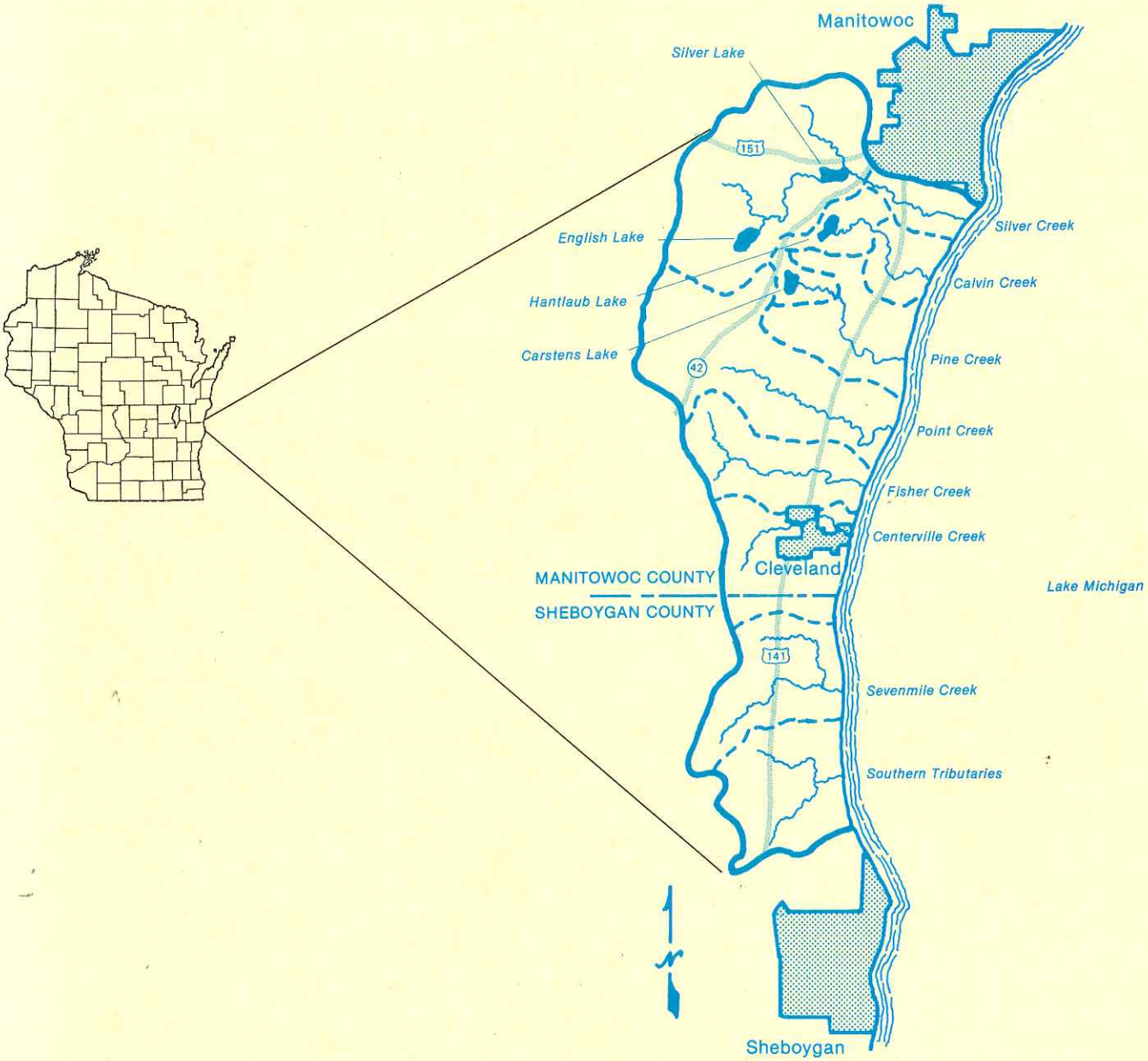
Nonpoint Source Pollution Control Plan for the Sevenmile — Silver Creek Priority Watershed



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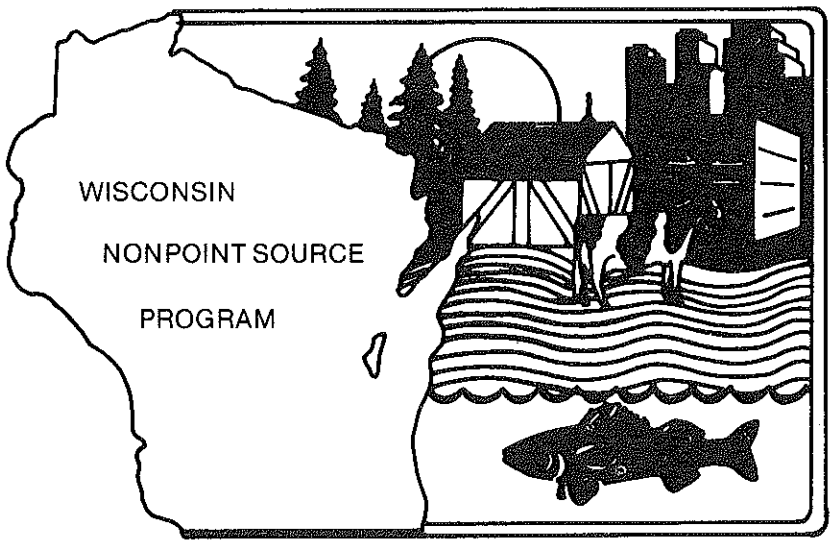
SEVENMILE-SILVER CREEK

PRIORITY WATERSHED PLAN

February, 1987



This document was prepared under the provisions of the Wisconsin Nonpoint Source Pollution Abatement Program.

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
Carroll D. Besadny
Secretary

BOX 7921
MADISON, WISCONSIN 53707

September 5, 1986

IN REPLY REFER TO: 2600

Mr. Donald Rehbein
Chair, Manitowoc County Board
Courthouse
Manitowoc, WI 54220

Mr. Harold Lindemann
Chair, Sheboygan County Board
615 N. 6th Street
Sheboygan, WI 53081

Dear Messrs. Rehbein and Lindemann:

I am pleased to be able to approve the Priority Watershed Plan for the Sevenmile - Silver Creek Watershed. As you know, the watershed encompasses portions of Manitowoc and Sheboygan Counties. Each of you is to be congratulated for your efforts in assisting in the development of the plan and preparing for project implementation. I am especially impressed by the high degree of cooperation among the County Land Conservation Committees and the Department of Natural Resources required to reach the common goal of protecting and improving the water resources of the area. The plan estimates total needs in the watershed to be approximately $2.4 million for installation of Nonpoint Source Pollution control practices and 20 person years of effort to provide administrative and technical assistance. Over the eight year period, the actual cost-share funding and personnel needs required will depend on the participation rates during the three-year sign-up period. The Department's Nonpoint Source Program will make funds available for the additional county staff that are needed to implement the project and the cost-sharing funds necessary for the installation of the management practices.

The detailed analysis and recommendations contained in the watershed plan provide a mechanism to achieve the water quality objectives. Enhancement and protection of the lakes and streams in the watershed are very worthwhile goals. The protection of the near shore zone of Lake Michigan is especially noteworthy and consistent with Wisconsin's committment to the protection of the Great Lakes.

The plan for control of Nonpoint Source pollution in the Sevenmile - Silver Creek Watershed has been reviewed by the Department staff and meets the intent of s. 144.25, Statutes, and NR 120, Wisconsin Administrative Code. It is consistent with and will serve to implement the area-wide water quality plan (Section 208, PL 92-500) for the Sheboygan River Basin and is, therefore, approved as an element of this plan.

Sincerely,

C. D. Besadny
Secretary

CDB:CW:cls
7756

NO. 86/87- 88

RESOLUTION APPROVING THE SEVEN MILE-SILVER CREEK PRIORITY WATERSHED PLAN

TO THE CHAIRPERSON AND BOARD OF SUPERVISORS
OF MANITOWOC COUNTY, WISCONSIN

Supervisors:

WHEREAS, the Manitowoc County Board of Supervisors through Resolution No. 84-44 has expressed its support of the designation of the Seven Mile-Silver Creek Watershed as a priority watershed project; and

WHEREAS, the inventory and planning phases of the project have been completed under the direction of the Manitowoc County Land Conservation Committee in cooperation with the Wisconsin Department of Natural Resources and the Sheboygan County Land Conservation Committee; and

WHEREAS, a priority watershed plan has been prepared which assesses the existing water quality and watershed conditions, identifies the management practices and actions necessary to improve or protect the water quality of the watershed, outlines the tasks required and the agency responsible for each, and establishes the time frame and cost estimates for the project; and

WHEREAS, a draft of the plan has been available for review and comments were accepted at a public hearing held August 25, 1986; and

WHEREAS, the implementation of this plan will provide both technical assistance and cost share monies to eligible landowners within the priority watershed for the installation of conservation practices designed to reduce the sources of non point pollution and protect or improve the quality of Manitowoc and Sheboygan Counties' water resources;

NOW, THEREFORE, be it resolved, by the Manitowoc County Board of Supervisors met in regular session, that the "Plan for the Control of Non Point Source Pollution in the Seven Mile-Silver Creek Watershed" be approved; and that the Land Conservation Committee be given the authority and responsiblity to act in behalf of Manitowoc County to administer this Priority Watershed Project as outlined in the plan.

Dated September 16, 1986.

Respectfully submitted,

Robert L. Wenzel, Chairman

William Wallander

James Mellberg

Harold Meinnert

Donald Noack

Land Conservation Committee

180

14) 459-3148

LAND CONSERVATION COMMITTEE

650 FOREST AVE.
SHEBOYGAN FALLS, WI 53085

September 26, 1986

Carroll D. Besadny, Secretary
Wisconsin Department of Natural Resources
Box 7921
Madison, WI 53707

Dear Mr. Besadny;

The Sheboygan County Land Conservation Committee has reviewed and approved the Seven Mile/Silver Creek Watershed Plan via a motion which was made and approved on September 26, 1986. The Sheboygan County Land Conservation Committee and Department staff will cooperate fully on the implementation of the watershed plan.

Sincerely;

William C. Hand

William Hand, Chairman
Sheboygan County Land Conservation Committee

PM:jdsb

Sevenmile-Silver Creek Priority Watershed Plan
Summary

Purpose:

The purpose of the Sevenmile-Silver Creek Priority Watershed project is to protect and improve the water resources in the watershed. The priority watershed plan develops a strategy for obtaining the protection and improvement of the water resources through the abatement of pollution from nonpoint sources.

The Planning Process:

Prior to the development of a strategy to control pollution from nonpoint sources in the Sevenmile-Silver Creek watershed, two major assessments were completed. These assessments were the water resource appraisal and the nonpoint source inventory. The water resource appraisal established the current conditions and uses of the lakes and streams in the watershed. The nonpoint source inventory determined the location and magnitude of the four major nonpoint source types occurring in the watershed. The information generated by these assessments was combined to produce water resource objectives and target levels of nonpoint source pollution control. Upon completion of the two assessment activities a pollution control strategy was developed. The pollution control strategy addresses the amount and costs of the management practices required to control the sources. The administrative, technical, and educational assistance needed to achieve adequate landowner participation and timely installation of management practices is contained in the detailed plan for implementation. Finally, the plan outlines a process for the evaluation of the project in terms of both progress toward the water resource objectives and the success the implementation strategy.

Assessment Techniques:

The water resource conditions within the Sevenmile-Silver Creek watershed were assessed using several methods. These assessments were designed to determine the current uses of the water bodies and to project the optimal uses that could be achieved via nonpoint source pollution controls. The extent and magnitude of the nonpoint sources of pollution were also assessed. The source inventories were carried out on a subwatershed basis in order that specific sources could be linked to individual water bodies. All lands within the watershed were included in the nonpoint source inventories. The properties of 656 landowners were inventoried for the following four source types:

1) Barnyard runoff: Each livestock operation in the watershed was assessed for its relative potential to generate pollutants during a four inch rainfall event. These results were used to rank the livestock operations within each subwatershed.

2) Manure Spreading Runoff: The potential of each livestock operation to produce pollutants from spread manure was assessed. An estimate of the amount of manure produced was used to estimate the land area needed to spread the manure at an acceptable rate. The land available was evaluated in terms of slope and proximity to water bodies. A calculation was then preformed which estimated the probability of spreading occurring on unsuitable lands. Each operation was then ranked using these results.

3) Upland Erosion: All lands in the watershed were categorized by landuse. The Universal Soil Loss Equation was applied to croplands, pasture, woodland, and vacant lands to estimate the average annual soil loss. The soil loss for each landowner in the watershed was summed and used to rank landowners for potential to generate pollutants from upland erosion.

4) Streambank Erosion: All stream reaches were inventoried for the location and extent of streambank erosion sites. The average sediment loss from each site was calculated and summed for each stream reach. Instances of cattle access to the stream were also recorded. Each case of streambank erosion and cattle access was assigned to a specific landowner for prioritization purposes.

Assessment Results:

The results of the water resource appraisal indicate that in the Sevenmile-Silver Creek watershed phosphorus is the primary pollutant of concern. Therefore, each of the four nonpoint sources was evaluated for potential to generate phosphorus. Table 1 summarizes the results of the assessments and illustrates the magnitude of phosphorus generation from each source.
Table 1 also illustrates that to accomplish a reduction in phosphorus loading of approximately forty percent, high levels of control will be required from upland erosion and animal waste sources. Streambank erosion is of less overall importance although severe localized impacts may occur.

Table 1:

WATERSHED ASSESSMENT SUMMARY TABLE (based on Assumption VI, Table 4)

(Table 1 cont. next page)

SUBWATERSHED	DRAINAGE AREA (SQ. MILE)	WATER RESOURCE OBJECTIVES (5)	NUMBER LIVESTOCK OPERATIONS	ANNUAL (1) PHOSPHORUS LOADING BARNYARDS	TOTAL CROPLAND ACRES	TOTAL SOIL LOSS (tons)	AVERAGE CROPLAND SOIL LOSS
SILVER LAKE	17.8	1,2,3	75	1579	8828	20416	2.3
LOWER SILVER CREEK	6.2	1,4	7	38	1919	3658	1.9
CALVIN LAKES	2.0	1,2	9	129	549	1266	2.3
LOWER CALVIN CREEK	7.4	1,5	7	361	2369	3790	1.6
PINE LAKES	2.2	1,3	6	51	990	2890	2.9
PINE CREEK	11.2	1,5	34	971	5171	1140	2.2
POINT CREEK	21.5	1,5	83	2060	10603	32800	3.1
FISCHER CREEK	11.1	1,5	44	1201	6175	17400	2.8
CENTERVILLE CREEK	7.5	1,3,5	24	1417	3129	10500	3.4
SEVENMILE CREEK	10.0	1,5	35	662	6108	12800	2.1
SOUTHERN TRIBS.	8.0	1	20	136	5156	11500	2.2
TOTALS	104.9		344	8605	50997	118160	2.4

(1)Assumes annual phosphorus loading to equal 5*10 year storm loading.
(2)Assumes annual phosphorsus loading to equal 0.3 pounds/acre cropland.
(3)Assumes annual phosphorsus loading to equal 1 pound/ton stm. bk. erosion.
(4)Assumes annual phosphorsus loading to equal 1 pound/acre for each critical acre of manure spread.
(5)Water Resource Objective Codes:

1. Protect nearshore zone of Lake Michigan.
2. Protect inland lake fishery and improve aesthetics.
3. Improve inland lake fishery and aesthetics.
4. Protect stream habitat and fishery.
5. Improve stream habitat and fishery.

Table 1 cont.

SUBWATERSHED	ACRES ERODING >3T/A/Y	ANNUAL (2) PHOSPHORUS LOADING CROPLAND	ANNUAL (3) PHOSPHORUS LOADING STM. BANKS	CRITICAL ACRES SPD. MANURE	ANNUAL (4) PHOSPHORUS LOADING SPD. MANURE	TOTAL SUBWATERSHED PHOSPHORUS LOADING
SILVER LAKE	2210	2648	12	968	968	5207
LOWER SILVER CREEK	223	576	69	28	28	711
CALVIN LAKES	104	165	0	86	86	380
LOWER CALVIN CREEK	275	711	272	275	275	1619
PINE LAKES	427	297	2	117	117	467
PINE CREEK	1037	1551	515	425	425	3462
POINT CREEK	4194	3181	851	1178	1178	7270
FISCHER CREEK	2055	1853	262	696	696	4012
CENTERVILLE CREEK	1387	939	229	325	325	2910
SEVENMILE CREEK	1506	1832	663	325	325	3482
SOUTHERN TRIBS.	72	1547	171	296	296	2150
TOTALS	13490	15299	3046	4719	4719	31669

(1)Assumes annual phosphorus loading to equal 5*10 year storm loading.
(2)Assumes annual phosphorsus loading to equal 0.3 pounds/acre cropland.
(3)Assumes annual phosphorsus loading to equal 1 pound/ton stm. bk. erosion.
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1. Protect nearshore zone of Lake Michigan.
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3. Improve inland lake fishery and aesthetics.
4. Protect stream habitat and fishery.
5. Improve stream habitat and fishery.

Pollution Control Strategy:

Within each subwatershed the levels of pollutant reduction required were set based on the water resource objectives. The amount of source control needed to obtain the desired reduction was determined. The landowner rankings were used to place landowners into management categories to insure that the landowners with the most critical sources are given highest priority of assistance and that the desired pollutant reduction is achieved. The management categories determine the number of landowners eligible for costsharing assistance for each source type. Approximately two hundred landowners will be eligible for costsharing to install best management practices to control one or more critical sources on their property.

Project Administration:

The Manitowoc and Sheboygan County Land Conservation Departments will maintain the primary responsibility for project administration at the local level. The Department of Natural Resources has overall program responsibility and administers the nonpoint source program at the state level. Among the primary responsibilities of the LCDs are: contacting landowners, designing pollution control systems for cooperating landowners, developing costsharing agreements with landowners, certifying proper practice installation, and issuing costshare payments to landowners. The DNR will provide funds to the LCDs for costsharing and the support of additional staff needed for project implementation. The LCDs will be assisted by the Soil Conservation Service, the Agricultural Stabilization and Conservation Service, and the University of Wisconsin Extension.

Implementation Procedures:

Project implementation will begin in the fall of 1986. At this time the LCD staffs will begin contacting eligible landowners to develop pollutant control plans. The vehicle for contracting with landowners is the costshare agreement. The costshare agreement is a legally binding contract between the landowner and the management agency, in this case the LCDs. The agreement details the management practices to be installed, the location of the practices, the installation schedule, the costsharing rates, the maintenance period for the practices, and other regulations regarding the obligations of both the management agency and the landowner. Costshare agreements may be developed and signed during the first three years of the project, with practice installation continuing up to five years after signing of the agreement.

Subsequent to the signing of a costshare agreement, the management agencies will assist the landowner in practice design. Following practice installation, the management agencies will certify the practice complete and the landowner may receive costshare reimbursement.

The management agencies are responsible for project tracking and

record keeping. The project will be audited for fiscal and programatic adherence to program rules at the close of the project and at least once during project implementation.

Project Costs and Staffing:

The nonpoint source inventory was used as a basis on which estimates of project costs were made. First, the quantity of each type of best management practice needed to control the critical sources in the watershed was estimated. Secondly, the amount of staff time required to administer the project was estimated. Staff time estimates were in part based on the time required to design and install the practices and on previous experiences in similar priority watershed projects.
The total cost for best management practices would be approximately 2.4 million dollars if one-hundred percent cooperation were achieved and all nonpoint sources controlled (includes both state and landowner share). However; a more realistic estimate of landowner participation is seventy-five percent. At the seventy-five percent participation level, total best management practice cost would be approximately 1.8 million dollars, with the state share being 1.3 million dollars.
The additional staff needed to implement the project at the seventy-five percent participation level was estimated for both Manitowoc and Sheboygan Counties. The additional effort required to implement the project in both counties is approximately 36,000 hours over the eight year life of the project. The greatest additional staff assistance will be required during the middle years of the project when the majority of practice design and implementation is anticipated to occur.

Information and Education:

An intensive information and education program will be required throughout the course of the project to insure adequate landowner participation. The educational effort will be most intensive during the first three years of the project to encourage landowners to address the pollutant sources on their properties by signing costshare agreements. The educational program will emphasis the need for nonpoint source pollutant control and explain the nature of the best management practices and the priority watershed approach to practice implementation. The informational and educational techniques will include newsletters, informational township meetings, demonstration projects on the properties of key landowners, radio broadcasts, and tours conducted by county staff.
The educational effort was begun during the inventory phase of the project and included several public meetings to explain the priority watershed project, mailings to all landowners in the watershed to explain the inventory process, and the implementation of best management practices on a farm in a

highly visible area of the watershed. A manure management tour was conducted which highlighted the practices installed on the demonstration farm. In addition, all landowners were given the opportunity to discuss the project with county staff during the inventory phase of the project.

Project Evaluation:

Two types of project evaluation will be undertaken. These evaluations are the responsibility of the Department of Natural Resources. Water quality monitoring will be carried out on a before and after practice application basis in one subwatershed. Changes in key water quality parameters and habitat will be monitored. Secondly, the success of the project in achieving the installation of best management practices to control critical sources will be evaluated. Estimates of the pollutant load reduction achieved through practice installation will be tracked on continuing basis. Project progress will be reviewed on an annual basis and adjustments to the project schedule will be made as necessary.

SEVENMILE-SILVER CREEK

PRIORITY WATERSHED PLAN

PREFACE

Purpose and Approach of the Nonpoint Source Water Pollution Abatement Program

The Sevenmile-Silver Creek Watershed was selected in June of 1984 as a Priority Watershed under the Wisconsin Nonpoint Source Water Pollution Abatement Program. This program was created by the State Legislature in 1978 as a means to reduce surface and groundwater pollution caused by nonpoint sources of pollution. These sources include: eroding agricultural lands, eroding streambanks and roadsides, poorly managed livestock wastes, and erosion from established and developing urban areas.

The Wisconsin Nonpoint Source Program approach to water quality management has four major characteristics:

1. The purpose of the program is to improve or protect water resources. Although the installation of land management practices is at the core of the program, their application under this program is restricted to sources that contribute significantly to water quality problems.

2. The program is implemented on a watershed basis so that all of the major nonpoint sources in an area draining to a water resource can be addressed at the same time. A substantial commitment of money and staff time is needed to control enough of the critical nonpoint pollutant sources to affect water quality and limiting the program to selected watersheds helps assure that the comprehensive effort needed can be made. To date, there are 25 active Priority Watersheds in addition to the Seven Mile-Silver Creek watershed in various stages of planning or implementation.

3. Involvement in the program of landowners, land renters, or municipalities that have critical nonpoint pollution sources is voluntary. Participation is encouraged by state level cost-share assistance (to help offset the cost of installing the recommended management practices), and an information and education program (to raise landowner awareness of the Nonpoint Source Program and foster its acceptance).

4. The Nonpoint Source Program is conducted locally by the counties in the watershed. Using this watershed plan as a guide, the counties in the watershed provide technical assistance necessary to design and install the needed management practices, provide administrative and financial management, and carry out the information/education program. This effort is usually carried out by the staff of the counties' Land Conservation Department, the Soil Conservation Service, and the U.W. Extension under the authority of the County Board and/or County Land Conservation Committee.

Legal Status of the Watershed Plan

This plan has 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.

This plan, once approved through the procedures described in Chapter NR 121, Wisconsin Administrative Code, is an update of the Areawide Water Quality Management Plan for the Sheboygan River Basin.

How and Why the Seven Mile-Silver Creek Watershed was Selected

Priority watersheds, including the Seven Mile-Silver Creek Watershed, are selected because of: 1) the severity of water quality problems in the watershed, 2) the importance of controlling nonpoint sources of pollution in order to attain water quality improvement or protection, and 3) the capability and willingness of the local government agencies to carry out the planning and implementation of the project. The watersheds are selected through a three step process involving a ranked list of all the watersheds in the state; regional advisory groups recommending watersheds from their area of the state; and the State Nonpoint Source Coordinating Committee recommending to the Department of Natural Resources watersheds for selection. When a watershed is selected, an offer of a project is sent to the County Boards of those counties in the watershed boundaries.

Structure of this Report and How it was Developed

A priority watershed project is carried out in two steps. This document is a result of that first step - the planning phase. During this period, the Department of Natural Resources, the County Land Conservation Department, and other local agencies worked together to produce a watershed plan. The second phase

of the project is the implementation of the plan.

Once the offer of a priority watershed by the Department is accepted by the County Boards, the local agencies along with the Department of Natural Resources, prepare a watershed plan. This document is that plan. The rest of this report is divided into two parts. Part one is an assessment of existing waster quality and watershed conditions, followed by an identification of the management practices and actions necessary to reduce the water quality problems or protect the water quality of the watershed. Part two of this plan identifies the tasks necessary to carry out the plan; the agencies responsible for the various tasks; and the time frame for completing the identified tasks. There are also costs estimates made of the funds required for the installation of the recommended practices and the administrative costs involved with implementing the project.

Upon approval of this plan by both the Department of Natural Resources and the involved County Boards, the state will provide funds to the counties to carry out the recommendations made in the plan. This "implementation phase" may last up to eight years. There will be an initial three year period during which certain landowners in the watershed will be contacted and will be eligible to receive cost sharing for the practices which are recommended in the plan. The cost share agreement signed by the landowner and the county outlines the practices, costs, cost share amounts, and schedule of installation. The practices can be scheduled for installation up to five years from the date of signing the cost share agreement.

This watershed plan was written with the best information available at the time of its preparation. Situations and conditions may change during the implementation of this plan, requiring changes in this document. Any revisions to this document must be approved by both the County and the Department of Natural Resources.

SEVENMILE-SILVER CREEK
PRIORITY WATERSHED PLAN

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A. Location and Water Resources

The Sevenmile-Silver Creek Watershed includes the 112 square mile land area extending a few miles inland from Lake Michigan between the Cities of Manitowoc and Sheboygan. Approximately seventy-five percent of the watershed is in Manitowoc County. The watershed contains seven small streams draining directly to Lake Michigan and thirteen small inland lakes (Map 1). The watershed was named for two of the larger stream systems - Sevenmile Creek in Sheboygan County and Silver Creek in Manitowoc County. Tables 1 and 2 briefly describe the physical characteristics of streams and lakes in the Sevenmile-Silver Creek Watershed. Comprehensive evaluations of each waterbody are undertaken in Section 3.

B. Land Use

The predominant landuse in the Sevenmile-Silver Creek Watershed is agriculture, with dairying accounting for the majority of the agricultural operations. A few livestock, cash grain and speciality crop operations do exist in the watershed. Some suburban development has and continues to occur primarily in the northeastern portion of the watershed near the City of Manitowoc. The incorporated Villages of Cleveland, Haven, and Newton are within the SMSC Watershed. These villages were not inventoried for nonpoint sources. Table A1 summarizes landuses in the watershed.

C. Soils

The predominant soil associations found in the SMSC Watershed are briefly discussed below. The soils of the east, approximately one half of the watershed were formed in glacial drift and are generally gently sloping, loamy to clayey, with moderate to good potential for agricultural production. The soils of the western half of the watershed were formed in glacial till or old glacial lake basins. These soils are generally level to gently sloping and are heavily dissected by drainageways. These soils are generally clayey with moderate to good potential for cultivation .

MAP 1: SEVENMILE-SILVER CREEK WATERSHED

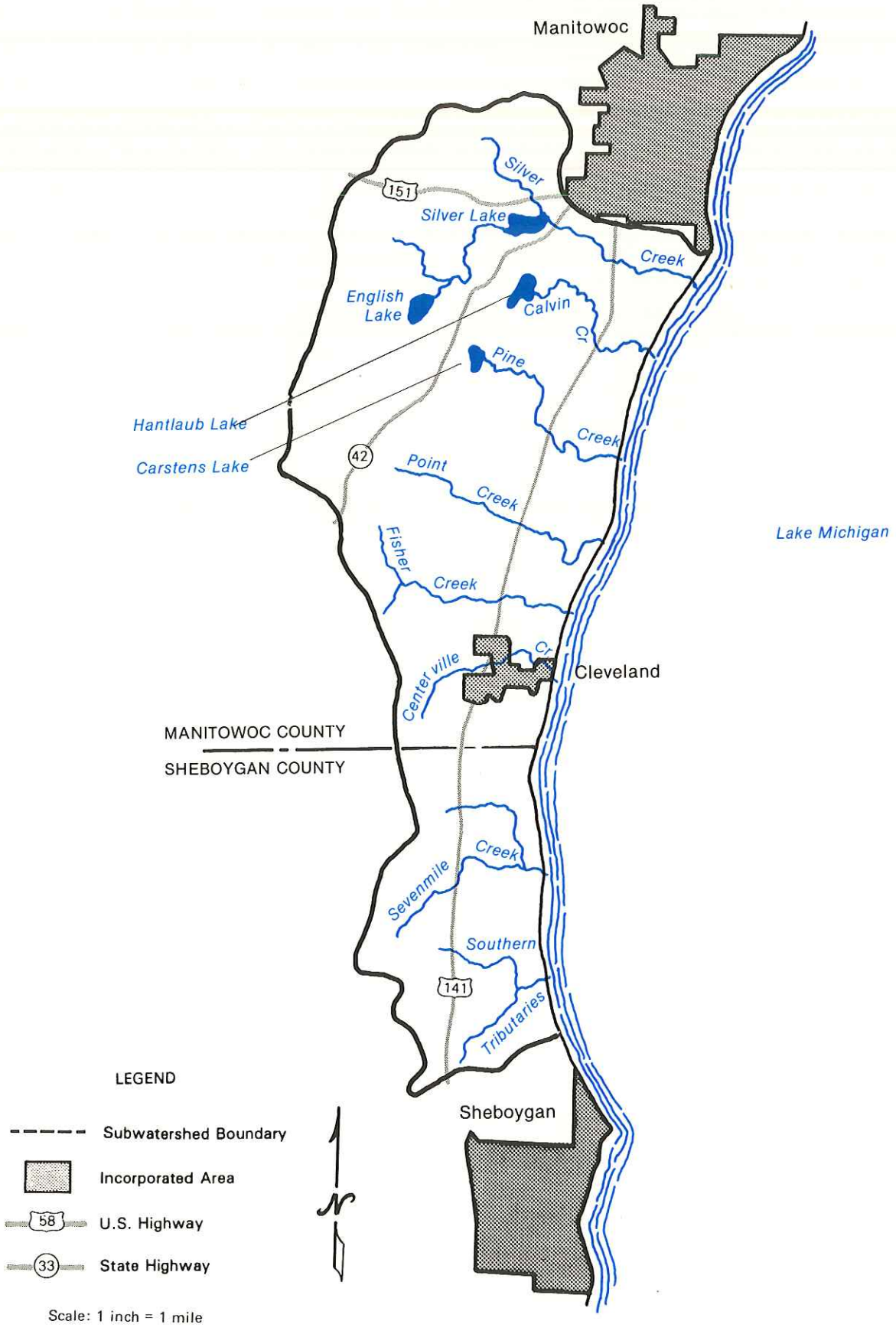


Table 2:

STREAMS OF THE SEVENMILE-SILVER CREEK WATERSHED

PHYSICAL DATA	SILVER CREEK	CALVIN CREEK	PINE CREEK	POINT CREEK	FISCHER CREEK	CENTERVILLE CREEK	SEVENMILE CREEK	SOUTHERN TRIBUTARIES
LENGTH (MILES)	14.8	5.4	6	8.2	6.3	4	5	3
GRADIENT (FT./MI.)	13.3	20	27.5	15.9	29.6	28.8	21.6	12
DRAINAGE AREA (SQ.MI.)	24	9.4	13.2	21.5	11.1	7.5	10	8
AVERAGE WIDTH (FEET)	12	4	5	8	9	7	3.5	4
AVERAGE DEPTH (FEET)	1	0.5	0.4	0.6	0.7	0.8	0.5	0.3
TWO-YEAR LOW FLOW (cfs)	0.04	0.01	0.01	0.35	0.22	0	0	0
ORGIN	ENGLISH LAKE	HARTLAUB LAKE	CARSTEN LAKE	NORTH OF OSMAN	NEAR OSMAN	SW OF CLEVELAND	NEAR HD. GROVE	NEAR SHEBOYGAN
TERMINUS	LAKE MICH.	LAKE MICH.	LAKE MICH.	LAKE MICH.	LAKE MICH.	LAKE MICH.	LAKE MICH.	LAKE MICH.

Table 3:

LAKES OF THE SEVENMILE-SILVER CREEK WATERSHED

	ENGLISH	SILVER	HARTLAUB	GASS	WEYERS	CARSTEN
SURFACE AREA (ACRES)	51	66.6	38.4	4.5	6.4	20
MAXIMUM DEPTH (FEET)	80	40	59	24	32	30
BOTTOM TYPE	MUCK	MUCK	MUCK	MUCK	MUCK	MUCK
PUBLIC ACCESS	YES	YES	YES	YES	YES	YES
FISHERY	WW/CW	WW	WW	WW	MARGINAL WW	WW
USE PROBLEMS		EUTROPHIC WINTER KILL	EUTROPHIC	EUTROPHIC	WINTER KILL	

Table 3 cont.

	VEETING	TEEK	WAACK	GROSSHUECH	KASBAUM	GLOMSKI
SURFACE AREA (ACRES)	4.3	4.3	1.1	3.3	6.1	9.2
MAXIMUM DEPTH (FEET)	33	34	18	33	68	43
BOTTOM TYPE	MUCK	MUCK	MUCK	MUCK	MUCK	MUCK
PUBLIC ACCESS	NO	NO	NO	NO	YES	YES
FISHERY	MARGINAL WW	MARGINAL WW		MARGINAL WW	WW	WW
USE PROBLEMS		WINTER KILL		SUMMER KILL		

II. Methods

Introduction - Essential to the development of a plan to abate pollution from nonpoint sources in the Sevenmile-Silver Creek Watershed is an accurate assessment of current water resource conditions, development of desired and achievable water resource improvements, and an inventory of pollution sources. These assessments were based on a variety of existing data sources and additional surveys undertaken by state and county staffs. Water resource information was obtained from DNR files and basin plans. Additional water resource surveys were conducted by DNR district fish managers and water quality specialists. A water resource appraisal group was assigned the task of determining what additional information was needed to determine the status of waterbodies in the watershed. Manitowoc and Sheboygan Counties LCD and SCS staff carried out detailed land use surveys. Approximately 90% of the watershed's land surface was evaluated for erosion potential and suitability for manure spreading, all streambanks were surveyed for erosion potential, and all barnyards in the watershed were surveyed for potential for pollution from animal wastes. This section explains the techniques used to assess the water resource conditions and the methods used in the land inventory.

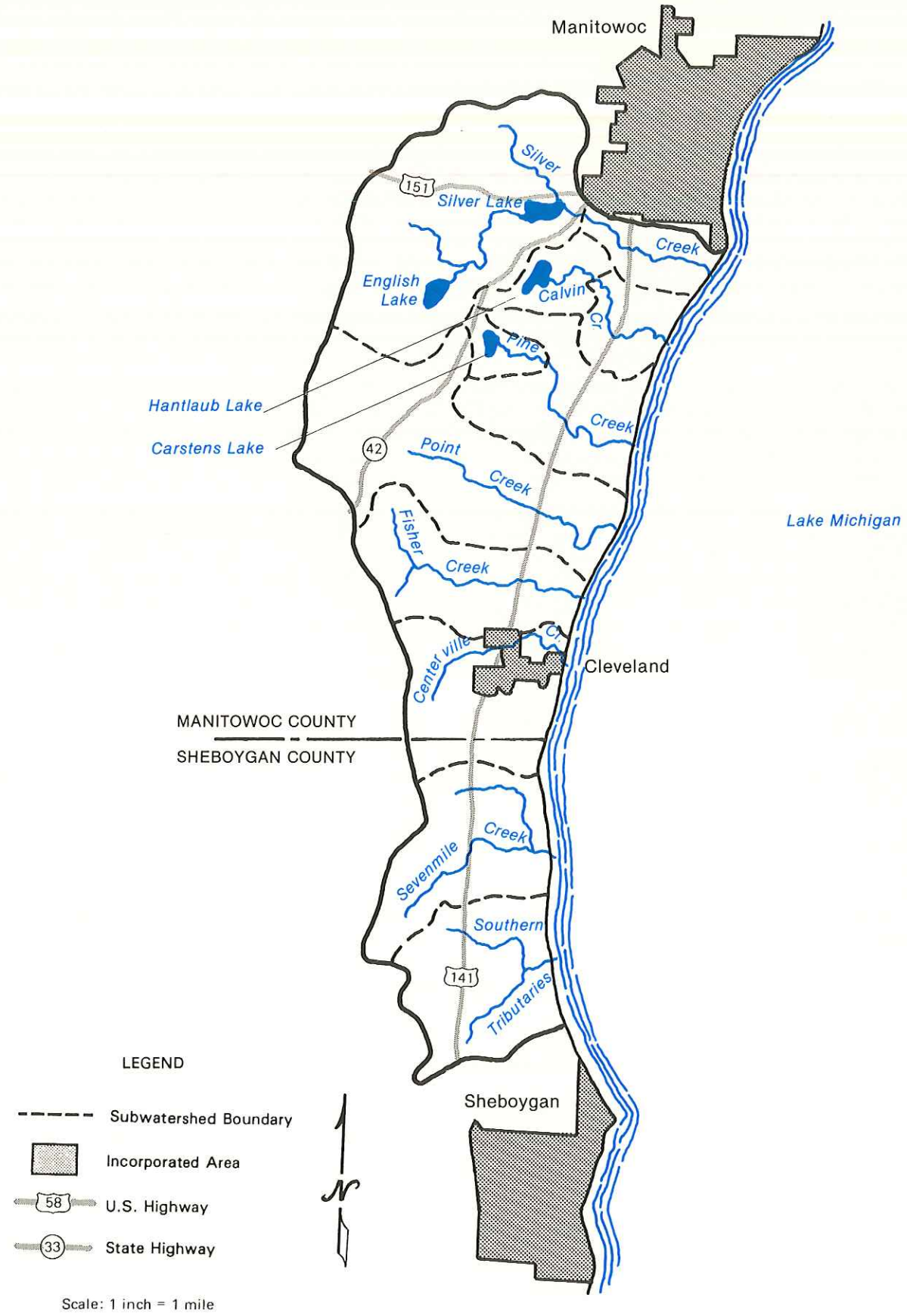
A. Subwatershed Delineation

The Sevenmile-Silver Creek Watershed was Divided into 11 subwatersheds ranging in area from 1280 (approximately two square miles) acres to 13760 (approximately 22 square miles) acres (Map 2). The division of the watershed into subwatersheds was done in an attempt to link water quality conditions in a specific waterbody (lake or stream reach) to a relatively small individual drainage area. The pollutant reductions needed to achieve water resource objectives can then be linked to specific sources in the drainage area. The identification of sources and water resource objectives at the subwatershed level will allow a selective approach to NPS source control.
The approach to water resource assessment, NPS source inventory, and source control used in this watershed plan will be linked to the 11 subwatersheds shown on Map 3.

B. Water Resource Assessment Methods

Introduction - Methods used for the appraisal of water resource conditions in the SMSC watershed include: biological and chemical monitoring, fish surveys and habitat evaluations, and lake trophic status evaluations. Beneficial use impairment assessment and physical/descriptive data are also used for water

MAP 2: SEVENMILE-SILVER CREEK WATERSHED



resource assessment. Each of the above methods or data sources may be defined as tools to be used for determination of current water quality conditions and the derivation of water quality objectives. Six tools used for water resource appraisal in the SMSC watershed are discussed below.

1. Beneficial Uses and Use Impairment

The beneficial uses most frequently identified in Wisconsin can be grouped into three general categories - fishery, recreation, and aesthetics. Numerous subcategories can be identified; ie, coldwater fishery, swimming, and boating. The beneficial use concept is most applicable when setting water quality objectives. One or more beneficial use objectives will be stated for each major waterbody in the watershed and linked to NPS sources in the subwatershed(s) draining to the waterbody. Beneficial use improvement objectives must be feasible in respect to source types and the pollutant control possible (see Management Alternatives). Beneficial use objectives may be either improvement or protection in nature; ie, reduce algae bloom frequency and intensity in the eutrophic lake or protect a high quality trout stream. Although beneficial use is the most subjective tool being used for water resource assessment, it relates most directly with the public's perception of water quality conditions and appropriate expenditure of public funds for NPS pollution control. Therefore, the beneficial use concept will be an important tool for the setting of project objectives in the SMSC Watershed.

2. Physical Data

Physical data is not water quality data, but is data describing the depth, length, area, flow rate and volume, gradient, and other largely fixed parameters relating to a particular lake or stream. Physical parameters are important when defining the potential best use or condition for a waterbody and determining the level of pollution control to be recommended in the waterbody's watershed. For instance; a lake with a maximum depth of six feet cannot, under most circumstances, support a cold water fishery and a stream with an average flow of 20 cubic feet per second, cannot be managed for canoeing, Knowledge of the correlations between physical constraints and maximum beneficial use is necessary to preclude the development of unrealistic water quality objectives in the SMSC watershed project. Physical data is listed in Tables 1 and 2 for each waterbody in the SMSC watershed and is considered with water resource assessment data when addressing water resource conditions and beneficial uses.

3. Biotic Index

The type insects found living on rocks and other debris in a streambed are reflective of the water quality conditions of that stream. Certain species of insects will only tolerate unpolluted waters, while other adapt more readily to various degrees of water pollution. The term pollution in this discussion means organic material in the water. Two ways organic pollution affects water quality are: 1) the organic material adds nutrients to the water which may result in nuisance growth of algae or weeds, and 2) the breakdown of the organic material by bacteria can deplete the water of its dissolved oxygen, which is required for insect and fish survival.

A system has been developed in Wisconsin by which the identification of the stream's quantity and variety of aquatic insects generates an index number which is indicative of the degree of organic pollution in that stream. This procedure is called the Hilsenhoff Biotic Index (Hilsenhoff, 1982). Organic pollution tolerance values are assigned to each species of insect. The scale of these values is 0-5, with 0 being the least tolerant (least organic pollution in the stream). The number and types of insects found at a stream site are used to calculate a HBI value between 0 and 5 for the stream. Qualitative descriptions for the index values are given below. This procedure was conducted on the seven major streams in the watershed. The results of this sampling is shown on Table A2.

Qualitative Description for the HBI

HBI Range	Water Quality
1.75	Excellent
1.76 - 2.25	Very Good
2.26 - 2.75	Good
2.76 - 3.50	Fair
3.51 - 4.25	Poor
4.26 - 5.00	Very Poor

4. Stream Fishery Habitat Assessment

In order to determine the present and potential future fishery uses of the streams, a procedure developed by the DNR and described in the publication: "Stream Classification Guidelines for Wisconsin" (Ball, 1982) was used. The system uses an inventory of the stream's physical fish habitat (stream flow, bed type, amount of riffles and pools, etc.) along with water quality, water temperature, and current stream biotic conditions to classify the present fishery use of the stream. This information is then modified to simulate the conditions that may be present as a result of a successful nonpoint source pollution control project in the watershed. This second step results in

an indication of the fishery which may be expected after a successful nonpoint source pollution control project. The results of the habitat assessments are shown in Table A2.

5. Lake Trophic Status

An assessment of the 13 major lakes in the watershed was also conducted. The water quality conditions of lakes is often referred to as the lake's "trophic status" (Carlson,1977). In general, this refers to the nutrient level in the lake's waters. A lake with high levels of nutrients will support nuisance algae and weed growth and is termed "eutrophic". A lake low in nutrients that has clear water during the summer is called "oligotrophic". An intermediate level between these two classes is called "mesotrophic".

There are three indicators commonly used to establish the "trophic status" of a lake. The first is the in-lake phosphorus concentration. In Wisconsin lakes, phosphorus is usually the nutrient limiting the growth of algae and weeds. The higher the concentration of phosphorus in the water, the greater the potential for nuisance growth of algae and weeds. The level of a substance called chlorophyll a is a second indicator of the trophic status of a lake. Chlorophyll a is found in algae. The concentration of chlorophyll a in the water can be correlated with the amount of algae in the water. The third indicator is a measurement of the secchi disc depth. A secchi disc is 8inches in diameter with alternating black and white stripes. The depth to which it can be seen in the lake's water is called the secchi depth. This depth can vary depending on the roughness of the water, the angle of the sun, and the technique of the observer. However, it does measure the depth of sunlight penetration, and the turbidity which could be due to algae or suspended material. Using these three indicators, plus some additional information on a lake's physical characteristics, several computer models have been developed which can determine the trophic status of a lake and predict the change in trophic status given a change in the amount of the amount of nutrients reaching the lake (Dillion, 1975). When the nutrient loading reduction due to the installation of practices in the lake's watershed is known, the model can predict the changes in the lake's trophic status.

6. Summary

The five water resource assessment tools described above will be used for the determination of current water resource conditions and in conjunction with the NPS inventories for setting water resource objectives for the SMSC project. Section III of this plan will address water quality conditions occurring in each major waterbody in the watershed. The amount of data available varies drastically by waterbody and some assessments will be by

necessity less detailed than others. However, management decisions will be in every case based on water resource objectives for each subwatershed or aggregations of subwatershed draining to one waterbody.

C. Pollutant Source Assessment Methods

Introduction

An integral component of the watershed planning process was the collection of inventory data on the nonpoint sources of pollution in the watershed. These inventories were conducted under the supervision of the County Land Conservation Departments (LCD's) with funding support from the DNR. Individuals were employed by the LCD's to collect the field data. The quality of these data were reviewed and approved by the LCD's. The data was sent to the DNR for analysis. The methods used for inventorying each nonpoint pollutant source is described below.
Before the inventories were conducted, the watershed was divided into 11 subwatersheds (Map 2). The divisions were based upon individual water resources which could be protected or improved as a result of the control of nonpoint sources of pollution. The data from each of the inventories was analyzed by subwatershed. Using this format, objectives could be set for each water body and the corresponding reduction in pollutants needed for that water body could be determined from the inventory data.

1. Channel Network Delineation

A conveyance system is required to transport NPS pollutants from their source to a receiving lake or stream. Except for sources immediately adjacent to the lake or stream the NPS pollutants are carried to receiving waters via channels. All pollutants reaching a channel are assumed to eventually reach receiving waters. By delineating the channel network it is possible to outline the areas of the watershed from which NPS pollutants may be expected to reach receiving waters. The issue of channel network delineation is complicated by lack of any standard method for delineation. Also, the extent of channel networks varies drastically by soil type and topography. In the SMSC watershed channels were defined as beginning at the up slope side of an area draining seventy acres above the intermittent and perennial streams shown on 7.5 USGS topographic maps for soils of A and B hydrologic maps. An area of 45 acres was used for C hydrologic group soils. An accurate determination of channel network is integral to the watershed project because it determines both the areas of the watershed to be inventoried and eventually the area where management of NPS sources will occur. The above method best delineates the channel systems found in the SMSC watershed and was agreed upon by LCD and DNR staff.

2. Upland Erosion

Upland erosion is of concern because of its potential to be a major contributor of sediment and phosphorus to the streams and lakes of the watershed. Sediment in streams and lakes adversely impacts the water resources in many ways. The suspended sediment can make it difficult for fish to feed, and it can abrade fish gills making the fish more susceptible to disease. The suspended sediment also causes the water to be warmer in the summer, and warm water cannot hold as much oxygen as cold water and limits the cold water fishery. Sediment that settles out to the stream or lake bottom can fill up pools in streams (destroying the fish habitat) and can fill up the bays in lakes (promoting excess aquatic weed growth). Soil from cropland entering the water can also contain nutrients and pesticides which can both increase the algae and weed growth in lakes and harm the biota of a water body.

Upland Erosion (for this project) is defined as the sheet and rill erosion from land areas and is commonly measured by soil loss in tons per acre per year. This class of erosion includes only the type that results from the overland flow of water on fields. It does not include the gully and streambank types of erosion. The most common method of measuring upland erosion is with the Universal Soil Loss Equation (USLE). This method calculates the soil loss from a field in tons of soil lost from the field during an average year. The factors used to make this determination on a field are: rainfall runoff, soil erosivity,land cover, present management practices, slope, and slope length. This calculated soil loss is not necessarily the amount of soil that enters the channel system of a watershed. Some of the soil will become trapped in depressions or breaks in slope on the land before it reaches a channel. This "trapped" soil may move into the channel system with subsequent rainfalls. (Once in the channel system, the sediment can become temporarily trapped in the pools of a stream before moving downstream.) The USLE was used to determine the parcels of land potentially contributing the most sediment to the channel system, and what percent of change in sediment pollution could be expected from the installation of soil erosion control practices.

On a parcel by parcel basis, USLE factors, the location, landowner identification code, and present practice information was collected. A parcel was defined as a field with homogenous individual USLE factors and was bounded by landowner property lines and watershed or subwatershed lines. The parcels generally ranged in size of 2 to 20 acres, and data was collected on about 6000 parcels in the entire watershed. Table A1 shows the results of this inventory.

As explained above, the USLE data in Table A1 does not represent sediment delivered to a channel, but soil movement on a field. Methods are not currently available to estimate sediment delivery to a stream or lake from any given field or aggregation

of fields. Therefore for purposes of this plan, the assumption is made that by reducing the soil movement on the fields eroding at the higher rates, a correspondingly higher proportion of sediment delivered to waterbodies is controlled. Upland erosion control needs are correlated with water quality objectives and control needs by subwatershed in section III.

3. Streambank Erosion Survey

Streambank erosion is the obvious bank failure along channels caused by the cutting action of water on the banks. This erosion is important because of its direct impact on fish habitat in terms of bank shade and cover in addition to the impact of the sediment filling up the stream's pools. Streambank erosion can be caused by cultural activities (such as grazing cattle) or it can be a natural condition.
The water resource objectives for the individual water bodies need to be considered when determining the overall significance, as well as the critical areas of streambank erosion within a subwatershed. For example, if improvement of fish habitat is the major concern, then the direct impact of each eroding site needs to be evaluated. If the objective is to reduce the total sediment load to downstream waters, then the relative significance of the total tons of sediment from streambanks compared with tons of sediment from other nonpoint sources needs to be evaluated. Effective abatement of both problems requires the identification of the most significantly eroding streambank sites. The inventory method used was a modification of the Phase II of the Land Inventory Monitoring process The main channels of streams totalling 52.7 stream miles were assessed with this method. For each erosion site, the method estimates the volume, and tons of sediment lost on a yearly average. This was done through measuring the length, height, and recessional rate of each erosion site. Recession rates were determined based upon the physical characteristics of the eroded site. The volume of sediment was then multiplied by the density of the sediment to estimate the tons of soil loss from the site. Along with this data, information on the location, landowner identification, and cattle access was collected for each site. The results of this inventory is given on Table A3.
Streambank control needs are correlated with water quality objectives and control needs by subwatershed in Sections III.

4. Barnyard Runoff

Dairy operations are the major type of agriculture in the SMSC Watershed. All of the barnyards were inventoried for potential to impact water quality. Runoff from these yards can carry manure to the streams and lakes of the watershed. The manure contains pollutants that can adversely affect the water quality and aquatic life. The nutrients in manure will promote nuisance algae and weed growth in the streams and lakes. Manure also

contains ammonia which, in high enough concentrations can be toxic to fish and other aquatic life. When the manure enters a water system the breakdown of the organic matter results in a depletion of the oxygen in the water which fish require to survive. Finally, the bacteria found in livestock manure can be harmful to other livestock drinking the water, and humans using the water for recreation.

The United States Department of Agriculture - Agriculture Research Service developed a computer model to estimate the amounts of pollutants coming from a barnyard as a result of a rainstorm (Young,1982). This model was modified by the DNR and has been used to indicate which barnyards within a watershed have the greatest potential to impact water quality from a rainfall washing through a barnyard. The model does not assess or the impact from manure spread on fields or from manure stack. Information to run this model was collected on all of the 362 barnyards in the SMSC Watershed. The data required by this model includes the types and numbers of livestock; the size of the yard; the physical characteristics of the area which contributes surface runoff waters to the yard; and the physical characteristics of the area through which the runoff waters leaving the barnyard flow before becoming channelized. A rainfall amount is assigned to the model. The 10 year, 24 hour rain event (3.8 inches) was selected. With this information the model calculates the pounds of phosphorus and pounds of Chemical Oxygen Demand (COD) for each barnyard as a result of the selected rainfall event. (Chemical Oxygen Demand is a measure of the amount of organic material in the barnyard runoff.)

Table A4 shows the results from this assessment.

Barnyard control needs are correlated with water quality objectives and control needs by subwatershed in Section III.

5. Manure Spreading

The disposal of livestock wastes on land can be a major source of water pollutants, especially when done on frozen land, land with steep slopes or land in the floodplain. Under these conditions, the spread manure is carried by runoff from melting snow or winter rain and enters the streams and lakes of the watershed. The impacts from this runoff are the same as those mentioned in the barnyard runoff discussion.

The information collected for the upland erosion and the barnyard runoff inventory was combined and used to estimate the amount of unsuitable land used for manure spreading during the winter. Lands unsuitable for winter spreading of manure were defined as parcels with slopes greater than 6% or lands located within 1/8 mile of a channel. (See pp 16 for detailed discussion of channel delineation).

The first step in this evaluation was to estimate how much land was required by each livestock operation to dispose of the manure generated over a 180 day period (the winter). The amount of manure generated by each operation was determined based on

the animal type and number of animals. Using an application rate of 25 tons per acre per year , the number of acres required for manure disposal was calculated for each operation. This number was compared to the acres of land suitable for winter spreading for each landowner according to the upland erosion inventory information. In this manner, it was estimated, on an average annual basis, how many acres of unsuitable land was used for manure disposal during the winter. Table A4 summarizes this data.

6. Point Sources

Unlike the activities mentioned above, the point sources of pollution in Wisconsin are regulated by the state. For each municipal or industrial wastewater discharge, a permit is issued by the DNR which defines the quantity and the quality of the wastewater allowed from each site. The point sources have been the most significant, and the most obvious sources of water quality impairment in the past. With the large scale effort and funding directed at cleaning up point source pollution in the past 20 years, the water quality impacts from these sources in the SMSC Watershed have been minimized.
Each municipal or industrial discharger has a permit file with the DNR. These files were reviewed to determine how well the treatment plant was meeting its permit requirements. If a facility is not in compliance with its permit, there are regulatory measures which can be employed to insure that clean up of the nonpoint sources of pollution will not be compromised by the wastewater treatment facilities. Situations where the presence of a point source may impact NPS, control efforts are discussed by subwatershed in Section III.

D. POLLUTION CONTROL STRATEGY

The pollution control strategy is based on the water resource appraisal and the nonpoint source inventories. The water resource appraisal determines:

CURRENT WATER RESOURCE CONDITIONS
DESIRED WATER RESOURCE CONDITIONS
POLLUTANT(S) OF CONCERN
POLLUTANT REDUCTION REQUIRED TO ACHIEVE
DESIRED WATER RESOURCE CONDITIONS

The nonpoint source element determines:

RELATIVE MAGNITUDE OF SOURCE CATEGORIES
ESTIMATE POLLUTANT CONTROL POSSIBLE
RANKING OF SITES WITHIN SOURCE CATEGORIES

The products of the water resource appraisal and the nonpoint source element are presented by subwatershed in Chapter III. A two-step approach to nonpoint source control was employed in the Sevenmile-Silver Creek project. First, an attempt was made to estimate the relative magnitude of the four source types (upland erosion, barnyard runoff, manure spreading, streambank erosion). Secondly, the importance of individual sites (by landowner) within each source type was carried out on a subwatershed basis through development of management categories. The management categories are defined as:

Management Category I is limited to the sources that generate a significant portion of the pollutant loading to the waters within a subwatershed. Sources in management category I must be included on costshare agreements.

Management Category II is is limited to eligible ,but less significant sources. These sources are eligible for costsharing assistance, but inclusion of these sources of the costshare agreement is optional.

Management Category III contains sources which are ineligible for costsharing. Sources in this category contribute a very minor portion of the pollutant load in the subwatershed and would not be cost effective to control.

The management categories provide an approach to the implementation of pollution control practices designed to reach the target levels of pollutant reduction and ultimately fulfill the water resource objectives in a cost effective manner by directing implementation efforts and funds toward the moat critical sources of pollution in the watershed. The following discussion explains the manner in which the two-step process was used to develop the pollution control strategy.

In the Sevenmile-Silver Creek Watershed the pollutant of concern is phosphorus, both because of negative impacts on the inland lakes and Lake Michigan and because phosphorus is a convenient surrogate for other less easily measured pollutants. Table 4 presents the assumptions employed to estimate the relative magnitude of the four pollutant source categories (upland erosion, streambank erosion, barnyard runoff, manure spreading) in terms of phosphorus loading from each source. The loading rate values were based on the best available literature values. Table 4 also illustrates that although cropland erosion rates in the Sevenmile-Silver Creek Watershed are not generally high, cropland areas contribute the largest portion of the phosphorus loading to the streams and lakes in the watershed. Even if assumption VI is selected (lowest upland erosion phosphorus loading rate and highest barnyard runoff loading rate), the phosphorus loading from all other sources is estimated to be approximately one-half of that generated from cropland erosion. Assumption VI was selected as best representing the

loading rate occurring in the Sevenmile-Silver Creek watershed. This decision was based on comparisons with unit area loadings from the Silver Lake Fesibility Study (WDNR, 1985) and tributary monitoring (WDNR, 1984) from the Onion River. Both studies produced all-landuse unit area loads of approximately .8 pounds per acre, which compares closely with assumption VI. The phosphorus loading from manure spreading activities is approximately one-third of that generated by upland erosion, while the phosphorus loading from barnyard runoff and eroding streambanks constitutes a smaller portion of the total load. Barnyards assume an additional importance as major contributors of organic pollutants and bacteria. The table also illustrates that reductions in phosphorus loadings greater than approximately forty percent are not possible assuming that all sources are controlled to the maximum extent possible. In addition, the lack of water resource data relating to the specific phosphorus loading reductions required to produce improvements in lake conditions further limits attempts to refine the relationship between specific levels of pollutant reduction and water quality improvements. Therefore, the management categories are structured to make eligible a large portion of the nonpoint sources in the watershed; for example the top cumulative eighty percent of the croplands eroding at a rate greater than three tons per acre per year are included in management category I. The management categories were structured to achieve a significant reduction in phosphorus loading in an attempt to fulfill the water resource objectives. Table 5 defines the Management Categories developed for the Sevenmile-Silver Creek project. The number of landowners placed in each management
category for each source type are tabulated by subwatershed in the Watershed Assessment portion of the plan (Chapter 3). Table 6 illustrates the number of landowners in each management category for the entire watershed. The definitions in Table 5 apply to all subwatersheds.

Table 4:

RELATIVE SOURCE MAGNITUDE USING SIX ASSUMPTIONS

SOURCE TYPE	I	ESTIMATED REDUCTION	II	ESTIMATED REDUCTION	III	ESTIMATED REDUCTION	IV	ESTIMATED REDUCTION	V	ESTIMATED REDUCTION	VI	ESTIMATED REDUCTION
UPLAND EROSION	29483	21818	29483	21818	29483	21818	14742	10909	14742	10909	14742	10909
STREAMBANK EROSION	3046	1523	3046	1523	3046	1523	3046	1523	3046	1523	3046	1523
BARNYARD RUNOFF	1720	258	3440	496	8600	1239	1720	248	3440	496	8600	1239
MANURE SPREADING	4719	2360	4719	2360	4719	2360	4719	2360	4719	2360	4719	2360
TOTALS	38968	25958	40688	26196	45848	26939	24227	15039	25947	15287	31107	16030
PERCENT REDUCTION	0.33		0.36		0.41		0.38		0.41		0.48	

ASSUMPTIOPN I=.6LBS.P./ACRE CROPLAND,10-YEAR STORM=ANNUAL LOAD

ASSUMPTION II=.6LBS.P./ACRE CROPLAND.2*10=YEAR STORM=ANNUAL LOAD

ASSUMPTION III=.6LBS.P./ACRE CROPLAND.5*10 YEAR STORM=ANNUAL LOAD

ASSUMPTION IV=.3LBS.P./ACRE CROPLAND,10 YEAR STORM=ANNUAL LOAD

ASSUMPTION V=.3LBS.P./ACRE CROPLAND,2*10 YEAR STORM=ANNUAL LOAD

ASSUMPTION VI=.3LBS.P./ACRE CROPLAND,5*10 YEAR STORM=ANNUAL LOAD

ALL ASSUMPTIONS=1.0 LBS.P./TON STREAMBANK EROSION,1.0 LBS.P./CRITICAL ACRE SPREAD MANURE

ASSUMED REDUCTIONS: 85 PERCENT FOR BARNYARD RUNOFF
26 PERCENT FOR CROPLAND EROSION
50 PERCENT FOR STREAMBANK EROSION
50 PERCENT FOR MANURE SPREADING

TABLE 5

MANAGEMENT CATAGORY DEFINITIONS

SOURCE TYPE	RANKING CRITERIA	MANAGEMENT CATAGORY I	MANAGEMENT CATAGORY II	MANAGEMENT CATAGORY III
UPLAND EROSION	TOTAL SOIL LOSS	80 %	AV.T/A>3.0	81-100 %
BARNYARD RUNOFF	PHOSPHORUS LOAD	60 %	61-80 %	81-100 %
MANURE SPREADING	CRITICAL ACRES	50 %	51-80 %	81-100 %
STREAMBANK EROSION	CATTLE ACCESS	W/H ACCESS	(1)	(2)

(1),(2) The number of landowners in these management categories will be assessed through additional field inventory during the first three years of the project due to inadequacies in the original streambank erosion inventory.

TABLE 6

SEVENMILE-SILVER CREEK PRIORITY WATERSHED
MANAGEMENT CATEGORY SUMMARY

SOURCE TYPE MGT. CATEGORY	UPLAND EROSION I	UPLAND EROSION II	MANURE MGT. I	MANURE MGT. II
MANITOWOC	94	39	36	52
SHEBOYGAN	19	3	3	7
TOTAL	113	42	39	59

TABLE 6 cont.

SOURCE TYPE MGT. CATEGORY	BARNYARD RUNOFF I	BARNYARD RUNOFF II	STRMBK. EROSION I
MANITOWOC	57	93	15
SHEBOYGAN	12	11	4
TOTAL	69	104	19

III. WATERSHED ASSESSMENT

A. Introduction:

This section of the watershed plan addresses the current water quality conditions and uses and the pollution sources for each waterbody in the watershed. Secondly, water resource objectives are stated based on the water resource assessment described in Part II. Physical data describing the lakes and streams in the Sevenmile-Silver Creek Watershed are summarized in Tables 1 and 2.
The results of the Nonpoint Source inventories are contained in Tables A1 through A4. Finally, Nonpoint Source Pollutant control recommendations are made for each water body. All discussions relating to the relative magnitude of loading from the four source types refer to Table 4. These recommendations are presented in a table which illustrates the number of sites in each management category. These tables are referred to throughout the following discussion of subwatershed assessment. Map 2 illustrates the division of the watershed into eleven subwatersheds and a map of each subwatershed accompanies the discussion of the particular subwatershed.

B. Subwatershed Assessments:

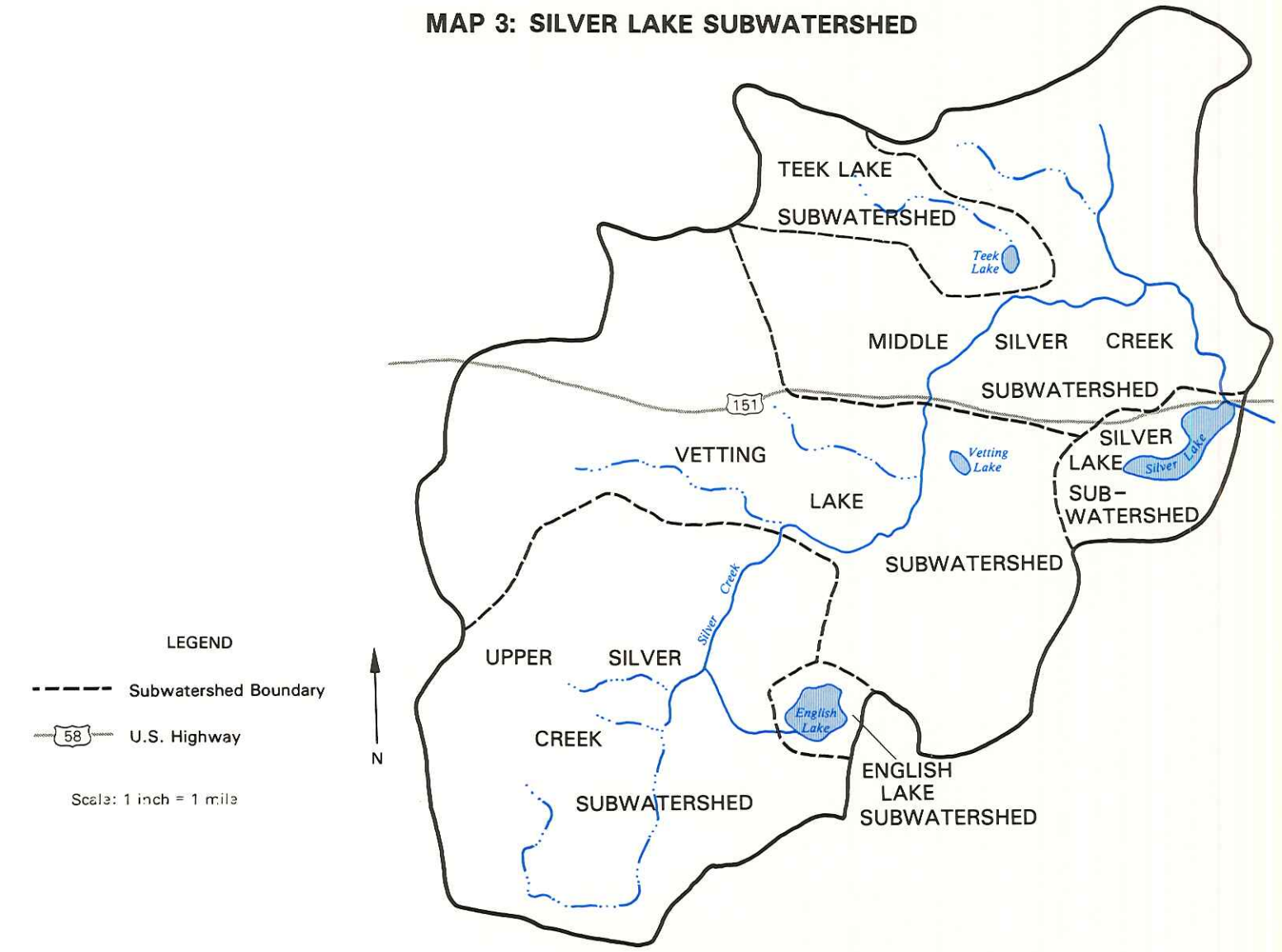
1. Lake Michigan Drainage

Each of the eleven subwatersheds in the Sevenmile- Silver Creek Watershed ultimately flow into the near-shore area of Lake Michigan. Although the impact of pollutants generated in the watershed are unknown ,research indicates that significant water quality degradation may occur in the near-shore zone of Lake Michigan due to pollution from nonpoint sources (International Joint Commission,1978). The near-shore area of Lake Michigan is used for fishing, swimming, boating and other recreational activities. In addition, four cities obtain drinking water from the lake near the Sevenmile-Silver Creek watershed. Due to potential negative impacts on Lake Michigan water quality, an overall objective for the priority watershed project is to protect the currently high water quality of the Lake Michigan near-shore area through a reduction in phosphorus loading from nonpoint sources throughout the watershed. Excepting the Silver Lake, Calvin Lakes, and Pine Lakes subwatersheds, the primary subwatershed objectives are based on reducing pollutant loadings to Lake Michigan. Pollutant sources are discussed by subwatershed and are summarized in Table A1-A4.

2. Silver Lake Subwatershed:

General Description: The Silver Lake Subwatershed is the approximately eighteen square mile area draining to Silver Lake,including the direct drainage to Silver Lake. The

MAP 3: SILVER LAKE SUBWATERSHED



subwatershed is located in the northern portion of the Sevenmile-Silver Creek Watershed. The subwatershed contains English, Teek, and Silver Lakes and approximately eighteen miles of intermittent stream. Table A1 shows the landuse composition of the subwatershed.

WATER QUALITY AND USE:

English Lake: English Lake maintains an area of fifty-six acres and a maximum depth of eighty feet and is the origin of Silver Creek. The primary recreational uses of English Lake are fishing and boating. The lake supports a viable warm/cool water fishery with periodic stocking of walleyes. Although, monitoring data has illustrated excessive phosphorus values, algae blooms are not excessive and no serious macrophyte problems are experienced.

Teek Lake: Teek Lake is five acres in area with a maximum depth of thirty-five feet. The lake supports a large macrophyte population and periodically experiences winter fish kills due to low oxygen levels beneath the ice. Teek Lake is the headwaters for an unnamed tributary to Silver Creek. Adequate public access does not exist on Teek Lake and no water resource objectives will be established. However, sources in the drainage to Teek Lake will be inventoried for pollutant contribution to the Silver Creek system and ultimately to Lake Michigan.

Silver Lake: Silver Lake is sixty-seven acres in area with a maximum depth of forty-feet. A lake management district was created in 1979 and a lake feasibility study was carried out in 1980(WDNR, 1985). Silver Lake experiences severe use limitation due to excessive algae and both winter and summer fish kills. The fish population consists primarily of rough fish, such as carp, capable of surviving low dissolved oxygen levels. The results of the lake feasibility study indicate that the lake is hyper-eutrophic with the phosphorus loading more than twenty times the acceptable level. The lake has excellent fishery potential but is limited due to the extremely poor water quality and a large persistent rough fish population. The Lake Feasibility study estimated the annual phosphorus loading to Silver Lake to be approximately 10,000 pounds per year. Ninty-seven percent of the loading was attributed to agricultural sources. The results of the NPS inventories carried out for the SMSC project when linked to phosphorus loading rates indicate an average annual loading of approximately 5,000 pounds per year (Table 2). The Feasibility Study further indicated that a seventy-five percent reduction in phosphorus loading would allow improvement to occur in the trophic status of the lake, assuming the higher loading rate. Therefore, if the loading generated by the current study is assumed, significant improvements in water quality in Silver Lake may be achieved

through control of nonpoint sources. However, a high level of pollutant control will be required and changes will occur slowly due to the time required to exhaust inlake phosphorus reserves.

Upper Silver Creek: Surveys of Upper Silver Creek indicate that flow is intermittent and that the stream is often without flow during the summer and fall. Therefore; no water resource objectives will be established for the creek. Upper Silver Creek is the primary transport mechanism for pollutants entering Silver Lake and as such pollutant sources to the creek will be inventoried and managed for their impact on Silver Lake and Lake Michigan.

Water Resource Objectives: Water resource objectives were established for English Lake and Silver Lake in addition to the overall watershed objective for Lake Michigan. The objective for English Lake is to protect the current viable fishery and to improve aesthetics. The objectives for Silver Lake are to improve the fishery and aesthetics. The water resource objectives in the Silver Lake subwatershed will be reached through a large reduction in phosphorus loading to the lakes by controlling the significant nonpoint sources throughout the subwatershed.

Pollution Sources: Approximately seventy-eight percent (8800 acres) of the land in the Silver Creek subwatershed is used for cropland. Although the average soil loss in the subwatershed is low (2.3 T/A/Y), approximately twenty-two hundred acres are eroding at a rate greater than three T/A/Y. Upland erosion produces approximately one-half of the phosphorus loading to Silver Lake. The subwatershed contains seventy-eight livestock operations, which are estimated to produce the majority of the remaining phosphorus loading to Silver Lake. This estimate includes barnlot runoff and loading from spread manure. Streambank erosion accounts for a negligible portion of the phosphorus loading to the waterbodies in the Silver Lake subwatershed. It is anticipated that the streambank erosion inventory under estimated the magnitude and extent of the streambank problems and additional inventory will be carried out to detail the problems.

Source Management Strategy:

TABLE 7

***** POLLUTION CONTROL STRATEGY ******

SILVER LAKE SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	20	6	116
BARNYARD RUNOFF	11	23	40
MANURE SPREADING	13	12	112
STREAM BANK EROSION	1		

Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

3. Lower Silver Creek Subwatershed:

General Description: Lower Silver Creek Subwatershed is defined as the portion of Silver Creek from the outlet of Silver Lake to the terminus of the stream at Lake Michigan. The area of the subwatershed is approximately six square miles. The subwatershed contains no lakes or perennial tributary streams. Table A1 shows the landuse composition of the subwatershed.

Water Quality and Use: Silver Creek park at the mouth of Lower Silver Creek allows public access to the stream and Lake Michigan. The majority of the recreational activity on Lower Silver Creek occurs at the park. Biotic index samples taken at one site on Lower Silver Creek indicate poor to very poor water quality. The creek supports a population of rough and forage species of fish, with very few game fish present. Salmonoid species are reported to migrate up the creek during spring and fall spawning runs, at which time the stream receives significant fishing pressure. In addition to poor water quality the fishery in the stream is further limited by very low flow during the summer and fall. Physical data for Lower Silver Creek is contained in Table 2.

Water Resource Objectives: The water resource objective for Lower Silver Creek is to prevent further degradation of the stream water quality and to reduce phosphorus loading to Lake Michigan.

Pollution Sources: Nonpoint sources in the Lower Silver Creek subwatershed are estimated to generate less than three percent of the whole watershed phosphorus loading (Table 1). Approximately forty-eight percent of the subwatershed is used as cropland. Upland erosion averages less than two tons per acre per year. Seven livestock operations are present in the subwatershed. These operations are estimated to produce a very small amount of phosphorus loading both from barnyard runoff and spread manure. Streambank erosion in the sandy soil area near the mouth of the stream appears to be severe and may have localized significant impact on stream habitat and fishery. Streambank erosion is not considered to contribute a significant phosphorus load to Lake Michigan.

Source Management Strategy:

TABLE 8

***** POLLUTION CONTROL STRATEGY ******

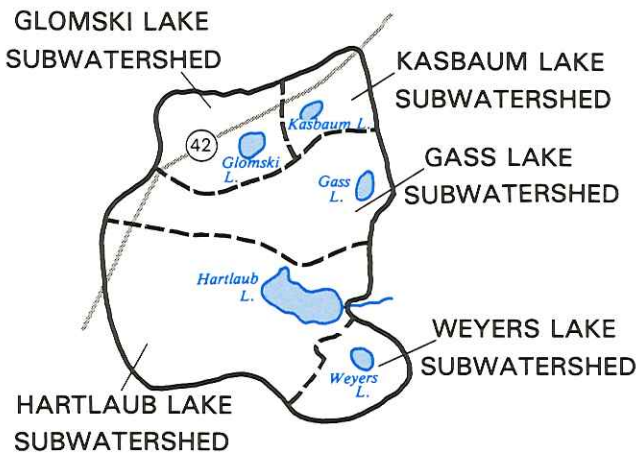
LOWER SILVER CREEK SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	3	2	49
BARNYARD RUNOFF	2	2	3
MANURE SPREADING	0	0	54
STREAM BANK EROSION	1		

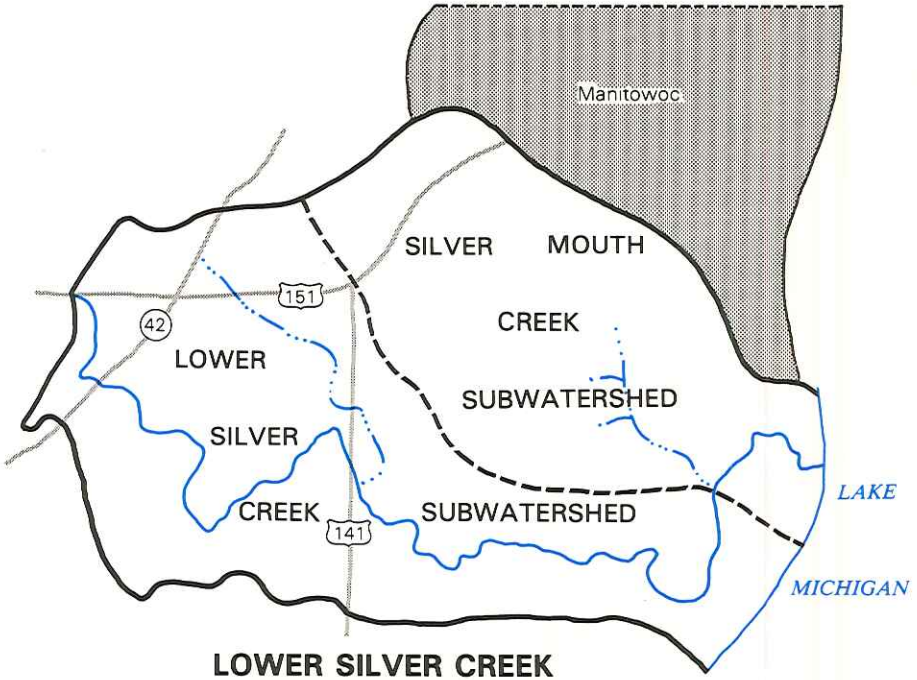
Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

4. Calvin Lakes Subwatershed:

General Description: Calvin Lakes Subwatershed is defined as the direct drainage area to the five small lakes (Gass, Glomski, Hartlaub, Kasbaum, and Weyers) in the headwaters of Calvin Creek. The drainage area is two square miles in extent. Physical descriptions of the lakes are found in Table 3.

MAP 4: CALVIN LAKES SUBWATERSHED





LOWER SILVER CREEK SUBWATERSHED

LEGEND

- Subwatershed Boundary
- Incorporated Area
- 58 U.S. Highway
- 33 State Highway

N

Scale: 1 inch = 1 mile

CALVIN CREEK SUBWATERSHED

Generally, the lakes in the subwatershed are small in surface area, w: steep sides and very little shallow area. The lakes are twenty to si: feet in maximum depth. Water quality and fishery data for these lake: very limited. Lakes with no public access will not have water resour objectives established unless the lake is connected to a stream syste Table A1 shows the landuse composition of the subwatershed.

Water Quality and Use:

Gass Lake: Gass is a five acre landlocked lake with a maximum depth twenty-four feet. Limited water quality monitoring indicates that th lake is eutrophic. No information regarding fish populations in Gass Lake is available. Adequate public access does exist and fishing and boating do occur.

Glomski Lake: Glomski Lake is approximately ten acres with a maximum depth of forty-three feet. No public access exists on Glomski Lake and no water resource objective will be established.

Hartlaub Lake: Hartlaub Lake is the headwaters of Calvin Creek, with the creek originating form the northeastern corner of the lake. Hartlaub Lake is thirty-eight acres in area and has a maximum depth of approximately sixty feet. The lake is used for fishing, hunting and boating. No recent information regarding the status of the warmwater fishery is available, however, older data indicates that the pan fish population is stunted and that fishing opportunities are compromised by algae blooms. The lake does experience frequent and severe algal blooms and instances of oxygen depletion have led to winter fish kills. The eutrophic condition of the lake is further substantiated by monitoring data which shows very high phosphorus concentrations.

Kasbaum Lake: Kasbaum Lake is approximately six acres with a maximum depth of sixty-eight feet. No public access exists on Kasbaum Lake and no water resource objective will be established.

Weyers Lake: Weyers Lake is a six acre landlocked seepage lake with a maximum depth of thirty-two feet. Water quality monitoring has illustrated excessively elevated phosphorus levels and the lake is considered to be eutrophic. The lake is aerated to prevent winterkill of fish.

Water Resource Objectives: Water Resource Objectives were established for Hartlaub, Gass, and Weyers Lakes. The objective for all three lakes is to protect the fishery and improve aesthetics by reducing the frequency and intensity of algae blooms. The objectives will require a reduction in phosphorus loading to the lakes.

Pollution Sources: The Calvin Lakes subwatershed is hilly with approximately fifty percent of the area in woodland. The nonpoint sources inventoried in the subwatershed are estimated to produce less than one percent of the whole watershed phosphorus loading (Table 1). The subwatershed contains 549 acres of cropland with an average erosion rate of 2.3 tons per acre per year. Due to the steep topography in the area, twenty percent of the cropland is eroding at a rate greater than three tons per acre per year. The subwatershed contains a nine barnyards, a high concentration considering the small size of the area. However, these barnyards are estimated to produce a small portion of the subwatershed phosphorus loading. The manure spreading analysis indicates eighty-six critical acres are spread annually in the subwatershed, also due to the steep topography. No significant streambank erosion sites were located in the subwatershed. The desired reduction in pollutant load can best be achieved in the Calvin Lakes subwatershed through control of the cropland eroding at rates greater than three tons per acre per year

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Source Management Strategy:

TABLE 9

***** POLLUTION CONTROL STRATEGY ******

CALVIN LAKES SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	6	3	15
BARNYARD RUNOFF	3	3	3
MANURE SPREADING	1	2	18
STREAM BANK EROSION	0		

Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

5. Lower Calvin Creek Subwatershed

The Lower Calvin Creek Subwatershed is defined as the area draining to Calvin Creek below the outlet of Hartlaub Lake to the stream terminus at Lake Michigan. The area of the subwatershed is approximately seven square miles. The subwatershed contains no lakes

or perennial streams other than Calvin Creek. Table A1 shows the landuse composition of the subwatershed.

Water Quality and Use: Table 2 describes the physical characteristics of Calvin Creek. Stream habitat assessment surveys indicate poor to fair habitat at two sites. The stream habitat appears to be degraded by a combination of siltation and other impacts typically associated with agricultural nonpoint sources. Biotic index samples were collected at one site near the mouth of the stream. These samples also indicate poor water quality. Dissolved concentration at the biotic index site was very low, again indicative of degradation by organic pollution. Calvin Creek supports a forage fishery and a minimal migration of salmonid species from Lake Michigan during the spawning run. The stream is unlikely to support a sport fishery due to extremely low flow during the summer and fall months. Calvin Creek may be viewed and managed primarily as a pollutant conduit to Lake Michigan.

Water Resource Objectives: The primary water resource objective for the Calvin Creek Subwatershed relates to the whole watershed objective of protection of the near-shore zone of Lake Michigan. The objective established for Calvin Creek is to improve dissolved oxygen levels and to upgrade the stream habitat and to improve the forage fishery. The accomplishment of these objectives will require major reductions in phosphorus and organic loadings from the nonpoint sources in the subwatershed.

Pollution Sources: Cropland constitutes eighty percent of the landuse in the Lower Calvin Creek subwatershed. The remaining twenty percent is a combination of scattered suburban, woodland and wetland areas. Average soil loss rates in the subwatershed are less than two tons per acre per year, with eleven percent of the cropland acres eroding at a rate greater than three tons per acre per year. The subwatershed contains seven livestock operations: however, the estimated phosphorus loading from these operations constitutes approximately one-third of the subwatershed loading. In addition, these livestock operations spread manure on three hundred critical acres per year, producing approximately one-fourth of the subwatershed phosphorus loading. Significant instances of streambank erosion and cattle access to the streams occur in the subwatershed. Management and control of the animal waste sources in the Lower Calvin Creek Subwatershed will be necessary to fulfill the water resource objectives.

Source Management Strategy:

TABLE 10

***** POLLUTION CONTROL STRATEGY ******

LOWER CALVIN CREEK SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	6	1	38
BARNYARD RUNOFF	2	3	2
MANURE SPREADING	3	0	40
STREAM BANK EROSION	0		

Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

6. Pine Lakes Subwatershed:

General Description: The Pine Lakes subwatershed is the two square mile area containing a chain of three small lakes (Carsten, Waak and Grosshuesch) which form the headwaters of Pine Creek. Table 2 contains a physical description of the lakes. The topography of the subwatershed resembles that of the Calvin Lakes subwatershed immediately to the north. The terrain surrounding the lakes is generally steep and the lakes are deep relative to their small surface areas. Table A1 shows the landuse composition of the subwatershed.

Water Quality and Use:

Carsten Lake: Carsten Lake has a surface area of twenty and a maximum depth of thirty feet. The lake is classified as eutrophic based on water quality samples, which illustrated high concentrations of phosphorus. The lake was treated to eliminate the excessive rough fish populations in 1982. Since the rough fish removal, water clarity has improved and macrophyte populations have increased. The lake does have adequate public access and water resource objectives are established.

Waak Lake: Waak Lake is a very small (one acre) located between Carsten and Grosshuesch Lakes in the headwaters of Pine Creek. Waak Lake has no public access and no water quality

information is available. No water resource objectives will be set for the lake.

Grosshuesch Lake: Grosshuech Lake is three acres in area with a maximum depth of thirty-three feet. Limited water quality sampling indicates that the lake is eutrophic. Limited public access is available. The lake supports a marginal warmwater fishery.

Water Resource Objectives: The water resource objective for both Carsten and Grosshuesch Lakes is to improve the fishery and to improve aesthetics. A reduction in phosphorus from nonpoint sources will be required to facilitate the objectives.

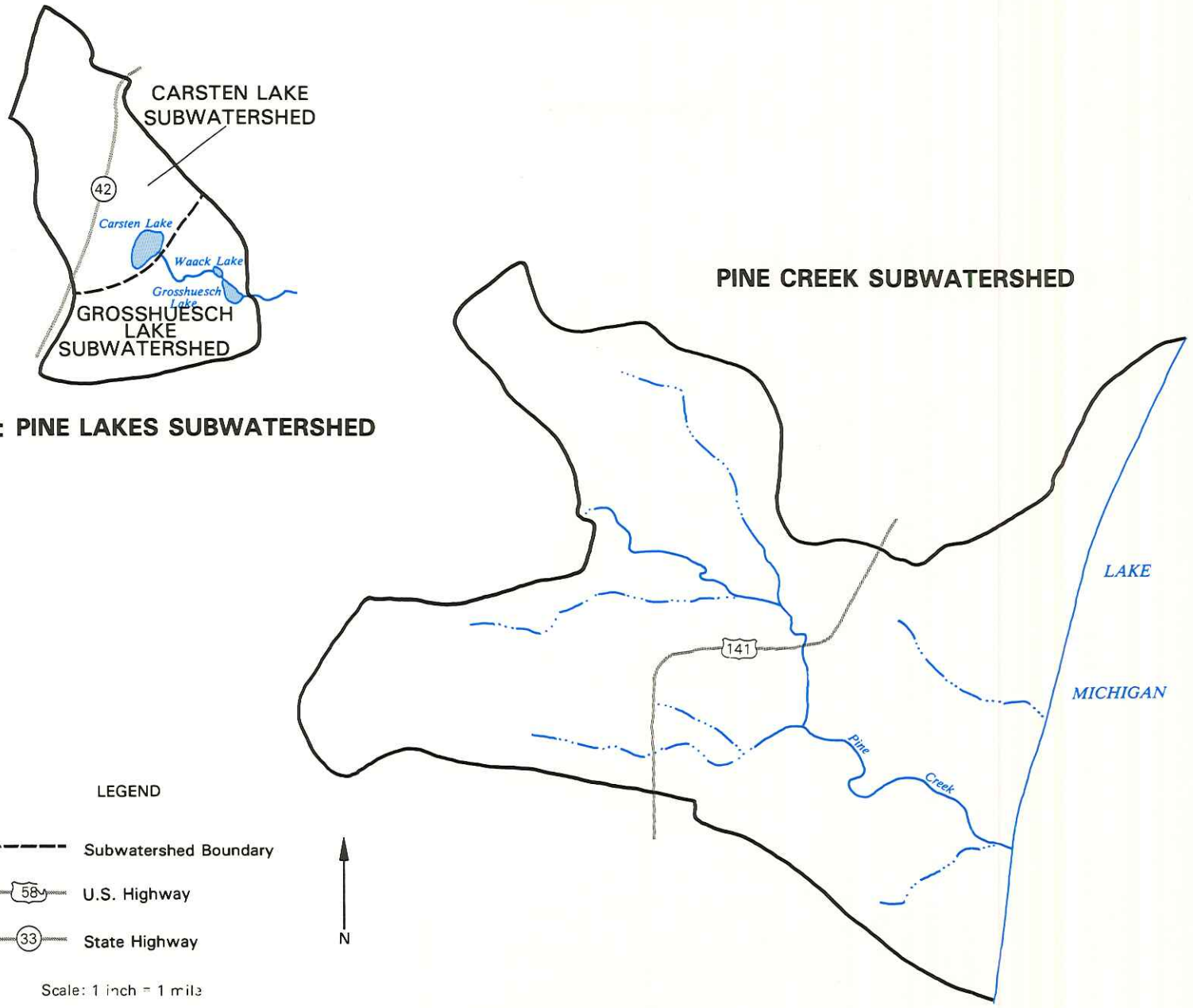
Pollution Sources: Approximately seventy percent (990 acres) of the land area in the Pine Lakes subwatershed is used as cropland. The average erosion rate of 2.9 tons per acre per year is the second highest in the Sevenmile-Silver Creek watershed. Forty-three percent (427 acres) of the cropland acres are eroding at a rate greater than 3 T/A/Y. Upland erosion is estimated to contribute approximately fifty percent of the subwatershed phosphorus loading (Table 1). The subwatershed contains six barnyards. These lots are estimated to contribute approximately thirty-six percent (includes 117 critical acres of spread manure) of the subwatershed phosphorus loading. The majority of the animal waste related loading is generated from manure spreading activities, again emphasizing the need to manage the steeper croplands. Streambank erosion is of very small magnitude in the subwatershed.

Source Management Strategy:

TABLE 11

***** POLLUTION CONTROL STRATEGY ******

PINE LAKES SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	2	0	20
BARNYARD RUNOFF	2	2	2
MANURE SPREADING	1	1	11
STREAM BANK EROSION	0		



MAP 5: PINE LAKES SUBWATERSHED

Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

7. Pine Creek Subwatershed:

General Description: The Pine Creek subwatershed is the area draining to Pine Creek from the outlet of Grosshuesch Lake to the stream terminus at Lake Michigan. The subwatershed is eleven square miles in area. The villages of Newton and Northeim are located in the subwatershed. Table A1 shows the landuse composition of the subwatershed.

Water Quality and Use: Table 2 describes the physical characteristics of Pine Creek. The upper two-thirds of Pine Creek is impacted by a sewage treatment facility and is classified as non-continuous marginal. The stream was rated as having fair habitat potential at a further downstream site. Biotic Index samples taken at the same site also indicate fair water quality. The stream's potential to support a sport fishery is severely limited by extreme low flow conditions which occur during the summer and fall. The stream does support a forage fishery. As in Calvin Creek, Pine Creek's greatest significance is as pollutant conduit to Lake Michigan and management recommendations are primarily related to Lake Michigan. However; water resource objectives are established for the creek and both lake and stream objectives will be served by the nonpoint source management.

Water Resource Objectives: The water resource objective for Pine Creek is to improve instream aesthetics and to protect the near-shore waters of Lake Michigan. Both objectives will require large reductions in pollutant loadings through the control of nonpoint sources.

Pollution Sources: Table 1 shows that the Pine Creek subwatershed is estimated to contribute approximately ten percent of the whole watershed phosphorus loading to Lake Michigan. Seventy-two percent of the land area in the subwatershed is in cropland. The average cropland erosion rate is two T/A/Y and about ten percent of the cropland acres are eroding at a rate greater than three T/A/Y. Cropland erosion is estimated to contribute slightly more than half of the subwatershed loading. The thirty-four livestock operations in the subwatershed account for the majority of the remaining phosphorus load, with 425 critical acres being annually spread with manure and the remainder being runoff from the barnyards. Several significant instances of streambank erosion were inventoried along Pine Creek. These sites contribute a small portion of the overall subwatershed loading but may have severe localized impacts on fish habitat.

Source Management Strategy:

TABLE 12

***** POLLUTION CONTROL STRATEGY ******

PINE CREEK SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	12	2	80
BARNYARD RUNOFF	6	11	11
MANURE SPREADING	3	7	83
STREAM BANK EROSION	3		

Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

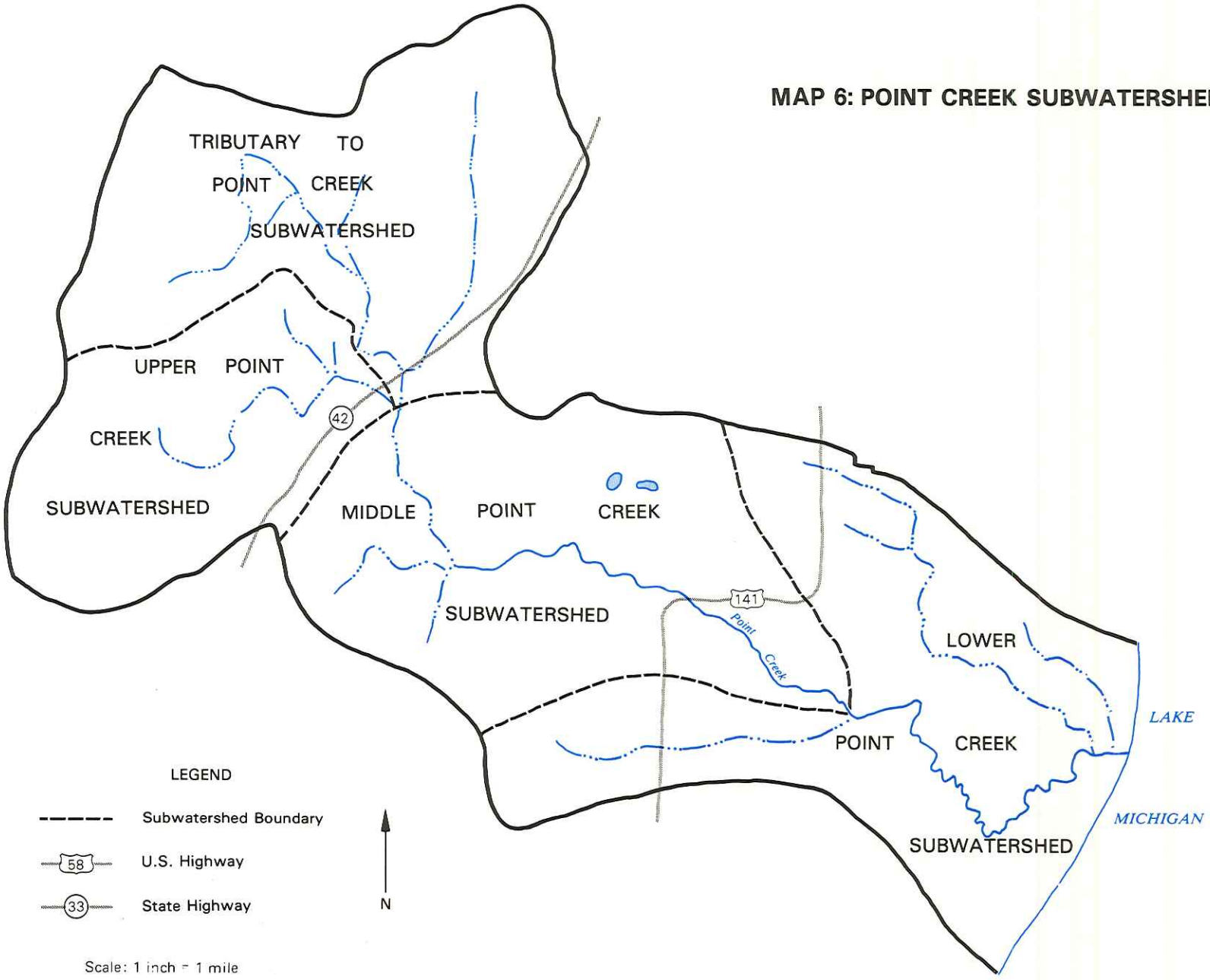
8. Point Creek Subwatershed:

General Description: The Point Creek subwatershed is the largest (twenty-two square miles) of the eleven subwatersheds in the Sevenmile-Silver Creek watershed. The subwatershed contains no named lakes or significant tributaries to Point Creek. No villages of cities are located in the subwatershed. Table A1 shows the landuse composition of the subwatershed.

Water Quality and Use: The physical description of Point Creek is contained in Table 2. Recent biotic index and habitat evaluation indicate fair water quality and habitat. Older data indicates that Point Creek contains or contained several species of fish considered to be relatively intolerant of pollution. The potential of the stream to support a sport fishery is limited by flow, although to a lesser degree than the other subwatersheds due to Point Creek's larger subwatershed area. A seasonal spawning run of Lake Michigan salmonoid species and fishing for these species does occur. Point Creek also transports pollutants to Lake Michigan and will be managed from both from this perspective and that of stream water quality.

Water Resource Objectives: The water resource objectives for Point Creek are to improve habitat and potential spawning areas in the stream and to protect the near shore area of Lake Michigan. The former goal will require a reduction in sediment

MAP 6: POINT CREEK SUBWATERSHED



loading to the stream and the second objective will require a reduction in phosphorus loading from the subwatershed.

Pollution Sources: The Point Creek subwatershed produces twenty-three percent of the whole watershed phosphorus loading. Although the higher loading is in part due to the larger size of the subwatershed, agricultural landuse is very intensive with the potential for pollution from both animal waste and upland erosion sources higher than in other subwatersheds. Seventy-seven percent of the subwatershed area is used for cropland. Approximately forty percent of the cropland is eroding at a rate greater than three T/A/Y. Cropland accounts for about one-half of the subwatershed phosphorus loading. Eighty-three livestock operations exist in the subwatershed. The barnyards are responsible for twenty-eight percent of the phosphorus from the subwatershed. Approximately 1200 critical acres are spread with manure each year, accounting for sixteen percent of the phosphorus loading. In addition, significant streambank erosion and cattle access sites contribute to localized sedimentation problems.

Source Control Strategy:

TABLE 13

***** POLLUTION CONTROL STRATEGY ******

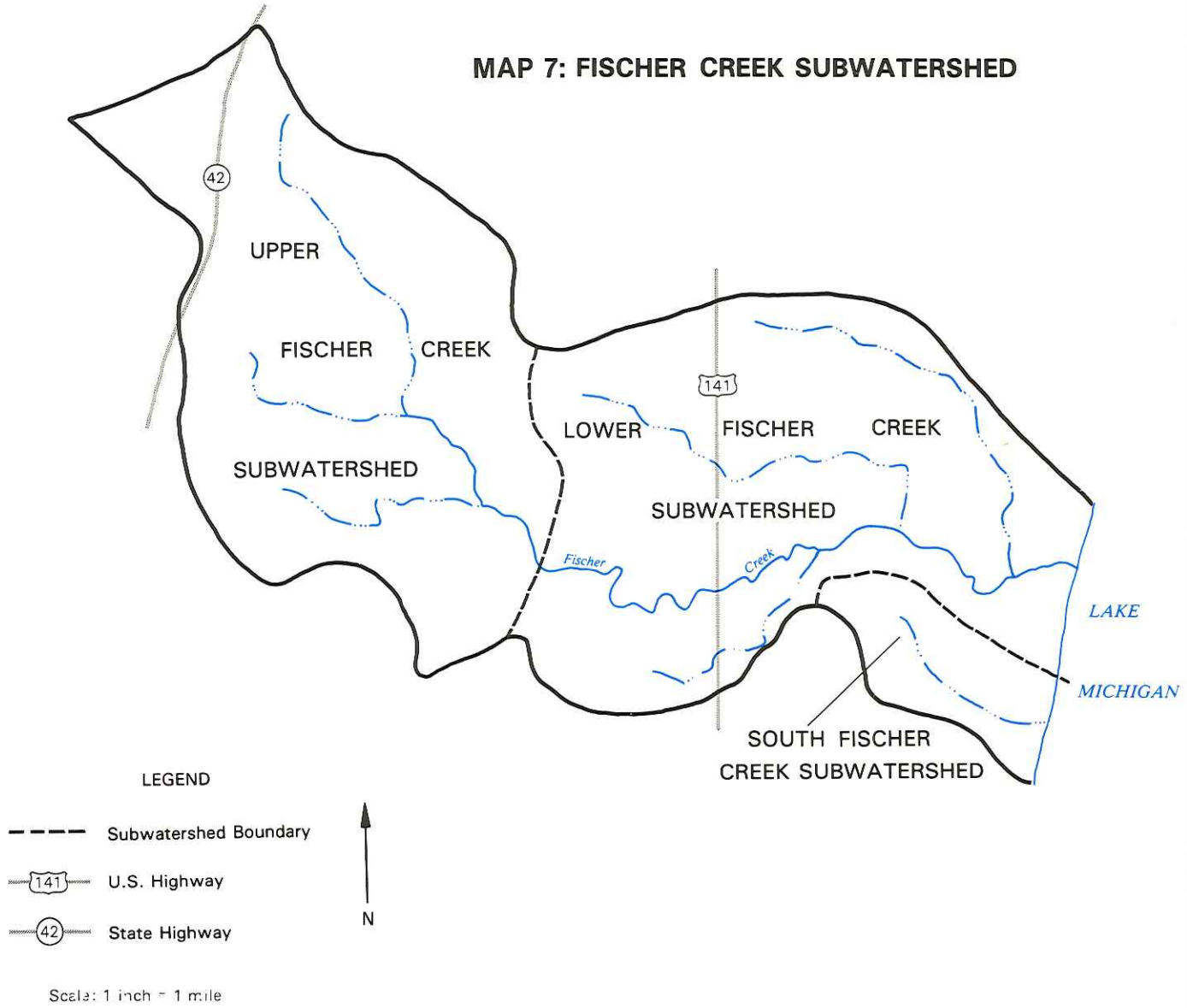
POINT CREEK SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	26	11	87
BARNYARD RUNOFF	18	23	42
MANURE SPREADING	12	13	96
STREAM BANK EROSION	4		

Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

9. Fischer Creek Subwatershed:

General Description: The Fischer Creek subwatershed is eleven square miles in area. Table A1 shows the landuse composition of the subwatershed. The Village of Osman is located on the western boundary of the subwatershed. There are no lakes or named tributaries to Fischer Creek.

MAP 7: FISCHER CREEK SUBWATERSHED



Water Quality and Use: Fischer Creek is described in Table 2. Fischer Creek originates near the Village of Osman and flows approximately six miles to Lake Michigan. Fischer Creek supports a forage fishery with some seasonal migration of Salmonoid species from Lake Michigan. The fishery is limited by low flow conditions during the summer and fall. Stream habitat surveys indicate poor habitat conditions primarily due to siltation of pools. Siltation inhibits fish spawning and may have acute impact on fish respiration. Recent biotic index sampling indicates a diverse macroinvertebrate community at the sampling site. Such diversity is indicative of adequate dissolved oxygen levels in the stream and implies that organic pollution is not critical in limiting the streams potential to support aquatic organisms.

Water Resource Objectives: The water resource objectives for Fischer Creek are to improve habitat and potential spawning areas in the stream and to protect the near shore area of Lake Michigan. The former goal will require a reduction in sediment loading to the stream and the second objective will require a reduction in phosphorus loading from the subwatershed.

Pollution Sources: Eighty-seven percent of the land area in the Fischer Creek subwatershed is cropland landuse. The upland erosion rate averages less than three T/A/Y; however, slightly more than 2000 acres are eroding at a rate greater than three T/A/Y. Cropland accounts for approximately fifty percent of the phosphorus loading from the subwatershed. The subwatershed contains forty-four livestock operations, which produce the majority of the remaining phosphorus load through a combination of direct lot runoff and runoff from manure spread fields. Several sites of significant cattle access to the stream occur in the subwatershed.

Source Control Strategy:

TABLE 14

***** POLLUTION CONTROL STRATEGY ******

FISCHER CREEK SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	17	4	60
BARNYARD RUNOFF	9	14	21
MANURE SPREADING	5	9	63
STREAM BANK EROSION	4		

Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

10. Centerville Creek Subwatershed:

General Description The Centerville Creek subwatershed is a small (7.5 square miles) drainage area in the southern portion of the Sevenmile-Silver Creek Watershed. The subwatershed is primarily in Manitowoc County with a small portion of the area in Sheboygan County. The subwatershed contains the Villages of Cleveland and Hika. Centerville Creek is approximately four miles in length and is impounded at it's mouth to form the Centerville Flowage at the Village of Hika. No other lakes or streams occur in the subwatershed. Table A1 shows the landuse composition of the subwatershed.

Water Quality and Use:

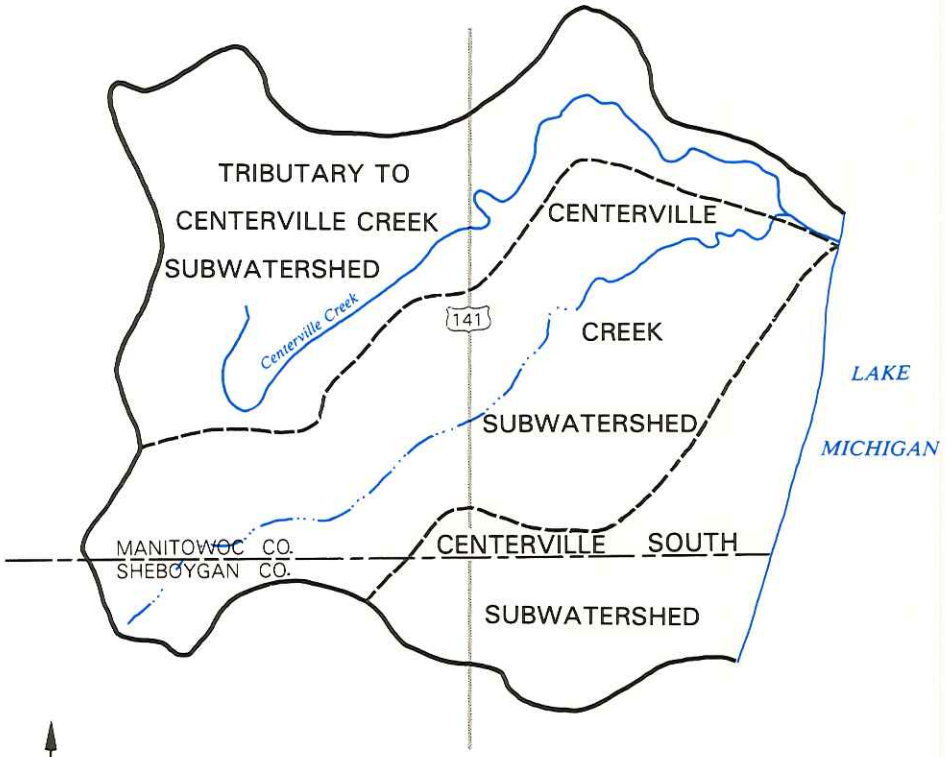
Centerville Flowage: Centerville Flowage is an eight acre impoundment near the mouth of Centerville Creek in the Village of Hika. The flowage is created by an eleven foot dam and has a maximum depth of fifteen feet. Very little information is available concerning the water resource conditions and fishery in the flowage. The water in the flowage is turbid due to sedimentation and the action of carp stirring the bottom sediments. The flowage is used for fishing and swimming.

Centerville Creek: Table 2 summarizes the physical characteristics of Centerville Creek. Centerville Creek experiences extremely low flows for the majority of the year. The creek supports a forage fishery. Stream habitat rating at three sites indicate fair to poor habitat, reflecting the very low flow and significant sedimentation in pools. Biotic index samples showed good to very good diversity of aquatic insects, indicating adequate dissolved oxygen levels. Centerville Creek's primary significance is as a pollutant conduit to Lake Michigan.

Water Resource Objectives: The water resource objective for Centerville Flowage is to improve aesthetics. The obtainment of the objective will require a reduction in sediment and phosphorus loading to the flowage. The water resource objective for Centerville Creek is to improve the forage fishery and aesthetics. Reductions in sediment and phosphorus loadings will be required to obtain the stream objective and will also support the flowage objective. The overall objective of protection of the near-shore waters of Lake Michigan will also be supported by these pollutant reductions.

Pollutant Sources: The Centerville Creek Subwatershed accounts for nine percent of the whole watershed phosphorus loading to

MAP 8: CENTERVILLE CREEK SUBWATERSHED



LEGEND

- Subwatershed Boundary
- 33 U.S. Highway
- County Boundary

N

Scale: 1 inch = 1 mile

Lake Michigan. Sixty-five percent of the subwatershed land is used for cropland, considerably less intensive use than other portions of the watershed. The subwatershed contains a higher percentage of woodland and suburban area than the majority of the other subwatersheds. The average cropland erosion rate is 3.4 T/A/Y, the highest of the eleven subwatersheds. Approximately one-half of the cropland acres are eroding at a rate greater than three T/A/Y. Cropland is estimated to account for one-third of subwatershed phosphorus generation. Twenty-four livestock operations are present in the subwatershed. These operations produce about two-thirds of the phosphorus loading. The inventory indicates that an average of 325 critical acres are spread with manure each year. Sites of significant streambank erosion are present, but produce a fairly small portion of the phosphorus load: however, these sites may be important to control for purposes of sediment reduction.

Source Control Strategy:

TABLE 15

***** POLLUTION CONTROL STRATEGY ******

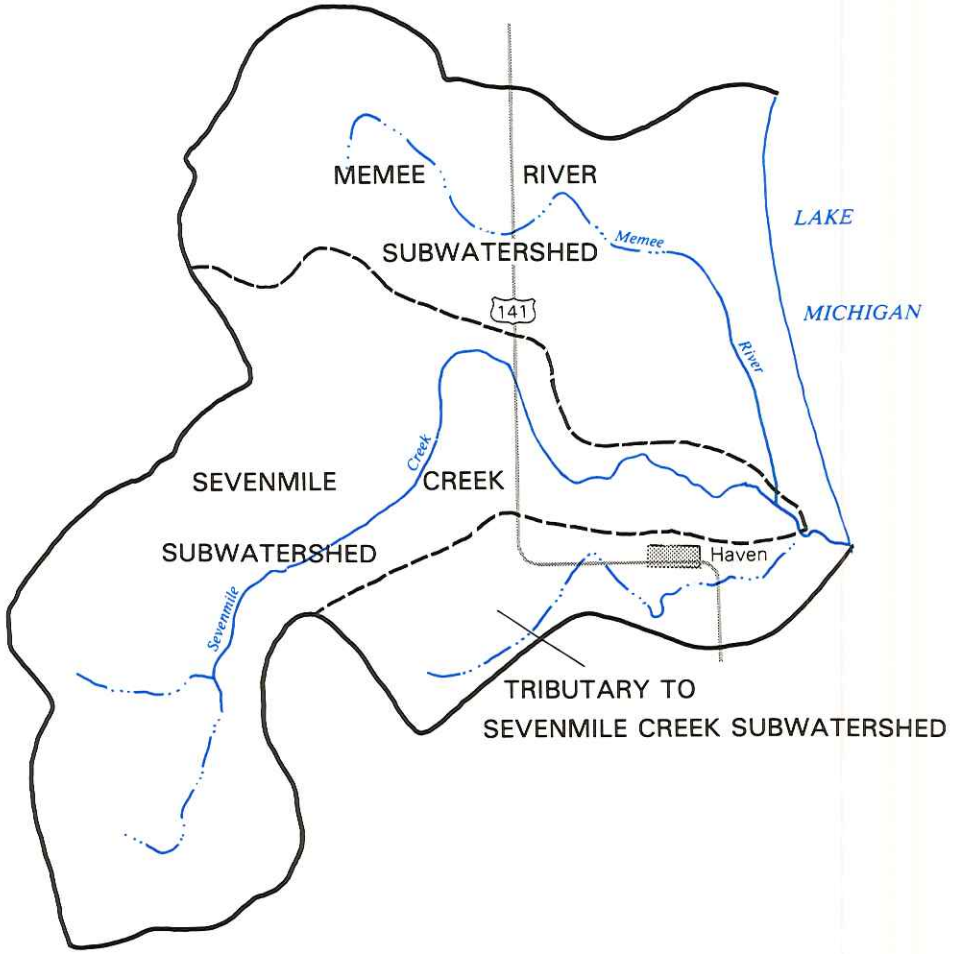
CENTERVILLE CREEK SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	13	6	33
BARNYARD RUNOFF	7	9	8
MANURE SPREADING	1	7	43
STREAM BANK EROSION	3		

Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

11. Sevenmile Creek Subwatershed:

General Description: The Sevenmile Creek subwatershed is ten square miles in area and contains both Sevenmile Creek and the Memee River. The subwatershed is in Sheboygan County and contains the Village of Haven. The Village of Howards Grove lies just outside of the subwatershed to the west. No lakes occur in the subwatershed and the entire area drains to Lake

MAP 9: SEVENMILE CREEK SUBWATERSHED



LEGEND

- Subwatershed Boundary
- 33 U.S. Highway
- Incorporated Area

N

Scale: 1 inch = 1 mile

Michigan. Table A1 shows the landuse composition of the subwatershed.

Water Quality and Use: The Memee River is an intermittent tributary entering Sevenmile Creek approximately one-half mile upstream from the mouth at Lake Michigan. No information is available concerning the water quality or fishery of the Memee River. The Memee River is limited by low flows most of the year and it is very unlikely that a significant fishery exists. The fishery in Sevenmile Creek consists of pollution tolerant forage fish. Stream habitat assessments indicate fair habitat: however, both biotic index values at one site were very poor indicating that macroinvertebrate populations are impacted by organic pollution lowering dissolved oxygen values. Dissolved oxygen readings obtained in conjunction with the habitat survey were depressed further supporting that organic pollution of the stream is occurring. The ability of Sevenmile Creek to support a viable fishery is further limited by extreme low flow. Table 2 summarizes the physical characteristics of Sevenmile Creek.

Water Resource Objectives: In addition to the overall objective of protection of the near-shore areas of Lake Michigan, the objectives for Sevenmile Creek (including Memee River) are to improve the forage fishery and improve aesthetics.

Pollutant Sources: The Sevenmile Creek subwatershed produces approximately eleven percent of the watershed phosphorus loading to Lake Michigan. Cropland use is very intensive, with ninty-five percent of the land surface being used for cropping. Average upland erosion rates are low , approximately two T/A/Y, and about one-fourth of the croplands are eroding at a rate greater than three T/A/Y. Thirty-five livestock operations contribute one-third of the phosphorus loading through lot runoff and manure spread on 325 critical acres. Stream bank erosion is more severe in the subwatershed than most others and contributes to stream sedimentation.

Source Control Strategy:

TABLE 16

***** POLLUTION CONTROL STRATEGY ******

SEVENMILE CREEK SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	9	4	50
BARNYARD RUNOFF	6	10	19
MANURE SPREADING	2	5	55
STREAM BANK EROSION	0		

Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

12. Southern Tributaries Subwatershed:

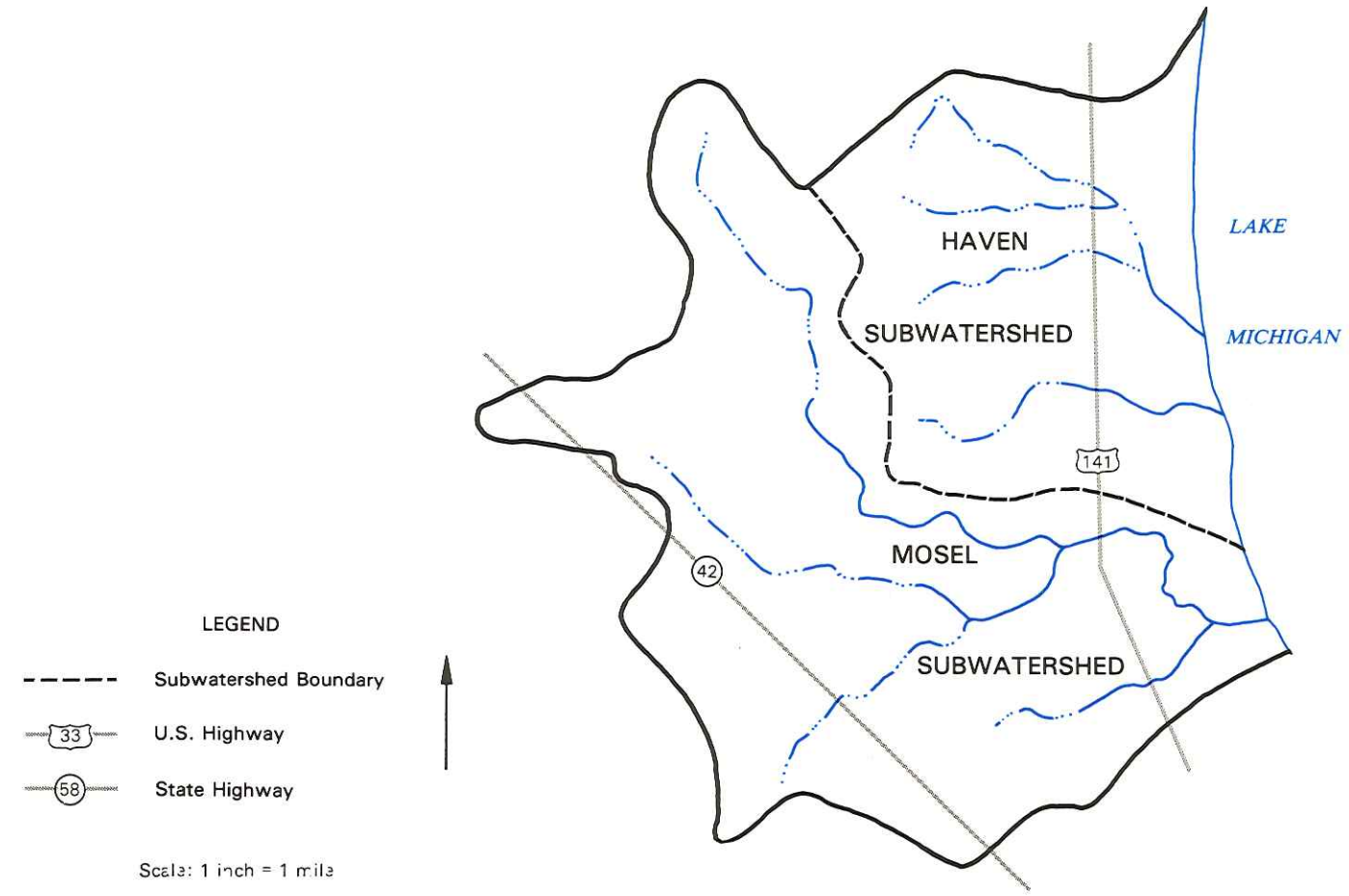
General Description The Southern Tributaries subwatershed encompasses the eight square mile area north of the City of Sheboygan and south of the Village of Haven. The subwatershed contains the Villages of Erdman and Mosel. The subwatershed contains no named streams or lakes. Approximately, three linear miles of intermittent streams are present in the area. Table A1 shows the landuse composition of the subwatershed.

Water Quality and Use: The streams in the Southern Tributaries subwatershed are very small and are dry for most of the year. No fish populations are present and no water quality data is available. The subwatershed is of concern because of pollutant transport during high flows to Lake Michigan.

Water Resource Objectives: The water resource objective for the Southern Tributaries Subwatershed is to protect the near-shore waters of Lake Michigan.

Pollutant Sources: The Southern Tributaries subwatershed contributes approximately seven percent of the whole watershed phosphorus loadings. The majority of this loading is generated from about 6000 acres of cropland, which constitutes almost 100 percent of the landuse. Upland erosion rates are low (2.2

MAP 10: SOUTHERN TRIBUTARIES SUBWATERSHED



T/A/Y) and only seventy-two acres are eroding at a rate greater than three T/A/Y. Twenty livestock operations are present in the subwatershed. These operations,including manure spreading, account for only about twenty percent of the phosphorus generated in the subwatershed. Isolated cases of streambank erosion occur but generate a very small portion of the phosphorus load.

Source Control Strategy:

TABLE 17

***** POLLUTION CONTROL STRATEGY ******

SOUTHERN TRIBS. SUBWATERSHED	NUMBER OF LANDOWNERS		
SOURCE TYPE	MANAGEMENT CATEGORY I	MANAGEMENT CATEGORY II	MANAGEMENT CATEGORY III
UPLAND EROSION	13	2	71
BARNYARD RUNOFF	3	4	13
MANURE SPREADING	0	3	79
STREAM BANK EROSION	4		

Table A5 illustrates the amounts and types of sheet and rill erosion control practices required to control the management category I and II upland erosion sites.

IMPLEMENTING THE MANAGEMENT PLAN

I. INTRODUCTION

The purpose of this portion of the plan is to serve as a guide for the efficient implementation of the recommendations which were identified in the Management Plan.

This Implementation Plan identifies:

1. The tasks necessary to implement the recommendations in the Management Plan;

2. The agencies and units of government responsible for carrying out those tasks;

3. The time frame for completion of those tasks;

4. The type and amount of staff needed;

5. The cost of carrying out the project; and

6. The information - education program.

The general procedure used for achieving the water quality objectives identified in the Management Plan is through the voluntary installation of corrective land management practices to control the critical nonpoint sources. Cost-share funds are provided to contract with landowners to cover a percentage of the costs of installing the practices. In addition, funds are made available to the local agencies to cover the accelerated work effort required to carry out their responsibilities.

II. AGENCIES INVOLVED AND THEIR RESPONSIBILITIES

A. Management Agencies

Management Agencies are those local units of government identified in the areawide water quality management plans as having responsibility for soil and water conservation, including implementation of best management practices to improve water quality. For unincorporated areas, the Manitowoc and Sheboygan County Boards will serve as the management agencies for their respective counties. These counties are being represented by their respective Land Conservation Committees (LCC's). The Cities of Manitowoc and Sheboygan and the Village of Cleveland are the identified management agencies for nonpoint source responsibilities within their respective incorporated limits. The cities and villages are singled out because the county's authority does not extend into incorporated areas. Together these units of government are able to provide project cost-share funding to landowners and install practices on public lands.

In the Sevenmile-Silver Creek Watershed the majority of the nonpoint source concerns are in the rural, unincorporated areas of the project. For this reason, the management agencies with most of the responsibilities will be the counties through their LCC's.
The Manitowoc County Land Conservation Committee and the Sheboygan County Land Conservation Committee ,acting for their respective county boards are the primary management agencies for the Sevenmile-Silver Creek Watershed Project. The two counties are contractually and financially responsible to the State of Wisconsin for overall management of the project, and are responsible for coordinating activities of any other management agencies which become involved.

The specific responsibilities for the management agencies, which are defined in the Wisconsin Administrative Rules, NR 120.04, are summarized below:

1. Identify in writing a person to represent the management agency during watershed plan development.

2. Assist with the development and approval of the priority watershed plan.

3. Prepare a detailed program for implementation as described in NR 120.08(3).

4. Recommend revisions to the plan to allow for necessary changes as the project is implemented.

5. Identify in writing a person to represent the unit of government during implementation of the watershed project.

6. Carry out education and information programs about nonpoint source pollution and land management needs within the watershed project area.

7. Maintain fiscal responsibility for the use of cost share funds provided to cost share recipients through cost share agreements.

8. Prepare and maintain adequate fiscal management and technical assistance files as described in NR 120.25 and 120.26.

9. Administer the cost-sharing element of the project including sign-ups, approval, authorization of payments, and record keeping.
10. Periodically submit to the DNR a list of cost share agreements that the management agency believes are eligible for extension under NR 120.13(8)(a).

11. Provide the DNR with evidence of properly certified practice installation, operation, and maintenance.

12. Provide best management practice design and installation assistance for all best management practices in cost share agreements within its jurisdiction.
13. Contact within one year of the signing of the Nonpoint Source Grant Agreement all owners or operators of lands identified as significant nonpoint sources in the watershed plan.

14. Coordinate and control nonpoint source program cost-sharing monies with local cost-sharing funds.

15. Prepare and submit to the DNR for approval annual or periodic workplans for activities necessary to implement the watershed project in accordance with the detailed program for implementation.

16. Report to DNR on project progress and recommended project modifications;

17. Determine priority for assistance among cost share grantees.

All of these activities may be carried out by the management agencies or by delegation to other agencies of units of government. The management agencies are still responsible for the activities whether they are done by the management agency or delegated to another agency.

B. Cooperating Agencies

In addition to the management agencies, the Sevenmile-Silver Creek Priority Watershed Project will receive assistance from the other agencies listed below.

1. Soil Conservation Service (SCS): This agency works through the local Land Conservation Committee for the Counties. The SCS provides technical assistance for installing conservation practices. The County SCS personnel worked with other project personnel to provide inventories of conservation needs, and estimated costs of best management practices. They also will aid the county in planning, designing, layout, supervision, and certification of practice installations.

2. University of Wisconsin Extension (UWEXT): County Extension agents will provide expertise in planning, coordinating and conducting public information, education, and participation efforts. UW-Extension will also assist the counties in the development of watershed tours, workshops, newsletters,and other educational activities necessary to assure adequate program participation.

4. Department of Natural Resources (DNR): The Department has overall administrative responsibility for the Wisconsin Nonpoint Source Water Pollution Abatement Program of which the Sevenmile-Silver Creek Priority Watershed is part. The DNR is responsible for allocation of funds to the project, for water quality and fish surveys and for evaluation of the watershed project.

III. BEST MANAGEMENT PRACTICES

A. Eligible Practices

Those land management practices which will effectively control the nonpoint sources of pollution are called best management practices (BMPs). The practices eligible for the Sevenmile-Silvere Creek Watershed project for cost-sharing under the Wisconsin Fund program are listed in Table 18. The cost-sharing rates which were determined by the LCC range from 50% to 70% and fall within the maximum state cost-share rates established for the Nonpoint Source Program in Administrative Rule NR 120.

TABLE 18: Maximum BMP Cost Sharing Rates
(Reference NR120.18)

Practice	Maximum Cost Sharing Rate	
Contour Cropping	50%	(flat rate of $6/ac)
Strip Cropping (1)	50%	(flat rate of $12/ac)
Reduced Tillage	50%	(2)(3)
Waterways	70%	
Field Diversions	70%	
Terraces	70%	
Critical Area Stabilization	70%	
Grade Stabilization Structures	70%	
Shoreline Protection	70%	
Barnyard Runoff Management	70%	
Short-term Manure Storage	70%	($6000 maximum)
Long-term Manure Storage	70%	($10,000 maximum)
Roofs for Barnyard Runoff Management & Manure Storage	70%	
Livestock Exclusion from Woodlots	50%	
Structural Urban BMPs	70%	

(1) $10/ac for field strip cropping.

(2) $15/ac for one year only for reduced tillage on crop rotations involving hay.

(3) $45/ac over three years for reduced tillage on continuous row croplands.

(4) Management Agencies may increase the state costshare rate up to 80% for: critical area stabilization, grade stabilization structures, shoreline protection, roofs for animal lots and manure storage facilities as per the conditions of s. 144.25(8)(h).

The BMPs included in Table 18 are those practices which will help meet the water quality objectives set for the watershed. The specifications used for these practices must meet the Soil Conservation Service requirements concerning technical design. The Department may identify alternative design criteria or standards and specifications where an alternative will achieve an equal or greater level of pollutant control.

Under some circumstances, practices may be recommended that are not included on the BMP list. Administrative Rule NR 120.15provides for alternative practices where necessary to to meet the water resource objectives identified in the watershed

plan. The Department 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 alternative best management practice. Below is a brief description of some of the common best management practices and where they are used. Although some other practices may also be appropriate, only those anticipated to meet the most typical situations in the watershed are included in this list. A more detailed description of the practices, and the conditions under which they are cost-shared is given in the Department's Administrative Rules NR 120 which is on file at the county offices.

1. Contour Cropping -Contour Cropping is farming on sloped land so all cultural operations from seed bed preparation to harvest are done on the contour.

2. Contour Strip Cropping - This practice involves rowing crops on the contour of the land in alternated swaths generally of corn, oats, and hay. Contour strip cropping can be used for field that are currently in a hay row crop rotation with high levels of erosion. This normally applies to dairy operations.

3. Terraces and Diversions - These are earthen berms constructed to: a) divert excess water to sites where it can be transported with minimal erosion; and b) up slope lengths on cropland in order to reduce soil loss.

4. Grassed Waterways - A constructed water course shaped, graded, and established in a suitable vegetative cover as needed to prevent erosion by runoff waters. This practice can be used to stabilize small gullies on croplands.

5. Reduced Tillage - Reduced tillage is a cropping system which leaves roughened surfaces or substantial amounts of crop residue in or on the soil surface after crops are planted. Generally, the system consists of no more than using one primary tillage pass in the fall or spring and no more than two passes with light or secondary tillage equipment prior to planting. Several important conditions apply to the use of the reduced tillage practice; these are explained in detail in NR 120.14.

6. Critical Area Stabilization - Planting suitable vegetation, such as trees or permanent grass on highly erosive areas. These areas may include: roadsides, gullies, intermittent stream channels, and steeply sloped lands.
A special category under this practice is stabilization applied to pastured areas. This practice applies to severely over-grazed pastures with high soil loss. It includes the establishment of a permanent vegetative cover and the installation of permanent and/or moveable fencing to control the livestock access to the various areas of the pasture. The

practice must include a management plan for the landowner to follow in order to insure that the pasture is managed in such a way that erosion above 4 t/ac/yr does not occur.

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

8. Shoreline Protection - This practice involves several measures designed to stabilize and protect the banks of streams against erosion. Specifically this practice could include: fencing to control livestock access to streams, rip rap, livestock or machinery stream crossings, and shaping and seeding of eroded banks.

9. Barnyard Runoff Management - Barnyard runoff management is the use of structural measures such as gutters, downspouts and diversions to intercept and redirect surface runoff around the barnyard, feeding area or farmstead, and collect, convey and temporarily store runoff from the barnyard, feeding area or farmstead.

10. Long-term Manure Storage Facilities - A structure for storage of manure through the winter and early spring. Several important conditions apply to this practice and are detailed in NR 120.14.

11. Short-term Manure Storage Facilities.- A structure for the storage of manure for the period of snow melt and when the soils are saturated during early spring.

12. Roofs for Barnyard Runoff Management and Manure Storage Facilities -A roof and supporting structure designed specifically to prevent rain and snow from contacting manure.

13. Livestock Exclusion from Woodlots - The protection of woodlots by fencing of other means.

14. Structural Urban Best Management Practices -Measures such as constructed infiltration areas, infiltration trenches, detention basins and porous pavement designed to control runoff rate or volume as a means to reduce the amounts of pollutants carried in the runoff.

B. Cost-Sharing Guidelines

Cost-share funding is available to landowners for a percentage of the costs of installing the best management practices on their land that are necessary to control nonpoint sources identified as significant in the watershed plan. Landowners have three years to sign up for cost-share assistance after the formal approval of the watershed plan and the implementation phase of the project has begun. NR 120.10 details the

practices, sources, and activities which are eligible or ineligible for cost share assistance.

For certain areas within the project, local, state, or federal permits may be needed in order to install some of the management practices. The land areas most likely to require permits are the zoned wetlands of a county and the shoreline of streams and lakes. These permits are required regardless of whether the activity is associated with the watershed project or not. The Planning and Zoning Office or the Land Conservation Office in each county should be consulted to determine if any permits are required in specific cases.

C. The Cost-Share Agreement

1. Contents of the Agreement

The cost-share agreement (see Appendix B for an example) is defined as an agreement listing the best management practices and establishing the conditions and considerations under which a cost share recipient agrees to install the practices listed consistent with the watershed plan. The cost share agreement is a legal contract between the participating city, county or village and the individual grantee. Costshare Agreements must be signed subsequent to the signing of the nonpoint source grant agreement and prior to practice initiation. The cost-share agreement includes: name and address of the grant recipient, the number and types of practices that are needed, installation schedule, a statement of maintenance requirements, estimated practice costs, cost-share percentage rate, and estimated cost-share reimbursement amount. The agreements also include practices which are needed to meet water quality objectives but are not cost-shared under the Nonpoint Source Program (such as crop rotation). Once the agreement is signed, the landowner has up to five years to install the practices (depending upon the schedule agreed to on the cost share agreement form.

2. Failure to Fulfill the Agreement

Once the cost share agreement has been signed by both parties, both parties are bound to carry out the provisions contained in the agreement. If the cost share grant recipient fails to fulfill any terms of the cost share agreement, including failure to install operate and maintain the practices of the agreement, the full amount of cost share funds received by the cost share recipient must be repaid in full to the granting management agency. The management agency will forward the recovered cost share funds to the DNR.

3. Change in Ownership

If a change in ownership or land management occurs during the cost share agreement period, repayment of cost shared funds by

the recipient is required unless at least one of the following conditions exists: 1) the new owner assumes in writing the operation and maintenance of the BMPs; 2) it is demonstrated to the satisfaction of the management agency that the change in land use or management will not result in degradation of existing water quality.

IV. ADMINISTRATIVE PROCEDURES

A. Introduction

Upon written approval of the priority watershed plan and the detailed program for implementation by the DNR and the management agencies the implementation phase of this project may be initiated. During the implementation phase of the project the management agencies and the DNR are guided and bound by two agreements which are signed by the Department and the management agencies. These two agreements, and the procedures by which they will be administered are discussed in detail below.

B. Administering the Cost Share Funds

1 . DNR - Management Agency Procedures

Cost-share funds are transferred from the state to the management agencies by the Nonpoint Source Grant Agreement (see Appendix B for a copy of this form). The Grant Agreement controls the cost share funds and does not address funding for local assistance to implement the project or educational funds. More than one Nonpoint Source Grant Agreement may be awarded to a single project. In the Sevenmile-Silver Creek project two agreements will be awarded; one with Manitowoc County and one with Sheboygan County.
Several items are defined on this agreement including:

1. The parties of the agreement (DNR and the Counties)
2. The name of the Priority Watershed Project the agreement relates to.
3. The amount of the agreement
4. The eligible period for entering into cost-share agreements
5. The effective period of the grant
6. Eligible practices which can be cost-shared
7. The sites eligible for the cost-sharing assistance
8. The conditions which the DNR and the Counties must follow

Advance money (up to ten percent of the grant amount) will be available to the management agencies through the Grant Agreement,in order to establish the watershed cost share fund account in the county. In this way, the landowners can be rapidly reimbursed for the installed practices directly from the county.
As landowners are reimbursed by the county for completed practices and the balance is depleted, the lead management

agencies will forward the appropriate documents to DNR. The Department will in turn reimburse the county so that the county's account always has a positive balance. The necessary documentation for a reimbursement request from the county includes: 1)the "Cost-share Calculation and Practice Certification Form" (Form #3200-53) for each landowner that was reimbursed, 2) a "Request for Advance or Reimbursement Form" (Form #3400-70) which indicates total prior pay requests and the amount of reimbursement being requested, and 3) a "Reimbursement Claims Worksheet" (Form #4400-47) which lists the landowners that were paid from the reimbursement request. Examples of these forms are included in Appendix B.

The initial amount of the Nonpoint Source Grant Agreement is less than the project will need throughout the project period. The agreement will be amended to increase this "grant amount" as practices are cost shared. At no time can the total costs of the practices under cost share agreement exceed the total amount of funds in the Grant Agreement.

2. Inter-County Procedures

Individual nonpoint source grant agreements will be established between the DNR and both Manitowoc and Sheboygan Counties. Each county will send reimbursement checks directly to the landowners in their respective counties after the proper documentation has been submitted and approved by the LCC.

Although many of the responsibilities of the fiscal management can be contracted to other agencies, the Counties remains responsible for insuring that the fiscal management activities are carried out in accordance with NR 120.

3. Intra-County Procedures

Within each county of the project, a procedure has been established for the administration of cost share funds from the time a landowner is contacted to the time the landowner is reimbursed for an installed management practice.Cost-Share Fund Reimbursement Procedures: Manitowoc and Sheboygan Counties

1. Landowner and conservation planner meet to discuss watershed project and landowner's management practice needs.
2. Landowner agrees to participate in the project
3. Conservation Plan (if necessary) is prepared by the SCS or LCD.
4. Landowner agrees to the plan and a Cost Share Agreement (form 3400-68) is signed by the landowner and the County,after approval
   by the LCC>
5. LCD files a copy of the costshare with the Register of Deeds.

6. Practices designed by SCS or the LCD, copy of the design delivered to the landowner.
7. Landowner obtains contractor.
8. SCS or LCD lay out the practices if necessary
9. Contractor installs practice.
10. SCS or LCD certifies installation (form 3200-53)
11. Landowner submits paid bills and cancelled checks to the county LCD office
12. Both Counties LCDs prepare vouchers for bills from their respective counties..
13. Both counties bookkeeping issues checks on approved vouchers.
14. LCD records check amount, number, date on form 3200-53.
15. Check mailed out by LCDs with appropriate county cover letter directly to the landowner for each of the two counties.

C. Administering the Local Assistance Funds

The local assistance grant agreement is defined by NR 120.21 as an agreement between the DNR and the city, county, village, a state agency, or an agent acting on behalf of the city, county, village, or state agency for providing funds for activities necessary to implement the priority watershed project and requiring additional staff, increased hours of existing staff or requiring the grantee to incur direct costs. The amount of increased activities required to support project activities in a manner consistent with project scheduling is determined based on the amount of BMPs estimated to be required to meet the objectives of the project as stated in the watershed plan. The local assistance agreement is amended annually based on activities in annual workplans submitted by the management agencies. NR 120.21 details eligible and ineligible activities for local assistance funding. Eligible activities include: labor required by the management agency to contact landowners of critical nonpoint sources, identify site-specific BMPs to control the sources, develop and review cost share agreements, design and install BMPs, review BMP operation and maintenance, prepare information and education material, conduct educational activities, and other activities approved by the Department. In addition; certain direct costs incurred by the management agencies are eligible for funding under the local assistance agreement.

Local assistance funds are not directly available to fund existing staff working on the priority watershed project. However; work hours of additional staff may be used to offset the hours spent by existing staff on the watershed project.

A basic premise of the local assistance agreement is that each management agency contribute a certain amount of their existing staff's time to the project. Therefore; the activities of

fiscal and project management are not eligible for reimbursement under the local assistance agreement. Fiscal management includes but is not limited to grant accounting, preparing ledgers, processing reimbursement requests, and the typing of cost share agreements. Project management includes but is not limited to preparing the annual workplan, and scheduling meetings with DNR and other agency staffs.

D. Project Tracking

The complex nature and long duration of the Sevenmile-Silver Creek watershed project dictate the need for a detailed tracking system. This system will be used to keep up to date on the accomplishments, the work yet to be done, and it will help to schedule activities in the future.

The following information will be recorded for the purpose of project tracking:

1. Landowner contacts: who has been contacted; when; what is their management category; who is left to contact;
2. Update of inventory information: if changes have occurred from the inventoried conditions these changes should be noted
3. Landowner contracts: what sources were controlled; what the new pollutant levels are (new erosion rate, phosphorus runoff, etc.); what does this represent in terms of the objectives set for each subwatershed.
4. Status of the Cost-Share Agreement: what has been designed, installed, certified, and reimbursed; is the schedule of installation still accurate?

The Department and the Counties have agreed on the format for two forms to be used to assist in tracking the project. Examples of both of these forms are in Appendix B. The first form is the "Landowner List". This is a list of all the rural landowners in the project, their management category for each of the inventoried pollutant sources, and spaces for writing in the dates of contact, and if a contract is signed. This list will be kept by each county, will be updated on a quarterly basis and will be made available for Department review.
The second form is a "Landowner Tracking Form". This form is filled out after the landowner has been contacted. Space is provided for the landowner name; location; and comments from the county field person after each contact. There is also a section for updating the landowners inventory situation if the inventory information is no longer accurate. Finally, if a Cost-Share Agreement is signed with the appropriate management practices, there is space to record the "after" situation of the source conditions. These forms will be kept in the county and made available to the Department for evaluation of the project's progress.

V. PROJECT COSTS

A. Management Practice Needs and Costs

The Best Management Practices needed in the Sevenmile-Silver Creek Watershed are listed on Table 19. The quantities of BMPs needed were estimated based on the assumptions outlined on the pages following the table. The estimated costs for each unit of practice were made based on the county's experience and the costs of similar practices in other watershed projects. For 100% landowner cooperation, the estimated state cost-share is approximately 2.4 million dollars. Because 100% participation is not probable due to the voluntary nature of the Wisconsin Nonpoint Source Water Pollution Abatement Program, a participation level of 75% has been shown to more accurately estimate the budget needs.

The procedures for estimating practice needs in the Sevenmile-Silver Creek Watershed are described on the pages following the table. The estimates on Table 19 are for the total needs, not necessarily what is feasible or practical to accomplish given the limitations on time and money.

Table 19: Estimated Practice Needs and Costs in the Sevenmile-Silver Creek Watershed Project

PRACTICES	ESTIMATED QUANTITY	COST/UNIT $	TOTAL COST $	COST SHARE RATE	TOTAL COST SHARE AMOUNT $
Contour Farming					
Manitowoc Co.	282 ac	12.00/ac	3,384	50%	1,692
Sheboygan Co.	0 ac		0	(flat	0
Contour Strips					
Manitowoc Co.	264 ac	24.00/ac	6,336	50%	3,168
Sheboygan Co.	142 ac		3,408	(flat	1,704
Reduced Tillage					
Manitowoc Co.	494 ac	30.00/ac	14,820	50%	7,410
Sheboygan Co.	418 ac		12,540	(flat	6,270
Reduced Till. with Contour Strips					
Manitowoc Co.	432 ac	54.00/ac	23,328	50%	11,664
Sheboygan Co.	0 ac		0	(flat	0

Table 19: Estimated Practice Needs and Costs in the Sevenmile-Silver Creek Watershed Project (cont.)

PRACTICES	ESTIMATED QUANTITY	COST/UNIT $	TOTAL COST $	COST SHARE RATE	TOTAL COST SHARE AMOUNT $
Rotation Change					
Manitowoc Co.	614 ac	00.00/ac	0	No	0
Sheboygan Co.	0 ac		0	C/S	0
Contour Farming w/h Rotation Change					
Manitowoc Co.	637 ac	12.00/ac	7,644	50%	3,822
Sheboygan Co.	602 ac		7,224	flat	3,612
Contour Strips w/h Rotation Change					
Manitowoc Co.	432 ac	24.00/ac	10,368	50%	5,184
Sheboygan Co.	116 ac		2,784	(flat	1,392
Reduced Tillage w/h Rotation Change					
Manitowoc Co.	4320 ac	30.00/ac	129600	50%	64,800
Sheboygan Co.	779 ac		23370	(flat	11,685
Reduced Tillage,Rotation Change,Contour Farming					
Manitowoc Co.	2050 ac	30.00/ac	61500	50%	30,750
Sheboygan Co.	285 ac		8550	(flat	4,275
Reduced Tillage,Rotation Change,Contour Strips					
Manitowoc Co.	769 ac	54.00/ac	23070	50%	11,535
Sheboygan Co.	0 ac		0	(flat	0
Terraces					
Manitowoc Co.	10000 ft	3.50/ft	35,000	70%	24,500
Sheboygan Co.	0 ft				
Grassed Waterways					
Manitowoc Co.	285 ac	2525/ac	719,625	70%	503,738
Sheboygan Co.	75 ac		189,375		132,563

Table 19: Estimated Practice Needs and Costs in the
(cont.) Sevenmile-Silver Creek Watershed Project

PRACTICES	ESTIMATED QUANTITY	COST/UNIT $	TOTAL COST $	COST SHARE RATE	TOTAL COST SHARE AMOUNT $
Grade Stabilization Structure					
Manitowoc Co.	35 un	3000/ea	105,000	70%	73,500
Sheboygan Co.	8 un		24,000		16,800
Critical Area Stabilization					
Manitowoc Co.	1,200 ac	80.50/ac	102,000	50%	51,000
Sheboygan Co.	240 ac		7,200		3,600
Streambank Rip Rap					
Manitowoc Co.	100 rd	270.00/rd	27,000	70%	18,900
Sheboygan Co.	22 rd		5,940		4,158
Streambank Fencing					
Manitowoc Co.	500 rd	18.00/rd	9,000	50%	4,500
Sheboygan Co.	210 rd		3,780	(flat	1,890
Streambank Shaping, Seeding, & Fencing					
Manitowoc Co.	300 rd	80.00/rd	24,000	70%	16,800
Sheboygan Co.	150 rd		12,000		8,400
Stream Crossing					
Manitowoc Co.	15 ea	1000/ea	15,000	70%	10,500
Sheboygan Co.	3 ea		3,000		2,100
Barnlot Runoff Mgmt.					
Manitowoc Co.	104 ea	9,000/ea	936,000	70%	655,200
Sheboygan Co.	18 ea		162,000		113,400
Manure Storage					
Manitowoc Co.	53 ea	0.00	0	70%	530,000
Sheboygan Co.	5 ea		0	(10,000 flat	50,000
Totals:			$2,717,846		$2,390,511
Total with 75% participation:					$1,792,883

Assumptions Used to Make Table 19.

Cropland Management Practices: A computer model was used to simulate practice application to each parcel of cropland currently eroding above 3 tons/acre/year by modifying the "C" and "P" factors. This effort was designed to allow the development of realistic BMP cost estimates and to allow county staff the opportunity to anticipate practice needs on any particular property. The practices were "applied" in order from least intensive to most intensive erosion control. The practices were applied one at a time until the targeted maximum level of erosion was attained or all of the designated practices were used.

For fields in continuous row crop, contour plowing was applied first (modifying the P factor based on the field's slope and slope length). If the soil loss on the field was not reduced to less than 3 T/A/Y, then minimum tillage was applied to the field (modifying the C factor in addition to the P factor). No further practices were applied to a field after this point. In this region of the state terraces are not generally practical. Therefore; fields eroding at an extreme rate were not brought below 3 T/A/Y. Upon actual farm inspection county staffs will attempt to suggest changes in management and additional practices to actually reach the target level.

For fields in crop rotation, the practice application order was: change in rotation (not a cost sharable practice), minimum tillage (modify the C factor in addition to the P factor), contour strips (modify the P factor based on slope and slope length of the field); and contour strips with minimum tillage.

Upon completion of these procedures, the acres of each practice were summed as well as the acres of land still eroding above the 3 T/A/Y level after the most intensive practice application. This process also generated estimates of the amount of soil erosion controlled through the application of practices for each subwatershed.

Grassed Waterways: Through the past experience of the counties in the project area, it was estimated that there is a need for about 1 acre of waterway for every 150 acres of cropland. Thus the total acres of cropland in the watershed was used to estimate the waterway needs.

Grade Stabilization Structures: This practice includes small pipe drop structures, toewalls, rock and sod chutes. Based on the counties past experience, it was estimated that one out of ten waterways will require some type of grade stabilization structure. This ratio was used to estimate the needs in each county.

Field and Gully Diversions: It was estimated by the counties that about half of the farms in the project area need an average of 500 feet of field or gully diversion.

Critical Area Stabilization; Pastures: The upland erosion inventory allowed for the soil loss calculation on lands identified as pasture. All pastures with soil loss above 3 T/A/Y were selected as needing some type of pasture management. Pasture management includes seeding of a permanent cover and the installation of fencing to control the use of portions of the pasture.

Streambank Fencing: Based on the streambank inventory and the county staffs past experience, areas of streambank with cattle access and with eroding bank heights less than approximately six feet were assumed to require this practice.

Streambank Rip Rap: Based on the streambank erosion inventory the total length of eroding streambank greater than about six feet in height and eroding at a moderate or greater rate was estimated to need rip rap.

Streambank Shaping, Seeding, & Fencing: Based on the streambank erosion inventory the total length of streambank eroding at the medium lateral recession rate was assumed to need this practice.

Woodlot Fencing: No estimate was made of the units of this practice needed during the inventory. Local experience and the small amount of woodlot in the project area imply that the need for the practice will be very minimal and will be dealt with on a case by case basis.

Stream Crossing: It was estimated that a crossing was needed for every 1000 feet of eroded streambank with cattle access.

Barnlot Runoff Management: All of the Category I barnyards and one half of the Category II barnyards were used to determine this need. These management categories are explained on in the pollution strategy portion of the plan.

Manure Storage: All of Category I farms and one third of category II farms were estimated to need some type of storage facility. These management categories are explained in the pollution control portion of the plan. Farms identified during the inventory as having a storage facility meeting SCS specifications were not included in this estimation.

B. Cost Containment Procedures

NR 120.19 requires management agencies to identify and use one or more cost containment procedures for each best management practice included in the detailed program for implementation.

Techniques such as bidding, average cost, and range of costs may be used to assure that costsharing funds are expended in a cost-effective manner. Table A6 illustrates the cost containment procedures to be used in the Sevenmile-Silver Creek project.

C. Local Assistance Needs and Costs

Through the planning process, the number of landowners with nonpoint source control needs has been estimated. Table 20 shows this information by county.
The quantity and types of practices needed in this project have been estimated through the planning process. With this information, along with the landowner numbers, an estimate can be made on the time needed to contact the landowners, draft the conservation plans, design the practices, and install/certify the practices.
Table 21 summarizes the time requirements for this project at the 75% participation level. This is an optimistic level so these estimates should be interpreted as maximum needs.
The estimates made in the table are important because they indicate how much additional staff time will be needed by the counties if the project follows the projected participation rate. The assumptions made to calculate the time requirements shown on Table 21 are explained on the page following the table.

TABLE 20

SEVENMILE-SILVER CREEK PRIORITY WATERSHED
MANAGEMENT CATEGORY SUMMARY

SOURCE TYPE / MGT. CATEGORY	UPLAND EROSION I	UPLAND EROSION II	MANURE MGT. I	MANURE MGT. II
MANITOWOC	94	39	36	52
SHEBOYGAN	19	3	3	7
TOTAL	113	42	39	59

TABLE 20 cont.

SOURCE TYPE / MGT. CATEGORY	BARNYARD RUNOFF I	BARNYARD RUNOFF II	STRMBK. EROSION I
MANITOWOC	57	93	15
SHEBOYGAN	12	11	4
TOTAL	69	104	19

Table 21: Estimated Staff Time Requirements for the Project (assuming a 75% participation rate and a 8 year project)

ACTIVITY	ESTIMATED QUANTITY NEEDED	RATE (HRS/UNIT)	COUNTY TOTAL HOURS	PROJECT TOTAL HOURS
Landowner Contacts				
Manitowoc Co.	512	2 hrs ea.	1,024 hrs	
Sheboygan Co.	102		204 hrs	
				1,228
Pre-Contact Office Inventory				
Manitowoc Co.	512	.5 hrs ea.	256	
Sheboygan Co.	102		51	
				307
Conservation Planning*				
Manitowoc Co.	14,700 ac	.35 hrs/ac	5,145 hrs	
Sheboygan Co.	0 ac		0 hrs	
				5,145
*All conservation planning will be done by Manitowoc Co.				
Cost Share Agreement Development and Amendment*				
Manitowoc Co.	166	2 hrs ea.	582 hrs	
Sheboygan Co.	33		166 hrs	
*Includes 250 and 100 hours per Co. for amendments				748
Practice Design and Installation/Certification				
Contour Farming				
Manitowoc Co.	919 ac	.30hr/ac	276 hrs	
Sheboygan Co.	602 ac		181 hrs	
				456
Contour Strips				
Manitowoc Co.	696 ac	.50hr/ac	348 hrs	
Sheboygan Co.	258 ac		129 hrs	
				477
Reduced Tillage				
Manitowoc Co.	6,864 ac	.20hr/ac	1,373 hrs	
Sheboygan Co.	1,482 ac		296 hrs	
				1,669
Reduced Till. with Contour Strips				
Manitowoc Co.	432 ac	.60hr/ac	259 hrs	
Sheboygan Co.	0 ac		0 hrs	
				259
Terraces				
Manitowoc Co.	10000 ft	.03hr/ft	300 hrs	
Sheboygan Co.	0			
				300

Table 21: Estimated Staff Time Requirements for the Project (assuming a 75% participation rate and a 8 year project)

ACTIVITY	ESTIMATED QUANTITY NEEDED	RATE (HRS/UNIT)	COUNTY TOTAL HOURS	PROJECT TOTAL HOURS
Waterways				
Manitowoc Co.	285 ac	35hr/ac	9,975 hrs	
Sheboygan Co.	75 ac		2,625 hrs	
				12,600
Grade Stabilization Structures				
Manitowoc Co.	35 un	18hr/unit	630 hrs	
Sheboygan Co.	8 un		144 hrs	
				774
Streambank Rip Rap				
Manitowoc Co.	100 rd	1.8hr/rd	180 hrs	
Sheboygan Co.	22 rd		40 hrs	
				220
Streambank Fencing				
Manitowoc Co.	500 rd	.20hr/rd	100 hrs	
Sheboygan Co.	210 rd		42 hrs	
				142
Streambank Shaping, Seeding & Fencing				
Manitowoc Co.	300 rd	1.0hr/rd	300 hrs	
Sheboygan Co.	150 rd		132 hrs	
				432
Stream Crossing				
Manitowoc Co.	15 ea	12hr/ea	180 hrs	
Sheboygan Co.	3 ea		36 hrs	
				216
Barnlot Runoff Mgmt.				
Manitowoc Co.	104 ea	50hr/ea	5,200 hrs	
Sheboygan Co.	18 ea		900 hrs	
				6,100
Manure Storage				
Manitowoc Co.	53 ea	80hr/ea	4,240 hrs	
Sheboygan Co.	5 ea		400 hrs	
				4,640

Project Totals (over 8 years)	County Totals
Manitowoc:	30,368 hrs
Sheboygan:	5,346 hrs
Project:	35,714

Assumptions Used to Make Table 21

Landowner Contacts: This estimate is based contacting every landowner with at least 1 nonpoint source in management category I or II. The rate of six hours assumes 2 hours per contact with an average of six contacts per landowner.

Cost Share Agreement Development: This includes the time required to actually fill in the agreement form and have it signed by the landowner and the County. The number of agreements assumes 75% of the landowners contacted will sign an agreement.

Conservation Planning: This estimate is derived from the number of acres that are eroding above the 3 T/A/Y level and are in Management Category I or II plus the number of acres critical for manure spreading in Category I or II. Seventy-five percent of this value was used and the rate for the planning was obtained from the counties.

Practice Design and Installation/Certification: The quantities of practices are 75% of the values shown in Table 19. The rates for the tasks were obtained from the counties.

VI. Project Schedule

A project schedule has been estimated and is shown in Table 22. The accuracy of this schedule will depend upon the participation of the landowners. The schedule, as presented, is most useful to help determine the staff needs of the counties for the initial one to three years of the project. During this time most of the effort will be spent on landowner contacts and conservation planning and these are activities that will occur independent of the landowner participation rate. The predicted schedule does show that there will be a need for additional staff above the current county base levels.

The assumptions used to make table 22 are described in Table 23.

Table 22: Project Schedule (assuming a 75% participation rate and a 8 year project)

Activity	HOURS							
	Project Year 1	Project Year 2	Project Year 3	Project Year 4	Project Year 5	Project Year 6	Project Year 7	Project Year 8
Landowner Contacts								
Manitowoc Co.	442	332	250	0	0	0	0	0
Sheboygan Co.	88	66	50	0	0	0	0	0
Pre-Contact Office Inventory								
Manitowoc Co.	111	83	63	0	0	0	0	0
Sheboygan Co.	22	17	13	0	0	0	0	0
Conservation Planning								
Manitowoc Co.	1,715	1,715	1,715	0	0	0	0	0
Sheboygan Co.	0	0	0	0	0	0	0	0
Cost Agreement Development & Amendment								
Manitowoc Co.	166	84	83	50	50	50	50	50
Sheboygan Co.	34	16	15	20	20	20	20	20
Practice Design & Installation								
Manitowoc Co.	1,168	1,752	2,336	3,621	3,621	3,621	3,621	3,621
Sheboygan Co.	246	369	493	763	763	763	763	763
Total Annual Hours Needed								
Manitowoc Co.:	3,602	3,966	4,447	3,671	3,671	3,671	3,671	3,671
Sheboygan Co.:	390	468	571	783	783	783	783	783
Project:	3,992	4,434	5,018	4,454	4,454	4,454	4,454	4,454
8-Year Project Total:	35,714							

Table 23: ASSUMPTIONS FOR TABLE 22: YEAR ONE (PAGE 1 OF 5)

YEAR ONE

Landowner Contacts

Manitowoc County:	512 x.3x 2	hrs/contact	=	442 hrs
Sheboygan County:	102 x.3x 2	hrs/contact	=	88 hrs

Pre-Contact Office Inventory

Organize landowner tracking sheets, air photos, etc

Manitowoc County:	512 x.3x 0.5	hrs each	=	111 hrs
Sheboygan County:	102 x.3x 0.5	hrs each	=	22 hrs

Conservation Planning

Plan 1/3 of total acres at expected participation rate *

Manitowoc County:	14,700 x.3x.35	=	1,715 hrs
Sheboygan County:	0		0 hrs

* acres used are total acres above 3 t/ac/yr in Mgmt. Cat. I or II and the number of acres in Cat. I and II for manure spreading

Cost Share Agreement Development

Assume 1/3 of total expected participants sign cost share agreements

Manitowoc County:	221 x .33	x 2 hrs/agrmt. =		166 hrs
Sheboygan County:	44 x .33	x 2 hrs/agrmt. =		34 hrs

Design & Installation of Practices

Manitowoc County:	1,168 hrs
Sheboygan County:	246 hrs

Year One Total

Manitowoc County:	3,602 hrs
Sheboygan County:	390 hrs

YEAR TWO

Landowner Contacts

Manitowoc County:	166	x 2	hrs/contact	=	332 hrs
Sheboygan County:	33	x 2	hrs/contact	=	66 hrs

Pre-Contact Office Inventory

Organize landowner tracking sheets, air photos, etc

Manitowoc County:	166	x 0.5 hrs each	=	83 hrs
Sheboygan County:	33	x 0.5 hrs each	=	17 hrs

Conservation Planning

Plan 1/3 of total acres at expected participation rate *

Manitowoc County:	14,700 x.3x.35	=	1,715 hrs
Sheboygan County:	0		0 hrs

* acres used are total acres above 3 t/ac/yr in Mgmt. Cat. I or II and the number of acres in Cat. I and II for manure spreading

Cost Share Agreement Development

Assume 1/3 of total expected participants sign cost share agreements

Manitowoc County:	221	x .33	x 2 hrs/agrmt. =	84 hrs
Sheboygan County:	44	x .33	x 2 hrs/agrmt. =	16 hrs

Design & Installation of Practices

Manitowoc County:	1,752 hrs
Sheboygan County:	369 hrs

Year Two Total

Manitowoc County:	3,966 hrs
Sheboygan County:	468 hrs

YEAR THREE

Landowner Contacts

Manitowoc County:	125	x 2	hrs/contact	=	250 hrs
Sheboygan County:	25	x 2	hrs/contact	=	50 hrs

Pre-Contact Office Inventory

Organize landowner tracking sheets, air photos, etc

Manitowoc County:	125	x 0.5	hrs each	=	63 hrs
Sheboygan County:	25	x 0.5	hrs each	=	13 hrs

Conservation Planning

Plan 1/3 of total acres at expected participation rate *

Manitowoc County:	14,700 x.3x.35	=	1,715 hrs
Sheboygan County:	0		0 hrs

* acres used are total acres above 3 t/ac/yr in Mgmt. Cat. I or II and the number of acres in Cat. I and II for manure spreading

Cost Share Agreement Development

Assume 1/3 of total expected participants sign cost share agreements

Manitowoc County:	125	x .33	x 2 hrs/agrmt. =	83 hrs
Sheboygan County:	25	x .33	x 2 hrs/agrmt. =	15 hrs

Design & Installation of Practices

Manitowoc County:	2,336 hrs
Sheboygan County:	493 hrs

Year Three Total

Manitowoc County:	4,447 hrs
Sheboygan County:	571 hrs

YEARS FOUR THROUGH EIGHT

Landowner Contacts	
Manitowoc County:	0 hrs
Sheboygan County:	0 hrs
Pre-Contact Office Inventory	
Manitowoc County:	0 hrs
Sheboygan County:	0 hrs
Conservation Planning	
Manitowoc County:	0 hrs
Sheboygan County:	0 hrs
Cost Share Agreement Amendments	
Assume values based on previous projects	
Manitowoc County:	50 hrs
Sheboygan County:	20 hrs
Design & Installation of Practices +	
Manitowoc County:	3621 hrs
Sheboygan County:	763 hrs
Total of Each Year (4 - 8)	
Manitowoc County:	3,671 hrs
Sheboygan County:	783 hrs

+ + The values in this category were obtained by dividing the remaining design time needed for each county (based on table 21) over the remaining five years of the project.

VII. EDUCATIONAL ACTIVITIES

A. Introduction

The educational activities for the Sevenmile-Silver Creek Watershed project are designed to provide current information concerning the nature of the priority watershed project to all people in the project area. By the use of various educational methods, information will be transmitted to landowners and the general public regarding the location of the project, why the project was selected and how the project will be implemented. Information on the approved best management practices practices will increase recognition of how they can reduce erosion and control other nonpoint sources of pollution and result in improved water quality.

The objectives of the educational activities are four-fold: 1.) to supply information about the project; 2.) to educate landowners about practices that will result in reduced nonpoint source pollution; and 3.) to teach the skills and management needed by the landowners to become efficient users of the conservation practices and 4.) to achieve adequate control of the critical nonpoint sources to achieve project objectives. The educational program shall include farm tours, conservation tillage demonstrations, barnyard runoff control and manure management demonstrations, newsletters, newsreleases, and other methods when appropriate.

The nonpoint source inventory results indicated that eroding croplands are contributing an higher than expected percentage of the phosphorus loading to the lakes and streams in the watershed. The inventory also indicated that: 1) the majority of the erosion is occurring on slopes of 6 to 12 percent, and 2) the erosion rate is predominantly less than ten tons per acre per year,and 3) such a rate of erosion is not apparent to the untrained observer, and 4) the majority of the lands in this erosion group are currently managed for long-term rotations of corn better suited for slopes of less than 6 percent.

The primary practice needed to correct the erosion problem is illustrated to be reduced tillage. The analysis of the upland erosion inventory data indicated the need for approximately nine thousand acres of reduced tillage on the approximately twelve thousand acres of cropland requiring management to reduce the erosion rate to a level less than 3 tons per acre per year..In addition, changes in crop rotation will be necessary on about ten thousand acres to reduce erosion to the desired rate.

The specific objectives of the cropland erosion portion of the educational effort are: 1) illustrate to the landowners that a significant erosion problem exists in the watershed, 2) the feasibility of reduced tillage in the control of the problem, 3) the applicability of changes in crop rotation to control erosion, 3) to explain the benefits that a landowner will receive by the installation of the erosion control practices, especially the reduced tillage practice.

B. Newsletters

Newsletters are designed to provide individuals the watershed with the objectives, methods, and constraints of the Sevenmile-Silver Creek Watershed project. Emphasis will be placed on increasing landowner understanding of land use/water quality relationships and how the ongoing activities in the watershed can protect and improve water quality.
Goals of the newsletters will include: developing cooperation between all the agencies and individuals involved in the project; giving updates on the progress of the watershed project: introducing conservation management practices to the landowners; developing ongoing communication between all the people in the watershed; and encouraging landowners to become involved in the watershed activities.
The responsibility for the development, writing and printing of the newsletters will lie with the Land Conservation Department and the UW-Extension. The UW Extension will have the lead responsibility in this activity.
Newsletters will be published four times per year during the first three years of the project and at a reduced rate (twice per year) during the final five years of the project. During the first project year, newsletters will be published during December of 1986 and during March, June, and September of 1987. The schedule of newsletter publication will be adjusted as appropriate after the first year of the project.

C. News Releases

News releases will be used to give short updates on information pertaining to ongoing activities in the watershed. News releases will also highlight landowners who have cooperated in the project. These releases will help to develop a positive public image of the watershed project.
The news releases will stress the importance of water quality to all people in the watershed. These news releases will be the responsibility of the Land Conservation Department and UW-Extension.

D. Tours

These activities will focus on conservation tillage, manure management and barnyard runoff control. The tours will be coordinated between both counties in order to avoid saturation. It is imperative that farmers see first hand how approved practices have been installed and how they have worked for other farmers. Personal exchange between farmers is essential. It sparks the "snowball effect", which is necessary in the farmer's adoption of a conservation practice. The tours will be conducted by both counties LCD staff and University Extension staff. The first manure management tour is scheduled for March 25, 1987 and the first conservation practice tour is scheduled for June of 1987.

E. Travelling Display

A travelling display was developed by the DNR for use in counties where priority watershed projects are underway. The display will be used periodically during the sign up period of the Watershed Project. The display was designed to be appealing as well as informative..The display is to be used as an exhibit at county fairs, local carnivals or festivals, in bank lobbies, at technical and high schools, at farm organization meetings, and other locations where it would expose significant numbers of people to the watershed The display presents the public with the basic facts concerning the Watershed Project.

F. Demonstration Projects

A demonstration project was established on one farm in the Manitowoc County portion of the watershed during the planning phase of the project. A complete barnyard and manure management system was installed as well as upland erosion control practices. The farm is located in a highly visible area and is clearly marked with signs identifying the farm as a participant in the priority watershed project. The owner of the farm has agreed to allow interested persons to tour the farm and this farm will be included in watershed tours. An additional one or two demonstration sites will be selected by October of 1986 to illustrate conservation tillage and other upland erosion control practices. These sites will be available for demonstration purposes during the installation season of 1987. At least one of these sites will be in the Sheboygan County portion of the watershed project.

G. Township Meetings

Two township meeting will be held during the first year of the watershed project. One meeting will be held in each county. The purpose of these meeting is to allow the program objectives and means to be explained to a small audience in and informal atmosphere. Solutions to nonpoint source problems will be discussed and benefits to the landowner highlighted. Township meeting are currently scheduled for Newton Town Hall on October 9, 1986, and for Howards Grove on Febuary 17, 1987.

H. Lake Association Meetings

Project staff will attend the annual meetings of the English and Carsten Lake associations during 1987. The purpose of these visits will be to inform lake property owners regarding the objectives and methods of the Sevenmile-Silver Creek watershed project and the projects benefits to lake water quality. In addition, methods by which shoreline property owners may reduce lake pollution through various control measures will be explained. The lake association meetings will occur during 1987.

Table 24: Schedule and Costs of Information/Education Activities

Activity	Cost/Unit ($)	Project Period (years) 1	2	3	4	5	6	7	8	Total
Newsletters	500	2,000 (4)*	2,000 (4)	2,000 (4)	1,000 (2)	1,000 (2)	500 (1)	500 (1)	500 (1)	9,500
Watershed Tours	250	500 (2)	250 1	250 1	--	--	--	--	--	1,000
Upland Erosion ** Control Demo.	2,650	2,650 (1)	--	--	--	--	--	--	--	2,650
Conservation Till. Demo. Establishment	6,500	6,500 (1)	--	--	--	--	--	--	--	6,500
Conservation Till Demonstrations	300	300 (1)	300 (1)	300 (1)		--	--	--	--	900
Barnyard Runoff Demo. (Sheboygan Co.)	6,000	6,000 (1)				--	--	--	--	6,000
Portable Display	0	0 (1)	0 (1)	0 (1)	--	--	--	--	--	0
Annual Totals:		17,950	2,550	2,550	1,000	1,000	500	500	500	26,550

* Numbers in () are the quantity of the activity scheduled for the year

** Includes several practices at one or two sites.

VIII. Project Evaluation

Two forms of project evaluation will be preformed over the eight year duration of the Sevenmile-Silver Creek Priority Watershed project. The first is an evaluation of the success of the project in controlling the critical nonpoint sources as determined by the inventories and prioritized by management category. This evaluation will ultimately determine the success of the management agencies in convincing eligible landowners to participate in the voluntary program and the viability of the voluntary approach to control of nonpoint sources of pollution. The project tracking mechanism described earlier in this chapter will be integral to this evaluation. Information such as; the number of landowner contacts, the amount of practices installed, and number of critical sources controlled will be closely monitored. In addition, estimates of the amount of pollutant reduction achieved by each best management practice installed will be tracked and periodically reviewed to determine if adequate progress toward project objectives is being made.

The second type of project evaluation will involve monitoring of the water resources both before and after the implementation of pollutant controls in the watershed. The purpose of the water resource evaluation is to determine if the water resource objectives stated in Chapter two are being reached. The before data was for the most part obtained as a portion of the water resource appraisal. Additional pre-installation information will be obtained where previous information was inadequate.

The Point Creek subwatershed was selected for intensive monitoring throughout the course of the project. This subwatershed was selected primarily due to a more continuous flow throughout the entire year. Stream habitat and biotic index samples will be collected at four sites on Point Creek in the fall of 1986 and the spring of 1987 (see Chapter 2 for a description of the assessment techniques). Similar samples will be taken at these sites every two years during the course of the project. In addition fish surveys will be conducted at two sites on Point Creek during the late summer or early fall of 1987. These surveys will determine the status of fish populations in the stream. These sites will be sampled near the end of the eight year project to determine if the pollutant controls installed during the project have effected the fish populations.

Less intensive monitoring will be carried out at one site on each of the six primary streams in the watershed. This monitoring will consist of biotic index sampling every four years at the sites which were sampled during the appraisal monitoring phase of project planning.

Substantial background data regarding the trophic status of Silver, Carsten, and English Lakes was summarized during the water resource appraisal. These lakes will be sampled during the early summer of 1987 to further characterize their trophic condition. Similar sampling will occur every two years for the

eight years of the project in an attempt to determine if the installation of pollutant controls in the subwatersheds of the lakes has effected their trophic status.
The strategies applied to both types of the types of project evaluation described above will be annually reviewed and modified as necessary. As more sophisticated methods for the estimation of nonpoint source loadings and the load reductions achieved through various pollutant controls evolve, they may be applied to the project data. Similarly, any additional methods which may be applied to the water resource evaluation will be incorporated into the evaluation monitoring strategy as appropriate.

BIBLIOGRAPHY

Ball, J. 1982. Stream Classification Guidelines For Wisconsin. Draft DNR Technical Bulletin (unpublished).

Carlson, R.E. 1977. A Trophic Status Index For Lakes. Limnology and Oceanography, 22:361-69.

Desparte M.; Threinen C.W.; and Weber J. 1968, Surface Water Resources of Manitowoc County, Department of Natural Resources, Madison, Wisconsin

Dillon, P.J. and F.H. Rigler. 1975. A Simple Method For Predicting The Capacity Of A Lake For Development Based On Lake Trophic Status. Journal Fisheries Research Board of Canada, 32:1519-31.

Hilsenhoff, W. 1982. Using A Biotic Index To Evaluate Water Quality In Streams. DNR Technical Bulletin 132. 22 p.

International Joint Commission, Environmental Management Strategy for the Great Lakes System (PLUARG),1978.

Lillie, R.A., and J.W. Mason. 1983. Limnological Characteristics of Wisconsin Lakes. DNR Technical Bulletin 138. 116 p.

Moore, C. I. 1979. Predicting Phosphorus Loads From Livestock Wastes For The Wisconsin Great Lakes Basin. M.S. Thesis, University of Wisconsin-Madison. 108 p.

Petersen, J., et al. 1985. Guidelines For The Land Application of Animal Wastes. UWEX. 3 p.

Poff R.; Threinen C.W.; and Weber J. 1968, Surface Water Resources of Sheboygan County, Department of Natural Resources, Madison, Wisconsin

USDI-Geological Survey,1984, An Assessment Of Nonpoint Source Discharges, Streamflow, and Water Quality in Onion River, Wisconsin, Report 84-4066.

USDI-Geological Survey, 1983, Drainage Area For Wisconsin Streams, USGS Open -File Report 83-933.

WDNR,1985, Silver Lake Feasibility Study Results and Management Alternatives.

WDNR,1984, Nonpoint Source Monitoring Program For Wisconsin Rivers Tributary To Lake Michigan.

Young, R.A., et al. 1982. An Evaluation System To Rate Feedlot Pollution Potential. Agricultural Research Service(USDA).

APPENDIX A

General Tables

Table A1: Land Use and Upland Erosion Inventory Results in the Sevenmile-Silver Creek Watershed
(includes only lands where USLE was calculated)
(Table A1 cont. next pp)

Land Use	Silver Lake Subwatershed			Lower Silver Subwatershed			Calvin Lakes Subwatershed			Lower Calvin Subwatershed			Pine Lakes Subwatershed			Pine Creek Subwatershed		
	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)
Cropland (all)	8,522 92.1%	2.4	20,174 98.7%	1,714 78.1%	2.1	3,604 98.5%	477 58.2%	4.5	2,170 94.9%	2,225 83.7%	1.7	3,771 99.5%	908 89.5%	3.1	2,838 98.2%	5,171 88.3%	2.2	11,280 98.6%
Woodlot	316 3.4%	0.1	45 0.2%	209 9.5%	0.1	18 0.5%	92 11.2%	0.3	25 1.1%	171 6.4%	.0	3 0.1%	82 8.1%	.0	3 0.1%	291 5.0%	.0	3 .0%
Pasture	260 2.8%	0.8	199 1.0%	29 1.3%	1.0	30 0.8%	81 9.9%	0.7	55 2.4%	32 1.2%	0.2	7 0.2%	19 1.9%	2.6	49 1.7%	120 2.0%	1.2	149 1.3%
Grassland (Vacant Land)	159 1.7%	0.1	23 0.1%	243 11.1%	.0	6 0.2%	169 20.6%	0.2	37 1.6%	230 8.7%	.0	9 0.2%	5 0.5%	0.0	0 0.0%	277 4.7%	.0	9 0.1%
Totals	9,257 100.0%	2.2	20,441 100.0%	2,195 100.0%	1.7	3,658 100.0%	819 100.0%	2.8	2,287 100.0%	2,658 100.0%	1.4	3,790 100.0%	1,014 100.0%	2.9	2,890 100.0%	5,859 100.0%	2.0	11,441 100.0%

Table A1: Land Use and Upland Erosion Inventory Results in the Sevenmile-Silver Creek Watershed
(cont) (includes only lands where USLE was calculated)

Land Use	Point creek Subwatershed			Fischer Creek Subwatershed			Centerville Creek Subwatershed			Sevenmile Creek Subwatershed			Southern Tribs. Subwatershed			Watershed Totals		
	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)	Acres	Aver. Soil Loss (t/a/y)	Total Soil Loss (t/yr)
Cropland	10,603	3.0	32,215	6,175	2.7	16,925	3,129	3.3	10,189	5,454	2.3	12,596	4,761	2.4	11,440	49,139	2.6	127,202
	86.9%		98.3%	84.9%		97.5%	84.2%		97.1%	86.4%		98.6%	85.5%		99.2%	86.4%		98.3%
Woodlot	823	0.1	65	517	.0	21	221	.0	8	654	.0	12	435	.0	5	3,811	0.1	208
	6.7%		0.2%	7.1%		0.1%	5.9%		0.1%	10.4%		0.1%	7.8%		.0%	6.7%		0.2%
Pasture	479	1.0	489	115	1.0	118	183	1.3	244	148	1.1	166	88	1.0	86	1,554	1.0	1,592
	3.9%		1.5%	1.6%		0.7%	4.9%		2.3%	2.3%		1.3%	1.6%		0.7%	2.7%		1.2%
Grassland (Vacant Land)	291	.0	6	466	0.6	291	183	0.3	54	59	0.1	3	287	.0	2	2,369	0.2	440
	2.4%		.0%	6.4%		1.7%	4.9%		0.5%	0.9%		.0%	5.2%		.0%	4.2%		0.3%
Totals	12,196	2.7	32,775	7,273	2.4	17,355	3,716	2.8	10,495	6,315	2.0	12,777	5,571	2.1	11,533	56,873	2.3	129,442
	100.0%		100.0%	100.0%		100.0%	100.0%		100.0%	100.0%		100.0%	100.0%		100.0%	100.0%		100.0%

Table A2: Biotic Index (HBI) and Stream Habitat Sampling Results (3)

Stream	Sampling Location	Biotic Index Values: Sampling Date 1979 Spring	1979 Fall	1985 Spring	Water Quality Conditions (as indicated by HBI)	Stream Habitat Rating
Silver Creek	County Hwy. LS	3.71	4.15	2.20	Poor, Very poor, Very good(1)	Fair
Calvin Creek	County Hwy. LS	No. not avail.(2)		3.66	Fair-poor	Fair
Pine Creek	County Hwy. LS	No data		2.95	Fair	Fair
Point Creek	Point Creek Road	No. not avail.(2)		2.89	Fair-poor, fair	Fair
Fischer Creek	Centerville Road	No data		2.22	Very good	Poor
Centerville Creek	North Ave. @ Centerville Road	No data		2.27	Very good	Fair-poor
Sevenmile Creek	County Hwy. LS	No data		4.72	Very poor	Fair-poor
Southern Tribs.		No data			No data	No data

(1) Differences in sampling technique may explain change in BI.

(2) Numeric data not reported.

(3) Chapter 2 describes the HBI and Stream Habitat Rating techniques.

Table A3:

SUMMARY TABLE OF STREAM BANK EROSION IN THE SEVENMILE-SILVER WATERSHED

Subwatershed	Inventoried Stream Length (feet)	Eroding Bank (feet)	Sediment (tons)	Percent Bank Eroding	Tons per 1000 Feet
Silver Lake	26070	1470	11.7	2.8	0.4
Lower Silver Creek	43230	1825	68.9	2.1	1.6
Calvin Lakes	No streambank erosion was observed in subwatershed.				
Lower Calvin Creek	30624	2795	271.5	4.6	8.9
Pine Lakes	4500	135	1.5	1.5	0.3
Pine Creek	47890	8889	515.4	9.3	10.8
Point Creek	129360	20611	852.0	8.0	6.6
Fischer Creek	60420	17293	464.0	14.3	7.7
Centerville Creek	29200	10365	229.0	17.7	7.8
Sevenmile Creek	41580	4365	661.0	5.2	15.9
Southern Tribs.	29380	1815	171.0	3.1	5.8
TOTALS	442254	69563	3246.1	7.9	7.3

Table A4: Summary of the Animal Waste Inventory Results
Based on the ARS Model for a 10 yr-24 hr. rainfall (3.8")

	***** Barnyard Runoff *****				** Manure Spreading **	
Subwatershed	Number of Barnyards	ARS Phos. Load (lbs)	# of Barnyards in top 60% of Phos. Load	# of Barnyards in top 60-80% of Phos. Load	Acres(1) Needed	Critical(2) Acres Spread
Silver Lake	75	316	11	23	1308	968
Lower Silver Creek	7	8	2	2	56	28
Calvin Lakes	9	26	3	3	162	86
Lower Calvin Creek	7	72	2	3	397	275
Pine Lakes	6	10	2	22	124	117
Pine Creek	34	194	6	11	631	425
Point Creek	83	412	18	23	1,805	1178
Fischer Creek	44	240	9	14	919	696
Centerville Creek	24	283	7	9	519	325
Sevenmile Creek	35	132	6	10	633	325
Southern Tributaries	20	27	3	4	296	296
Totals	344	1,720	69	124	6,850	4,719

(1) The "Acres Needed" Column is the amount of land needed to needed to dispose of a 6 month accummulation of manure at a disposal rate of 25 tons/acre.

(2) The "Critical Acres" Column is the annual average amount of land that is spread with manure and is not suitable for spreading when the ground is frozen.

Table A5: Sheet and Rill Erosion Control Practices Needed in each Subwatershed (1)

Practice Totals (acres)	***** Subwatershed *****											
	Silver Lake	Lower Silver Creek	Calvin Lakes	Lower Calvin Creek	Pine Lakes	Pine Creek	Point Creek	Fischer Creek	Centerville Creek	Sevenmile Creek	Southern Tribs.	Watershed Total
Contour Cropping	118	0	0	104	0	0	60	0	0	0	0	282
Contour Strip Cropping	166	44	0	20	0	19	15	0	0	73	69	406
Reduced Tillage	56	45	0	0	0	35	42	0	116	82	136	512
Rotation Change(2)	41	0	0	0	0	118	438	100	17	57	0	771
Contour Cropping & Reduced Tillage	41	0	0	0	0	62	68	0	29	6	214	420
Contour Cropping & Rotation Change(2)	124	20	65	22	32	93	246	70	35	275	327	1309
Reduced Tillage & Rotation Change(2)	718	25	13	61	246	1226	1616	725	415	479	320	5844
Contour Strips & Rotation Change(2)	88	14	4	4	17	40	209	13	56	77	39	561
Contour Strips & Reduced Tillage	0	0	0	0	0	0	0	0	0	19	0	19
Contour Cropping, Rotation Change(2), Reduced Tillage	236	4	0	13	84	715	740	518	258	285	0	2853
Contour Strips, Rotation Change(2), Reduced Tillage	160	3	22	9	21	162	303	157	89	0	0	926
Watershed Total	1748	155	104	233	400	2470	3737	1583	1015	1353	1105	13903

(1) Includes only those practices simulated by modeling.
(2) Rotation change are not eligible for costsharing.

Table A6: Cost Containment Procedures

The following table is based on average costs by practice component.

Practice:	Average Cost($):
Contour Farming	10.00 per acre
Strip Cropping	15.00 per acre
Reduced Tillage	30.00 per acre
Waterways	1.30 per foot
lined waterway	1.38 per foot
rock crossing	350.00 each
concrete crossing	1.74 per sq. foot
stone surface inlet 8'x8'	150.00 each
2'x8'	95 00 each
Field Diversions	1.30 per foot
rock crossing	350.00 each
concrete crossing	1.74 per sq. foot
Terraces	2.25 per foot
Critical Area Stabilization	118.00 per acre
Grade Stabilization Structure	
rock chute	16.10 per yard
sand and gravel	8.30 per yard
Shoreline protection	
fencing (barbed wire)	.50 per foot
fencing (electroic)	.45 per foot
filter strip	118.00 per acre
rock crossing	900.00 each
concrete crossing	1.74 per sq. foot
Animal Waste Management Systems (includes components of barnyard runoff mgt. and manure storage)	
excavation	1.15 per cu. yard
earthfill	1.40 per cu. yard
gravel driveway	.12 per sq. foot
filter area	137.00 per 1000 cu.feet
clean water diversion	3.00 per foot
concrete	1.72 per sq. foot
concrete wall	39.00 per foot
wood wall	15.75 per foot
pond drain	649.00 each
picket dam (6 foot)	1542.00 each
(8 foot)	2961.00 each
tile (4 to 12 inch)	1.50-4.00
downspouts	2.38 per foot
gutters	4.73 per foot
roof gutter surface inlet	52.50 each
fence (woven wire)	1.25 per foot
fence (barbed wire)	.50 per foot
fence (electric)	.45 per foot
transfer pump (air, piston, chopper)	10,000.00 each
transfer pipe (12 inch)	17.00 per foot
stacker or extended barn cleaner	7825.00 each
test pits (foundation investigation)	32.00 each

APPENDIX B

Forms Used for Project Administration

Standard Forms Used in the Wisconsin Nonpoint Source Program

Several standarized forms will be used during the implementation of the Sevenmile-Silver Creek priority watershed project. These forms are listed with a brief description below and sample forms are included on the following pages.

Wisconsin Nonpoint Source Water Pollution Abatement Program Grant Award/Amendment (form 3400-108)

This form is signed between the Department of Natural Resources and the management agencies implementing the project. The purpose is twofold: 1) to convey costsharing funds from the Department to the management agencies and: 2) to specify the nature and amount of additional workload to be incurred by the management agencies during project implementation and to specify the amount and rates of local assistance to be provided by the Department for these efforts. The grant award is negotiated on an annual basis for the life of the project.

Request for Advance or Reimbursement Wisconsin Nonpoint Source Pollution Abatement Program (form 3200-54)

The management agencies use this form to request "advance" funds for costsharing and to replenish their costsharing account when depleted. When used for reimbursement, the form must be accompanied by a contractor's itemized invoice, evidence of payment by the landowner/operator, and a copy of the Practice Certification Form (see below).

Nonpoint Source Water Pollution Abatement Program Local Assistance Grant Backup Worksheet (form 3200-78)

The management agencies use this form to request reimbursement as specified in the local assistance portion of the Grant Award/Amendment. Reimbursement is normally requested on a quarterly basis. Management agencies must maintain documentation of work hours and other costs reported for reimbursement.

Costshare Agreement (form 3400-68)

This form is signed by the management agencies and landowner/operators and contains the needed practices, the location of the practices, the estimated total and costshare costs, the costshare rate, schedule of installation, and the practice maintainance period. The form includes the responsibilities of both the landowner/operator and the management agency. The costshare agreement is a binding contract between the signees.

Costshare Agreement Amendment (form 3400-68a)

This form is used to modify an inplace costshare agreement. For example the addition, deletion, or substantial modification of a practice requires that the costshare agreement be amended. This form must be signed by the signees of the costshare agreement to which it applies.

Costshare Calculation and Practice Certification (form 3200-53)

This form is required when a management agency requests reimbursement from the Department for expended costshare funds. The form contains the calculation of the costshare amount and the management agency's certification that the practice meets specifications and that installation is complete.

Nonpoint Source Water Pollution Abatement Program Cost Summary for Education and Local Assistance Grant Agreements (form 3200-79)

This form is required when a management agency requests reimbursement from the Department as specified in the local assistance portion of the Grant Award/Amendment. Reimbursement is normally requested on a quarterly basis. Management agencies must maintain documentation of work hours and other costs reported for reimbursement.

State of Wisconsin
Department of Natural Resources
Bureau of Water Grants
Box 7921
Madison, Wisconsin 53707

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM GRANT AWARD/AMENDMENT

Form 3400-108 6-86

tice: This form is authorized by s. 144.25, Wis. Stats., and ch. NR 120, Wis. Adm. Code. Completion of this form is mandatory. Failure to submit a completed form to the Department of Natural Resources will result in the denial of grant funds.

TYPE OF PROJECT	TYPE OF ACTION	TYPE OF AGREEMENT
☐ Priority Watershed	☐ Grant Award	☐ Local Assistance Grant
☐ Small Scale Watershed	☐ Grant Amendment	☐ Nonpoint Source Grant
		☐ Combined Grant

ART 1. GRANT ADMINISTRATION DATA

ant Number	Grant Award Date	Amendment Number	Amendment Date

atershed Name	Total Grant Amount
antee	12 Month Local Assistance Grant Amount
thorized Representative (Name and Title)	Amendment Amount This Action
reet or Route	Eligible Period for Signing Cost Share Agreements
ty, County, Zip Code	Installation Period _____ Years from the Signing of Cost Share Agreement
lephone Number (include area code)	Grant Period From Through
me of Department Project Liaison (Chief, Nonpoint Source and Land Management ction)	DNR District

ART 2. ELIGIBLE COST BUDGET INFORMATION

te: Line items can not be exceeded without amendment.

	Original or Former Award	Amendment Amount	Amended Total
ction A — Local Assistance Costs			
1. Salaries			
2. Fringe Benefits			
3. Travel Expenses			
4. Information and Education			
5. Equipment, Materials, Supplies			
6. Professional Services Contract			
7. Other (specify)			
8. Local Assistance Grant Amount			
9. Maximum Advance Amount $			
ction B — Nonpoint Source Grant Funds			
1. Cost Share Funds For a. Landowners/Land Operators			
b. Grantee Direct Contracts			
c. Grantee Force Account			
2. Other (specify)			
3. Nonpoint Source Grant Amount			
4. Maximum Advance Amount $			
ction C — Combined Grant Funds			
Combined Grant Amount (Section A + Section B)			

PART 3. INELIGIBLE COSTS

1. Costs for best management practice installation which were incurred prior to the signing of a cost share grant agreement.
2. Costs for installation of a best management practice which does not meet the conditions of s. NR 120.14 or 120.15, Wis. Adm. Code.
3. Costs for practices identified in s. NR 120.17, Wis. Adm. Code.
4. Costs which exceed or do not satisfy the cost containment procedures of s. NR 120.19, Wis. Adm. Code
5. Costs for fiscal and project management identified in s. NR 120.21 (3) (b), Wis. Adm. Code.
6. Other (specify).

PART 4. PURPOSE AND SCOPE

PART 6. CONDITIONS

The State of Wisconsin Department of Natural Resources (Department) and the Grantee, in mutual consideration of the provisions of this document, agree as follows:

1. This agreement and all activities undertaken pursuant to this agreement are subject to the provisions of s. 144.25, Wis. Stats., and ch. NR 120, Wis. Adm. Code.

2. All amendments to this agreement shall be executed in writing and be mutually agreed upon between the Department and the Grantee.

3. The Grantee shall request prior Department approval in writing before expending funds for the purposes identified in s. NR 120.12(4), Wis. Adm. Code. The request shall include plans and specifications, detailed cost estimates and project schedules for each best management practice. Department approval shall be granted as an amendment to this agreement.

4. The Grantee shall comply with the cost containment and procurement procedures in ss. NR 120.19 and 120.24, Wis. Adm Code, and may request advance monies and reimbursement from the Department in accordance with ss. NR 120.18 and 120.23, Wis. Adm. Code.

5. The Department shall disburse grant funds in accordance with ss. NR 120.18 and 120.23, Wis. Adm. Code.

6. The Grantee shall maintain a financial management system, separate from all other grantee activities, for this project. Accounting and fiscal records shall be maintained in accordance with ss. NR 120.25 and 120.26, Wis. Adm. Code. All grant funds shall be credited promptly upon receipt and may be expended only for eligible project costs.

7. In connection with the performance of work under this agreement, the Grantee agrees not to discriminate against any employee or applicant for employment because of age, race, religion, color, handicap, sex, physical condition, developmental disability as defined in s. 51.01(5), Wis. Stats., sexual orientation or national origin. This provision includes but is not limited to employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Grantee agrees to provide and post notices in conspicuous places, available for employees and applicants for employment, setting forth the provisions of this nondiscrimination clause. Except with respect to sexual orientation, the Grantee shall take affirmative action to ensure equal employment opportunities.

8. The Grantee shall indemnify the Department and all of its officers, employees and agents against, and h old harmless from, any and all claims, actions, suits, proceedings, costs, expenses, damages and liabilities, to person or property, including attorney's fees, arising out of, connected with or resulting from the occupancy, use, acts or omissions of the Grantee's employees, agents or representatives.

9. The Grantee or its employees or agents are not employees or agents of the Department for any purpose including Worker's Compensation.

10. The Grantee shall submit reimbursement requests on forms provided by the Department. Nonpoint source grant reimbursement requests shall be submitted to the Department periodically, preferably by the time 50% of the advance monies have been expended. Local assistance grant reimbursement requests shall be submitted to the Department quarterly within 15 days of the end of each quarter.

11. The Grantee shall submit eligible cost share recipient tracking and other reports to the Department's project liaison during the grant period identified in Part 1 of this agreement.

12. The Grantee shall enter into cost share agreements and amendments with landowners and land operators on forms provided by the Department. The cost share rates may not exceed the rates specified in s. NR 120.18, Wis. Adm. Code.

13. The Grantee agrees to perform periodic inspections beyond the grant period to ensure that all cost share recipients are complying with the maintenance requirements in accordance with s. NR 120.13(6), Wis. Adm. Code.

14. The Grantee shall insure that Department representatives have access to land on which watershed project activities are undertaken during periods of best management practice installation, operation or maintenance.

15. The Grantee may not request reimbursement for costs which exceed the approved line item costs listed in Part 2 of this agreement.

16. The Grantee shall submit any proposed cost share agreement exceeding $50,000 to the Department for approval in accordance with s. NR 120.13(5), Wis. Adm. Code.

17. The Grantee shall request prior written approval from the Department before constructing best management practices on property owned or operated by the Grantee.

18. The Grantee shall provide best management practice technical design and installation assistance to landowners and land operators who are cost share recipients within the Grantee's jurisdiction.

FOR THE STATE OF WISCONSIN
By

Authorized Representative

Title

Date Signed

Paul N. Guthrie, Jr., Director
Office of Intergovernmental Programs

Date Signed

Wisconsin Department of Natural Resources
Bureau of Water Grants
Box 7921
Madison, Wisconsin 53707

REQUEST FOR ADVANCE OR REIMBURSEMENT
NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM

Form 3200-54 Rev. 9-86

Complete items 1 through 10 and 15 for all payment requests. See instructions on reverse side for completing items 11 through 14.
Send one completed copy of this form to the Department of Natural Resources at the address printed above.

Note: This form is authorized by s. 144.25, Wis. Stats., and ch. NR 120, Wis. Adm. Code. Completion of this form is mandatory. Failure to submit a completed form to the Department will result in the denial of grant funds.

1. Grantee Name	2. Watershed Name		
6. Mail Check To:	3. County	4. Grant No.	5. Pay. Req. No.
	7. Period covered by this report (mo-day-yr): From To		
	8. Type of Project ☐ Priority Watershed ☐ Small Scale Watershed	9. Type of Request ☐ Advance ☐ Partial ☐ Final	10. Type of Grant ☐ Local Assistance ☐ Nonpoint Source Gra ☐ Combined ☐ Education

	AMOUNT	LEAVE BLANK — DNR USE ONLY
11. Request for Advance Payment:		
a. Initial State Grant Amount		
b. Advance Payment Requested (% of above. See instructions.)		
12. Summary of Payment Requests:		
a. Reimbursement Requested This Claim (From Form 3200-80)		
b. Total Prior Pay Requests (Including Advance)		
c. Total All Payment Requests to Date		
13. Computation of Maximum Partial Payment:		
a. Total Cumulative Grant to Date		
b. Enter 95% of Above Total		
14. Computation of Net Payment Due:		
a. Enter 95% of Total Cumulative Grant (Line 13b. Above)		
b. Less: Total Prior Payment Requests (Line 12b. Above)		
c. Net Payment Due (Line 14a. Minus Line 14b.)		
	Amount Allowed This Claim	

15. CERTIFICATION:

I certify that to the best of my knowledge and belief the billed costs of expenditures are based on actual payments of record and are in accordance with the terms of the project agreement and the reimbursement represents the grant share due which has not been previously requested.

Auditor Initials

Date

Bur. Finance Initials

Date

Signature of Authorized Representative

Date Signed

Typed or Printed Name and Title

Telephone No. (include area code and extension

INSTRUCTIONS

Item 11 - Complete for Advance Payment Request only.

11a Enter the amount of grant shown on the original grant agreement.
11b 10% of the grant amount for priority watershed project nonpoint source grant agreements less than or equal to $2,000,000.

5% of the grant amount for priority watershed project nonpoint source grant agreements exceeding $2,000,000.

50% of the grant amount for small-scale watershed project nonpoint source grant agreements less than or equal to $50,000.

25% of the grant amount for small-scale watershed project nonpoint source grant agreements exceeding $50,000.

50% of the estimated 12 month grant amount for local assistance grant agreements.

50% of the grant amount for education grant agreements.

Item 12 - Complete for Partial and Final Payment Requests. (See required attachments below.)

12a Enter total amount from worksheet (Form 3200-80) attached to this pay request.
12b Enter total amount of all previous payment requests, including the advance.
12c Sum of 12a and 12b.

Item 13 - Complete for Partial Payment Requests only.

13a Enter the sum of the original grant amount and any amendment increases.
13b Enter 95% of the above amount, which represents the maximum that shall be paid on a grant prior to final accounting and audit. (Compare this amount with item 12c before completing item 14.)

Item 14 - Complete for Partial Payment Requests only when the amount shown on line 12c above exceeds the amount shown on line 13b.

14a&b Self-explanatory.
14c The net result when subtracting line 14b from line 14a is the maximum amount which may be paid with this pay request.

REQUIRED ATTACHMENTS

Attach the following documentation with each Partial and Final Payment Request:

1. One copy of reimbursement claim worksheet (Form 3200-80) listing individual payments on cost share agreements.

2. Photocopy of cost share agreements (Form 3400-68) for each cost share grant recipient listed in this report (if not previously submitted).

3. Photocopy of form showing approval of final cost share amount by the county, city, or village for each practice listed in this report.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

WISCONSIN FUND REIMBURSEMENT CLAIM WORKSHEET

FORM 4400-47 3-79

NAME OF GRANTEE	PROJECT NUMBER	DATE SUBMITTED

DATE OF CHECK	NUMBER		PAYEE	DESCRIPTION OF EXPENDITURE	AMOUNT
	CHECK	VOUCHER			
				TOTAL EXPENDITURES	

PAGE _____ OF _____ PAGES.

INSTRUCTIONS

LABOR COSTS

Salary

Item 1a. Enter the hours worked on eligible activities specified in the Local Assistance Grant Agreement during the quarter for which reimbursement is being applied.

1b. Enter the eligible hours carried over from the previous quarter(s) for which reimbursement has not been claimed. (Note: See line 3a from previous quarter request.)

1c. Sum of 1a and 1b.

Item 2. Enter hours paid for additional staff funded under this grant. If more than one staff person is funded, identify hours paid to each person separately.

Item 3a. Enter the difference in hours between line 1c and line 2 only if line 1c is greater. These hours are carried over to the next quarter and should be entered on line 1b on your next payment request.

3b. Self-explanatory.

Item 4. Enter the actual hourly salary rate paid additional staff funded under this grant. If more than one additional staff, identify hourly rate for each.

Item 5. Self-explanatory. (Note: More than one additional staff will require a sum of all reimbursable salary amounts to generate a final amount for this line.)

Fringe

Item 6. Enter the percent of fringe paid for additional staff funded under this grant.

Item 7. Self-explanatory.

OTHER DIRECT COSTS EXCLUDING LABOR (Note: These costs must have been approved in the grant award.)

Item 8. Enter travel expenses directly associated with implementing the watershed project, including mileage, lodging, meals and registration fees associated with attending the annual project managers' meeting.

Item 9. Enter the actual costs of printing, contractual editing, watershed tours, printed informational brochures, newsletters, informational meetings, small group meetings, radio spots, notices and other direct costs associated with information and education materials. (Note: Do not include labor costs.)

Item 10. Enter the actual costs of equipment and supplies purchased and directly associated with implementing the watershed project.

Item 11. Enter the actual costs of professional services such as private consultants or other government agencies to provide field, administrative, planning or other services to carry out activities of the local assistance grant agreement.

Item 12. Enter the actual costs for other items approved in the local assistance grant award.

Item 13. Self-explanatory.

DOCUMENTATION

Adequate accounting records supported by source documentation should be kept as per section NR 120.25, Wisconsin Administrative Code, for all of the above items.

slh/8485K.PERM

State of Wisconsin
Department of Natural Resources

NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM
LOCAL ASSISTANCE GRANT BACKUP WORKSHEET

Form 3200-78 9-86

Note: This form is authorized by s. 144.25, Wis. Stats., and ch. NR 120, Wis. Adm. Code. Completion of this form is mandatory. Failure to submit a completed form to the Department will result in the denial of grant funds.

Grantee Name	Watershed Name	
Period Covered by This Report (MM-DD-YY) From To	Grant No.	Pay Request No.

LABOR COSTS

Salary

1. Hours eligible calculation
   a. Hours worked on eligible activities during quarter .....
   b. Hours carried over from previous quarter .....
   c. Total eligible hours (line 1a plus line 1b) .....
2. Hours worked by additional staff .....
3. Calculation of hours reimbursable
   a. If the amount on line 1c is greater than the amount on line 2, the difference is the carry over for the next quarter. Enter the difference here .....
   b. Hours reimbursable (Enter hours from line 1c or line 2, whichever is less) .....
4. Hourly salary rate of additional staff ..... $ /hour
5. Reimbursable salary amount (the amount on line 3b times the rate on line 4) ..... $

Fringe

6. Fringe percent ..... %
7. Fringe amount reimbursable (the amount on line 5 times the percent on line 6) ..... $

OTHER DIRECT COSTS (EXCLUDING LABOR)

8. Travel ..... $
9. Information and education materials (name of item) (amount)

   Total $

10. Equipment, supplies (name of item) (amount)

    Total $

11. Professional services (name of item) (amount)

    Total $

12. Other ..... $
13. Sum of lines 5, 7, 8, 9, 10, 11, and 12 ..... $

State of Wisconsin
Department of Natural Resources

NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM COST SUMMARY FOR EDUCATION AND LOCAL ASSISTANCE GRANT AGREEMENTS

Form 3200-79 9-86

NOTE: This form is authorized by s. 144.25, Wis. Stats., and ch. NR 120, Wis. Adm. Code. Completion of this form is mandatory. Failure to submit a completed form to the Department will result in the denial of grant funds.

Grantee Name	Watershed Name	
Period Covered by This Report (MM-DD-YY)	Grant Number	Pay Request Number

	Maximum Eligible Cost Per Budget	(A) Previous Amount Claimed	(B) Request This Claim	(A + B) Total Claimed To Date
LABOR COSTS				
Salaries				
Fringe				
OTHER DIRECT COSTS				
Travel				
Equipment, Materials, Supplies				
Professional Service Contracts				
Demonstration Activities (Education Grant Only)				
Other				
TOTAL				

State of Wisconsin
Department of Natural Resources

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM COST SHARE AGREEMENT

Form 3400-68 Rev. 5-86

Notice: This form is authorized by § 144.25, Wis. Stats., and ch. NR 120, Wis. Adm. Code. Completion of this form is mandatory. Failure to submit a completed form to the Department of Natural Resources will result in the denial of grant funds.

Cost Share Agreement Number	Total Est. Cost Share Amount $
Name of Cost Share Recipient	Telephone Number ( ) -
Street or Route	
City, State, Zip Code	
Legal Description of Property	

Name of Watershed Project	Project Grant Number
Name of County, City or Village	Telephone Number ( ) -
Street or Route	
City, State, Zip Code	

Name of Landowner or Land Contract Vendor* (if other than Cost Share Recipient)	Telephone Number ( ) -
Street or Route	
City, State, Zip Code	
Installation Period (Not to exceed 5 years) From (MM/YY)	To (MM/YR)

SECTION 1. AGREEMENT PROVISIONS

1. This agreement is subject to the provisions of § 144.25, Wis. Stats., and ch. NR 120, Wis. Adm. Code.
2. The period of this agreement shall be the installation period plus the operation and maintenance period.
3. The cost share recipient:
   - A. Agrees to install the best management practice(s) listed in section 2 consistent with the specifications listed in section 3 during the installation period identified above;
   - B. Agrees to operate and maintain each best management practice for 10 years beginning when the last practice on this agreement has been installed;
   - C. Agrees to allow onsite inspection of the best management practice(s) by county, city or village and Department of Natural Resources staff during the installation and operation and maintenance periods;
   - D. Agrees to repay the full amount of the cost share payments made if any term of this agreement is not fulfilled, including:
     - (1) Failing to install, operate and properly maintain the practices in this agreement as specified in ch. NR 120, Wis. Adm. Code;
     - (2) Adopting any land use or practice which defeats the purposes of the best management practices;
     - (3) When a change in ownership occurs, unless the new owner or operator assumes in writing responsibility for installation, operation and maintenance of the practices and other provisions of this agreement; or
     - (4) When a change in land use or management occurs, unless it is demonstrated to the county, city or village that the change will not result in the degradation of existing water quality;
   - E. Is not required to repay cost share payments if a practice is rendered ineffective due to circumstances beyond the control of the cost share recipient; and
   - F. Agrees not to discriminate against contractors because of age, race, religion, color, handicap, sex, physical condition, developmental disability, or national origin, in the performance of responsibilities under this agreement.
4. The county, city or village:
   - A. Agrees to provide technical assistance for best management practices indentified in section 2, unless the technical assistance is provided by the cost share recipient; and
   - B. Agrees to make cost share payment after receipt of a payment request by the cost recipient and evidence of proper installation of the best management practice.
5. The total state cost share payment for each practice identified in section 2 shall be based on A) the cost share rate for the practice as applied to the eligible costs actually incurred as substantiated to the county, city or village, and B) approved cost containment procedures.
6. The agreement may be amended, by mutual agreement, during the installation period subject to the provisions of ch. NR 120, Wis. Adm. Code.
7. The agreement must be amended if cost overrun on any or all practices exceed $500 in state cost share amounts.

*If the property described is being rented or purchased by land contract the landowner or land contract vendor's name must be filled in this box. The landowner or land contract vendor should sign this agreement on the reverse side.

SECTION 2. BEST MANAGEMENT PRACTICES, COSTS, INSTALLATION SCHEDULE

This section contains all best management practices, both those eligible for cost sharing and those not eligible, needed to control significant nonpoint sources in eligible areas owned or operated by the cost share recipient.

Best Management Practices (if best management practice is not cost shared, enter N/C)

Item Number	Field Number	BMP Code	Practice Name	Quantity	Units	Unit Cost	Estimated Total Cost	Cost Share Rate	Estimated Cost Share Amount	Cost Share From Other Programs*	Year to be Installed
						Total		**Total**		*Identify Program	

SECTION 3. BEST MANAGEMENT PRACTICE CONDITIONS

Attached are the conditions for each best management practice listed in section 2.

Signature of Cost Share Recipient or Authorized Representative	Date Signed	Signature of Authorized Representative of County, City or Village	Date Signed
Title		Title	
Signature of Landowner or Land Contract Vendor	Date Signed		

State of Wisconsin
Department of Natural Resources

NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM COST SUMMARY FOR EDUCATION AND LOCAL ASSISTANCE GRANT AGREEMENTS

Form 3200-79 9-86

NOTE: This form is authorized by s. 144.25, Wis. Stats., and ch. NR 120, Wis. Adm. Code. Completion of this form is mandatory. Failure to submit a completed form to the Department will result in the denial of grant funds.

Grantee Name	Watershed Name	
Period Covered by This Report (MM-DD-YY)	Grant Number	Pay Request Number

	Maximum Eligible Cost Per Budget	(A) Previous Amount Claimed	(B) Request This Claim	(A + B) Total Claimed To Date
LABOR COSTS				
Salaries				
Fringe				
OTHER DIRECT COSTS				
Travel				
Equipment, Materials, Supplies				
Professional Service Contracts				
Demonstration Activities (Education Grant Only)				
Other				
TOTAL				

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM — COST SHARE CALCULATION AND PRACTICE CERTIFICATION FORM
Section 144.25, Wis. Stats.
Form 3200-53 9-82

_____ Priority Watershed Project: _____ County

Agreement Number	Name and Address
Telephone Number (Include Area Code)	

COST SHARE CALCULATION

Practice Code	Practice Name	Units Installed	*	Total Cost of Practice	Cost Share %	Cost Share For Practice
				$		$
					TOTAL	$

*Place 0 if there are more of this type of practice on this agreement to install.
Place 1 if these units complete the installation of this practice for this agreement.

Amount Paid	Check Number	Check Date YY — MM — DD

PRACTICE CERTIFICATION

I certify the above practice or practices and practice units have been installed in accordance with the appropriate standards and specifications.

Signature	Title	Date Signed

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM COST SHARE AGREEMENT AMENDMENT

State of Wisconsin
Department of Natural Resources

Form 3400-68A Rev. 5-86

Notice: This form is authorized by § 144.25, Wis. Stats., and ch. NR 120, Wis. Adm. Code. Completion of this form is mandatory. Failure to submit a completed form to the Department of Natural Resources will result in the denial of grant funds.

Cost Share Agreement Number	Amendment Number

Name of Cost Share Recipient

Name of County, City or Village

Name of Watershed Project	Project Grant Number	New Total Est. Cost Share Amount

1. Best management practices ADDED *(If best management practice is not cost shared, enter N/C. Also complete appropriate section on reverse side.)*

Field Number	BMP Code	Practice Name	Quantity	Units	Unit Cost	Estimated Total Cost	Cost Share Rate	Estimated Cost Share Amount	Cost Share From Other Programs*	Year to be Installed	
					Column Subtotal		Column Subtotal		*Identify Program		

2. Best management practices DELETED *(If best management practice is not cost shared, enter N/C. Also complete appropriate section on reverse side.)*

Field Number	BMP Code	Practice Name	Quantity	Units	Unit Cost	Estimated Total Cost	Cost Share Rate	Estimated Cost Share Amount	Cost Share From Other Programs*	Year to be Installed	
					Column Subtotal		Column Subtotal		*Identify Program		

3. Best management practices CHANGED *(If best management practice is not cost shared, enter N/C. Also complete appropriate section on reverse side.)*

Field Number	BMP Code	Practice Name	Quantity	Units	Unit Cost	Estimated Total Cost	Cost Share Rate	Estimated Cost Share Amount	Change (+ or −)	Cost Share From Other Programs*	Year to be Installed
					Column Subtotal		Column Subtotal			*Identify Program	

REASON FOR ACTION TAKEN (Explanation and justification for such action)

1. Added Action

2. Deleted Action

3. Changed Action

Signature of Cost Share Recipient or Authorized Representative	Date Signed	Signature of Authorized Representative of County, City or Village	Date Signed
Title		Title	
Signature of Landowner or Land Contract Vendor	Date Signed		