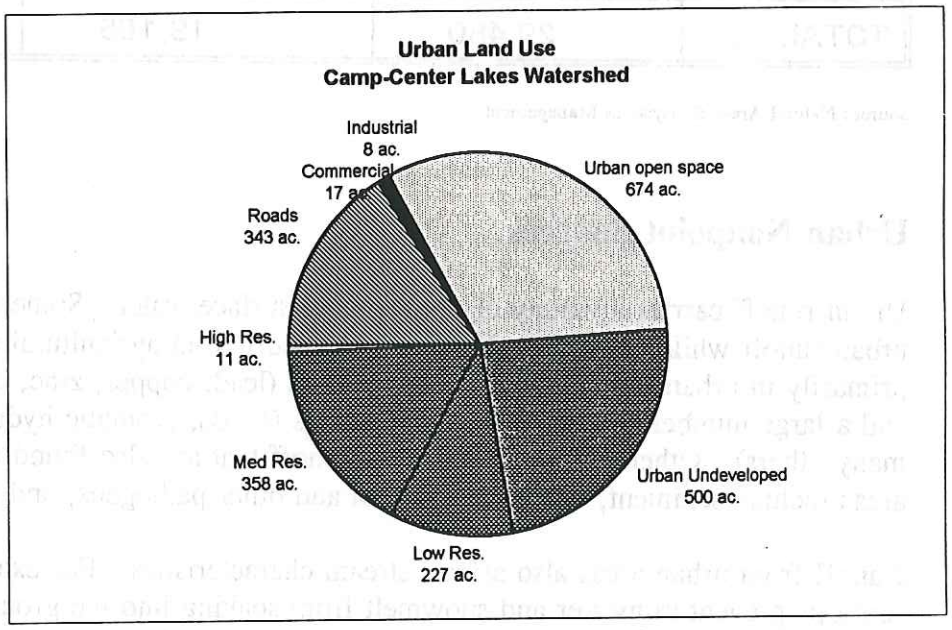
flows or prevent flood damage. This often destroys the natural stream system and speeds the transport of pollutants downstream.

In addition to these typical urban nonpoint sources, construction site erosion, in-place contaminants, and runoff from waste disposal sites are all a concern in the Camp and Center Lakes watershed. These factors, some of which may be addressed by WPDES stormwater permit requirements, contribute in varying degrees to lake use impairment. The purpose of the urban nonpoint source inventory and analysis was to identify which causes (and related nonpoint sources) are critical constraints to achieving water quality goals and which are only minor contributors.

Urban nonpoint sources described below include runoff from existing urban areas, construction sites, and post-construction urban areas.

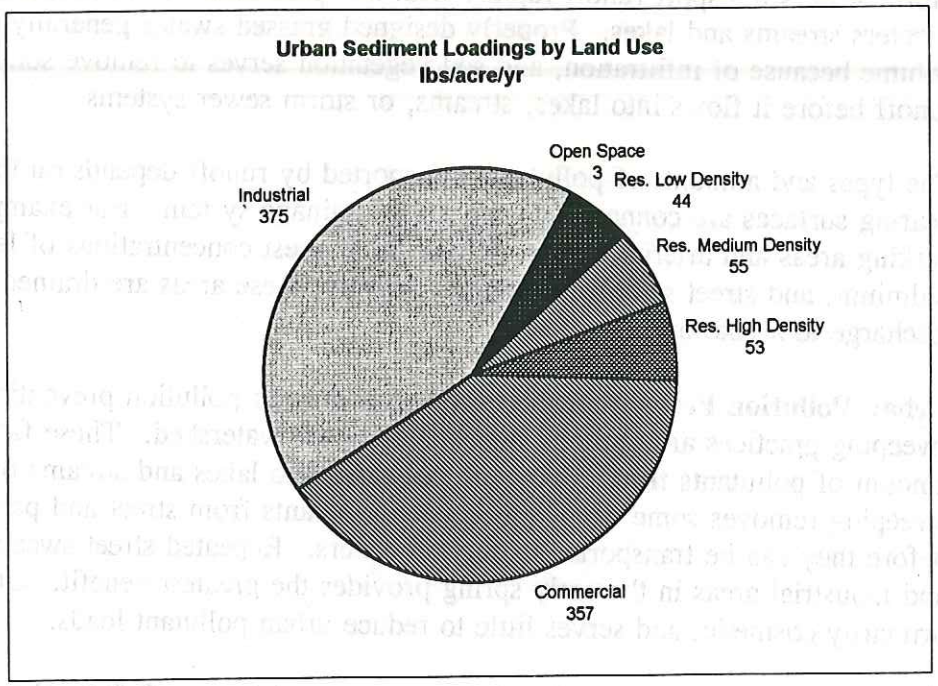
Existing Urban Areas: The delivery of urban pollutants to lakes and streams from existing urban areas depends on the types of urban land uses (shown in Figures 3-1 and 3-2), the types of stormwater conveyance systems, and urban pollution prevention practices, including but not limited to street sweeping, yard waste collection, and waste oil recycling programs. Each factor is discussed below.

Figure 3-1.



Source: H2GEO and SEWRPC

Figure 3-2.



Source: H2GEO

Urban Land Uses: Figure 3-1 shows the type and extent of urban land uses in the watershed. Urban land uses as sources of pollutants in runoff are shown in Figure 3-2. Commercial and industrial areas are the largest sources of sediment and phosphorus on a per acre basis. High density residential areas are less important sources of sediment and phosphorus, but are significant sources of pesticides, bacteria, and household or automotive maintenance products dumped into ditches and storm sewers. Low density residential areas, particularly in the lakeshore areas, are important where the improper use and disposal of pesticides, fertilizers, and automotive maintenance products may occur.

The pollutants in urban runoff depend on the configuration of "source areas." Source areas—characterized by streets, parking lots, rooftops and lawn areas—are present in different proportions depending on the land use pattern. For example, residential areas contain more lawn area than commercial areas, while commercial areas have more rooftop, street, and parking lot surfaces. Lawns can be important sources of fertilizers and pesticides. Rooftop areas are important sources of zinc and atmospheric pollutants. Their connection to the storm drainage system may be direct or indirect, depending on the use of downspouts, grassed areas, drain tiles, etc. Streets are sources of significant amounts of lead, cadmium, sediment, and other pollutants, depending on their condition and the amount of traffic.

Stormwater Conveyance: Stormwater is most commonly conveyed to streams and lakes through a combination of roadside ditches, grassed swales, and in some cases, storm sewers.

Storm sewers transport runoff rapidly with no "pretreatment" or filtering of the runoff before it enters streams and lakes. Properly designed grassed swales generally reduce runoff volume because of infiltration, and sod vegetation serves to remove some pollutants from runoff before it flows into lakes, streams, or storm sewer systems.

The types and amounts of pollutants transported by runoff depends on the way that pollutant-bearing surfaces are connected to the storm drainage system. For example, commercial parking areas and arterial streets, deliver the highest concentrations of lead, asbestos, cadmium, and street sediment because normally, these areas are drained by storm sewers that discharge to a lake or stream.

Urban Pollution Prevention Practices: Stormwater pollution prevention systems and street sweeping practices are virtually nonexistent in the watershed. These factors affect the amount of pollutants from urban surfaces carried to lakes and streams by runoff. Street sweeping removes some of the particulate pollutants from street and parking lot surfaces before they can be transported to surface waters. Repeated street sweeping of commercial and industrial areas in the early spring provides the greatest benefit. Other sweeping is primarily cosmetic, and serves little to reduce urban pollutant loads.

The potential for lawn care chemicals to be carried by runoff from shoreline areas and nearby drainageways to the lakes is a concern. Fertilizer residues can enrich the lakes with nutrients and promote algae growth. Use of non-phosphorus fertilizers is recommended for lawn areas.

Nonpoint Source Loadings: Existing urban land uses and their respective amounts and types of pollutant loads are shown in Table 3-6. The greatest amount of urban land in the watershed is concentrated in subwatershed C5. In addition, subwatershed C3 has the greatest potential for new medium to low-density residential development.

Table 3-6. Urban Nonpoint Source Loads in the Camp and Center Lakes Watershed: 1995

Subwatershed	Urban Land		Sediment		Phosphorus		Zinc**	
	Acres	Percent	Tons/Yr	Percent	Pounds/Yr	Percent	Pounds/Yr	Percent
C1 (Center Lake)	113	12	4.52	16	11.28	12	8.58	15
C2 (Center Lake)	36	4	1.98	7	3.53	4	3.67	7
C3 (Center Lake)	277	29	6.57	23	10.43	11	9.43	17
C4 (Camp Lake)	111	11	4.37	16	48.64	50	17.80	31
C5 (Camp Lake)	426	44	10.84	38	22.52	23	16.82	30
TOTAL	963	100	28.28	100	96.40	100	56.30	100

** Zinc is used as an indication of metal loadings contributed from urban land uses.

Table 3-7. Changes in Land Use Within the Camp and Center Lakes Watershed: 1995 to 2010

Land Use Category	1995		Net Change		Year 2010	
	Acres	Percent of Total	Acres	Percent Change	Acres	Percent of Total
Residential	595	12	1,453	244	2,048	43
Commercial	17	1	1	6	18	1
Industrial	8	1	58	725	66	1
Transportation, Communication, Utilities	343	7	388	113	731	15
Open Space, Undeveloped	2,284	47	-1,177	-52	1,107	23
Cropland	1,557	32	-723	-46	834	17
TOTAL	4,804	100	0	0	4,804	100

Source: H2GEO and SEWRPC

Three pollutants (sediment, phosphorus, and zinc) were chosen to characterize the type and severity of urban nonpoint pollution. Commercial and industrial areas have the highest unit/area/year pollutant loads, producing the most significant amounts of suspended solids, metals and other urban toxic pollutants. Medium density and multi-family residential areas also generate significant quantities of toxic pollutants. This occurs primarily because of the large impervious area these land uses occupy. Medium to high density residential areas are also significant sources of sediment and phosphorus.

Construction Site Erosion and Sedimentation: Construction site erosion and sedimentation is a major water quality concern in the watershed, particularly because of the land use changes expected to occur in the future. Construction erosion and sedimentation can destroy aquatic communities in lakes and streams. It can cause reduced capacity of stormwater conveyance systems resulting in localized flooding. In addition, any water quality improvements occurring through implementation of nonpoint source control practices in downstream areas can be negated by construction erosion upstream.

Predicting rates of construction site erosion is difficult. On some sites, erosion rates exceeding 75 tons/acre/year can occur. This rate of erosion is greater than occurs on the most severely eroding croplands and more than 60 times the sediment loading rate from post-construction commercial and industrial areas. Often the close proximity of construction sites to storm sewers or other drainageways serving urban areas results in nearly all of the sediment being delivered to lakes and streams.

An analysis of construction site erosion in the Camp and Center Lakes watershed was conducted using land use inventory data provided by Kenosha County Office of Planning and Development. The average annual amount of land under construction for the period 1995 to the year 2010 was estimated by quantifying historical changes in urban land use and

estimated growth between 1995 to 2010. New development was estimated to occur at an average rate of about 23 acres annually (H2GEO, 1995).

Average annual sediment loading to the lakes from construction erosion for 1995 to 2010 conditions was determined by multiplying the rate of urban land development by an average of 30 tons per acre per year. This rate of erosion and transport assumes the current level of on-site erosion and sediment control and is based on observed land development patterns and generalized climatic conditions. It is estimated that in the years between 1995 and 2010, construction erosion will contribute about 690 tons per year of sediment (about 17 percent of the total from nonpoint sources) to lakes and streams in the watershed.

The potential impact of urban redevelopment on water quality is similar to that of construction activities on previously undeveloped land. Renovation of buildings and utilities can cause erosion and sedimentation. Although urban redevelopment projects will not necessarily increase the amount of urban surface area, they provide opportunities to install stormwater management practices to treat runoff from both the redeveloped property and adjacent established areas.

Enforcing state and local ordinances can be an effective means to reduce construction site erosion and its adverse water quality impacts. In 1986, the DNR and the League of Wisconsin Municipalities cooperatively developed a model ordinance for the control of construction site erosion (WDNR, 1987). It contains provisions for planning, designing, installing and maintaining erosion control practices. It also contains guidance for administering and enforcing the ordinance.

The Kenosha County Office of Planning and Development has a site plan review process for all new developments in the county, except for single family residences. A change in land use requires that a stormwater management and erosion control plan be reviewed by the County, but water quality requirements are not explicit in all plans. It is the intent of the Kenosha County Office of Planning and Development to request water quality design components for plans within the Camp-Center Lakes watershed.

Town of Salem has an ordinance for controlling construction site erosion and sedimentation. In addition, developers are governed by state regulations set forth by the Department of Industry, Labor and Human Relations (DILHR) for erosion control on sites with one and two family dwellings. Compliance with ordinance requirements has been inconsistent, and routine enforcement has been relatively ineffective. Some of the potential impediments to effective erosion control include:

- Developers sometimes perceive erosion control as an add-on cost and not a built-in cost of construction.
- DNR handbook standards are not always practicable. For example, sedimentation basin designs consume large areas where vacant land is scarce.
- Reviewers of erosion control plans and site inspectors are reluctant to exercise full enforcement authority or their authority is limited.
- Unnecessary grading and excavation is commonplace.

- Soil is routinely tracked onto roads because preventative measures are expensive and not a high priority for builders.
- Properly installed silt fences and straw bales are ineffective in controlling fine clay sediments.
- Courts are lenient on violators of the erosion control ordinance.
- Funds for hiring adequate inspection staff are generally not available.
- There is often confusion about who is responsible for installing erosion control practices.
- Local erosion control ordinances may need revision.
- Some erosion control practices are cost prohibitive.
- Technical information is not readily available to contractors and developers.

The construction site erosion and sedimentation control strategy described in Chapter Four addresses the elements listed above. In addition, informational workshops will be scheduled to provide opportunities for problem-solving among developers, municipalities, concerned citizens and other units of government.

Planned Urban Areas: Once construction of new roads and buildings is completed and excavated soils are stabilized, the newly established urban areas convey stormwater at rates much higher than before development. Consequently, as areas urbanize, water quality problems can be worsened not only by the influence of typical urban pollutants but by increased stormwater runoff as well.

Table 3-7 shows the increase in urban land uses estimated to occur within the next few decades. Urban land uses are expected to increase by about 1,900 acres, or 200 percent (SEWRPC, 1991).

Runoff from planned urban areas has the potential to further degrade lake and stream water quality unless stormwater management controls are incorporated during development. Table 3-8 shows the estimated urban nonpoint source loading that will occur in the watershed if planned urban source areas are not controlled.

Table 3-8. Future Urban Nonpoint Source Loads in the Camp and Center Lakes Watershed**

Subwatershed	Sediment		Phosphorus		Zinc	
	Tons/Yr	Percent	Pounds/Yr	Percent	Pounds/Yr	Percent
C1 (Center Lake)	14.88	17	30.10	5	2.41	1
C2 (Center Lake)	9.5	11	155.20	28	44.24	20
C3 (Center Lake)	19.84	22	33.64	6	32.84	15
C4 (Camp Lake)	20.18	23	283.08	50	96.94	44
C5 (Camp Lake)	24.43	27	59.77	11	43.50	20
TOTAL	88.83	100	561.79	100	219.93	100

** This future condition assumes no increase in the level of nonpoint source control from 1995 conditions and represents an anticipated development scenario beyond year 2010.

Source: H2GEO

Stormwater Management: The Town of Salem was surveyed regarding their current stormwater management practices and policies. Local authorities do not require installation of stormwater management practices through ordinance or policy. The Town of Salem requires curbs, gutters and storm sewers in most new developments. Roof downspout connections to storm sewers are not required. No stormwater detention for new development is required.

Analysis of stormwater management techniques shows that certain best management practices (BMPs), such as infiltration basins and stormwater detention ponds, can significantly reduce sediment and other pollutant loadings to lakes and streams. Adoption of stormwater management ordinances and use of stormwater management practices will be addressed Chapter Five of this plan.

Water Resources Goals and Objectives

The goals and objectives of this plan focus on achieving optimum biological and recreational uses in the Camp and Center Lakes and their tributary streams. They provide the basis for prescribing nonpoint source pollution control best management practices and the criteria by which water quality improvements will be evaluated when the project is completed.

The following goals and objectives statements are used in Wisconsin's stream classification system. Generally, the objective will be to "protect," "enhance," or "improve" the existing biological and recreational uses of a surface waterbody.

"Protect" is used for lakes and streams fully supporting their potential biological and recreational uses. Controlling nonpoint sources is necessary to assure that the resource quality is maintained. For example, if a stream is supporting a healthy warm water sport fish population, this objective seeks to protect that use.

"Enhance" is used for lakes and streams that are moderately degraded and only **partially** meeting their potential biological and recreational uses. Controlling nonpoint sources is necessary to enhance water quality to support a healthier aquatic community. For example, nonpoint source controls may result in a more widely diverse and vigorous forage fish community by restoring lost habitat, even though natural conditions preclude the stream from ever supporting a warm water sport fish population.

"Improve" is used for lakes and streams that are severely degraded and **not** meeting their potential biological and recreational uses. In this case, nonpoint source controls can help achieve potential uses for the stream that cannot otherwise be attained. For example,

nonpoint source controls may result in a stream moving from supporting a limited forage fish community to a healthy warm water sport fishery.

The water resource goals and objectives for the Camp and Center Lakes and their tributaries focus on providing environmental conditions which allow the watershed's lakes and streams to fully achieve their potential biological uses. In many cases other cultural factors that limit these water resources, such as point sources, channelization, dams, or limited public access, will also need to be addressed to see the full benefits of nonpoint source controls.

Water resources goals and objectives are presented below. These objectives will be met in a manner consistent with the protection of existing fish and wildlife habitat, including wetlands. In addition, opportunities will be sought to achieve nonpoint source pollution reduction goals in ways that enhance currently degraded fish and wildlife habitat, such as through the use of restored wetlands and shoreline buffers.

Lake Goals and Objectives

Center Lake

The principal effect of nonpoint source pollution on Center Lake is degraded water clarity associated with turbidity and excessive phosphorus. The data indicate that internal phosphorus loading is substantially less than external loading and within a range typical of mesotrophic or eutrophic lakes.

The goals for Center Lake are to improve the recreational and aesthetic value as well as enhance fish and wildlife habitat by improving water quality. The primary water resource objectives include improving water clarity, reducing the potential for nuisance algae blooms, and supporting a healthy aquatic plant community.

Historical diatom communities in Center Lake indicate maximum in-lake phosphorus concentrations of about 20 ug/L. This corresponds to a regional water quality goal set by the SEWRPC (1979). The Reckow Lake Model estimates that a 59 percent reduction in annual phosphorus loading is needed to obtain a spring turnover phosphorus concentration of 20 ug/L. Thus, the water quality goal of 20 ug/L spring phosphorus concentration would increase water clarity by 3.3 feet and maintain (or possibly reduce) existing chlorophyll-a concentrations.

Goals:

- Improve swimmable water by increasing water clarity
- Improve recreational and aesthetic value by decreasing the growth of nuisance algae.
- Enhance aquatic habitat for fish and wildlife.

Objectives:

- Reduce sediment load by 50 percent or greater.
- Reduce phosphorus load 59 percent.
- Maintain and enhance the functions of shoreland wetlands.
- Preserve undeveloped shoreline as water quality buffers and wildlife shelter

Camp Lake

Similar to Center Lake, Camp Lake experiences degraded water clarity associated with suspended solids and increased nutrient concentrations. Monitoring data indicate that internal phosphorus loading is substantially less than external loading and within a range typical of mesotrophic or eutrophic lakes.

The goals for Camp Lake are to improve the recreational and aesthetic value as well as enhance fish and wildlife habitat by improving water quality. The primary water resource objectives include improving water clarity, reducing the potential for nuisance algae growth, and supporting healthy fisheries and wildlife populations.

Presettlement diatom communities in Camp Lake indicate maximum in-lake phosphorus concentrations of about 25 ug/L. This is slightly higher than the regional water quality goal set by the SEWRPC (1979). The Reckow Lake Model estimates that a 64 percent reduction in annual phosphorus loading is needed to reach the goal.

Goals:

- Improve swimmable water by increasing water clarity
- Improve recreational and aesthetic value by decreasing the growth of nuisance algae.
- Enhance aquatic habitat for fish and wildlife.

Objectives:

- Reduce sediment load by 50 percent or greater.
- Reduce phosphorus load 64 percent.
- Maintain and enhance the functions of shoreland wetlands.
- Preserve undeveloped shoreline as water quality buffers and wildlife shelter

Pollutant Reduction Goals

The following discussion establishes pollution reduction goals which target the control of sediment and phosphorus in rural areas and control of sediment, phosphorus, and toxic materials in urban areas.

Sediment and Phosphorus Reduction Goals

As previously discussed, extensive water quality and aquatic habitat investigations were conducted as part of the planning effort for the Camp and Center Lakes Watershed Project. The results indicated that significant reductions were needed in the amount of sediment and phosphorus loadings to achieve the watershed's water quality objectives. A determination of the needed reductions was made by comparing the findings of these field investigations with the results of the urban and rural nonpoint pollution sources inventories and analyses. A summary of the analyses and a nonpoint source mass balance are shown in Table 3-9.

Sediment Goal: Reduce overall sediment delivered by 56 percent. To meet this goal, the following is needed:

- 38 percent reduction in sediment reaching streams from cropped fields.
- 82 percent reduction in streambank sediment delivered to surface waters of the watershed.
- 58 percent reduction in shoreline sediment delivered to the lakes.
- 33 percent reduction in construction site sediment delivered to surface waters of the watershed.
- 7 percent reduction in sediment from future urban areas of the watershed.

Phosphorus Goal: Reduce overall phosphorus load by 56 percent. To meet this goal, the following is needed:

- 36 percent reduction in phosphorus from cropland areas.
- 6 percent reduction in phosphorus from urban lands.

Short-term Pollutant Reduction Goal: A short-term goal of 40 percent of the overall pollutant reduction goals for sediment and phosphorus is established for the end of the third year of project implementation. Progress toward meeting these goals will be monitored according to criteria listed in Chapter Eight.

Urban Toxics Reduction Goals

Another important water quality consideration is to reduce the concentrations of toxic materials in urban runoff. Zinc and lead are often used as indicator pollutants for evaluating the impact of urban runoff on water quality. In general, the lake water quality appraisals did not find evidence of heavy metals toxicity associated with urban runoff. However, urban runoff in the Milwaukee area has been shown to contain concentrations of heavy metals that often exceed surface water quality standards for acute toxicity (Bannerman et al, 1994). The urban toxics reduction goal is to protect existing conditions in the lakes and prevent future impacts of stormwater toxicity in the lakes.

Table 3-9. Sediment and Phosphorus Nonpoint Source Mass Balance

Existing Sources	Units	Before Practices				After Practices		Percent Sediment Reduction	Percent Phosphorus Reduction
		Sediment (t/yr)	Percent of Total	Phosphorus (lbs/yr)	Percent of Total	Sediment (t/yr)	Phosphorus (lbs/yr)		
Croplands	1,557 ac	1,384	35	8,710	32	852	5,534	38	36
Urban Land	963 ac	28	1	96	1	26	90	7	6
Construction	23 ac	690	17	4,830	18	460	3,220	33	33
Streambanks	9.7 mi	1,560	39	10,920	40	283	1,981	82	82
Shorelines	8.6 mi	334	8	2,338	9	140	980	58	58
	TOTAL:	3,996	100	26,894	100	1,761	11,805	56	56
Future Sources**									
Croplands	833 ac	805	23	5,075	21	463	3,070	42	40
Urban Land	2,863 ac	89	3	562	3	49	309	45	45
Construction	23 ac	690	20	4,830	20	460	3,220	33	33
Streambanks	9.7 mi	1,560	44	10,920	46	283	1,981	82	82
Shorelines	8.6 mi	334	10	2,338	10	140	980	58	58
	TOTAL:	3,478	100	23,725	100	1,395	9,560	60	60

** This future condition assumes no increase in the level of nonpoint source control from 1995 conditions and represents an anticipated development scenario beyond year 2010.

Source: H2GEO and DNR

Other Pollution Sources

This section describes pollution sources that have an impact on water quality in the Camp-Center Lakes watershed, but which are beyond the scope of this project. Control of these pollution sources occurs through other state and county regulatory programs, as described below.

Industrial Point Sources of Pollution

Discharges of wastewater from permitted industrial sources are important considerations for improving and protecting surface water resources. Chapter 147, Wis. Stats., requires any person discharging pollutants into the waters of the state to obtain a Wisconsin Discharge Elimination System (WPDES) Permit.

Status of the NR 217, the Point Source Phosphorus Effluent Limitation Rule: The Phosphorus Rule was passed in June, 1992 by the DNR Board. It was approved by the legislature in Fall, 1992. The Rule requires both municipal and industrial point sources with surface water discharge points to remove phosphorus from their effluents to 1.0 ppm. Industries that generate 60 pounds of phosphorus per month and municipalities that generate 150 pounds per month must comply. It will take 3–8 years before all facilities are on line. Implementation of this Rule should reduce the phosphorus load from the point sources in the Camp-Center Lakes watershed.

Failing Septic Systems

Septic systems consist of a septic tank and a soil absorption field. Septic systems fail due to soil type, location of system, poor design or maintenance. Generally, in the Camp-Center Lakes watershed, the majority of soils are not suitable for conventional septic tank soil absorption systems. As a result, throughout the watershed there are some surface discharge systems where soil absorption systems have failed. This presents a surface water quality problem. Landspreading of septage waste during the winter months can also create surface water quality problems.

The Wisconsin Fund is a Private Sewage System Replacement Grant Program offering financial assistance designed to help eligible homeowners and small business operators offset the costs of replacing a failing septic system. The program is administered by county zoning departments. The grant program applies to principle residences and small businesses built prior to July 1, 1978, and is subject to income and size restrictions. Seasonal homes are not eligible for participation in this program. Interested individuals should contact their county zoning department for more information.

Other Contaminated Sites

The Wisconsin Remedial Response Site Evaluation Report also has the Inventory of Sites or Facilities Which May Cause or Threaten to Cause Environmental Pollution and the Spills Program List which includes sites or facilities identified under the Hazardous Substance Spill Law.

Land Application of Municipal and Industrial Wastes

Sludge is an organic, non-sterile, by-product of treated wastewater, composed mostly of water (up to 99 percent). The re-use of sludge through land application is considered a beneficial recycling of nutrients and a valuable soil conditioner. Use of sludge in this manner is also considered to be the most cost-effective means for the treatment facility to dispose of the material.

Land application of municipal and industrial sludge is regulated under NR 204 and NR 214 respectively which require a WPDES permit, site criteria, minimum distances from wells, application rates to ensure that environmental and public health concerns such as proper soil types, depth to groundwater, distance from surface water, and the type of crop to be grown on sludge amended fields are taken into consideration when the DNR approves agricultural fields for sludge application.

CHAPTER FOUR
Management Actions: Control Needs and Eligibility For Cost-Share Funding

Introduction

This chapter describes the management actions developed to meet the pollution reduction goals established during the water resource appraisal process (See Chapter Three for a description of pollutant reduction goals). Also, this chapter describes the criteria which determine the eligibility of each pollutant source for cost-share funding through the nonpoint source program.

Management Categories

Nonpoint source control needs are addressed by assigning management categories to each major nonpoint source pollution site. Management categories include: **critical** for those sites that require treatment and are essential to achieving water quality objectives, **eligible** for those sites where financial and technical assistance is made available under the priority watershed project, and **ineligible** for sites which are insignificant pollution sources and are not eligible for cost-sharing.

Categories are based on the amount of pollution generated by a source, and the feasibility of controlling the source. Management category eligibility criteria are expressed in terms of tons of sediment delivered to surface waters from eroding uplands, shorelines and streambanks; and pounds of phosphorus delivered to surface waters annually.

The criteria used to define these management categories must be confirmed at the time that the NRCS staff visit a site. A source may change management categories depending on the conditions found at the time of the site visit. A management category may be revised up to the point that a landowner signs a cost-share agreement. Any sources, created by a landowner, requiring controls after the signing of a cost-share agreement must be controlled at the landowners expense for a period of ten years.

Management Category: Critical Sites

As described in Wis. Stat. s.144.25(4)(g)(8.), critical sites are those sites that are significant sources of nonpoint source pollution upon which best management practices must be implemented to obtain the water quality objectives of this plan. Nonpoint sources in this category contribute or are likely to contribute a significant level of pollutant(s) which impact lakes and streams. Reduction of the pollutant load is required by landowners with critical sites.

The installation of best management practices to address nonpoint sources from critical sites are eligible for funding and/or technical assistance under the priority watershed project. As a condition of funding (and at the discretion of the project manager), all critical site sources must be controlled. A landowner may also voluntarily participate in any eligible category component of the priority watershed project if all critical sites are controlled.

Management Category: Eligible Sites

Sources in this category contribute a lesser pollutant load to lakes and streams than those of critical sites. However, control of a portion of these sources is needed to achieve water quality goals of the priority watershed project. Control of sources in this category will provide voluntary controls needed to meet project goals not fully achieved by critical site pollution control activities.

Practices installed on eligible sites are cost-shareable but optional. It is important to note that although these sites are optional, the success of the priority watershed project may depend on control on many of these sites.

Management Category: Ineligible Sites

Nonpoint sources of pollution in this category do not contribute a significant amount of the pollutants impacting surface waters and are not eligible for funding and/or technical assistance under the priority watershed project. Other DNR programs (e.g., wildlife and fisheries management) can, if warranted, assist project staff to control these sources as implementation of the integrated resource management plan for this watershed. Other federal programs may also be applicable to these lands.

Criteria for Eligibility and Management Category Designation

Croplands And Other Upland Sediment Sources

Upland erosion on active farm fields in the Camp-Center Lakes watershed annually yields 10,505 tons of sediment, of which 1,583 tons (15 percent) reaches and is deposited into streams. Approximately 1,384 tons (13 percent) washes into the lakes. The majority of this sediment contribution is generated by 119 farm fields distributed across the five subwatersheds. A 38 percent reduction in sediment from eroding fields is targeted for agricultural lands. This translates into bringing all lands that are eroding at a rate greater than the tolerable soil loss rate "T" to a tolerable level and lands contributing sediment to streams at a rate greater than 1 ton/acre/year down to 1 ton/acre/year.

Fields delivering greater than 2 tons/acre/year to streams and lakes are designated critical. Sources in this category must be controlled to meet project goals. There are an estimated 55 fields (761 acres) in the Camp-Center Lakes watershed designated as critical with an average sediment delivery rate of 2.9 tons/acre/year. Twenty-seven landowners will need to develop conservation plans bringing their soil loss within T, resulting in control of 966 tons of sediment or 33 percent of the upland sediment load.

An additional 11 percent (316 tons) of the sediment load delivered to the streams could be controlled through eligible sources, which include an estimated 37 fields, encompassing 477 acres, though not all landowners in this category are expected to participate. The average sediment delivery rate for this category is 1.5 tons/acre/year. Eligible sources include about 30 landowners with fields delivering sediment at a rate between 1 and 2 tons/acre/year. See Tables 4-1 and 4-2.

Table 4-1. Upland Sediment Erosion Eligibility Criteria in the Camp-Center Lakes Watershed

Management Category	Eligibility Criteria	Average Delivery (tons/acre/year)	Percent Control
Critical	> T and > 2 tons/acre/year	2.9	33
Eligible	> T or 1-2 tons/acre/year	1.5	11
Ineligible	≤ T or < 1 tons/acre/year	0.7	0

Note: T = tolerable soil loss rate. The average sediment delivery rate of all subwatersheds is 1.95 tons/acre/year

Source: H2GEO

Table 4-2. Rural Uplands Targeted for Sediment Control

Subwatershed	Total Load (tons/yr)	Management Category: Critical			Management Category: Eligible			Total Potential Control (%)
		Acres	Control (tons/yr)	Control (%)	Acres	Control (tons/yr)	Control (%)	
C1 (Center Lake)	271	8	9.8	4	141	75.2	28	32
C2 (Center Lake)	875	268	345.0	39	107	80.0	9	48
C3 (Center Lake)	192	43	46.1	24	10	6.9	4	28
C4 (Camp Lake)	1,271	372	477.6	38	129	92.4	7	45
C5 (Camp Lake)	350	70	87.3	25	90	61.7	18	43
Totals	2,959	761	965.8	33	477	316.2	11	44

Sources: H2GEO, Natural Areas Ecosystems Management, DNR and DATCP

Nutrient and Pest Management

All owners and operators of cropland in the Camp-Center Lakes watershed will be eligible for cost-sharing for development of a nutrient and pest management plan for their property.

Nutrient management is addressed through the Natural Resources Conservation Service (NRCS) Nutrient Management Standard 590. Pest management is addressed through the NRCS Pest Management Standard 595. Nutrient and pest management plans will be developed by private consultants. Landowners will be eligible to participate for up to three years and will be responsible for paying 50 percent of the consultant's fees. NRCS staff will prepare soil conservation plans and materials for the nutrient and pest management plans. NRCS will also review the nutrient and pest management plans. Fertilizer and pesticide applications will then be adjusted to meet specific crop needs.

Nutrient and pest management activities should result in pollutant load reductions. The nutrient and pest management program for the Camp-Center Lakes Watershed project will be evaluated at annual watershed review meetings.

Streambank Erosion

Streambanks contribute 39 percent of the overall sediment delivered to streams in the watershed. Critical sites are those with severe erosion and annual sediment yields of greater than 0.06 tons/foot/year or those reaches having a total annual sediment yield of 130 tons/year or greater. During implementation, NRCS staff will verify this designation during a site evaluation to determine accessibility and feasibility.

Eligible sites were identified as those streambank erosion areas with moderate erosion rates and annual sediment yields between 0.03 and 0.06 tons/foot/year. All other eroding streambank sites are ineligible. See Tables 4-3 and 4-4.

Table 4-3. Streambank Eligibility Criteria for the Camp-Center Lakes Watershed

Management Category	Eligibility Criteria	Number of Reaches	Percent Control
Critical	> 0.06 tons/foot/year or > 130 tons/year/reach	6	79
Eligible	0.03 to 0.06 tons/foot/year	3	7
Ineligible	< 0.03 tons/foot/year	10	0

Sources: Natural Areas Ecosystems Management, DNR and DATCP

Table 4-4. Streambank Erosion Eligibility for the Camp-Center Lakes Watershed

Subwatershed	Number of Landowners and Length					
	Critical	Feet	Eligible	Feet	Ineligible	Feet
C1 (Center Lake)	2	5,220	5	1,200	0	0
C2 (Center Lake)	2	5,500	0	0	1	2,100
C3 (Center Lake)	0	0	0	0	5	3,400
C4 (Camp Lake)	15	12,319	3	1,453	9	11,193
C5 (Camp Lake)	0	0	0	0	8	8,678
TOTAL	19	23,039	8	2,653	23	25,371

Sources: H2GEO and Natural Areas Ecosystems Management

Shoreline and Channel Erosion

Shoreline and channel erosion on Camp and Center Lakes contributes 8 percent of the overall sediment delivered in the watershed. In the summer of 1995, the entire shoreline of both lakes and their adjoining channels was inventoried.

The most severely eroding shorelines and channels were designated as critical sites. Critical sites are defined as parcels with an annual sediment yield of 10 tons per year or greater.

Eligible sites are defined as parcels with an annual sediment yield of 2 to 10 tons per year. See Tables 4-5 and 4-6.

Table 4-5. Shoreline and Channel Erosion Eligibility Criteria: Camp-Center Lakes

Category	Eligibility Criteria	Percent Control
Critical	> 10 tons/year	20
Eligible	≥ 2 tons/year and ≤ 10 tons/year delivered	40
Ineligible	< 2 tons/year delivered	0

Source: Natural Areas Ecosystems Management, DNR and DATCP

Table 4-6. Shoreline and Channel Erosion Eligibility for the Camp-Center Lakes Watershed

Subwatershed	Number of Landowners and Length					
	Critical	Feet	Eligible	Feet	Ineligible	Feet
C3 (Center Lake)	1	1,055	17	9,590	180	7,830
C5 (Camp Lake)	2	2,610	12	6,875	174	20,685
TOTAL	3	3,665	29	16,465	354	28,515

Sources: Natural Areas Ecosystems Management, DNR and DATCP

Wetland Restoration

There are no wetland restoration sites designated as critical. All wetlands meeting the criteria listed below will be eligible for restoration. Wetland restoration is an eligible best management practice for the purpose of controlling nonpoint sources of pollution. Secondary benefits of wetland restoration may be enhancement of fish and wildlife habitat.

Wetland restoration includes the plugging or breaking up of existing tile drainage systems, the plugging of open channel drainage systems, other methods of restoring the pre-development water levels of an altered wetland, and the fencing of wetlands to exclude livestock.

Wetland restoration is an eligible practice when applied to any of the following:

1. Cultivated hydric soils with tile or open channel drainage systems discharging to a stream or tributary.

   Wetland restoration will reduce the amount of nutrients and pesticides draining from the altered wetland to a water resource either by establishing permanent vegetation or altering the drainage system.

2. Pastured wetlands riparian to streams, or tributaries.

   Eliminating livestock grazing within wetlands will reduce the organic and sediment loading to the wetland and adjacent water resource, and reduce the direct damage to the wetland from the livestock. Livestock exclusion by fencing will control the pollutants and restore the wetland.

3. Prior converted wetlands downslope or upslope from fields identified as critical for upland sediment sources.

   Restoration of wetlands in these situations will do one of two things: 1) create a wetland filter which reduces the pollutants from an upslope field(s) to a water resource; or 2) reduces the volume and/or velocity of water flowing from an up-slope wetland to a down-slope critical field. Two eligibility conditions must be met to use wetland restoration in this situation:

   - All upland fields draining to the wetland must be controlled to a soil loss rate that is less than or equal to the soils "T" value.
   - Wetland restoration costs must be the least-cost practice to reach sediment reduction goals.

In addition to the criteria described above, landowners must control all critical sources, through a cost-share agreement, to be eligible for an easement through the watershed project.

Land Easements

Nonpoint source program funds may be used to purchase land easements in order to support specified best management practices. These practices, all of which involve the establishment of permanent vegetative cover, include:

- Shoreline Buffers
- Critical Area Stabilization
- Wetland Restoration

Although easements are not considered a best management practice, they can help achieve desired levels of nonpoint source pollution control in specific conditions. Easements are used to support best management practices, enhance landowner cooperation and more accurately compensate landowners for loss or altered usage of property. The benefits of using easements in conjunction with a management practice are:

- Riparian easements can provide fish and wildlife habitat along with the pollutant reduction function;

- Easements are generally perpetual, so the protection is longer term than a management practice by itself; and

- Easements may allow for limited public access (depending on the situation). However, the primary justification of an easement must be for water quality improvement. Participating landowners must control all critical sites sources (through a cost-share agreement) to be eligible for an easement through the watershed project.

Construction Erosion

Construction site erosion control throughout the watershed project area is important to achieving sediment reduction goals. It is expected that the rate of construction activity will remain steady in the future. Without at least a 33 percent control of the sediment from theses sites, construction site erosion will remain a significant source of sediment in the watershed project area. All sites subject to a building permit are considered critical.

This part of the plan identifies the actions needed for effective construction erosion control programs throughout the watershed project area. These actions are needed to control erosion from newly developing areas, urban redevelopment projects in established urban areas, and installation and/or maintenance of roadways, bridges and buried utilities.

State and Federal Requirements: Wisconsin State Statutes 101.65, 101.651, and 101.653 establish a statewide construction site erosion control ordinance. Currently, inspection and enforcement measures for erosion control on construction sites for one and two family dwellings will be administered by the Wisconsin Department of Industry, Labor, and Human Relations (DILHR). Another provision being developed for the statewide erosion control ordinance is agency responsibility for residential, commercial, and industrial developments with ground disturbances of 5 acres or greater as required by U.S. Environmental Protection Agency (EPA) stormwater regulations. Currently, DILHR has been authorized to enforce erosion control measures for one and two family dwellings in areas that have adopted the Uniform Dwelling Code.

Construction erosion control is accomplished most effectively through a local erosion control ordinance, locally administered building codes, practice standards and application guidelines, an effective administrative program and effective enforcement. Training programs are

needed for staff administering ordinances and developers who are responsible for installing and maintaining the erosion control practices.

General Requirements: Local ordinances must meet the applicability and content requirements of NR 120.16 dealing with erosion control. The "Model Construction Site Erosion Control Ordinance," developed cooperatively by the DNR and the League of Wisconsin Municipalities (DNR, 1987), and suggested changes to the model ordinance (set forth by Mr. James H. Schneider, League Legal Counsel, in the March 1989 issue of "The Municipality") will be used as guides to determine adequacy of ordinances. Erosion control practice standards and applicability criteria should be consistent with those set forth in the *Wisconsin Construction Site Best Management Practice Handbook* (DNR, 1989). Education and training activities needed to control construction site erosion are described in Chapter Six.

Specific Needs of Local Government and Developers: The following is a list of specific needs that local government and developers should address in maintaining an effective construction site erosion control program.

- The Town needs to review (and modify where needed) their ordinance to assure effective penalties for non-compliance and responses to concerns of citizens, inspection staff and developers.

- The Town needs to identify and fill staffing and training needs for effective ordinance administration and enforcement.

- The Town needs to evaluate their permit fee schedule to investigate ways to raise revenue to support effective enforcement activities.

- Developers and contractors need to know what is expected of them, and they need better access to technical information through seminars and other educational activities and materials.

- Erosion control inspectors need specific guidelines for documenting ordinance violations in order to provide for more consistent and effective legal action.

A construction site erosion control implementation program is described in Chapter Five under the Core Program Roles and Responsibilities section. An erosion control information and education strategy is described in Chapter Six.

Urban Runoff

The urban runoff pollution inventory and analysis showed that expensive structural BMPs for runoff pollution control in established urban areas are not needed to achieve pollutant reduction goals of the project. However, local units of government will be expected to conduct "core" activities of the plan described in Chapter Five, including urban pollution prevention and educational activities.

Supplementing the traditional pollution prevention practices such as yard and pet waste management, special emphasis will be placed on ditch maintenance in the watershed. Historically, ditches have been popular places to burn leaves and dispose of other yard wastes. Deterioration of ditch vegetation leads to reduced infiltration, scouring, and rapid movement of stormwater and runoff pollutants. An important part of the public educational strategy described in Chapter Six will be to address landowners' ditch maintenance practices.

Critical Sites Summary

Critical site management criteria were established for cropland, construction sites, streambanks, and shorelines. Landowners may have more than one critical site on an individual parcel. In addition, some critical sites are located on rented parcels and are not the result of the landowner's management, but rather that of the land operator. Table 4-7 summarizes the estimated number of critical sites and estimated number of landowners by source category. These estimates are based on state-of-the art computer modeling with data collected by a private consultanting firm. A strategy for notification of landowners with critical sites is described in Chapter Five.

Table 4-7. Summary of Critical Sites in the Camp-Center Lakes Watershed

Sources	Units	Estimated Total Number of Sites	Estimated Total Number of Landowners
Croplands	761 acres	55 fields	27
Construction Sites	23 acres/year	40 sites/year	Unknown[1]
Streambanks	4.5 miles[2]	6	19
Shorelines	0.7 miles	3	3

[1]Number of construction site landowners is too difficult to estimate accurately.

[2]Streambank erosion sites are greatly elongated with low bank heights and moderate erosion rates. Treatment consists of grading and seeding with only a limited use of low-cost biotechnical treatments such as fiber rolls and A-jax. Traditional and costly riprap structures will seldom be used.

Critical sites criteria:

Cropland: >T and >2 tons/acre/year
Streambanks: >0.06 tons/foot/year or sites >130 tons/year
Shorelines: sites >10 tons/year
Construction Sites: All sites

Sources: H2GEO and Natural Areas Ecosystems Management

Eligible Sites Summary

Eligible site management criteria were established for cropland, streambanks, and shorelines. Table 4-8 summarizes the number of eligible sites and estimated number of landowners by source category. A strategy for notification of landowners with eligible sites is described in Chapter Five.

Table 4-8. Summary of Eligible Sites in the Camp-Center Lakes Watershed

Sources	Units	Estimated Total Number of Sites	Estimated Total Number of Landowners
Croplands[1]	477 acres	37 fields	30
Streambanks	0.5 miles	3	8
Shorelines	3.1 miles	29	29

[1]All landowners are eligible for assistance with development of nutrient and pest management plans.

Eligible sites criteria:

Cropland: >T or 1-2 tons/acre/year
Streambanks: 0.03-0.06 tons/foot/year
Shorelines: sites 2-10 tons/year

Sources: H2GEO and Natural Areas Ecosystems Management

CHAPTER FIVE
Implementation

Introduction

This chapter identifies the means for implementing the rural and urban management actions for nonpoint source pollution control described in the previous chapter. It is divided into two sections. The first describes the watershed plan implementation strategy for rural areas. The second section describes the implementation strategy for urban and developing portions of the watershed. The success of this priority watershed project depends on the ability to carry out these pollution control strategies.

This chapter identifies:

- The agencies and units of government responsible for carrying out the identified tasks;
- The best management practices (BMPs) necessary to control pollutants on the critical sites identified in Chapter Four;
- The cost-share budget;
- The cost containment policies;
- The cost-share agreement procedures including administrative procedures for carrying out the project and cost-share reimbursement;
- Staffing needs including total hours per year and number of staff to be hired;
- Schedules for implementing the project;
- The project budget including the expense for cost-sharing; and staffing for technical assistance, administration, and the information and education program.

Project Participants: Roles and Responsibilities

Landowners and Land Operators

Owners and operators of public and private lands are important participants in the priority watershed program. They will adopt BMPs which reduce nonpoint sources of water pollution and protect and enhance fish, wildlife and other resources. Landowners and land operators in the Camp-Center Lakes watershed eligible for cost-share assistance through the priority watershed program include: 1) individuals; 2) Kenosha County; 3) other governmental units described in NR 120.02(19); 4) corporations; and 5) the State of Wisconsin.

Camp-Center Lakes Rehabilitation District (CCLRD)

The CCLRD will be the grant recipient and lead agency responsible for carrying out the plan. The CCLRD will contract the services of the U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS) to carry out many detailed activities of the plan (see description below). The CCLRD will keep an account and reimburse cost-share recipients for the eligible costs of installing BMPs at the rates consistent with administrative rules and established in this plan (see p. 5-16). The CCLRD will assist the NRCS and other units of government in carrying out public information meetings, hearings, and other project oversight activities. Fact sheets and other educational materials targeting landowners around the lakes will be distributed by the CCLRD as described in Chapter Six. An active member of the CCLRD will serve on the Citizens Advisory Committee. In addition, the CCLRD may provide funds to offset the local share of some BMP installations (see Table 5-1).

Kenosha County Office of Planning and Development

The Kenosha County Office of Planning and Development will conduct land use planning reviews for any rezoning proposed within the watershed. These proposals will be reviewed for stormwater management planning and erosion control consistent with water quality objectives and pollutant reduction goals established in this plan.

Natural Resources Conservation Service (NRCS)

Through an agreement with the CCLRD, the NRCS will be the agency responsible for carrying out most of the detailed activities of this plan. The Kenosha County Office of Planning and Development, the Kenosha County Land Conservation Committee, and the CCLRD will provide local oversight for the project (see roles descriptions below).

The specific responsibilities of NRCS will be defined by an agreement between the CCLRD and the NRCS and are consistent with Wisconsin Administrative Rules, s. NR 120.05. They are summarized below:

1. Identify in writing a person to represent the NRCS during implementation of the project.

2. Contact all owners or operators of lands identified as critical and eligible nonpoint sources within one year of signing the nonpoint source grant agreement. The strategy for contacting landowners is included in this chapter.

3. Develop farm conservation plans consistent with the needs of the project.

4. Enter into nonpoint source cost-share agreements with critical and eligible landowners and enforce the terms and conditions of cost-share agreements as defined in s. NR 120.13, Wisconsin Administrative Code.

5. Provide staff training and engineering assistance where needed.

6. Design best management practices and verify proper practice installation.

7. Prepare and submit annual work plans for activities necessary to implement the project. The lead agency shall submit a workload analysis and grant application to the DATCP as required in s. Ag. 166.50.

8. Prepare and submit to the DNR and DATCP the annual resource management report required under s. NR 120.21(7) to monitor project implementation by tracking changes in the nonpoint source inventory, and quantifying pollutant load reductions which result from installing BMPs.

9. Participate in the annual watershed project review meeting.

10. Conduct the information and education activities identified in this plan for which they are responsible.

Department of Natural Resources

The role of the DNR is identified in s. 144.24, Stats. and s. NR 120, Wis. Adm. Code (NR 120). The DNR has been statutorily assigned the overall administrative responsibility for the Wisconsin Nonpoint Source Pollution Abatement Program. The DNR's role is summarized below.

Project Administration - Project administration includes working with the NRCS to ensure that work commitments required during the six-year project implementation phase can be met. The DNR will participate in the annual work planning process with the NRCS. The DNR assists with cost-share agreements signed by the CCLRD and NRCS and the participating landowners for installing BMPs. The DNR provides guidance when questions arise concerning the conformance of proposed activities with the statutes, administrative rules, and the watershed plan.

Financial Support - Financial support for implementation of the priority watershed project is provided in two ways: a local assistance grant (LAG) agreement, and a nonpoint source grant (NPS) agreement. These agreements are described later in this chapter. The DNR may also

enter into cost-share agreements directly with local or state units of government for the control of pollution sources on land the governments own or operate.

Project Evaluation - The DNR has responsibility for priority watershed project monitoring and evaluation activities. These efforts determine if changes in water quality occur as best management practices and other pollution controls are installed or implemented. The water quality evaluation and monitoring strategy for the Camp-Center Lakes watershed is included in Chapter Eight. The DNR documents the results of monitoring and evaluation activities in interim and final priority watershed project reports.

Technical Assistance - The DNR provides some technical assistance to the project staff for design and application of best management practices. This assistance is primarily for urban areas.

Other DNR Responsibilities

These include:

1. The appropriate District Nonpoint Source Coordinator to arrange for DNR staff to assist NRCS staff with site reviews to determine the impacts of nonpoint sources on surface waters, wetlands, and/or groundwater quality.

2. Assisting NRCS staff to integrate wildlife and fish management concerns into selection and design of BMPs.

Department of Agriculture, Trade and Consumer Protection

The role of the DATCP is identified in s. 144.25, stats., ch. 92 stats., and NR 120; and is summarized below.

Information and Education - DATCP will assist the project sponsors to plan and carry out the information and education activities for the project.

Ordinances - DATCP will assist project staff in the development of manure storage ordinances and agricultural shoreland management ordinances, as needed. DATCP will take a lead role in preparing these ordinances for submission to the Land and Water Conservation Board.

Grant Application - DATCP will assist project staff to complete annual workplans and grant applications for work conducted under the priority watershed project or Soil and Water Resource Management (SWRM) Program. The review will be coordinated with the DNR.

Technical Assistance, Training, and Certification - DATCP has eight field staff who provide engineering support to project staff working with soil and water conservation programs, including the priority watershed projects. These services include: engineering training, design, oversight and plan review. Also, DATCP is developing a training and certification program for project staff involved in the above mentioned work.

Technical Standards - DATCP, in conjunction with NRCS, will lead in developing technical standards for agricultural BMPs and will provide technical assistance to project staff regarding application of these practices.

Project Management - DATCP will participate with DNR staff in the annual project review meetings. DATCP participation includes development of evaluation forms and annual accomplishment reports.

Ag Clean Sweep Program - DATCP will coordinate the Ag Clean Sweep program to reduce the amount of unusable pesticides and other chemicals stored by landowners in the watershed.

Kenosha County Land Conservation Committee (LCC)

The LCC will provide assistance to the CCLRD and the project team in obtaining Kenosha County Board approval for the watershed plan. The LCC will also act as the local appeals authority for critical sites (see Critical Sites Designation Appeals Process described in this chapter).

University of Wisconsin Extension (UWEX)

County and Area Extension agents will provide support in developing and conducting a public information and education program aimed at advancing participation in the project. This will include assistance to carry out the information and education activities identified in this plan.

Farm Service Agency (FSA)

FSA administers most of the federal programs aimed at the stabilization of the prices paid producers for agricultural products and administers federal funds for rural soil and water and other resource conservation activities. The Agricultural Conservation Program (ACP) which is administered by FSA will, to the extent possible, be coordinated with the Camp-Center Lakes Priority Watershed Project. In addition other conservation incentives such as the Conservation Reserve Program (CRP) will be used whenever possible to control nonpoint sources of pollution.

Agricultural Best Management Practices (BMPs)

BMPs Eligible For Cost-Sharing And Their Rates

Best management practices are those practices identified in NR 120. Design and installation of all BMPs must meet the conditions listed in NR 120. Generally these practices use standard specifications included in the NRCS Field Office Technical Guide. In some cases additional specifications may apply. The applicable specifications for each BMP can be

found in NR 120.14. The DNR may approve interim best management practices and design criteria based on the provisions of NR 120.15 where necessary to meet the water resource objectives.

If the installation of BMPs destroys significant wildlife habitat, NR 120 requires that habitat will be recreated to replace the habitat lost. The DNR District Private Lands Wildlife Specialist or a designee will assist the NRCS in determining the significance of wildlife habitat and the methods used to recreate the habitat. Every effort shall be made during the planning, design, and installation of BMPs to prevent or minimize the loss of existing wildlife habitat.

The practices eligible for cost-sharing and the cost-share rates for each BMP are listed in tables 5-1 and 5-2 below. The BMPs listed in table 5-1 can either be cost-shared at 50 percent or at the flat rates listed.

Table 5-1. State Cost-Share Rates for Best Management Practices[1]

BEST MANAGEMENT PRACTICE	STATE COST-SHARE RATE (PERCENT)
Field Diversions and Terraces	70
Grassed Waterways	70
Critical Area Stabilization[2]	70
Shoreline Buffers[2]	70
Wetland Restoration[2]	70
Shoreline and Streambank Protection[2]	70
Grade Stabilization Structures	70
Agricultural Sediment Basins	70
Livestock Exclusion from Woodlots	50
Nutrient and Pesticide Management	50

[1] Table 5-2 shows BMPs cost-shared at a flat rate. The DNR may increase the state share up to 80 percent for critical area stabilization, grade stabilization structures, shoreline and streambank protection, demonstration practices approved by the DNR, shoreline buffers, wetland restoration, and structural urban BMPs installed by landowners other than governmental units-- provided that a county matching share equal the state share over 70 percent.

[2] Easements may be entered into with landowners identified in the watershed plan in conjunction with these BMPs. See Chapter Four for an explanation of where easements may apply.

Table 5-2. BMP Flat Rates for State Cost-Share Funding

BEST MANAGEMENT PRACTICE	FLAT RATE PER ACRE
Contour Farming[1]	$ 9.00
Contour Stripcropping[1]	$ 13.50
Field Stripcropping	$ 7.50
High Residue Management[2]	$ 18.50
Cropland Protection Cover[2]	$ 25.00

[1] Wildlife habitat restoration components of this practice are cost-shared at 70%.
[2] Up to three years.

Following is a brief description of some of the most commonly used BMPs included in table 5-1 and 5-2. A more detailed description of these practices can be found in NR 120.14.

Contour Farming

The farming of sloped land so that all operations from seed bed preparation to harvest are done on the contour.

Contour Stripcropping

Growing crops in a systematic arrangement of strips or bands, on the contour, in alternate strips of close grown crops, such as grasses or legumes, and row crops.

Cropland Protection Cover (Green Manure)

Cropland protection covers are close-growing grasses, legumes or small grains grown for seasonal soil erosion protection and soil improvement.

High Residue Management (Reduced Tillage)

A system which leaves substantial amounts of crop residue on the soil surface after crops are planted. The minimum amount of ground cover after planting shall be at least 30%. It is utilized in two situations; one for continuous (at least three consecutive years) row crops, the other for short crop rotations (no more than two years corn and small grains and hay) or for the establishment of forages and small grains.

Critical Area Stabilization

The planting of suitable vegetation on critical nonpoint source sites and other treatment necessary to stabilize a specific location.

Grassed Waterways

A natural or constructed channel shaped, graded and established with suitable cover as needed to prevent erosion by runoff waters.

Grade Stabilization Structure

A structure used to reduce the grade in a channel to protect the channel from erosion or to prevent the formation or advance of gullies.

Livestock Exclusion from Woodlots

The exclusion of livestock from woodlots to protect the woodlots from grazing by fencing or other means.

Shoreline and Streambank Stabilization

The stabilization and protection of stream and lake banks against erosion and the protection of fish habitat and water quality from livestock access. This practice includes streambank riprap, streambank shaping and seeding, stream crossings, livestock watering, fencing and fish habitat structures. This practice may also include plans and practices to manage or exclude livestock.

Terraces

A system of ridges and channels with suitable spacing and constructed on the contour with a suitable grade to prevent erosion in the channel.

Field Diversions

The purpose of this practice is primarily to divert water from areas it is in excess or is doing damage to where it can be transported safely.

Agricultural Sediment Basins

A structure designed to reduce the transport of sediment eroded from critical agricultural fields and other pollutants to surface waters and wetlands.

Shoreline Buffers

A permanently vegetated area immediately adjacent to lakes, streams, channels and wetlands designed and constructed to manage critical nonpoint sources or to filter pollutants from nonpoint sources.

Wetland Restoration

The construction of berms or destruction of the function of tile lines or drainage ditches to create conditions suitable for wetland vegetation.

Nutrient Management

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

Pesticide Management and Spill Control Basin

The management of the handling, disposal and application of pesticides including the rate, method and timing of application to minimize the amount of pesticides entering surface and groundwater. This practice includes integrated pest management scouting and planning and spill control basins with liquid-tight floors for pesticide handling areas.

Easements

Although not considered to be best management practices, easements provide long-term benefits in rapidly developing areas. Their applicability is defined in Chapter Four, Management Actions. Details for such arrangements will be worked out between landowners, DNR and the NRCS during the implementation phase. In addition, local governments, planners, developers and elected officials should be informed of the benefits and availablity of easements through the watershed project (see Chapter Six).

Interim Best Management Practices

Under some circumstances, practices may be recommended that are not included on the BMP list. Administrative Rule NR 120.15 provides for interim practices where necessary to meet the water resource objectives identified in the watershed plan. The DNR shall identify in the nonpoint source grant agreement the design criteria and standards and specifications where appropriate, cost-share conditions, and cost-share rates for each interim best management practice.

BMPs Not Cost-Shared

BMPs not cost-shared, but which shall be included on the cost-share agreement if necessary to control the nonpoint sources, are listed in NR 120.17. Several examples are included below.

- That portion of a practice to be funded through other programs.

- Practices previously installed and necessary to support cost-shared practices.

- Changes in crop rotations and other activities normally and routinely used in growing crops or which have installation costs that can be passed on to potential consumers.

- Changes in location of unconfined manure stacks involving no capital cost.

- Nonstationary manure spreading equipment.

- Practices needed for land use changes during the cost-share agreement period.

- Other activities the DNR and the NRCS determine are necessary to achieve the objectives of the watershed project.

- Minimum levels of street sweeping and leaf collection.

Activities and Sources of Pollution Not Eligible For Cost-Share Assistance

Priority watershed cost-share funds cannot be used to control sources of pollution and land management activities specifically listed in NR 120.10(2). The following is a partial list of ineligible activities most often inquired about for cost-sharing in rural areas.

- Operation and maintenance of cost-shared BMPs,

- Actions which have drainage of land or clearing of land as the primary objective,

- Practices already installed,with the exception of repairs to the practices which were rendered ineffective due to circumstances beyond the control of the landowner,

- Activities covered under the Wisconsin Pollution Discharge Elimination System (WPDES) Program or covered in other ways by Chapter 147 of Wis. Stats. (including livestock operations with more than 1,000 animal units, or livestock operations issued a notice of discharge under ch. NR 243),

- Septic system controls or maintenance,

- Dredging activities,

- Silvicultural activities,

- Bulk storage of fertilizers and pesticides,

- Activities and structures intended primarily for flood control,

- Practices required to control sources which were adequately controlled at the time the cost-share agreement was signed, with the exception of those that occur beyond the control of the landowner,

- Other practices or activities determined by DNR not to meet the objectives of the program.

Cost-Share Budget

Costs of Installing BMPs

The estimated quantity and type of management practices that are required to meet the water quality objectives of this project are listed in table 5-3. The capital cost of installing the BMPs are listed in this table assuming landowner participation rates of 75 percent and 100 percent. The units of measurement and cost per unit for the various BMPs are also included.

The capital cost of installing the Best Management Practices is approximately $360,000 assuming 75 percent participation.

- State funds necessary to cost-share this level of control would be about $260,000.

- The local share provided by landowners and other cost-share recipients would be about $100,000.

Easement Costs

Chapter Four identifies where state nonpoint source program funds can be used to purchase easements. The estimated cost of purchasing easements on eligible lands in the watershed is shown in table 5-3. The estimated cost of easements on eligible lands would be about $15,000. The easement costs would be paid for entirely by the state. However, it is very difficult to determine landowner response to easements as a management tool. Easements are a relatively new tool in the priority watershed program. Therefore, it is very difficult to estimate cost.

Table 5-3. Cost-Share Budget Needs for Management Practices in the Camp-Center Lakes Watershed

Best Management Practices	Number	Cost/Unit $	Total Cost $	100% Participation		75% Participation	
				State Share	Local Share	State Share	Local Share
Upland NPS Control (1)							
Change in Crop Rotation (2)	300 ac	NA	0	0	0	0	0
Contour Cropping (2)	400 ac	9	3,600	3,600	0	2,700	0
Contour Strip Cropping (2)	300 ac	13.50	4,050	4,050	0	3,038	0
Field Strip Cropping (2)	200 ac	7.50	1,500	1,500	0	1,125	0
Residue Management (2)	1,000 ac	18.50	18,500	18,500	0	13,875	0
Cropland Protection Cover (2)	200 ac	25	5,000	5,000	0	3,750	0
Critical Area Stabilization	15 ac	800	12,000	8,400	3,600	6,300	2,700
Grass Waterways	10 ac	3,000	30,000	21,000	9,000	15,750	6,750
Field Diversions & Terraces	100 ft	3	300	210	90	158	68
Grade Stabilization	2 ct	10,000	20,000	14,000	6,000	10,500	4,500
Agricultural Sediment Basin	3 ct	10,000	30,000	21,000	9,000	15,750	6,750
Nutrient and Pest Mgmt.(3)	1,500 ac	10	15,000	7,500	7,500	5,625	5,625
Shoreline Buffers	100 ac	200	20,000	14,000	6,000	10,500	4,500
Wetland Restoration	2 ct	10,000	20,000	14,000	6,000	10,500	4,500
Clean Water Diversion	4 ct	2,500	10,000	7,000	3,000	5,250	2,250
Streambank and Shoreline Erosion Control							
Shape and Seeding	30,000 ft	5	150,000	105,000	45,000	78,750	33,750
Rock Riprap	800 ft	30	24,000	16,800	7,200	12,600	5,400
Biotechnical Treatment	5,000 ft	20	100,000	70,000	30,000	52,500	22,500
Easements	15 ac	1,000	15,000	15,000	0	11,250	0
Totals			478,950	346,660	132,490	259,996	99,368

[1] NA means that cost-share funds are not available for this practice.
[2] Local share consists of labor and any additional equipment costs. Also see flat rates in table 5-2.
[3] Nutrient and Pest Management is cost-shared over a three year period.

Source: DNR, DATCP, and Natural Areas Ecosystem Management

Cost Containment

Cost Containment Procedures

Chapter NR 120 requires that cost containment procedures be identified in this plan. Cost-share payments will be based on actual installation costs. If actual installation costs exceed the amount of cost-sharing determined by the bidding, range of costs, and average cost methods, the amount paid the grantee may be increased with the approval of the CCLRD. Appropriate documentation regarding the need for changes will be submitted to DNR.

Bids, Average Costs, and Flat Rates: The cost containment procedures to be used by the CCLRD are described in a standard bidding procedure, average cost list, and flat rate list. These have been approved by the DATCP and DNR. Copies of the bidding procedure and the lists can be obtained from the NRCS. If these procedures or lists change, they are subject to approval by DATCP and DNR.

Average costs for BMPs will be determined by the NRCS. The average cost list will be reviewed periodically and appropriate changes made. If changes are made, the list will be forwarded to the DNR and the DATCP for final approval before the changes are used for calculating cost-share agreements and payments. BMPs using flat rates are shown in table 5-2. The rates shown are the state's share of the practice installation costs.

All structural BMPs in the watershed are required to be bid out according to the CCLRD's bidding procedure. Nonstructural BMPs are subject to average costs to verify cost containment.

Landowner Contact Strategy and Procedures

Notification and Status of Critical Sites

Landowners with sites meeting the criteria for critical sites are required, through s. 144.25, Stats to achieve the pollution reduction goal for their site(s) through the installation of BMPs or elimination of the source.

All critical sites will be verified by NRCS staff. Verification includes confirming that the site continues to meet the criteria for critical sites and that the landowner has not signed a cost-share agreement. The verification process will begin within the first six months after the plan has been approved by the DNR. As part of the verification process, NRCS staff will inventory any additional lands in the watershed which were not inventoried previously and are under the same ownership as the sites which meet the critical sites criteria. These findings shall be reported in writing to the DNR.

Within 60 days after the verification findings of a critical site have been completed and the site continues to meet the criteria for critical sites, notification of the status will be sent by certified mail to the landowner by NRCS staff or the DNR. This process will start with the highest ranked critical sites and proceed to the lowest ranked critical sites for each nonpoint source category. The notification process will continue for a period of five years or until all landowners and/or land operators with critical sites have been notified.

The notification sent to a landowner with a critical site will include the following information:

- The dates indicating the beginning and end of the 36 month period of cost-share availability. The consequence of cost-share level reductions of 50 percent after the 36 month period has passed.

- The potential consequences of 144.025(2)(u), (v) or (w), Stats. that the landowner may face if no action is taken within 36 months after receipt of notification and the site continues to meet the critical site criteria. Those potential consequences are:

  1. All site information will be turned over to the DNR for processing.

  2. The DNR may prepare a notice of intent to issue the order to abate pollution caused by nonpoint sources. The notice of intent shall include the expected date of pollution abatement.

  3. Failure to implement corrective measures as outlined in the notice of intent by the date identified in the notice, the DNR will issue orders to abate the nonpoint source pollution.

- The right to appeal the designation as a critical site through a written request to the Kenosha County Land Conservation Committee (LCC). This request must be received within 60 days of the receipt of the notification letter.

Critical Site Designation Appeals Process

The owner or operator of a site designated as a critical site may appeal the critical site designation to the LCC. The appeal shall be in writing. The written appeal must be received within 60 days of the landowner's receipt of the notification letter. The LCC shall:

- Provide the appellant with a hearing and give reasonable notice of the hearing to the appellant, the DNR, and the DATCP.

- The hearing shall be conducted informally and be held in a place convenient to the appellant.

- Within 60 days of the hearing, The DNR and DATCP may submit a report and recommendation to the LCC concerning the hearing.

- The LCC may affirm or reverse the designation of the site as a critical site. The LCC shall limit its appeal consideration to whether the critical site designation is consistent with critical site criteria established in the watershed plan. The LCC shall consider whether governmental representatives erred in their verification of the site conditions or management. Loss of profit or pecuniary hardship is not grounds for affirmation of an appeal. Violations by or appeals granted to other appellants shall not justify affirmation of an appeal.

- Following the hearing, the LCC shall render a decision in writing within 45 days of receiving the DNR and DATCP recommendations/reports, or within the conclusion of the 60 day DNR and DATCP recommendation/report period.

The owner or operator of a site designated as a critical site may obtain a review of the decision of the LCC by filing a written request with the Land and Water Conservation Board within 60 days after receiving the decision of the LCC.

The owner or operator of a site designated as a critical site may request a contested case hearing under chapter 227 to review the decision of the Land and Water Conservation Board by filing a written request with the DNR within 60 days after receiving an adverse decision of the Land and Water Conservation Board.

The NRCS staff shall postpone notification to any landowner who signs a cost-share agreement and continues to comply with the implementation schedules described in the cost-share agreement as per N 120.13(4)(d).

A site is no longer considered a critical site if the site no longer meets the criteria for critical sites or the site has had BMPs implemented in accordance with a cost-share agreement. In accordance with s.133.025(2)(u), (v), and (w), Stats., the NRCS and/or the DNR may issue a notice of intent to a landowner of a site who fails to install the needed BMPs to reduce the level of pollution to an acceptable level.

Eligible Landowner Contact Strategy

The following procedure will be used to make landowner contacts for eligible sources.

- During the first three months of the implementation period, all landowners or operators with eligible nonpoint sources will receive a mailing from the NRCS explaining the project and how participants can become involved.

- After the initial landowner mailings, NRCS staff will make personal contacts with all landowners that have been identified as having eligible nonpoint sources of pollution .

- The NRCS will continue to make contacts with eligible landowners and operators until they have made a definite decision regarding participation in the program.

- The NRCS will contact all eligible landowners not signing cost-share agreements by personal letter six months prior to the end of the project.

Cost-Share Agreement Reimbursement Procedures

Nonpoint Source Grant Agreement and Administration

General Information

The Nonpoint Source Grant Agreement is the means for transmitting funds from the DNR (through the Nonpoint Source Program) to the CCLRD for use in funding the state's share of cost-share agreements. Cost-share agreements are the means to transmit funds from the CCLRD to the landowners.

A portion of the Nonpoint Source Grant is forwarded to CCLRD to allow it to set up an account. Funds from this account are used by the CCLRD to pay landowners after practices are installed through the project. As this account is drawn down, the CCLRD, will request reimbursements from DNR to replenish the account. The CCLRD will submit reimbursement requests on a quarterly basis or sooner if needed. This reimbursement schedule will insure that the account balance is maintained at an adequate level. The Nonpoint Source (NPS) Grant Agreement will be amended annually to provide funding needed for cost sharing for the year. The funds obligated under cost-share agreements must never exceed the total funds in the NPS Grant Agreement.

Fiscal Management Procedures, Reporting Requirements

The CCLRD is required to maintain a financial management system that accurately tracks the disbursement of all funds used for the Camp-Center Lakes Watershed Project. The records of all watershed transactions must be retained for three years after the date of final project settlement. A more detailed description of the fiscal management procedures can be found in NR 120.25 and NR 120.26.

Cost-Share Agreement and Administration

Purpose and Responsibilities

Consistent with s. 144.25, Stats. and NR 120, Wis. Adm. Code, cost-share funding is available to landowners for a percent of the costs of installing BMPs to meet the project objectives. Landowners have five years after formal approval of the watershed plan to enter into cost-share agreements (CSA). Practices included on cost-share agreements must be installed within the schedule agreed to on the cost-share agreement. Unless otherwise approved, the schedule of installing BMPs will be within five years of signing of the cost-share agreement. Practices must be maintained for a minimum of ten years from the date of installing the final practice included in the cost-share agreement.

The cost-share agreement is a legal contract between the landowner and the CCLRD. The cost-share agreement includes the name and other information about the landowner and grant recipient, conditions of the agreement, the practices involved and their location, the

quantities and units of measurement involved, the estimated total cost, the cost-share rate and amount, the timetable for installation, and number of years the practice must be maintained. The cost-share agreements also identify and provide information on practices not cost-shared through the nonpoint program but that are essential to controlling pollution sources (such as crop rotations). These items will be completely listed in the conservation plan and the conservation plan is tied to the CSA via addendum 2 of the CSA. Once it is signed by both parties, they are legally bound to carry out the provisions in it.

If landownership changes, the cost-share agreement remains with the property and the new owner is legally bound to carry out the provisions. NR 120.13(9) and (10) has more information on changes of landownership and the recording of cost-share agreements.

Local, state, or federal permits may be needed prior to installation of some BMPs. The areas most likely to need permits are zoned wetlands and the shoreline areas of lakes and streams. These permits are needed whether the activity is a part of the watershed project or not. Landowners should consult with the Kenosha County Office of Planning and Development to determine if any permits are required. The landowner is responsible for acquiring the needed permits prior to installation of practices.

The NRCS will be responsible for monitoring compliance of cost-share agreements. Where DNR serves as a party to an agreement with a unit of government, the DNR will take responsibility for monitoring compliance. The responsible party will insure that BMPs installed through the program are maintained in accordance with the operation and maintenance plan for the practice for the appropriate length of time. The NRCS will check for compliance with practice maintenance provisions once every three years after the last practice has been installed. The NRCS must check maintenance at its own expense after the Nonpoint Source Agreement has lapsed, unless state funding for this activity becomes available at any time during the implementation or monitoring phase of this project.

Procedure for Developing a Cost-Share Agreement

Eligibility for cost-sharing is verified following a site visit, using the criteria described in Chapter Four.

The development of farm conservation plans will be the primary method used to develop cost-share agreements. These plans are specific to a particular landowner and are a comprehensive approach to the abatement of the nonpoint sources of pollution, and the conservation of soil and other resources. The farm plan takes into consideration the sustainability of the agricultural resources and the management decisions of the owner or operator.

The cost-share agreement specifies the items listed in the farm conservation plan that are necessary to reduce the nonpoint sources of pollution. The conservation plan and cost-share agreement will document existing management which must be maintained to protect water quality.

The following procedure will be used by the NRCS for developing and administering agreements. Below are the steps from the initial landowner contact through the completion of BMP maintenance.

1. Landowner and NRCS staff meet to discus the watershed project, NPS control practice needs, and coordination with conservation compliance provisions if applicable.

2. Landowner agrees to participate with the watershed project.

3. A farm conservation plan is prepared by the landowner and the NRCS.

4. The landowner agrees with the plan, a cost-share agreement is prepared and both documents are signed by the landowner, the NRCS and the CCLRD. A copy of the cost share agreement (CSA) is sent to the DNR Southeast District Nonpoint Source Coordinator and a copy given to the landowner. The CSA will be recorded by the CCLRD with the County Register of Deeds.

5. Practices are designed by the NRCS, or their designee, and a copy of the design is provided to the landowner.

6. Landowner obtains the necessary bids or other information required in the cost containment policy.

7. Amendments to the CSA are made if necessary.

8. The NRCS staff oversee practice installation.

9. The NRCS verifies the installation.

10. The landowner submits paid bills and proof of payment (canceled checks or receipts marked paid) to the CCLRD.

11. The CCLRD or its designated representative, and if required, county boards, approve cost-share payments to landowners.

12. Checks are issued by the CCLRD to the respective landowners and project ledgers are updated.

13. The CCLRD records the check amount, number, and date.

14. DNR reimburses the CCLRD for expended cost-share funds.

Identifying Wildlife and Fishery Needs

The NRCS staff will consult with DNR's District wildlife management and fisheries management staff to optimize the wildlife and fish management benefits of nonpoint source control BMPs. Specifically, the NRCS staff will contact DNR staff if in the NRCS's

opinion: Fence rows, rock piles, wetlands, or other wildlife habitat components will be adversely affected by installation of agricultural BMPs.

The DNR staff will assist NRCS staff at their request by:

- Identifying streambank protection practices that benefit fish and wildlife.
- Identifying wildlife habitat components that could be incorporated into vegetative filter strips along streams or in upland areas.
- Reviewing placement of agricultural sediment basins to assure that negative impacts on stream fish and aquatic life do not occur and recommending wildlife habitat components.
- Providing technical assistance when the installation of BMPs will require the removal of obstructions or other wildlife habitat by proposing measures to minimize impact on wildlife habitat.
- Assisting to resolve questions concerning effects of agricultural nonpoint source BMPs on wetlands.

Submittal to the DNR

Cost-share agreements do not need prior approval from DNR, except in the following instances:

- Where cost-share funds are to be used for practices on land owned or controlled by the NRCS.
- For agreements or amendments where the cost-share amount for all practices for a landowner exceeds $50,000 in state funds.
- For grade stabilization structures and agricultural sediment basins with embankment heights between 15 and 25 feet and impoundment capacities of 15 to 50 acre feet.
- For streambanks to be controlled using riprap or other materials with banks over 6 feet high, according to NR 120.14. If applications are similar to each other in content, they will be reviewed to determine if future applications need be subject to this approval procedure.
- For animal lot relocation.
- For roofs over barnyards or manure storage facilities.

Local Assistance Grant Agreement Administration

General Information

The Local Assistance Grant Agreement (LAGA) is a grant from the DNR to the CCLRD for staff and support costs. Through an agreement with the CCLRD, the NRCS will use funds from the LAGA for staff to implement the project and conduct information and education activities. Other items such as travel, training, and certain office supplies are also supported by the LAGA. Further clarification of eligible costs supported by this grant is given in NR 120.14(4) and (6).

Grant Agreement Application Procedures

An annual review of the Local Assistance Grant Agreement is conducted through the development of an annual workload analysis by the NRCS. This workload analysis estimates the work needed to be accomplished each year. The workload analysis is provided to DATCP and DNR for review and clarification. Along with the workload analysis, a grant application form is sent. Funds needed to complete the agreed upon annual workload are amended to the local assistance grant agreement.

Fiscal Management Procedures, Reporting Requirements

The CCLRD is required to maintain a financial management system that accurately tracks the disbursement of all funds used for the Camp-Center Lakes Watershed Project. The records of all watershed transactions must be retained for three years after the date of final project settlement. A more detailed description of the fiscal management procedures can be found in NR 120.25 and NR 120.26. NR 120 requires annual reports to DATCP from the lead management agency in accordance with s. Ag. 166.40(4) accounting for staff time, expenditures, and accomplishments regarding activities funded through the watershed project. Reimbursement requests may be included with the submittal of the annual project reports.

Budget and Staffing Needs

This section estimates the funding and staffing required to provide technical assistance for the rural portion of this project.

Staff Needs

Table 5-4 lists the total estimated staff hours needed to implement the project. A total of about 12,480 staff hours are required to implement this plan. This includes 3,852 staff hours to carry out the information and education program.

Currently, the equivalent of one full-time position is being funded on the Camp-Center Lakes watershed project staff. The NRCS and state agencies will determine the need for additional staff based on the annual Workload Analysis.

Staffing Costs

The estimated cost for staff (see table 5-7) is approximately $218,400. These costs will be paid by the state through the Local Assistance Grant Agreement.

Table 5-4. Estimated Staff Needs for Project Implementation (over six years)

Activity	Staff Hours
Project and Financial Management	1,848
Information and Education Program	3,852
Pre-Contact Office Inventory; Landowner Contracts and Progress Tracking	768
Conservation Planning and Cost-Share Agreement Development	480
Plan Revisions and Monitoring	480
Practice Design and Installation	
Upland Sediment Control	480
Streambank and Shoreline Erosion Control	3,036
Easements	768
Training	768
Total Workload:	12,480
Estimated Staff Required :	1 per year
Hours	2,080 per year

Source: DNR; DATCP and Natural Areas Ecosystems Management

Urban Implementation Program

The following sections provide guidance on how the urban nonpoint source control program will be implemented. The urban implementation program includes basic measures that can be carried out at low cost and without further study.

Project staff from the DNR will work with staff from the Town of Salem and the CCLRD to implement the urban program within the first three years of the project. This is a prerequisite for local governments to receive technical and financial assistance through the priority watershed project. This prerequisite only applies to the receipt of funds used directly by these local units of government as a grantee, such as where it installs, owns, and operates a BMP. It does not apply to those instances where the unit of government acts as a grantor, passing cost-share funds through to private landowners. This means that individual landowners could receive cost-share funds from the DNR for the installation of BMPs prior to the local government's agreement to conduct the urban implementation program.

The basic goals of the urban implementation program are:

- Effectively enforce the construction erosion control provisions in local ordinances based on the state model ordinance and state building codes.

- Develop and implement a program of urban pollution prevention practices which reduce urban nonpoint source pollution. This may include a combination of efforts such as a ditch maintenance education program, adoption of ordinances regulating pet wastes or changes in the timing and scheduling of leaf collection.

- Implement an information and education program containing the elements and achieving the goals of the strategy presented in Chapter Six.

- Following the completion and adoption of the DNR Stormwater Management Guidebook (in preparation), *it is recommended* that a stormwater management ordinance be incorporated into the urban program.

Program Participants--Roles and Responsibilities

The specific roles and responsibilities for the urban implementation program participants are summarized below. As noted in Chapter One, "Plan Purpose and Legal Status," implementation begins following approval of this priority watershed plan by the Kenosha County Board, the Land and Water Conservation Board, and the DNR.

Local Units of Government

The following is a schedule for implementing the urban nonpoint source control strategy for this priority watershed project. Each participating unit of government should:

1. Identify in writing an authorized representative for the local unit of government within 30 days of the start of implementation.

2. Identify the roles and responsibilities of the town, county, lake management district, developers, contractors, and landowners for controlling construction erosion in all areas of the watershed within 6 months of the start of implementation. Develop administrative procedures, and determine staff needs to

fully enforce construction erosion control ordinances and building codes within 12 months of the start of implementation. Amend, as needed, current construction erosion control ordinances to address problems listed in Chapter Three within 12 months of the start of implementation.

3. Develop and carry out a program of urban pollution prevention practices which reduce urban nonpoint source pollution. This may include but is not limited to a combination of information and education efforts, adoption of ordinances regulating pet wastes, and changes to the timing and scheduling of leaf and yard waste collection. The activities of the program and a schedule for implementation will be negotiated by the local unit of government and the DNR within 12 months of the start of implementation.

4. Implement the information and education strategy as described in the Chapter Six.

5. Prepare and submit annual work plans for staff and activities necessary to implement the project.

6. Prepare and submit to the DNR an annual report for the purpose of monitoring project implementation.

7. Participate in the annual watershed project review meeting.

Department of Natural Resources

The DNR has been statutorily assigned the overall administrative responsibility for the Wisconsin Nonpoint Source Water Pollution Abatement Program. This includes providing financial support for local project staff and installation of BMPs, assisting local units of government to integrate wildlife and fish management concerns into selection and design of BMPs, and conducting project evaluation activities. The DNR's role in assisting local units of government in carrying out the urban implementation activities are as follows:

1. Assist local governments to enforce construction erosion control provisions developed by the DNR and the Department of Industry, Labor and Human Relations (DILHR).

2. Review urban pollution prevention practices and programs.

3. Review and approve annual work plans for staff and activities necessary to implement the project.

4. Review and approve annual project implementation reports.

5. Participate in the annual watershed project review meeting.

6. Track changes in urban pollutant loads using information supplied by local units of government.

Landowners and Land Operators

In many cases, private landowners will install BMPs on their property. Landowners are important participants in the urban implementation activities. Eligible landowners will participate in the project by signing cost-share agreements with local units of government. Maintenance responsibility can be assigned using agreements similar to those discussed above.

Natural Resources Conservation Service (NRCS)

In addition to the roles and responsibilities that NRCS will carry out in the rural areas of the watershed (see p. 5-2), they will provide technical assistance for planning and installing conservation practices in urban areas. NRCS will work with eligible urban landowners or units of government to provide assistance with developing cost-share agreements and BMP designs.

University of Wisconsin Extension (UWEX)

Area extension agents will provide support in developing and conducting a public information and education program aimed at increasing voluntary participation in the project. These activities are described in Chapter Six in the information and education strategy.

Urban Best Management Practices (BMPs)

Best management practices (BMPs) are those practices identified in NR 120 determined in this watershed plan to be the most effective in reducing nonpoint sources of pollution. Design and installation of the best management practices previously described under the rural implementation strategy must meet the conditions listed in NR 120. Generally, these practices use standard specifications in the NRCS Field Office Technical Guide. Application of these practices will be guided by technical assistance provided by the NRCS and DNR. Procedures for applying for grants, developing cost-share agreements, containing costs, and reporting financial information are the same as those described earlier in this chapter. Eligible practices and state cost-share rates are listed below in table 5-5.

Table. 5-5. State Cost-Share Rates for Urban Best Management Practices.

Best Management Practice	State Cost-share Rate
Critical Area Stabilization[1]	70%
Grade Stabilization Structures	70%
Streambank and Shoreline Stabilization	70%
Shoreline Buffers[1]	70%
Wetland Restoration[1]	70%

Best Management Practice	State Cost-share Rate
Grass Swales and Waterways[2]	70%

[1] Easements may be used in conjunction with these practices. The DNR may increase the state share up to 80 percent for critical area stabilization, grade stabilization structures, shoreline and streambank protection, demonstration practices approved by the DNR, shoreline buffers, wetland restoration, and structural urban BMPs installed by landowners other than governmental units-- provided that a county matching share equal the state share over 70 percent.
[2] Applies only to structures for established urban areas--those in existence prior to the date the DNR approves this watershed plan.

Source: DNR

Other activities and elements of the urban implementation strategy are eligible for financial assistance. The type of eligible activities and the amount of state funds available are described below:

Table 5-6. Other Urban Implementation Activities Eligible for State Funding.

Activity	Cost-Share Rate
Development of stormwater quality management plans[1]	100%
Design and engineering for structural best management practices[1]	100%

[1] Funding not available for components dealing exclusively with drainage and flood control.

Source: DNR

Activities and Sources of Pollution Not Eligible for Cost-Share Assistance

Priority watershed cost-share funds cannot be used to control sources of pollution and land management activities specifically excluded in NR 120.10 and NR 120.17. The following is a partial list of ineligible activities for cost-sharing in urban areas:

1. Operation and maintenance of cost-shared best management practices (BMPs).

2. Construction erosion control practices.

3. Structural BMPs for new urban development--those whose construction activity commenced after DNR approval of this plan.

4. BMPs installed prior to signing cost-share agreement.

5 Activities covered under the Wisconsin Pollution Discharge Elimination System (WPDES) Program, including industrial site run-off.

6. On-site septic system controls or maintenance.

7. Dredging activities.

8. Activities and structures intended primarily for flood control.

9. Most activities involving street sweeping and leaf collection.

Urban Budget Needs

The urban program budget requirements are included in table 5-7. A summary of these are presented below.

Engineering Feasibility Studies

Engineering feasibility studies will be needed for streambanks, shorelines and other sites on urban lands in order to determine the type, size and location of BMPs. Most of these studies will probably be carried out by the NRCS or the private sector, with most of the cost borne by the DNR. The estimated costs of preparing these feasibility studies are included in the BMP cost estimates shown in table 5-3 and 5-7.

Detailed Engineering Designs

Once BMP feasibility studies are completed, detailed designs must be prepared. These designs will probably be prepared by the NRCS, the private sector or by staffs of local governments. The cost of site designs for structural practices located in urban areas is included in the BMP cost estimates presented in tables 5-3 and 5-7. Designs costs are funded 100 percent by the DNR.

Stormwater Management Planning

In developing areas, stormwater management planning can assure that adequate land is set aside, and stormwater pollution control practices are incorporated into runoff conveyance systems. Nonpoint source program funds may be used to develop these plans. An estimated $60,000 would be required to develop stormwater plans for new development in the watershed. These costs are funded 100 percent by the DNR for portions of plans dealing with water quality and not drainage and flood control.

Operation and Maintenance for Urban BMPs

Operation and maintenance costs for urban BMPs are estimated to be about 5 percent of the capital construction cost per year. This cost must be borne locally.

Construction Site Erosion Control Plans

The cost of preparing construction site erosion control plans has not been estimated. It will be borne primarily by the private sector to meet requirements of local ordinances, state building codes and stormwater permits.

Construction Erosion Control Practices

It is assumed that construction site practices will average $250 per acre. Using this unit cost, it will require an estimated $34,500 to install construction site erosion control practices in the watershed. All of this cost will be borne locally by the private sector to meet requirements of local ordinances, state building codes, and state stormwater permits.

Table 5-7. Total Estimated Project Costs (over six years in 1995 dollars)

Item	Local Share	State Share
Cost-Share Funds: BMPs	93,743	243,121
Cost-Share Funds: Easements	0	11,250
Local Assistance Staff Support*	0	218,400
Information/Education Direct	0	12,880
Other Direct (travel, supplies, etc.)	0	43,680
Nutrient Management	5,625	5,625
Stormwater Planning	18,000	42,000
Construction Erosion Control Practices	34,500	0
* Salary + Indirect = $36,400/year TOTAL	151,868	576,956

Source: DNR, DATCP and Natural Areas Ecosystems Management

Implementation Schedule

Grant Disbursement and Project Management Schedule

Implementation of the Camp-Center Lakes Priority Watershed Project may begin upon approval of this watershed plan by the Kenosha County Board, Land and Water Conservation Board (LWCB), and the DNR. The priority watershed project implementation period lasts six years. Cost-share agreements may be signed with eligible landowners for five years, beginning on the date of LWCB approval. Practices on any cost-share agreement must be installed within the six year implementation period.

Under extenuating circumstances, the initial period for entering into cost-share agreements can be extended by DNR for a limited period of time if it will result in a significant increase

in nonpoint source control. Limited extensions for the installation period for practices on individual cost-share agreements must also be approved by DNR and DATCP.

The initial Nonpoint Source (NPS) grant will cover the cost of practices over the entire six year implementation phase. The amount of the NPS grant is calculated, based on 75 percent participation of eligible landowners. This grant may be amended.

Local Assistance (LAG) grant funds will be disbursed annually to NRCS through the CCLRD to cover costs of personnel, operating expenses, and equipment. The DNR will evaluate the annual workload analysis and grant application submitted by NRCS.

Total Project Cost

The total estimated state funding required to meet the nonpoint source pollution control needs is presented table 5-7. The estimated cost to the state is $577,000 and the estimated cost to local landowners and others is $152,000. These figures include the capital cost of practices, staff support, information and education, and easement costs presented above.

This cost estimate is based on projections developed by the agency planning staff. Historically, the actual expenditures for projects are less than the estimated costs. The factors affecting expenditures for this watershed project include: the participation rate, the length of time the project is actually in implementation, the amount of cost sharing that is actually expended, the number of staff working on the project, and the amount of support costs.

CHAPTER SIX
Information and Education Strategy

Chapter Six describes an information and education strategy to help achieve the pollution reduction goals listed in Chapter Three. The strategy identifies key watershed characteristics, sets objectives, and identifies the audiences and activities needed to achieve these objectives. A budget for education activities is also included in this chapter. More specific descriptions about the duration, frequency, responsible parties, and funding for each educational activity are listed in the Appendix.

Background Information

Distinct community factors, key audiences, and water quality problems influence the education strategy for the Camp-Center Lakes Priority Watershed Project.

Community Factors

Watershed Residents Already Value the Lakes: As the major surface water resources in the watershed, Camp and Center Lakes enrich the local community by providing opportunities for fishing, boating, swimming, wildlife observation, and solitude. Watershed residents appreciate the lakes and have an interest in protecting and improving them.

Lake Rehabilitation District Assistance Available: Most watershed residents reside in the Camp-Center Lakes Rehabilitation District. The Rehabilitation District is an active proponent for cleaner lakes and educates its constituents about local water quality issues. As a participant in the watershed project and the lakes' long term caretaker, the Rehabilitation District can help implement this public participation and education strategy.

When the Lakes Rehabilitation District cooperates with the Priority Watershed Project, some residents may falsely assume the Priority Watershed Project can assist the Rehabilitation District with its efforts at aquatic weed harvesting, dam maintenance, water level manipulations, and dredging shallow channels and shoreline areas. Clarifying the pollution prevention role of the Priority Watershed Project will help avoid misconceptions that may confuse watershed residents and discourage them from participating in the project.

Watershed Residents are Anxious to See Action: Camp and Center Lakes have been the subject of many investigations and evaluations over the years. For watershed residents, the Priority Watershed Project will be "just-another-study" until they see action. To counter skepticism among residents, water quality demonstration projects should be installed and

promoted early in the implementation phase. Early demonstration projects will also help create a sense of momentum to spur residents into adopting practices for water quality at home.

Key Audience Groups

To clarify local educational needs, five key audience groups are identified:

Local government and community leaders: The Town of Salem and the County of Kenosha represent the two local governments in the watershed. In addition, the Rehabilitation District has provided key leadership on many lake issues. Considerable effort should be devoted to this audience group which can help manage construction site erosion, control stormwater runoff, and stabilize eroding streambanks. As previously mentioned, the Rehabilitation District also has the ability to educate constituents on water quality issues. Important characteristics of this audience group include:

- Their desire to independently address environmental issues which they support.
- Their desire to provide a high quality of life for residents.
- Their reluctance to raise local taxes.

Rural Landowners and Farmers: Rural land uses account for 83% of the watershed area and eroding cropland is a major source of sediment and phosphorus to the lakes. Without actions by rural landowners and farmers the watershed will not reach its water quality objectives. Because rural landowners and farmers live away from the lakes, they are probably less concerned about lake protection. Convincing this audience group to take action will require more effort than for lake residents. In addition, other important characteristics of Rural Landowners and Farmers include:

- Their reluctance to try new management practices. Most farmers need to see a neighbor or someone they trust be successful with a new management practice before they will try it themselves.
- The short planning horizon of many rural landowners because they are hoping to sell their land for development.
- The increasing number of rural landowners who start horse and hobby farms with a limited understanding of the farms environmental impacts.

Business and Industry: The primary business and industry audiences who can help improve water quality in the watershed are local realtors, developers, contractors, engineers, and builders. Important characteristics of this audience group include:

- Their recognition of the value buyers place on quality of life in decisions about new and used home purchasing.
- Their concern about economic costs and benefits.
- Their sense of civic responsibility and pride in their work.

Lake Rehabilitation District Residents: Most of the urban residents in this watershed are members of the Rehabilitation District and get much of their information about local water quality issues through this organization. Compared to watershed projects without Rehabilitation Districts, the urban audience in this watershed is probably more aware of local water quality problems. Surveys of urban residents conducted in other watersheds reveal that most are willing to take action at home to protect their environment. What concerned citizens lack is useable information telling them what to do. The educational approach for the urban public in this watershed project relies on coordination with the Rehabilitation District, mass mailings, and the use of the local media. Important characteristics of this audience group include:

- Their commitment to water quality improvement, especially among lake users.
- The value they place on a high local quality of life
- Their preference for local input into ordinances that effect daily life
- Their reluctance to attend meetings or workshops

Youth: Youth are addressed by this plan because they can support action to reduce runoff pollution in the future. Youth can also influenced decision makers (including their parents) and attract media attention. Important characteristics of this audience group include:

- Their interest and participation in water-based recreation
- Their access to water resource education at local schools

Water Quality Problems

The education strategy is based on the priority watershed project's major water quality problems identified in Chapter Three. These problems are:

- Sediment and phosphorus from cropland
- Sediment from eroding streambanks and shorelines
- Sediment from construction sites
- Phosphorus and organic matter (leaves and grass clippings) from residential lawns
- Degradation of shoreland wetlands and loss of undeveloped shoreline

Education Strategy Objectives

Based on the watershed's major water quality problems, this section lists the objectives for the education strategy. Following each objective statement is a list of audiences and activities to achieve the objectives. The education strategy should be evaluated according to the extent the following objectives are achieved.

Increase Public Awareness

Objective: Build a foundation of support for implementing the watershed plan by increasing the public's appreciation of the ecological and recreational value of local water resources, their awareness of the watershed program, and their understanding of best management practices.

Audience and Activities:

Local Government officials and staff

1. Distribute the watershed **newsletter.**
2. Make **presentations** before the County and Town board, and the County Land Use Committee, to update them on watershed progress.

Media

1. Develop **information packets** for local newspaper editors and reporters.
2. Produce a regular **water quality column** for local newspaper(s).
3. Distribute timely **news releases** about watershed activities, especially successful water quality improvement projects and home pollution prevention practices.

Youth, youth group leaders, and teachers

1. Promote the use of appropriate **water quality curricula.**
2. Develop a **water quality unit** for schools.
3. Notify schools and youth groups (4H, Girl Scouts, Boy Scouts, FFA) of speakers available for **presentations.**
4. Prepare **information packets** for students to take home and share with their family.
5. Sponsor a **writing campaign** for schools.
6. Develop **video or slide program** that describes the watershed project's water quality goals and reports on the project's implementation efforts.
7. Recruit **youth volunteers** and adult leaders for a water quality project(s).

Community groups and lake districts

1. Notify groups of speakers available for **presentations.**
2. Distribute the **newsletter.**
3. Distribute **news releases** to community groups that publish newsletters.

General public

1. Premier **water quality videos** on the Wisconsin Instructional Network.

2. At appropriate times, distribute informational **flyers** to select businesses or communities to notify them of upcoming watershed activities or important runoff management techniques.
3. Distribute **promotional items** with a clean water message.
4. Hold a **watershed fair** in conjunction with the CCLRD annual meeting.
5. Distribute **informational packets** to interested watershed residents.

Control Sediment and Phosphorus from Cropland

Objective: Help farmers and rural landowners understand the social, agronomic, and economic benefits of integrating best management practices into their land management; inform them about the financial and technical assistance available throughout the watershed program; and encourage them to adopt or install best management practices including nutrient and pest management.

Audience and Activities:

Rural land owners

1. Make **one-to-one contacts** with owners of critical sites.
2. **Direct mail** information about conservation tillage, and nutrient and pest management.

Farmers

1. Make **one-to-one** contacts with farmers.
2. Hold a **field day** at **demonstration** sites to describe various watershed BMPs for cropland erosion control.
3. **Direct mail** farmers information about conservation tillage and nutrient and pest management.

Control Sediment from Eroding Streambanks and Shorelines

Objective: Help waterfront property owners understand the environmental hazards of shoreline erosion, inform them about the financial and technical assistance available throughout the watershed program, and encourage them to install or adopt soil saving best management practices for their shoreline property.

Audience and Activities:

Waterfront property owners

1. Make **one-to-one** contacts for owners of critical sites.
2. **Direct mail** waterfront property owners information on lake friendly shoreline landscaping and stabilization techniques.

3. Sponsor a **demonstration** at the site of a shoreline stabilization demonstration project.

Control Erosion from Construction Sites

Objective: Help developers, builders, contractors, realtors, local government inspectors, and new home buyers understand the water quality impact of construction site erosion; the management practices available to prevent construction site erosion; and the process for notifying the township of eroding construction sites.

Audiences and Activities:

Developers, Contractors, and Builders

1. Promote UW-Extension **Construction Site Erosion Control workshops.**
2. Make **one-to-one** contacts with local builders.

Realtors

1. Prepare **informational packets** for realtors about the importance of good erosion control on building sites.
2. Hold an **informational meeting** for local realtors to explain the impact the watershed project and other land management programs have on land development in their selling area.

Local Government Officials

1. **Direct mail** information about the environmental hazards associated with construction site erosion.
2. Make **one-to-one** contacts with local building inspectors.

New Home buyers

1. **Direct mail** information about erosion control and lawn establishment to new home owners and/or contractors when their building permit is issued.

Public

1. Conduct construction site **erosion control training** at a CAC meeting so interested citizens recognize construction site erosion problems and know how to notify Salem Township officials when they see a poorly managed construction site.
2. Premier the urban nonpoint **water quality video** and new erosion control video on local cable television
3. Make **presentations** at lake district meetings providing information about the effectiveness of different erosion control practices

Phosphorus and Organic Matter (leaves and grass clippings) from Residential Lawns

Objective: Help homeowners learn about lake friendly yard care best management practices, and encourage them to adopt these practices on their property.

Audiences and Activities:

Homeowners/Renters

1. Provide information about lake friendly lawn care through the watershed **newsletter.**
2. Explore the feasibility of starting a **community composting** effort with collection and/or drop off sites.
3. **Demonstrate** various lake friendly yard care practices at a home in the watershed (or use a home that already has these practices)and hold an **open house** at the site.
4. Conduct **one-to-one** visits with shoreline property owners in the watershed to distribute information about lake friendly yard care.
5. Prepare a lake friendly lawn care **exhibit.**

Degradation of Wetlands and Loss of Undeveloped Shoreline

Objective: Help owners of undeveloped shoreline and wetland property understand its water quality value and encourage them to protect this property from development.

Audience and Activities:

Owners of wetlands and undeveloped shoreline property

1. **One-to-one** contacts with owners of wetlands and shoreline property.
2. Devote a **newsletter** to the subject of the value of wetlands.

Information and Education Budget

This budget includes the overall costs for the Education Strategy, 1996-1999. It does not include costs for exhibits, newsletter production or distribution, fact-sheet printing, and other items covered through contracts between DNR and UW-Extension.

Table 6-1. Budget for the Camp-Center Lakes Priority Watershed Project Education Strategy, 1996-1999.

Activities	Fiscal Year*		
	1996-97	1997-98	1998-99
Citizen Advisory Committee	$ 120	$ 120	$ 120
Demonstration Projects	500	500	500
Direct Mail	640	640	640
Field Days	200	200	200
Information Packets	300	----	----
Informational Meeting	50	50	50
Open House	1100	100	100
Promotional Items	200	----	----
Stream Signs	----	800	----
Tours	300	300	300
Water Quality Unit	----	200	----
Watershed Fair	1500	1500	1500
Writing Campaign	----	100	----
Youth Volunteers	----	50	----
Total	$ 4,910	$ 4,560	$ 3,410

* Most of the costs for information and education activities will be incurred during the first three years of the project. Cost for subsequent years have not been estimated but will be determined during the annual review process (see Chapter Eight).

Table 6-2. The Education Strategy for the Camp-Center Lake Priority Watershed, 1996-1998

Activities	Educational Objectives*					
	A	B	C	D	E	F
	Build a foundation of support for implementing the watershed plan by increasing the public's appreciation of the ecological and recreational value of local water resources, their awareness of the watershed program, and their understanding of best management practices.	Help farmers and rural landowners understand the social, agronomic, and economic benefits of integrating best management practices into their land management; inform them about the financial and technical assistance available throughout the watershed program; and encourage them to adopt or install best management practices including nutrient and pest management.	Help waterfront property owners understand the environmental hazards of shoreline erosion; inform them about the financial and technical assistance available throughout the watershed program; and encourage them to install or adopt soil saving best management practices for their shoreline property.	Help developers, builders, contractors, realtors, local government inspectors, and new home buyers understand the water quality impact of construction site erosion; the management practices available to prevent construction site erosion; and the process for notifying the township of eroding construction sites.	Help homeowners learn about lake friendly yard care best management practices, and encourage them to adopt these practices on their property.	Help owners of undeveloped shoreline and wetland property understand its water quality value and encourage them to protect this property from development.
Citizen Advisory Committee	To be decided					
Composting Project					7/95	
Construction Site Erosion Control Training	To be decided			Spring 97		
Construction Site Erosion Control Workshops				Fall 96-98		
Demonstrations						
Direct Mail	As needed	As needed	As needed	As needed	As needed	As needed
Exhibits	As needed	As needed	As needed	As needed	As needed	As needed

Activities	Educational Objectives*					
	A	B	C	D	E	F
Field days						
Flyers	As needed	As needed	As needed	As needed	As needed	As needed
Information Packets	As needed	As needed	As needed	As needed	As needed	As needed
Informational Meeting				Winter 96-97		
Newsletter	Seasonally 96-98				Seasonally 96-98	Special issue ??/97
News Releases	As needed	As needed	As needed	As needed	As needed	As needed
One-to-One Contacts		On going	On going		On going	On going
Open House			Summer 97, 98		Summer 97, 98	Summer 97, 98
Presentations	As needed	As needed	As needed	As needed	As needed	As needed
Promotional Items	Fall 96					
Tours	Per request					
Slide or Video Program	To be decided					
Water Quality Column	To be decided					
Water Quality Curricula	To be decided					
Water Quality Unit	To be decided					
Water Quality Video	Annually 96-98					
Watershed Fair	08/96 08/97 08/98					
Writing Campaign	To be decided					
Youth Volunteers	To be decided					

* Educational activities are described for the first three years of implementation when most participation will occur. New activities may be added, and some activities modified during implementation. The information and education strategy will be reviewed annually.

CHAPTER SEVEN
Integrated Resource Management Program

Introduction

The purpose of this chapter is to define the principles and guidelines for assuring that the watershed project is coordinated with other resource management programs, organizations, and activities. Each of these activities is described below.

Fisheries

Watershed best management practices (BMPs), such as streambank protection, shoreline buffer strips, and easements, should be implemented in such a way that will enhance fishery management goals. Specifically, all streambank protection BMPs should be installed in such a way that fisheries habitat is enhanced. Large diameter-sized rock should be used below the water line. Rock riprap should be installed and sized so that the placement and size of rock will positively benefit trout habitat. The fishery manager should be consulted for input in the design of each streambank protection BMP.

Wetland Restoration

Significant amounts of restorable wetland areas exist in this watershed. The general guidelines for wetland restoration, easement acquisition, and shoreline buffers to protect existing wetlands should be followed. Wetlands that are important wildlife habitats will be identified by the U.S. Fish and Wildlife Service in consultation with the (DNR) private lands manager. Shoreline buffer easements may be acquired adjacent to these wetlands to better protect them from sedimentation and other nonpoint source pollution.

In addition to the normal priority watershed funding, additional cost-sharing may be available to provide for a 100 percent payment for installation of the BMP. This additional funding may be available through the DNR district private lands manager, and/or the U.S. Fish and Wildlife Service. Eligibility for this additional funding would be determined by the DNR's private lands manager or the district nonpoint source coordinator.

Stewardship

The streambank protection program under stewardship is an important additional means of protecting water quality. Under this program, the DNR could obtain an easement on both sides of the stream (generally 66 feet wide on each side). If needed, the DNR will financially support the fencing of the stream. Streams in the watershed should be nominated for eligibility when the DNR nomination period is opened.

Endangered and Threatened Species Sites

Endangered, threatened, and special concern species are listed in Chapter Two of the plan. To the best extent possible, every effort should be made to protect these species. If site-specific or other information is needed, contact the DNR Bureau of Endangered Resources.

Cultural Resources

Procedures for coordination with state and federal historic preservation laws are outlined in Chapter Two. Streambank or shoreline shaping are likely practices that may potentially disturb archaeological sites.

Coordination with State and Federal Conservation Compliance Programs

The Camp-Center Lakes Watershed Project will be coordinated with the conservation compliance features of the Wisconsin Farmland Preservation Program (FPP) administered by DATCP, and the Federal Food Security Act (FSA) administered by the Natural Resources Conservation Service.

Coordination with the Camp-Center Lakes Rehabilitation District

The Camp-Center Lakes Rehabilitation District (CCLRD) is a taxing authority established for the purpose of protecting and enhancing the quantity and quality of water in the lakes and their surroundings. Camp-Center Lakes Watershed Project staff will continue to cooperate

with the CCLRD, attending board meetings and public meetings upon request. Fact sheets and other educational materials targeting landowners around the lakes will be distributed to CCLRD representatives. An active member of the district will serve on the Citizens Advisory Committee. As a local unit of government, the CCLRD may apply for local assistance grants (see Chapter Five). In addition, the CCLRD may provide funds to offset the local share of some BMP installations (see Table 5-1).

Forest Management

Nonindustrial private forests (NIPFs) make important contributions to both the environmental quality and the wood products requirements of the United States. Changing policies on public lands have increased the need for more intensive management of natural resources on private lands. Financial assistance is available for forest management and soil and water protection by means of the Stewardship Incentive Program (SIP) and the Managed Forest Law (MFL).

Stewardship Incentive Program

The Stewardship Incentive Program (SIP) was authorized to stimulate enhanced management of NIPF lands by cost-sharing approved management practices. SIP provides cost-share funding of up to 75 percent for practices that provide soil and water protection. Practices that are cost-shared by SIP are (1) development of a landowner forest stewardship plan, (2) site preparation and tree planting, (3) timber stand improvement, (4) windbreak and hedgerow establishment, (5) soil and water protection and improvement, (6) riparian and wetland protection and improvement, (7) fisheries habitat enhancement, (8) wildlife habitat enhancement and (9) forest recreation enhancement. The SIP program applies to nonindustrial private forest land of 10 acres or more on forested or forest related (i.e., prairie, wetlands) lands.

Managed Forest Law

The goal of the Managed Forest Law (MFL) is to encourage long-term sound forest management. MFL is a tax incentive program for industrial and nonindustrial private woodland owners who manage their woodlands for forest products while also managing for water quality protection, wildlife habitat and public recreation. In return for following an approved management plan, property taxes are set at a lower rate than normal. At a later time when the landowner receives an income from a timber harvest, some of the deferred tax is collected in the form of a yield tax. Management plans are based on the landowner's objectives. These plans may address harvesting, planting, thinning, release and soil erosion on a mandatory basis while addressing other practices, such as wildlife and aesthetic activities, on a voluntary basis. For more information about financial assistance for forest management, call your local DNR forester.

CHAPTER EIGHT
Project Evaluation

Introduction

This chapter briefly summarizes the plan for monitoring the progress and evaluating the effectiveness of the Camp-Center Lakes Priority Watershed Project. The evaluation strategy includes these components:

- Administrative review.
- Pollution reduction evaluation.
- Watershed resources evaluation monitoring.

Information on the first two components will be collected by the NRCS and reported on a regular basis to the DNR and the DATCP. The project team will meet each year in February or March throughout the implementation phase to review and evaluate the accomplishments of the preceding year. Additional information on the numbers and types of practices on cost-share agreements, funds encumbered on cost-share agreements, and funds expended will be provided by the DNR's Bureau of Community Assistance. The watershed resource evaluation monitoring follows guidance established by DNR's Bureau of Water Resources Management to select specific sites in the watershed to monitor.

A final report will be prepared for the Camp-Center Lakes Priority Watershed Project within 18 months of the end of the grant period. This report will include information on landowner participation, project management, grant management, technical assistance, and monitoring.

Administrative Review

The first component, the administrative review, will focus on the progress of the NRCS and other units of government in implementing the project. The project will be evaluated with respect to accomplishments, financial expenditures, and staff time spent on project activities.

Accomplishment Reporting

The NRCS will provide the following data to the DNR and the DATCP annually:

- Planned and completed BMPs
- Planned and completed conservation systems
- Major information and education activities undertaken

Accomplishment data are summarized in the Annual Accomplishment Report prepared by DATCP and DNR, and are also discussed at watershed review meetings held annually. Additional evaluation data provided by NRCS for the annual watershed review include:

- Pollutant load reductions (described below)
- Status of grants and related financial activities
- Evaluation of landowner participation
- Status of project administration including data management, staff training, and BMP monitoring
- Status of nutrient management planning and easements

Likewise, participating local units of government implementing the urban nonpoint source management program meet periodically with DNR staff to review progress. The DNR and local units of government will jointly evaluate the urban implementation program. Annual reports of governmental units include:

- Information and education activities
- Urban pollution prevention activities
- Effectiveness of construction erosion control activities
- Status of any stormwater management activities
- Acres of land covered by stormwater management plans

Details of the reporting requirements are contained in DNR Publication WR-233-94, which is reviewed every two years by DATCP and DNR and revised as necessary.

The Field Office Computing System, called FOCS, is a computer data management system that has been developed by the NRCS. The NRCS, the DNR and the DATCP use FOCS to meet the accomplishment reporting requirements of all three agencies. The NRCS will use FOCS to collect data for administrative accomplishments and will provide the information to the DNR and the DATCP for program evaluation.

Financial Expenditures

The NRCS will provide the following financial data to the DNR and the DATCP annually:

- Number of landowner cost-share agreements signed
- Amount of money encumbered in cost-share agreements
- Number of landowner reimbursement payments made for the installation of best management practices (BMPs), and the amount of money paid

- Staff travel expenditures
- Information and education expenditures
- Expenditures for equipment, materials, and supplies
- Expenditures for professional services and staff support costs
- Total project expenditures for the NRCS staff
- Amount of money paid for installation of BMPs, and money encumbered in cost-share agreements

The NRCS will also provide both agencies with the following financial data on an annual basis:

- Staff training expenditures
- Interest money earned and expended
- Total lead management agency LCD budget and expenditures on the project

Time Spent On Project Activities

The CCLRD and any other unit of government with a local assistance grant will provide time summaries to both departments for the following activities on an annual basis:

- Project and fiscal management
- Clerical assistance
- Pre-design and conservation planning activities
- Technical assistance: practice design, installation, cost-share agreement status review and monitoring
- Educational activities
- Training activities
- Leave time

Pollutant Reduction Evaluation

Evaluating Pollutant Load Reductions

The purpose of the second evaluation component, pollutant load reduction, is to calculate reductions in the amount of pollutants as a result of installing BMPs. As described in Chapter Three, this plan calls for pollutant reductions for each of five categories: streambanks, shorelines, croplands, construction sites, and urban areas. A short-term goal of 40 percent of the total pollutant reduction goal is established for the end of the third year of project implementation.

Streambanks and Shorelines

The NRCS project staff will calculate changes in streambank sediment and shoreline sediment in tons of sediment and length of eroding sites. A tally will be kept of landowners

contacted, the amount of streambank and shoreline sediment being generated at the time of contact, and changes in erosion levels estimated after installing BMPs.

Croplands

The NRCS will use the WINHUSLE model to estimate sediment reductions due to changes in cropping practices. The NRCS will use FOCS to provide data for the WINHUSLE model on an annual basis, as described above.

Construction Sites

The NRCS project staff with the assistance of the Town of Salem construction site erosion control inspector will report annually to the DNR on the number of construction sites in the watershed, the number of construction sites receiving appropriate permits, the number of sites not adequately meeting their permit requirements, and any amendments to construction site erosion control plans and construction site erosion control ordinances that affect sediment loads associated with these sources.

Existing and Planned Urban Areas

The NRCS project staff with assistance from the Town of Salem, the Camp-Center Lakes Rehabilitation District, and the Kenosha County Office of Planning and Development will report annually to the DNR on any activities that may result in changes in urban stormwater pollutant loadings. Such activities may include pollution prevention, source area controls, end-of-pipe stormwater BMPs installed in existing urban areas, stormwater management plans, stormwater management ordinances, new developments served by stormwater BMPs, new developments not served by stormwater BMPs, and other activities for which the DNR may request information.

Water Resource Evaluation Monitoring

Limited funds and the intensive staffing needed to properly evaluate water quality changes prohibits monitoring each watershed individually. Instead, two types of evaluation monitoring are being conducted on a state-wide basis: Whole Stream Monitoring and Signs of Success. The goal of the evaluation monitoring activities is to determine the progress the Nonpoint Source Program is making towards improving the quality of Wisconsin's water resources.

Evaluation monitoring activities were developed to answer five questions about the water resource objectives and the pollution reduction goals:

1. Do the levels and types of best management practices recommended in the watershed plans achieve the water resource objectives?

2. Do the types and levels of best management practices recommended in the watershed plans achieve the pollutant reduction goals?

3. Does any level of participation below 100 percent achieve the water resource objectives or the pollutant reduction goals?

4. Do we need to adjust the pollutant load reduction goals to achieve the water resource objectives?

5. Can we use simple environmental indicators in many of the watershed projects to provide some early evidence that the practices might achieve the water resource objectives and pollutant reduction goals?

A team of experts from state and federal agencies, and the University of Wisconsin was formed to develop and direct the evaluation monitoring activities at the Whole Stream Monitoring and Signs of Success sites.

Whole Stream Monitoring Sites

Criteria were developed to select and monitor twelve streams around the state. The stream sites represent the five major types of fisheries found in agricultural and urban parts of priority watersheds, and three of the five ecoregions in the state. The five fishery types are: high gradient cold water sport fishery, high gradient warm water sport fishery, high gradient warm water forage fishery, low gradient warm water forage fishery, and low gradient cold water sport fishery. A stormsewer outfall is also being monitored. The three ecoregion types represented are the Southeastern Wisconsin till plains, the Driftless area, and the North Central Hardwood Forest.

All but one of the stream sites drain a small area (about ten square miles or less). There will be two years of monitoring before any best management practices are installed, five years of monitoring during the practice installation phase, two years of monitoring during the response period, and two years of monitoring during the post-practice installation phase, for a total of eleven years of monitoring.

State-of-the-art chemical and physical monitoring is being done at all the Whole Stream Monitoring stream sites. Biological monitoring will be done at eight of the twelve streams. Results of the monitoring will be used to determine how well the best management practices achieve the pollution reduction goals and objectives. Improving the fish community is the most important water resource objective for all the streams.

Signs of Success

Signs of success (SOS) is short-term monitoring designed to provide some early evidence that better land management does make a difference. One sight will be identified for each watershed project. Signs of Success will focus on one practice, such as a streambank protection project, that is expected to have an early effect on the adjacent stream.

Monitoring will take place over a two-year period, the year before and the year after a practice is installed. Habitat sampling and photographs will be used to indicate the benefit of the practice. Limited chemical monitoring and fish sampling will be done at SOS sites. SOS sites for the Camp-Center Lakes Priority Watershed Project are still being identified and will be established shortly after the implementation stage begins.

The cost of water resources monitoring programs will be borne by the state. The results of will be documented and featured in educational materials such as local newsletters, newspapers and the statewide newsletter "Fields and Streets."

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APPENDIX A
List of Acronyms

ACP	Agricultural Conservation Program
BARNY	Barnyard nutrient analysis model
BIM-GEO	DNR Bureau of Information Management-Geographical Unit
BMP	Best Management Practice
CAC	Citizen Advisory Committee
CFSA	Consolidated Farm Services Agency (United States Department of Agriculture)
COD	Chemical Oxygen Demand
CRP	federal Cropland Reserve Program
CSA	Cost share agreement
DATCP	Wisconsin Department of Agriculture, Trade, and Consumer Protection
DILHR	Department of Industry, Labor, and Human Relations
DNR	Wisconsin Department of Natural Resources
FFA	Future Farmers of America
FOCS	Field Offices Computing System
FPP	Wisconsin Farmland Protection Program
FSA	Food Security Act
GW	groundwater
I&E	Information and Education
LCC	Land Conservation Committee
LCD	Land Conservation Department
LWCB	Land and Water Conservation Board
NPM	Nutrient and Pest Management
NRCS	Natural Resource Conservation Service
SHS	Wisconsin State Historical Society
SIP	Stewardship Incentive Program
SOS	Signs of Success monitoring program
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UWEX	University of Wisconsin-Extension
WGNHS	Wisconsin Geological and Natural History Survey
WINHUSLE	sediment transfer model based on the Universal Soil Loss Equation
WPDES	Wisconsin Pollutant Discharge Elimination System [permit system]
WUWN	Wisconsin Unique Well Number assigned to well sample sites

APPENDIX B
Information and Education Methods

This appendix is a supplement to Chapter Six. It provides greater detail about the educational activities listed in the chapter. For more information, contact the Area Watershed Educator or the watershed project manager.

Citizen Advisory Committee - An organized group of watershed residents who act as a liaison between watershed residents, project staff, and members of the Rehabilitation District. CAC members will also assume responsibility for certain I&E activities.

Time: 8 hours per meeting
Responsibility: Project manager/CAC chairperson/Watershed Educator
Frequency: 4-5 meetings annually, decreasing after the first two implementation years.
Cost: $30 per meeting

Composting Project - Organic waste from residential lawns is a source of nutrients to the lakes. Composting reduces the chance this material will wash into the lakes, instead producing a fertilizer and soil amendment for lawns that can save homeowners money. Through the newsletter the watershed will encourage individuals to adopt home composting. In addition, local nurseries and the Pheasant Run Waste Management Facility will be contacted about their interest in collecting organic waste from homes in the watershed.

Time: 120 hours
Responsibility: CAC member/Watershed Educator
Frequency: Once

Construction Site Erosion Control Training - A presentation for CAC members and other interested community groups that explains why construction site erosion is a water quality hazard, what BMPs are recommended to prevent an erosion problem on single family home construction sites, and what procedures to follow if one discovers an eroding construction site in the watershed.

Time: 4 hours
Responsibility: Watershed Educator
Frequency: Once for the CAC, per request for other groups

Construction Site Erosion Control Workshops - UW-Extension in cooperation with the DNR annually sponsors erosion control workshops at different locations in Wisconsin. At least one workshop is held in Southeast Wisconsin each year. Developers, builders, and local

building inspectors who work in the watershed will be encouraged to attend one of these workshops to learn the latest on effective construction site erosion control practices. Participants may be invited to attend personally, or through the mail.

Responsibility: Project Manager
Frequency: Annually
Cost: None, unless the watershed chooses to subsidize travel expenses for participants

Demonstration Projects - Describe the function, management, maintenance, and water quality value for each watershed demonstration project. Field days, informational meetings, fact-sheets, news releases, and newsletter articles will be used for this purpose. The watershed project will demonstrate structural and management practices that reduce runoff pollution from residential and rural sources. Anticipated demonstration projects include: conservation tillage, wetland restoration, streambank and/or shoreline stabilization, and lake friendly lawn care practices.

Time: 40 hours per project
Responsibility: Project Manager/Watershed Educator
Frequency: One demo each year for the first three implementation years
Cost: $500 per demonstration for signs

Direct Mail - Distribute water quality information to select audiences in the watershed. Information will be specific for the needs of the audience. Audiences include: general public, new home buyers, critical site owners, and farmers.

Time: 8 hours per mailing
Responsibility: Project Manager
Frequency: As needed
Cost: First class postage

Exhibits - Prepare table top display boards with photos and text to explain components of the watershed project. Exhibits will be developed to accompany presentations or to stand alone in public locations (ex. Salem Grade School, Salem Library, Kenosha County Center).

Time: 8 hours per exhibit
Responsibility: Project Manager/Watershed Educator
Frequency: As needed for meetings, public events, or to stand alone at public locations

Field days - In the field instruction to teach farmers how to control cropland erosion.

Time: 40 hours
Responsibility: Project Manager
Frequency: Annually if attendance warrants
Cost: $200 for lunch food and beverages

Flyers - Produce and distribute informational flyers to public locations in the watershed area to notify residents of watershed events and important pollution prevention activities.

Time: 4 hours per flyer
Responsibility: Project Manager/Watershed Educator
Frequency: As needed

Information packets - Prepare folders that contain appropriate water quality fact sheets for the following audiences: Farmers, Rural landowners, Students (including materials students can share with parents), Local government officials, Realtors

Time: 4 hours to prepare folders
Responsibility: Project Manager/Watershed Educator
Frequency: As needed
Cost: $.30 per folder

Informational Meeting - Clean water is an important factor determining where people choose to live. For this reason, realtors are interested in protecting water quality. Develop a program to help local realtors understand how land management effects water quality. Explain the different land management programs in the Camp-Center Lakes Area and encourage them to get involved in local land development issues to protect water quality.

Time: 40 hours
Responsibility: County Extension Agent/Watershed Manager/Local Realtor-CAC Member
Frequency: Once (Repeated if successful and demand warrants)
Cost: $50 for refreshments

Newsletters - Printed 3-4 times per year to feature the efforts of residents working to protect water quality and inform readers about important information like available BMPs and cost-share rates. The newsletter is mailed to approximately 1,300 households in the watershed and is also distributed to local government officials, community leaders, and local libraries.

Time: 40 hours per newsletter
Responsibility: Watershed Educator/Project Manager
Frequency: Quarterly for first three years of implementation, biannually thereafter

News releases - News releases will be distributed to local newspapers, television stations, and radio stations to announce watershed events including: tours, public information meetings, open houses, watershed fairs, and demonstrations projects. Feature stories prepared for the newsletter will also be distributed to local media outlets.

Time: 4 hours per release
Responsibility: Project Manager/Watershed Educator

Frequency: As needed

One-on-One - Watershed staff and project volunteers will help individual landowners recognize polluted runoff on their property and understand the effects polluted runoff can have. Staff will also provide feedback on the progress of pollution reduction efforts and will recognize people for their efforts. Audiences to be contacted include, farmers, critical site property owners, local government officials, local developers, and local building inspectors.

Time: 400 hours
Responsibility: Project Manager
Frequency: As needed

Open House - Watershed staff and CAC members will attempt to find a watershed resident with lake front property who will install various lake friendly yard care practices on their property. Practices may include native plantings for shoreline stabilization and low input yard care, water barrels to collect roof runoff water, composting bins, porus pavement, grass mowing with a mulching mower, fertilizer and pesticide management, and backyard wildlife habitat. Watershed residents will be encouraged to visit the open house at their convenience.

Time: 80 hours
Responsibility: Project manager/Watershed Educator/Volunteer Homeowner
Frequency: Formally open at least twice annually for first two implementation years
Cost: $1000 for interpretive signs, $50 open house for refreshments

Presentations - Conducted as needed to keep local government officials, Rehabilitation District members, schools, and community organizations up-to-date on progress in the watershed program.

Time: 4 hours to produce each presentation
Responsibility: Project Manager/Watershed Educator/CAC Members
Frequency: Annually before the county board and the lake district. Addition presentation per request.

Promotional Items - Purchase small items like pens, refrigerator magnets, coffee mugs, that carry a clean-water message. Give these items away at watershed events as a way to build recognition of the watershed project. This is a low priority activity that will only be implemented if sufficient funds are available after all other educational activities are completed.

Responsibility: Project Manager/CAC Members

Tours - Scheduled as requested by advisory committee members or deemed necessary by project staff to update participants about project progress.

Time: 24 hours
Responsibility: Project Manager/CAC Members
Frequency: Annually
Cost: $300 per tour for bus rental and refreshments

Video or slide program - Develop a water quality video or slide program that features the effort of the watershed project to protect Camp and Center Lakes from runoff pollution.

Time: 100 hours
Responsibility: Watershed Educator/Project Manager
Frequency: Once
Cost: (To be determined)

Water Quality Column - Produce a regular column to focus on local water quality issues and actions people can take to improve local water resources.

Time: 8 hours per column
Responsibility: Project Manager/CAC Member
Frequency: monthly during the first two years of implementation

Water Quality Curricula - Encourage teachers to include water quality education in their classroom activities. This activity may includes providing speakers and existing water quality booklets, posters, models and other learning materials to teachers. The schools that draw students from the watershed include: Riverview Elementary, Salem Elementary, Trevor Elementary, Wilmot High School, Central High School.

Time: 80 hours
Responsibility: CAC Members/Watershed Educator
Frequency: Once

Water Quality Unit - Develop new curricula for interested teacher(s) in a school(s) that serves the watershed. This would be a cooperative effort with the school to ensure they receive a useable product.

Time: 80 hours
Responsibility: CAC Members/Volunteer Teacher(s)/Watershed Educator
Frequency: Once
Cost: $200 for bus rental for field trips

Water Quality Videos - Premier existing educational videos on local cable access channel #7, the Wisconsin Instructional Network. These videos are also available for use by groups and individuals in the watershed.

Responsibility: Watershed Educator
Frequency: Annually

Watershed Fair - A community event designed to attract residents who are unlikely to attend formal meetings. Fair will be held in conjunction with the Lake Districts's annual meeting and involve water-quality displays, refreshments, and Children activities.

Time: 120 hours
Responsibility: CAC members/Watershed Educator/Project manager
Frequency: Annually
Cost: $1500 for renting tents, tables, chairs, grills, and purchasing refreshments

Writing Campaign - Sponsor a writing contest for students from the five schools that draw students from the watershed.

Time: 40 hours
Responsibility: CAC members/Project Manager/Watershed Educator
Frequency: Once (repeat if demand warrants)
Cost: $100 for prizes and certificates

Youth Volunteers - Youth group (Girl Scouts, Boy Scouts, 4H, Church Group) develops a project that helps them with their education or merit requirement and provide a water quality benefit.

Time: 40 hours
Responsibility: Project Manager
Frequency: Once
Cost: $50 for refreshments

APPENDIX C
Glossary

ACUTE TOXICITY:
Any poisonous effect produced by a single short-term exposure to a chemical that results in a rapid onset of severe symptoms.

AGRICULTURAL CONSERVATION PROGRAM (ACP):
A federal cost-sharing program to help landowners install measures to conserve soil and water resources. ACP is administered by the USDA FSA through county ACP committees.

ALGAE:
A group of microscopic, photosynthetic water plants. Algae give off oxygen during the day as a product of photosynthesis and consume oxygen during the night as a result of respiration. Therefore, algae effect the oxygen content of water. Nutrient-enriched water increases algae growth.

AMMONIA:
A form of nitrogen (NH_3) found in human and animal wastes. Ammonia can be toxic to aquatic life.

AREAWIDE WATER QUALITY MANAGEMENT PLANS (208 PLANS):
A plan to document water quality conditions in a drainage basin and make recommendations to protect and improve basin water quality. Each basin in Wisconsin must have a plan prepared for it, according to section 208 of the Clean Water Act.

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

BASIN PLAN:
See "Areawide Water Quality Management Plan".

BENTHIC ORGANISMS (BENTHOS):
Organisms living in or on the bottom of a lake or stream.

BEST MANAGEMENT PRACTICE (BMP):
The most effective, practical measures to control nonpoint sources of pollutants that runoff from land surfaces.

BIOCHEMICAL OXYGEN DEMAND (BOD):
A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water. BOD_5 is the biochemical oxygen demand measured in a five day test. The greater the degree of pollution, the higher the BOD_5.

BUFFER STRIPS:
Strips of grass or other erosion-resisting vegetation between disturbed areas and a stream or lake.

CARCINOGENIC:
A chemical capable of causing cancer.

CHLORORGANIC COMPOUNDS (CHLORORGANICS):
A class of chemicals that contain chlorine, carbon and hydrocarbon. This generally refers to pesticides and herbicides that can be toxic. Examples include PCB's and pesticides such as DDT and dieldrin.

CHRONIC TOXICITY:
The effects of long-term exposure of organisms to concentrations of a toxic chemical that are not lethal, but is injurious or debilitating in one or more ways. An example of the effect of chronic toxicity is reduced reproductive success.

CLEAN WATER ACT:
See "Public Law 92-500."

CONFINED DISPOSAL FACILITY (CDF):
A structure built to contain and dispose of dredged material.

CONSERVATION TILLAGE:
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.

CONSUMPTION ADVISORY:
A health warning issued by DNR and WDHSS that recommends people limit the fish they eat from some rivers and lakes based on the levels of toxic contaminants found in the fish.

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

CONVENTIONAL POLLUTANT:
Refers to suspended solids, fecal coliforms, biochemical oxygen demand, and pH, as opposed to toxic pollutants

COST-EFFECTIVE:
A level of treatment or management with the greatest incremental benefit for the money spent.

DDT:
A chlorinated hydrocarbon insecticide that was banned because of its persistence in the environment.

DIOXIN (2,3,7,8-tetrachlorodibenso-p-dioxin):
A chlorinated organic chemical which is highly toxic.

DISSOLVED OXYGEN (DO):
Oxygen dissolved in water. Low levels of dissolved oxygen cause bad smelling water and threaten fish survival. Low levels of dissolved oxygen often result from inadequate wastewater treatment. The DNR considers 5 ppm DO necessary for fish and aquatic life.

DREDGING:
Removal of sediment from the bottom of water bodies.

ECOSYSTEM:
The interacting system of biological community and its nonliving surrounding.

EFFLUENT:
Solid, liquid or gas wastes (byproducts) that are disposed on land, in water or in air. As used in the RAP, effluent generally means wastewater discharges.

EFFLUENT LIMITS:
The DNR issues WPDES permits establishing the maximum amount of pollutant to be discharged to a receiving stream. Limits depend on the pollutant and the water quality standards that apply for the receiving waters.

ENVIRONMENTAL PROTECTION AGENCY (USEPA):
The federal agency responsible for enforcing federal environmental regulations. The Environmental Protection Agency delegates some of its responsibilities for water, air and solid waste pollution control to state agencies.

ENVIRONMENTAL REPAIR FUND:
A fund established by the Wisconsin Legislature to deal with abandoned landfills.

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

EUTROPHIC:
Refers to a nutrient-rich lake. Large amounts of algae characterize a eutrophic lake (see also "Oligotrophic" and "Mesotrophic").

EUTROPHICATION:
The process of nutrient enrichment of a lake loading to increased production of aquatic organisms. Eutrophication can be accelerated by human activity such as agriculture and improper waste disposal.

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.

FISHABLE AND SWIMMABLE:
Refers to the water quality goal set for the nation's surface waters by Congress in the Clean Water Act. All waters were to meet this goal by 1984.

GROUNDWATER:
Underground water-bearing areas generally within the boundaries of a watershed, which fill internal passageways of porous geologic formations (aquifers) with water that flows in response to gravity and pressure. Often used as the source of water for communities and industries.

HABITAT:
The place or type of site where a plant or animal naturally lives and grows.

HEAVY METALS:
Metals present in municipal and industrial wastes that pose long-tern environmental hazards if not properly disposed. Heavy metals can contaminate ground and surface waters, fish and other food stuffs. The metals of most concern are: arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium and zinc (see also separate listings of these metals for their health effects).

HERBICIDE:
A type of pesticide that is specifically designed to kill plants and can also be toxic to other organisms.

HYDROCARBONS:
Any chemical of a large family of chemicals containing carbon and hydrogen in various combinations.

INFLUENT:
Influent for an industry would be the river water that the plant intakes for use in its processing. Influent to a municipal treatment plant is untreated wastewater.

IN-PLACE POLLUTION:
As used in the RAP, refers to pollution from contaminated sediments. These sediments are polluted from post discharges from municipal and industrial sources.

LANDFILL:
A conventional sanitary landfill is "a land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading solid wastes in thin layers, materials at the end of each operating day". Hazardous wastes frequently require various types of pretreatment before they are disposed of, i.e., neutralization chemical fixation encapsulation. Neutralizing and disposing of wastes should be considered a last resort. Repurifying and reusing waste materials or recycling them for another use may be less costly.

LEACHATE:
The contaminated liquid which seeps from a pile or cell of solid materials and which contains water, dissolved and decomposing solids. Leachate may enter the groundwater and contaminate drinking water supplies.

LOAD:
The total amount of materials or pollutants reaching a given local.

MACROPHYTE:
A rooted aquatic plant.

MASS:
The amount of material a substance contains causing it to have weight in a gravitational field.

MASS BALANCE:
A study that examines all parts of the ecosystem to determine the amount of toxic or other pollutant present, its sources, and the processes by which the chemical moves through the ecosystem.

MESOTROPHIC:
Refers to a moderately fertile nutrient level of a lake between the oligotrophic and eutrophic levels. (See also "Eutrophic" and "Oligotrohpic.")

MILLIGRAMS PER LITER (mg/1):
A measure of the concentration of substance in water. For most pollution measurement this is the equivalent of "parts per million".

MITIGATION:
The effort to lessen the damages caused, by modifying a project, providing alternatives, compensating for losses or replacing lost values.

NONPOINT SOURCE POLLUTION (NSP):
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 in runoff, which can best be controlled by proper land management.

NPS:
See nonpoint source pollution.

OLIGOTROPHIC:
Refers to an unproductive and nutrient-poor lake. Such lakes typically have very clear water. (See also "Eutrophic" and "Mesotrophic.")

OUTFALL:
The mouth of a sewer, drain, or pipe where effluent from a wastewater treatment plant is discharged.

PATHOGEN:
Any infective agent capable of producing disease. It may be a virus, bacterium, protozoan, etc.

PESTICIDE:
Any chemical agent used to control specific organisms, such as insecticides, herbicides, fungicides, etc.

PH:
A measure of acidity or alkalinity, measured on a scale of 0 to 14 with 7 being neutral and 0 being most acid, and 14 being most alkaline.

PHENOLS:
Organic compounds that are byproducts of petroleum refining, textile, dye, and resin manufacture. High concentrations can cause taste and odor problems in fish. Higher concentration can be toxic to fish and aquatic life.

PHOSPHORUS:
A nutrient that, when reaching lakes in excess amounts, can lead to overfertile conditions and algae blooms.

PLANKTON:
Tiny plants and animals that live in water.

POINT SOURCES:
Sources of pollution that have discrete discharges, usually from a pipe or outfall.

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

POLYCHLORINATED BIPHENYLS(PCBs):
A group of 209 compounds, PCBs have been manufactured since 1929 for such common uses as electrical insulation and heating/cooling equipment, because they resist wear and chemical breakdown. Although banned in 1979 because of their toxicity, they have been detected on air, land and water. Recent surveys found PCBs in every section of the country, even those remote from PCB manufacturers.

PRETREATMENT:
A partial wastewater treatment required from some industries. Pretreatment removes some types of industrial pollutants before the wastewater is discharged to a municipal wastewater treatment plant.

PRIORITY POLLUTANT:
A list of toxic chemicals identified by the federal government because of their potential impact in the environment and human health. Major dischargers are required to monitor all or some of these chemicals when their WPDES permits are reissued.

PRIORITY WATERSHED:
A drainage area about 100,000 acres in size selected to receive Wisconsin Fund 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.

PRODUCTIVITY:
A measure of the amount of living matter which is supported by an environment over a specific period of time. Often described in terms of algae production for a lake.

PUBLIC LAW 92-500 (CLEAN WATER ACT):
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.

PUBLICLY OWNED TREATMENT WORKS (POTW):
A wastewater treatment plat owned by a city, village or other unit of government.

REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RF/FS):
An investigation of problems and assessment of management options conducted as part of a superfund project.

RESOURCE CONSERVATION AND RECOVERY ACT OF 1976 (RCRA):
This federal law amends the Solid Waste Disposal Act of 1965 and expands on the Resource Recovery Act of 1970 to provide a program that regulates hazardous wastes, to eliminate open dumping and to promote solid waste management programs.

RETRO-FIT:
The placement of an urban structural practice in an existing urban area, which may involve rerouting existing storm sewers and/or relocating existing buildings or other structures.

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

RIPRAP:
Broken rock, cobbles, or boulders placed on the bank of a stream to protect it against erosion.

RULE:
Refers to Wisconsin administrative rules. See Wisconsin Administrative Code.

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

SECONDARY IMPACTS:
The indirect effects that an action can have on the health of the ecosystem or the economy.

SECONDARY TREATMENT:
Two-stage wastewater treatment that allows the coarse particles to settle out, as in primary treatment, followed by biological breakdowns of the remaining impurities. Secondary treatment commonly removes 90% of the impurities. Sometimes "secondary treatment" refers simply to the biological part of the treatment process.

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

SEICHES:
Changes in water levels due to the tipping of water in an elongated lake basin whereby water is raised in one end of the basin and lowered in the other.

SEPTIC SYSTEM:
Sewage treatment and disposal for homes not connected to sewer lines. Usually the system includes a tank and drain field. Solids settle to the bottom of the tank. Liquid percolates through the drain field.

SOLID WASTE:
Unwanted or discharged material with insufficient liquid to be free flowing.

STORM SEWERS:
A system of sewers that collect and transport rain and snow runoff. In areas that have separated sewers, such stormwater is not mixed with sanitary sewage.

SUPERFUND:
A federal program that provides for cleanup of major hazardous landfills and land disposal areas.

SUSPENDED SOLIDS (SS):
Small particles of solid pollutants suspended in water.

TOXIC:
An adjective that describes a substance which is poisonous, or can kill or injure a person or plants and animals upon direct contact or long-term exposure. (Also, see toxic substance.)

TOXIC SUBSTANCE:
A chemical or mixture of chemicals which, through sufficient exposure, or ingestion, inhalation of assimilation by an organism, either directly from the environment or indirectly by ingestion through the food chain, will, on the basis of available information cause death, disease, behavioral or immunologic abnormalities, cancer, genetic mutations, or development of physiological malfunctions, including malfunctions in reproduction or physical deformations, in organisms or their offspring.

TREATMENT PLANT:
See wastewater treatment plant.

TROPHIC STATUS:
The level of growth or productivity of a lake as measured by phosphorus content, algae abundance, and depth of light penetration.

TURBIDITY:
Lack of water clarity. Turbidity is usually closely related to the amount of suspended solids in water.

UNIVERSITY OF WISCONSIN-EXTENSION (UWEX):
A special outreach, education branch of the state university system.

VARIANCE:
Government permission for a delay or exception in the application of a given law, ordinance or regulation. Also, see water quality standard variance.

VOLATILE:
Any substance that evaporates at a low temperature.

WASTELOAD ALLOCATION:
Division of the amount of waste a stream can assimilate among the various dischargers to the stream. This limits the amount (in pounds) of chemical or biological constituent discharged from a wastewater treatment plant to a water body.

WASTEWATER:
Water that has become contaminated as a byproduct of some human activity. Wastewater includes sewage, washwater and the water-borne wastes of industrial processes.

WASTE:
Unwanted materials left over from manufacturing processes, refuse from places of human habitation or animal habitation.

WASTEWATER TREATMENT PLANT:
A facility for purifying wastewater. Modern wastewater treatment plants are capable of removing 95% of organic pollutants.

WATER QUALITY AGREEMENT:
The Great Lakes Water Quality agreement was initially signed by Canada and the United States in 1972 and was subsequently revised in 1978 and 1987. It proves guidance for the management of water quality, specifically phosphorus and toxics, in the Great Lakes.

WATER QUALITY LIMITED SEGMENT:
A section of river where water quality standards will not be met if only categorical effluent standards are met.

WATER QUALITY CRITERIA:
A measure of the physical, chemical or biological characteristics of a water body necessary to protect and maintain different water uses (fish and aquatic life, swimming, etc.).

WATER QUALITY STANDARDS:
The legal basis and determination of the use of a water body and the water quality criteria, physical, chemical, or biological characteristics of a water body, that must be met to make it suitable for the specified use.

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

WETLANDS:
Areas that are inundates 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. Wetlands generally include swamps, marshes, bogs and similar areas.

WISCONSIN ADMINISTRATIVE CODE:
The set of rules written and used by state agencies to implement state statutes. Administrative codes are subject to public hearing and have the force of law.

WISCONSIN FUND:
A state program that helps pay the cost of reducing pollution. Funding for the program comes from general revenues and bonds and is based on a percentage of the state's taxable property value. The Wisconsin Fund includes these programs:

Point Source Water Pollution Abatement Grant Program - Provides grants for 60% of the cost of constructing wastewater treatment facilities. Most of this program's money goes for treatment plant construction, but three percent of this fund is available for repair or replacement of private, on-site sewer systems.

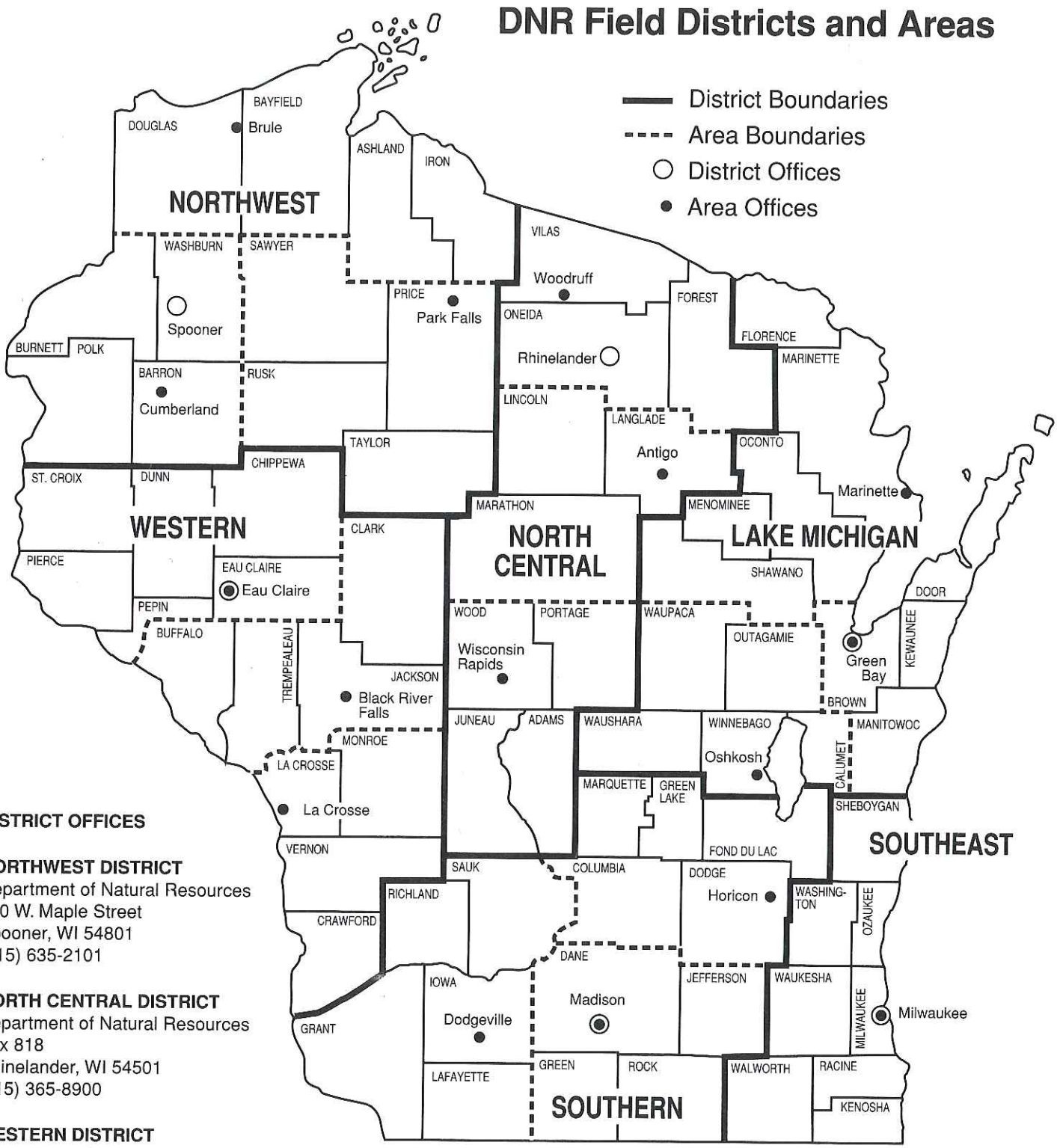
Nonpoint Source Water Pollution Abatement Grant Program - Funds to share the cost of reducing water pollution. Nonspecified sources are available in selected priority watersheds.

Solid Waste Grant Program - Communities planning for solid waste disposal sites are eligible for grant money. $500,000 will be available each year to help with planning costs.

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT GRANT PROGRAM:
A state cost-share program established by the State Legislature in 1978 to help pay the costs of controlling nonpoint source pollution. Also known as the nonpoint source element of the Wisconsin Fund or the Priority Watershed Program.

WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM (WPDES):
A permit system to monitor and control the point source dischargers of wastewater in Wisconsin. Dischargers are required to have a discharge permit and meet the conditions it specifies.

DNR Field Districts and Areas



DISTRICT OFFICES

NORTHWEST DISTRICT
Department of Natural Resources
810 W. Maple Street
Spooner, WI 54801
(715) 635-2101

NORTH CENTRAL DISTRICT
Department of Natural Resources
Box 818
Rhinelander, WI 54501
(715) 365-8900

WESTERN DISTRICT
Department of Natural Resources
1300 W. Clairemont Avenue, Box 4001
Eau Claire, WI 54702
(715) 839-3700

LAKE MICHIGAN DISTRICT
Department of Natural Resources
1125 N. Military Avenue, Box 10448
Green Bay, WI 54307
(414) 492-5800

SOUTHEAST DISTRICT
Department of Natural Resources
2300 N. Dr. Martin Luther King, Jr. Drive
Box 12436
Milwaukee, WI 53212
(414) 263-8500

SOUTHERN DISTRICT
Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711
(608) 275-3266

Our Mission:

To protect and enhance our Natural Resources—
our air, land and water;
our wildlife, fish and forests.

To provide a clean environment
and a full range of outdoor opportunities.

To insure the right of all Wisconsin citizens
to use and enjoy these resources in
their work and leisure.

And in cooperation with all our citizens
to consider the future
and those who will follow us.

WISCONSIN
DEPT. OF NATURAL RESOURCES

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