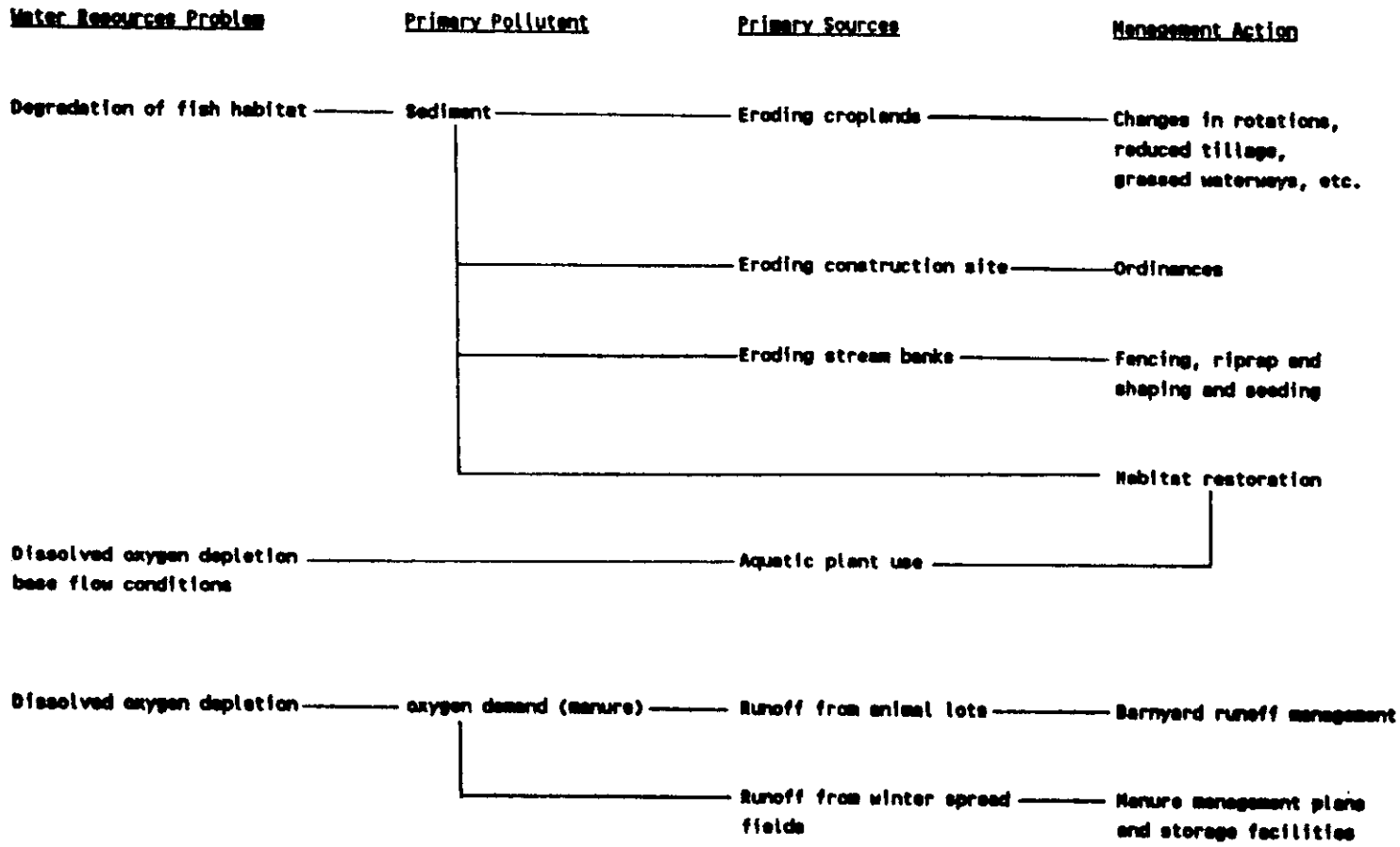

FIGURE 20. Black Earth Creek Problems, Pollutants Sources and Management Actions

Manure Spreading Management Needs. Proper manure spreading and handling are also needed to reduce manure entering the streams. The Dane County Land Conservation Department will assist farm operators in preparing a management plan for proper manure spreading. The manure management plan is based on the manure spreading guidelines of the University of Wisconsin Extension as adopted by the Soil Conservation Service. The results of the manure management plan include an identification of the proper spreading periods, application rates and acceptable fields.

A small number of the manure management plans may identify the need for manure storage facilities. Where manure storage facilities are necessary, cost share funds will be available through the Wisconsin Nonpoint Source Water Pollution Abatement Program. The cost share rate is 70 percent up to a maximum of $6,000 or $10,000, depending on the type of structure. Participation in the program is voluntary.

Stream Bank Management Needs. Stream bank management needs vary. Some sites need fencing to limit cattle access to streams. Others need structural practices such as reshaping with seeding or rock riprap. Two segments of the Black Earth Creek need intensive management, such as bank stabilization and fish habitat rehabilitation. As with other nonpoint sources, cost share funds will be available through the Wisconsin Nonpoint Source Water Pollution Abatement Program. The cost share rate is 70 percent to 80 percent.

Construction Site Management Needs. Middleton, Cross Plains need to control pollutants from construction sites. Middleton has an ordinance but enforcement of the ordinance needs to be upgraded. Cross Plains needs to develop an ordinance. The sensitivity of Black Earth Creek at Cross Plains coupled with the past occurrence of fish habitat and the projected development necessitate an ordinance. Black Earth and Mazomanie should upgrade their ordinances to prevent future water quality problems.

Much of the anticipated development in the headwaters of Black Earth Creek is likely to occur outside incorporated. Dane County needs to upgrade enforcement of their ordinance. It also needs to expand its ordinance to include the following construction: residential buildings, particularly on lands within shoreland zoning areas; lands classified as capability class 6 or greater; subdivisions; and lands with curb and gutter drainage systems.

Urban Lands (Storm Water) Management Needs.

Presently, Middleton's storm water management ordinance provides relatively stringent management of runoff volumes and peaks for new development. The portion of Middleton's Industrial Park within the watershed is being developed consistent with that ordinance. Middleton needs to continue to enforce the ordinance as the city and its industrial park continue to grow westward into the watershed.

Development of the Enchanted Valley area of Cross Plains creates a situation where the capacity of the existing drainageways and depressions is likely to be exceeded. A storm water management plan based on this analysis also needs to be prepared. This plan needs to include the identification of the types and locations of best management practices for managing storm water runoff. The Department of Natural Resources will offer financial and technical assistance in preparing this plan.

Summary of Funds Needed for Cost Sharing, Staffing and Educational Activities

Grants will be awarded to Dane County and the cities and villages by the Department for cost sharing, staff support and educational activities. The following is an estimate of financial assistance needed to implement the nonpoint source controls.

Type of Nonpoint Source	Cost Share $
Cost sharing:	
Uplands management	$ 165,000
Stream bank protection	$ 208,250
Animal waste management	$ 767,000
Urban study	$ 25,000
subtotal	$ 1,165,250
Dane County Land Conservation Department staffing	$ 225,000
Educational activities	$ 8,000
total	$ 1,398,250

This educational activity amount is low for two reasons. First, a substantial amount of funds and time were committed to this watershed during the planning phase of this project. Second, much of the staff time for educational activities is included in the Dane County Land Conservation Department staffing.

Fish Management and Related Activities

Intensive Management Segments. Two segments of Black Earth Creek are identified for intensive management. The two segments are:

1. The footbridge over Black Earth Creek east of the Village of Cross Plains downstream to CTH KP at the west end of the village.

2. South Valley Road downstream to the confluence with Vermont Creek.

The intensive management activities will be cooperative efforts between the Department of Natural Resources, the Dane County Land Conservation Department and the Village of Cross Plains, as appropriate. The intent of the intensive management in this segment is to restore fish habitat using one or more of the following practices or methods:

- structurally narrowing the stream to scour sediment from the stream bed and decrease aquatic vegetation;

- stabilizing stream banks;

- installing "Lunker" structures to artificially create overhanging banks;

- planting trees to shade the stream and to decrease aquatic vegetation; and

- planting of grasses along the stream to provide fish cover and food sources.

Land Acquisition. Land acquisition is a major form of management for fish habitat in portions of the Black Earth Creek Watershed. Land acquisition includes long or short term easements and rent.

The Master Plan for the Black Earth Creek Fishery approaches land acquisition as a means of establishing a continuous management corridor. It identifies the need to acquire lands along:

- Black Earth Creek from Stagecoach Road southeast of Cross Plains downstream to Mazomanie;

- Garfoot Creek; and

- Vermont Creek.

Besides the use of Trout Stamp Funds or Trout Unlimited funds for land acquisition, the Conservation Reserve Program, through the U. S. Department of Agriculture, provides an opportunity to rent "stream filter strip" lands for 10 years. Private funding sources may also be available for land acquisition.

Coordination

Watershed Work Group. A watershed work group was responsible for coordinating the development of this plan and coordinating implementative and demonstrative activities before completing this plan. The Department will use the watershed work group as an intra-agency coordinative mechanism for many of the Department Resource Management and Environmental Quality programs. The watershed work group will also serve as an interagency coordinative mechanism. Staff of the Department and the Dane County Land Conservation Department have the primary responsibility for coordinating activities. Other work group members include representatives of the Department of Agriculture, Trade and Consumer Protection, the Soil Conservation Service and University of Wisconsin - Extension.

Black Earth Creek Watershed Association. The Black Earth Creek Watershed Association (BECWA) was formed as a result of a public watershed association meeting held in 1986. Many people at the meeting stated their interest to form a citizens group for Black Earth Creek Watershed aimed at:

- furthering citizen involvement in pertinent issues and

- enhancing coordination between agencies, local governments, landowners and recreational users.

BECWA, a viable citizen's group, has been active in the watershed. State and local agencies should continue to support its activities by participating in its meetings and by serving as advisors to BECWA's board of directors.

Long-term Baseflow Maintenance

Baseflow in the streams coming from many springs, is the "lifeblood" of Black Earth Creek and its tributaries. Without the cold, clean ground water feeding these streams, the trout fishery would not exist. Anticipated land use changes in portions of the watershed may have an impact on the amount of groundwater feeding Black Earth Creek.

The most critical area is the Headwaters subwatershed of the watershed. This subwatershed is located in the so called "Golden Triangle" for development stretching from Middleton to Cross Plains to Verona. Urban development is likely to increase the volume of runoff and decrease infiltration. Other threats such as new high capacity public water supply wells located in the subwatershed, will significantly impact the groundwater flow patterns.

No program exists to evaluate the long-term impact of the many aspects of urbanization on the baseflow of streams. The long-term future of Black Earth Creek, however, may depend on the maintenance of infiltration and the proper location of high capacity wells. The Department should pursue a research study to obtain information on the extent of the recharge area to the Black Earth Creek springs, and to estimate the potential reduction in volume of water discharged from the springs.

A PLAN FOR THE CONTROL OF NONPOINT SOURCES AND RELATED RESOURCE MANAGEMENT IN THE BLACK EARTH CREEK PRIORITY WATERSHED

TABLE OF CONTENTS

ORGANIZATIONAL INFORMATION ..... Inside Front Cover

LETTERS OF APPROVAL i

PRINCIPAL PARTICIPANTS IN THE BLACK EARTH CREEK PLAN DEVELOPMENT ix

EXECUTIVE SUMMARY 1

CHAPTER 1: INTRODUCTION, PURPOSE AND LEGAL STATUS 1-1

INTRODUCTION 1-1

NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM 1-2

PURPOSE OF THIS PLAN 1-3

LEGAL STATUS OF THE WATERSHED PLAN 1-5

PART 1: WATERSHED ASSESSMENT

CHAPTER 2: PHYSICAL DESCRIPTION OF THE BLACK EARTH CREEK WATERSHED 2-1

CHAPTER 3: WATER RESOURCES CONDITIONS, OBJECTIVES AND CONTROL NEEDS 3-1

INTRODUCTION 3-1

BLACK EARTH CREEK - HEADWATERS TO BREWERY CREEK SUBWATERSHED 3-7

BREWERY CREEK SUBWATERSHED 3-19

BLACK EARTH CREEK - BREWERY TO GARFOOT SUBWATERSHED 3-30

GARFOOT CREEK SUBWATERSHED 3-41

BLACK EARTH CREEK - GARFOOT TO VERMONT SUBWATERSHED 3-49

VERMONT CREEK 3-58

BLACK EARTH CREEK - VERMONT TO HALFWAY PRAIRIE SUBWATERSHED 3-67

INDIAN LAKE SUBWATERSHED 3-75

HALFWAY PRAIRIE CREEK SUBWATERSHED 3-79

WENDT CREEK SUBWATERSHED 3-86

BLACK EARTH CREEK - HALFWAY PRAIRIE TO BLUE MOUNDS SUBWATERSHED 3-93

CHAPTER 4: POINT SOURCES 4-1

MUNICIPAL WASTEWATER TREATMENT PLANTS 4-1

INDUSTRIAL WASTEWATER DISCHARGERS 4-4

LANDFILLS 4-5

CHAPTER 5: MANAGEMENT ACTIONS 5-1

NONPOINT SOURCE CONTROL ACTIVITIES 5-2

AGRICULTURAL LANDS MANAGEMENT NEEDS 5-2

STREAM BANK MANAGEMENT NEEDS 5-8

ANIMAL LOT MANAGEMENT NEEDS 5-9

MANURE SPREADING MANAGEMENT NEEDS 5-11

CONSTRUCTION SITE MANAGEMENT NEEDS 5-13

URBAN LANDS MANAGEMENT NEEDS 5-13

FISH MANAGEMENT AND RELATED ACTIVITIES 5-16

INTENSIVE MANAGEMENT SEGMENTS 5-16

LAND ACQUISTION 5-18

COORDINATION ACTIVITIES 5-19

WATERSHED WORK GROUP 5-19

BLACK EARTH CREEK WATERSHED ASSOCIATION 5-21

LONG-TERM BASEFLOW MAINTENANCE 5-22

PART 2: DETAILED PROGRAM FOR IMPLEMENTATION

CHAPTER 6: DETAILED PROGRAM FOR IMPLEMENTATION 6-1

INTRODUCTION 6-1

ROLE OF DANE COUNTY LAND CONSERVATION COMMITTEE AND DEPARTMENT 6-1

COST SHARE ASSISTANCE ADMINISTRATION 6-2

TECHNICAL ASSISTANCE AND STAFFING NEEDS 6-5

INFORMATION AND EDUCATION 6-8

PART 3: EVALUATION PLAN

CHAPTER 7: EVALUATION AND MONITORING 7-1

INTRODUCTION 7-1

EVALUATION OF POLLUTANT LOAD REDUCTIONS 7-1

EVALUATION OF WATER RESOURCES 7-2

BIBLIOGRAPHY

APPENDICES

APPENDIX A: DATA COLLECTION AND ANALYSIS METHODS A-1

WATER RESOURCES A-1

NONPOINT SOURCES A-7

APPENDIX B: SPECIAL PRACTICE FOR ANIMAL LOT RELOCATION B-1

APPENDIX C: GEOGRAPHIC INFORMATION SYSTEM APPLICATIONS C-1

LIST OF FIGURES

CHAPTER 2: PHYSICAL DESCRIPTION OF THE BLACK EARTH CREEK WATERSHED 2-1

FIGURE 1. Map of Black Earth Creek Watershed 2-3

CHAPTER 3: WATER RESOURCES CONDITIONS, OBJECTIVES AND CONTROL NEEDS 3-1

FIGURE 2. Map of Subwatersheds in Black Earth Creek Watershed 3-3

FIGURE 3. Map of Black Earth Creek Headwaters to Brewery Creek Subwatershed 3-9

FIGURE 4. Map of Brewery Creek Subwatershed 3-21

FIGURE 5. Map of Cross Plains Existing Land Use - 1985 3-23

FIGURE 6. Map of Cross Plains Master Plan 3-24

FIGURE 7. Map of Cross Plains Sewer Service Area and Environmental Corridors 3-25

FIGURE 8. Map of Black Earth Creek - Brewery Creek to Garfoot Creek Subwatershed 3-31

FIGURE 9. Map of Garfoot Creek Subwatershed 3-43

FIGURE 10. Map of Black Earth Creek - Garfoot to Vermont Creek Subwatershed 3-51

FIGURE 11. Cross Section of Black Earth Creek at Demonstration Site 3-53

FIGURE 12. Map of Vermont Creek Subwatershed 3-59

FIGURE 13. Map of Year 2010 Black Earth Service Area 3-61

FIGURE 14. Map of Black Earth Creek - Vermont to Halfway Subwatershed 3-69

FIGURE 15. Map of Halfway Prairie Creek and Indian Lake Subwatersheds 3-83

FIGURE 16. Map of Wendt Creek Subwatershed 3-87

FIGURE 17. Map of Mazomanie Environmental Corridors and Sewer Service Area 3-94

FIGURE 18. Map of Soil Erosion in Black Earth Creek Watershed 3-99

CHAPTER 4: POINT SOURCES 4-1

FIGURE 19. Temperature and Dissolved Oxygen in Black Earth Creek 4-3

CHAPTER 5: MANAGEMENT ACTIONS 5-1

FIGURE 20. Black Earth Creek Problems, Pollutants, Sources and Management Actions 5-3

LIST OF TABLES

CHAPTER 3: WATER RESOURCES CONDITIONS, OBJECTIVES AND CONTROL NEEDS 3-1

TABLE 1. Subwatersheds of the Black Earth Creek Watershed 3-2

TABLE 2. Cropland Soil Erosion in Black Earth Creek Headwaters to Brewery Creek Subwatershed 3-13

TABLE 3. Animal Lot Pollutant Loads for Black Earth Creek Headwaters to Brewery Creek Subwatershed 3-14

TABLE 4. Cropland Soil Erosion in Brewery Creek Subwatershed 3-26

TABLE 5. Animal Lot Pollutant Loads for Brewery Creek Subwatershed 3-27

TABLE 6. Cropland Soil Erosion in Black Earth - Brewery to Garfoot Subwatershed 3-36

TABLE 7. Animal Lot Pollutant Loads for Black Earth - Creek Brewery to Garfoot Subwatershed 3-37

TABLE 8. Cropland Soil Erosion in Garfoot Creek Subwatershed 3-45

TABLE 9. Animal Lot Pollutant Loads for Garfoot Creek Subwatershed 3-46

TABLE 10. Cropland Soil Erosion in Black Earth Creek - Garfoot to Vermont Subwatershed 3-54

TABLE 11. Animal Lot Pollutant Loads for Black Earth Creek - Garfoot to Vermont Subwatershed 3-55

TABLE 12. Cropland Soil Erosion in Vermont Creek Subwatershed 3-64

TABLE 13. Animal Lot Pollutant Loads for Vermont Creek Subwatershed 3-65

TABLE 14. Cropland Soil Erosion in Black Earth Creek - Vermont to Halfway Prairie Subwatershed 3-71

TABLE 15. Animal Lot Pollutant Loads for Black Earth Creek - Vermont to Halfway Prairie Subwatershed 3-72

TABLE 16. Cropland Soil Erosion in Indian Lake Subwatershed 3-77

TABLE 17. Animal Lot Pollutant Loads for Indian Lake Subwatershed 3-78

TABLE 18. Cropland Soil Erosion in Halfway Prairie Creek Subwatershed 3-81

TABLE 19. Animal Lot Pollutant Loads for Halfway Prairie Creek Subwatershed 3-82

TABLE 20. Cropland Soil Erosion in Wendt Creek Subwatershed 3-89

TABLE 21 Animal Lot Pollutant Loads for Wendt Creek Subwatershed 3-90

TABLE 22. Cropland Soil Erosion in Black earth Creek - Halfway to Blue Mounds Subwatershed 3-95

TABLE 23. Animal Lot Pollutant Loads for Black Earth Creek - Halfway to Blue Mounds Subwatershed 3-96

CHAPTER 4: POINT SOURCES 4-1

TABLE 24. Average Phosphorus Concentrations in Black Earth Creek Upstream and Downstream of the Cross Plains Wastewater Treatment Plant - April through September 1985 4-5

CHAPTER 5: MANAGEMENT ACTIONS 5-1

TABLE 25. Sediment and Manure Load Reduction Needed to Achieve the Water Resources Objectives by Subwatershed 5-4

TABLE 26. Critical Agricultural Acres by Subwatershed 5-5

TABLE 27. Estimated Cropland and Other Upland Best Management Practices and Cost Share Amounts 5-7

TABLE 28. Stream Bank Protection Best Management Practices and Estimated Costs 5-9

TABLE 29. Critical Animal Lots by Subwatershed 5-10

TABLE 30. Animal Waste Practices and Estimated Costs 5-12

TABLE 31. Summary of Funds for Cost Sharing, Staffing and Education Activities 5-15

PART 2: DETAILED PROGRAM FOR IMPLEMENTATION

CHAPTER 6: DETAILED PROGRAM FOR IMPLEMENTATION 6-1

TABLE 32. Eligible Best Management Practices and Cost Share Rates 6-3

TABLE 33. Black Earth Creek Priority Watershed Project Staffing Projections 6-7

TABLE 34. Education Target Audiences and Corresponding Education Activities 6-9

CHAPTER 7:

TABLE 35. Timetable for Evaluation Monitoring Activities 7-5

A PLAN FOR THE CONTROL OF NONPOINT SOURCES AND RELATED RESOURCE MANAGEMENT IN THE BLACK EARTH CREEK WATERSHED

INTRODUCTION, PURPOSE AND LEGAL STATUS

A PLAN FOR THE CONTROL OF NONPOINT SOURCES AND RELATED RESOURCE MANAGEMENT IN THE BLACK EARTH CREEK WATERSHED

CHAPTER 1: INTRODUCTION, PURPOSE AND LEGAL STATUS

INTRODUCTION

Black Earth Creek and a number of its tributaries provide a recreational trout fishery known throughout the Midwest. This fishery is relatively unique since it is located within 20 miles of 200,000 plus people living in the Madison metropolitan area. Although the trout population is large and stable, anglers and Department of Natural Resources (Department) fish managers have expressed concern that conditions in the stream, such as water clarity, are degrading.

In response to this concern, a number of studies were carried out. One study was conducted by the graduate students of the 1985 Water Resources Management Workshop of the University of Wisconsin - Madison's Institute for Environmental Studies. Their work is summarized in a report titled Black Earth Creek: A Watershed Study with Management Options, published in March 1986. A second study was conducted in 1985 and 1986 by the U. S. Geological Survey (USGS) through funding from the Department's Bureau of Fisheries Management. The USGS report is not available at this time. However, the information from the study is used in this plan. In addition, the Department's fish managers, water resources biologists and other staff have studied the fishery and fish habitat over the past decade.

Based on the concerns and the results of the studies mentioned above, the Black Earth Creek Watershed was selected in late 1985 by the Department as a Priority Watershed project through the Wisconsin Nonpoint Source Water Pollution Abatement Program.

The Black Earth Creek Watershed is located mainly in northwestern Dane County. Black Earth Creek, its major stream, is a tributary to Blue Mounds Branch which subsequently drains to the Lower Wisconsin River. The watershed is part of the Lower Wisconsin River Basin. The watershed falls within the physical boundaries of two, areawide water quality management plans, the Lower Wisconsin River Basin and the Dane County

"complex area".

The Department and the Dane County Land Conservation Department (DCLCD) jointly prepared this plan. Substantial assistance in preparing this plan was provided by many programs within the Department of Natural Resources, the Water Resources Management Program of the Institute for Environmental Studies of the University of Wisconsin and the U. S. Geological Survey. In addition, assistance for collecting and analyzing land use and management data was provided through the Soil Conservation Service funded CONSOIL Project, a multiagency/University of Wisconsin - Madison project to demonstrate the use of geographic information system technology for the Conservation of Natural Resources through Sharing of Information Layers (CONSOIL).

NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM

The Nonpoint Source Water Pollution Abatement Program was created in 1978 by the Wisconsin Legislature. Its goal is to improve and protect the water quality of lakes, streams, wetlands and groundwater by reducing pollutants from urban and rural nonpoint sources. The program is administered by the Department of Natural Resources and the Department of Agriculture, Trade and Consumer Protection.

Nonpoint sources include: eroding agricultural lands, eroding stream banks, animal lots, fields spread with manure, eroding construction sites, streets and parking lots. These sources are generally considered significant when pollutants from the site are carried to surface or ground waters by runoff or seepage.

Key elements of the program are as follows:

- The program is implemented through watershed projects. Each watershed is a hydrologic unit.

- A priority watershed plan is prepared for each project to guide implementation.

- Projects are implemented by local units of government, such as counties, cities and villages.

- Nonpoint sources are controlled by measures or engineered structures called best management practices. Ordinances are also used.

- Participation is voluntary. Cost share assistance is provided for control of the most significant nonpoint sources through the program. Landowners, land

renters, counties, cities, villages, towns, metropolitan sewerage districts, sanitary districts are eligible cost share recipients. Educational and technical assistance is also provided.

- Generally, projects have a three year period for signing cost share agreements. All best management practices must be installed within five years of the date of the cost share agreement.

- The Department of Natural Resources and the Department of Agriculture, Trade and Consumer Protection review the progress of local units of government and provide assistance to those units of government throughout the life of the project.

- The Department of Natural Resources monitors improvements in water quality resulting from the control of the nonpoint sources.

PURPOSE OF THIS WATERSHED PLAN

The purpose of this watershed plan is to guide the implementation of best management practices to control nonpoint sources of water pollution in the Black Earth Creek Watershed for meeting the specific water resources objectives identified in this plan. This plan is divided into seven chapters:

1. Introduction, Purpose and Legal Status;

2. Watershed Description;

3. Watershed Assessment;

4. Point Sources;

5. Management Actions;

6. Detailed Program for Implementation; and

7. Project Evaluation.

Chapter 2: Description of the Watershed describes the physical features of the watershed including the topography, soils, and geology of the watershed. It also includes political, demographic and land use features of the watershed.

Chapter 3: Watershed Assessment describes the water quality problems and pollution sources throughout the Black Earth Creek

Watershed. Specifically, this chapter:

1. identifies the water quality or water resources problems in the lakes and streams of the Black Earth Creek watershed;

2. identifies the water quality or water resources objectives for those lakes and streams that can be achieved through a nonpoint source control project;

3. determines the level of pollutant control needed to achieve the objectives;

4. ranks the significant nonpoint sources, and

5. determines fishery management needs.

Chapter 3 discusses this information by subwatershed. It provides the basis for the management activities identified in Chapter 5.

Chapter 4: Point Sources summarizes point source activities in the watershed that relate directly to the quality of the lakes and streams.

Chapter 5: Management Actions identifies actions required to meet the needs identified in chapters 3 and 4. It is the essence of this plan. Specifically, Chapter 5 identifies:

1. the best management practices and other nonpoint source control activities;

2. fishery management activities;

3. coordination; and

4. long term water resources concerns beyond the scope of this plan.

Chapter 6: Detailed Program for Implementation outlines a strategy to assist landowners, land operators and municipalities in installing best management practices to control the significant nonpoint sources. This strategy must include:

1. a cost share budget based on the estimated cost of the best management practices and expected participation rates;

2. a schedule for implementation activities;

3. a description of information and education activities;

4. a summary of fiscal management procedures; and

5. an estimate of technical assistance needs of counties, cities and villages.

The purpose of Chapter 7: Project Evaluation is to identify procedures and schedules for determining project progress and accomplishment. This includes estimating pollutant load reductions due to the installation of best management practices and measuring changes in water quality.

LEGAL STATUS OF THE WATERSHED PLAN

Nonpoint Source Portions of this Plan

The nonpoint source portions of this plan have been prepared under the authority of the Wisconsin Nonpoint Source Water Pollution Abatement Program described in s. 144.25, Wisconsin Statutes and Chapter NR 120 of the Wisconsin Administrative Code. This plan is the basis for cost share and local assistance grants through the Nonpoint Source Water Pollution Abatement Program administered by the Department of Natural Resources. The Wisconsin Statutes and Chapter NR 120 of the Wisconsin Administrative Code, however, govern the conduct of the Nonpoint Source Water Pollution Abatement Program. In the event a discrepancy occurs between this plan and the statutes or the administrative rules or if the statutes or administrative rules are revised or amended, the statutes and rules override this plan.

This plan, once approved through the procedures described in Chapter NR 121, Wisconsin Administrative Code, constitutes an update of the Lower Wisconsin River Basin Areawide Water Quality Management Plan and the Dane County Water Quality Plan.

Fish Management and Related Activities

The fish management and related activities identified in this plan are identified to integrate resource management activities with the nonpoint source activities. While they are not subject to the provisions of s. 144.25, Wisconsin Statutes or Chapter NR 120, Wisconsin Administrative Code, it is the intent of the Department of Natural Resources to implement these activities to the extent possible.

PART 1: WATERSHED ASSESSMENT

CHAPTER 2: PHYSICAL DESCRIPTION OF THE BLACK EARTH CREEK WATERSHED

As shown in Figure 1, the Black Earth Creek watershed includes all of the surface drainage area to Black Earth Creek and its tributaries. The watershed is located primarily in northwestern Dane County. Only a few square miles of its approximately 100 square miles drainage area are located in northeastern Iowa County. Also as shown in Figure 1, Black Earth Creek flows west to where it joins Blue Mounds Creek which flows north to the Wisconsin River. The villages of Cross Plains (1986 population estimate 2,338), Black Earth (1986 population estimate 1,217) and Mazomanie (1986 population estimate 1,324) are located within the watershed. In addition, a portion of the city of Middleton is located in the southeastern edge of the watershed.

Agriculture is the primary land use in the watershed. The overall land use in the watershed is:

Agriculture	56%
Woodlands	32%
Wetlands	2%
Incorporated	2%
Other	7%

Most of the woodland is on steep slopes. Wetlands are located primarily along streams. The "other" category includes roads, non-metallic mining and scattered residential and commercial land uses.

The watershed is greatly influenced by both unglaciated and glaciated land features. The Jamestown End Moraine forms the eastern boundary of the watershed. The Military Ridge, an unglaciated land feature forms the southern boundary. For purposes of this description, the watershed can be divided into two parts by the western edge of the ground moraine running southeast to northwest just east of the Village of Cross Plains.

The eastern part of the watershed is characterized by glacial features such as depressions and kettles. Indian Lake is formed in a glacial kettle. The headwaters of Black Earth Creek flow

through the coarse aggregate outwash plain formed by the outflow channel of glacial Lake Middleton. The major spring area feeding Black Earth Creek is located at the western edge of the ground moraine in the outwash plain.

Although the western part of the watershed is unglaciated, the valleys are covered with glacial outwash materials. The hillsides and ridge tops are steeply sloped and are underlain by dolomite and sandstone. Much of the hillsides are wooded. Two glacial outwash terraces form the valleys. The lower outwash terrace is found along Black Earth Creek, Marsh Creek and Halfway Prairie Creek. The deposits tend to be finer in texture further west or downstream from the ground moraine. The side valleys are covered by the silty alluvium forming the upper terrace of the outwash plain.