Nonpoint Source Control Plan for the East River Priority Watershed Project

East River Watershed

Bringing It Back To Life

This plan was prepared under the provisions of the Wisconsin Nonpoint Source Water Pollution Abatement Program by the **Wisconsin Department of Natural Resources**, the **Department of Agriculture, Trade and Consumer Protection**, and the **Land Conservation Departments of Brown and Calument Counties**.

WATERSHED PLAN ORGANIZATION INFORMATION

Natural Resources Board

Stanton P. Helland, Chairman
Herbert F. Behnke, Vice Chairman
Trygve A. Solberg, Secretary
Mary Jane Nelson
Neal W. Schneider
James E. Tiefenthaler, Jr.
Stephen D. Willett

Brown County Land Conservation Department

Bill Hafs, County Conservationist

Brown County Planning Commission

Bob Pavoleski, Executive Director

Calumet County Land Conservation Department

Rock Anderson, County Conservationalist

Bay Lakes Regional Planning Commission

Bob Fisher, Executive Director

Wisconsin Department of Natural Resources

George M. Meyer, Secretary
Lyman Wible, Administrator, Division for Environmental Quality
Bruce Baker, Director, Bureau of Water Resources Management
Rebecca Wallace, Chief, Nonpoint Source & Land Management Section

Wisconsin Department of Agriculture, Trade and Consumer Protection

Alan Tracy, Secretary
Nicholas Neher, Administrator, Division of Agriculture Resource Management
Dave Jelinski, Director, Bureau of Land and Water Resources
Keith Foye, Chief, Soil and Water Resource Management Section

A NONPOINT SOURCE CONTROL PLAN FOR THE EAST RIVER PRIORITY WATERSHED PROJECT

The Wisconsin Nonpoint Source Water Pollution Abatement Program

This Plan Was Cooperatively Prepared By:

The Wisconsin Department of Natural Resources,
The Department of Agriculture, Trade, and Consumer Protection,
The Brown and Calumet County Land Conservation Departments,
Bay Lake Regional Planning Commission,
Brown County Planning Commission,
Local Units of Government, and
the East River Watershed Advisory Committee.

March, 1993
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For Copies of the document contact:

Wisconsin Department of Natural Resources
Bureau of Water Resources Management
Nonpoint Source and Land Management Section
P.O. Box 7921
Madison, WI 53707

The Wisconsin Department of Natural Resources acknowledges the Environmental Protection Agency's Region V Office for their involvement in the partial funding of this activity through Section 319 of the Water Quality Act.

WATERSHED PLAN ACKNOWLEDGEMENTS

Author

Jeff Prey, Nonpoint Source & Land Management Section, DNR
Jim D'Antuono, Nonpoint Source and Land Management Section, DNR
Ruth Foxe, Department of Agriculture, Trade & Consumer Protection (DATCP)

Editor

Cindy Lukas, Nonpoint Source & Land Management Section, DNR

Graphics/Maps

BIM/GEO Section, DNR

Contributors

East River Watershed Advisory Committee
- John Kennedy, Green Bay Metropolitan Sewerage Dist.
- Bud Paruleski, Brown County Planning Commission
- Dave Smith, Brown County U.W. Extension
- Rock Anderson, Calumet County Land Conservation Dist.
- Jon Bechle, Brown County Land Conservation Dist.
- Robert Beining, Citizen
- Steve Bennett, Area Agent U.W. Extension
- Frank Dadam for Richard Hall, Director of Public Works - Green Bay
- Bruce Deuchert, Citizen
- James Drought, Bay Lakes Regional Planning Commission
- William Elman, Fox Valley Water Quality Planning Agency
- Keith Foye, Department of Agriculture, Trade & Consumer Protection
- Tony Frigo, President - Village of Ashwabenon
- Matthew Glewen, Calumet County U.W. Extension
- William Hafs, Brown County Land Conservation District
- John Hart, Village of Wrightstown
- Ken Hibbard, Citizen
- Jim Hunt, U.S. Soil Conservation Service
- Rebecca Leighton, Brown County Board Supervisor
- Thomas McIntosh, University of Wisconsin-Green Bay
- Thomas Obenberger, Village Engineer - Village of Alouez
- Carl Weber, Director of Public Works - DePere

Ken Baun, DNR
Steve Bennett, Doty Juengst, University of Wisconsin-Extension
Laura Herman, DNR
Bob Fisher, Bay Lake Regional Planning Commission

Word Processing

Word Processing Staff, DNR

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
Carroll D. Besadny, Secretary
Box 7921
Madison, Wisconsin 53707
TELEFAX NO. 608-267-3579
TDD NO. 608-267-6897

September 12, 1991

Thomas D. Cuene, County Executive
Brown County
305 East Walnut
P. O. Box 23600
Green Bay, WI 54305-3600

Dear Mr. Cuene:

I am pleased to approve the East River Priority Watershed Plan prepared through the Wisconsin Nonpoint Source Water Pollution Abatement Program. This plan meets the intent and conditions of s. 144.25, Wisconsin Statutes, and Chapter NR 120, Wisconsin Administrative Code. This plan has also been approved by the Department of Agriculture, Trade and Consumer Protection. I am also approving the East River Priority Watershed Plan as an amendment to the Lower Fox Areawide Water Quality Management Plan.

I would like to express the Department's appreciation to the Brown County staff that participated in preparing this plan. The implementation of the East River project will be successful, and be a major step in achieving the objectives of the Lower Green Bay Remedial Action Plan.

We look forward to assisting Brown County, Calumet County and the cities and villages in the watershed in the implementation of the East River Priority Watershed Plan.

Sincerely,

C. D. Besadny
Secretary

cc: Jon Bechle - Brown Co. LCD
Bill Hafs - Brown Co. LCD
Dave Jelinski - DATCP
Becky Wallace - WR/2
Cindy Hoffland - CA/GEF 1

BC: Chuck Ledin
Jim D'Antuono

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
Carroll D. Besadny, Secretary
Box 7921
Madison, Wisconsin 53707
TELEFAX NO. 608-267-3579
TDD NO. 608-267-6897

September 12, 1991

Wilma Springer, County Board Chair
Calumet County
206 Court Street
Chilton, WI 53014

Dear Ms. Springer:

I am pleased to approve the East River Priority Watershed Plan prepared through the Wisconsin Nonpoint Source Water Pollution Abatement Program. This plan meets the intent and conditions of s. 144.25, Wisconsin Statutes, and Chapter NR 120, Wisconsin Administrative Code. This plan has also been approved by the Department of Agriculture, Trade and Consumer Protection. I am also approving the East River Priority Watershed Plan as an amendment to the Lower Fox Areawide Water Quality Management Plan.

I would like to express the Department's appreciation to the Calumet County staff that participated in preparing this plan. The implementation of the East River project will be successful, and be a major step in achieving the objectives of the Lower Green Bay Remedial Action Plan.

We look forward to assisting Brown County, Calumet County and the cities and villages in the watershed in the implementation of the East River Priority Watershed Plan.

Sincerely,

C. D. Besadny
Secretary

cc: Rock Anderson - Calumet Co. LCD
Dave Jelinski - DATCP
Becky Wallace - WR/2
Cindy Hoffland - CA/GEF 1

BC: Chuck Ledin
Jim D'Antuono

State of Wisconsin
Department of Agriculture, Trade & Consumer Protection

Alan T. Tracy
Secretary

801 West Badger Road
PO Box 8911
Madison, WI 53708-8911

August 20, 1991

Mr. Bruce Baker, Director
Bureau of Water Resources Management
Wisconsin Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

Dear Mr. Baker:

The Department of Agriculture, Trade and Consumer Protection has received the request from the Department of Natural Resources to approve "A Nonpoint Source Control Plan For The East River Priority Watershed Project". We have assisted DNR in the development of revisions for the rural portions of the watershed plan as presented in the April 1991 public hearing draft. The Department, hereby, approves the East River Watershed plan as revised.

I encourage you to process the grant documents for the rural portions of the project as soon as possible. Any delays will hamper implementation of best management practices in this construction season. We look forward to assisting DNR and the Land Conservation Committees of Brown and Calumet Counties in implementing the rural portions of the project. The progress of this project should be closely monitored to gauge the impact of the Federal Water Quality Demonstration Project on implementation.

Please contact Keith Foye (266-9496) if we can be of any further assistance in moving the project to implementation.

Sincerely,

Dave Jelinski, Director
Land and Water Resources Bureau
AGRICULTURAL RESOURCE MANAGEMENT DIVISION
(608) 267-0157

cc: Becky Wallace

May 15, 1991

TO THE HONORABLE CHAIRMAN & MEMBERS
OF THE BROWN COUNTY BOARD OF SUPERVISORS

Ladies & Gentlemen:

RESOLUTION RELATING TO THE APPROVAL OF THE
EAST RIVER PRIORITY WATERSHED PLAN

WHEREAS, the East River was designated by the state legislature as a "priority watershed" in 1987 under the Wisconsin Nonpoint Source Water Pollution Abatement Program, and

WHEREAS, the county Land Conservation Department, Brown County Planning Commission, Bay-Lake Regional Planning Commission, in cooperation with the Wisconsin Department of Natural Resources and Wisconsin Department of Agriculture, Trade and Consumer Protection, conducted a detailed inventory of the land use within the watershed in 1989 and 1990, and

WHEREAS, a draft of the plan has been available for review and comments were accepted at a public informational hearing held April 24, 1991, and

WHEREAS, the priority watershed plan 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, the implementation of this plan will provide both technical assistance and cost-share monies to eligible landowners and local governments 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 Brown County's water resources.

NOW, THEREFORE, BE IT RESOLVED, that the Brown County Board of Supervisors does hereby approve the "Priority Watershed Plan for the East River Priority Watershed Project" and that the implementation of the plan begins as soon as possible.

Respectfully submitted,

LAND CONSERVATION COMMITTEE

Approved By:

COUNTY EXECUTIVE

Date Signed: 5-17-91

Final Draft Approved by Corporation Counsel

RESOLUTION 1991-15

RESOLUTION ADOPTING THE
EAST RIVER NON-POINT SOURCE
PRIORITY WATERSHED PLAN

To the Honorable Chairperson and Board of Supervisors of Calumet County, Wisconsin:

WHEREAS, The East River Watershed was designated a "Priority Watershed" in 1987 under the Wisconsin Non-Point Source Water Pollution Abatement Program, and

WHEREAS, A detailed inventory of the land use within the watershed was conducted in 1989 and 1990, and

WHEREAS, This inventory resulted in the development of a detailed Non-Point Source Control Plan for the watershed, and

WHEREAS, An official public informational hearing was conducted on April 24, 1991, and

WHEREAS, Pertinent public comments have been incorporated into the Plan, and

WHEREAS, Each county within the watershed wishing to receive cost-sharing grants for landowners in the watershed must first adopt the East River Watershed Plan, and

WHEREAS, Costs to the County for implementation of the East River Watershed Plan are reimbursed 100%, except for office supplies and equipment which is reimbursed at 70%, and

WHEREAS, The County's share for supplies and equipment has been included in the 1991 budget.

NOW, THEREFORE, BE IT RESOLVED By the Board of Supervisors of Calumet County herein assembled, that the East River Non-Point Source Priority Watershed Plan be hereby adopted and that implementation of the Plan begin as soon as possible.

Dated this 18th Day of June, 1991.

Countersigned by:

_____
Wilma Springer, Chairperson
COUNTY BOARD OF SUPERVISORS

INTRODUCED BY THE
LAND CONSERVATION COMMITTEE

_____
William Barribeau, Chairperson

_____
Alvin Ott

_____
Donald Schwobe

_____
Charles Lisowe

_____
Peter Dorn

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SUMMARY

INTRODUCTION

The Nonpoint Source Control Plan for the East River Priority Watershed Project assesses the rural and urban nonpoint sources of pollutants in the East River Watershed Project Area. The plan guides the implementation of nonpoint source control measures in the project area. The control measures are necessary to meet specific water resources objectives for the East River, its tributaries and for lower Green Bay. This report provides an overview of the information contained in the plan.

Rural nonpoint sources of pollutants most commonly found in this watershed include:

- Sediment from cropland erosion.
- Polluted runoff from barnyards and feedlots.
- Sediment from eroding streambanks.
- Runoff from areas winterspread with livestock manure.

Urban nonpoint pollutant sources include:

- Construction sites.
- Freeways.
- Industrial areas.
- Commercial areas.
- Residential areas.

Major pollutants from urban sources are sediment, phosphorus, and heavy metals. The purpose of this project is to reduce the amount of pollutants originating from both rural and urban nonpoint sources that reach the surface waters and groundwater within the area of the East River Priority Watershed Project.

The plan was prepared by the Wisconsin Department of Natural Resources (DNR), the Department of Agriculture, Trade, and Consumer Protection (DATCP) and the following organizations:

- The Brown County Land Conservation Department.
- The Calumet County Land Conservation Department.
- The Brown County Planning Commission.
- The Bay Lake Regional Planning Commission.
- The University of Wisconsin Extension Service.
- The East River Watershed Advisory Committee.

The DNR selected the East River Watershed as a priority watershed project through the Wisconsin Nonpoint Source Water Pollution Abatement Program. This project joins 50 similar watershed projects statewide in which nonpoint source control measures are being planned and implemented. The Wisconsin Nonpoint Source Water Pollution Abatement Program (NPS Program) was created in 1978 by the state legislature. The program provides financial and technical assistance to landowners and local governments to reduce nonpoint source pollution.

On the state level, the DNR and DATCP administer priority watershed projects. Locally, each county land conservation department (LCD) administers the appropriate rural portions of the project with assistance from UW-Extension and the Soil Conservation Service (U.S. Department of Agriculture). Each municipality administers the urban portions of the project.

GENERAL WATERSHED CHARACTERISTICS

The East River Priority Watershed Project is located in northeastern Wisconsin and drains an area of land situated between the village of Wrightstown and Lake Michigan. The project area includes the East River Watershed (148 square miles), the areas draining directly to the lower portion of the Fox River from the village of Wrightstown to the bay of Green Bay (28 square miles), and the areas draining directly or indirectly through small streams to the east side of the bay of Green Bay (33 square miles). The East River Watershed drains approximately 209 square miles or about 134,000 acres and contains more than 260 miles of streams. Principal streams in the watershed are the East River (33 miles long), the Fox River (18 miles long), Bower Creek (17 miles long) and Baird Creek (13 miles long).

The watershed lies in portions of three counties: Brown County (99 percent), and Calumet and Manitowoc (one percent). The existing population of the East River Watershed is estimated at 131,500 people. The majority reside in incorporated areas, with most concentrated in the metropolitan area of the cities of Green Bay and De Pere, and the villages of Ashwaubenon, Allouez and the town of Bellevue. The fastest growing urban areas in the last decade were the cities of Green Bay and De Pere and the northeastern portion of the town of Bellevue.

Rural land uses are predominant in the watershed (152 square miles, 73 percent). Agricultural uses and related open space account for 80 percent of the rural area. Woodlands and wetlands together cover about 15 percent of the project area. (Refer to Table 1).

Urban land uses (including developing areas) occupy about 57 square miles, or 27 percent of the watershed project area. The predominant urban uses are residential (35 percent), and parks and open undeveloped space (48 percent). Population and land use projections indicate that the population will increase by between 5 and 10 percent over about the next 20 years resulting in an additional 8,700 acres of urban development.

Table 1. Land Use in the East River Watershed.

Land Use	Percent of Watershed
Agricultural	57%
pasture, grazed woodlot	1%
cropland	54%
grassland	2% other 5%
Woodland and Wetland	11%
Urban and Developing	27%

WATER RESOURCES

For the purposes of this project, the watershed was divided into six subwatersheds. These are the East River, Bower Creek, Baird Creek, Fox River, Holland Wildlife, and Green Bay Direct Drainage Area. Breaking the watershed project area into smaller pieces allows better identification of pollution control needs to achieve improved water quality.

Water quality studies reveal that most of the project area's streams and lower Green Bay suffer from excessive sediment and nutrient loading resulting in fair to poor water quality, degraded fish populations, and restricted opportunities for water-based recreation. The East River, Fox River, and downstream portions of Baird and Bower Creeks have the potential to support populations of warm water sport fish (bass, walleye, northern pike) and are currently used by migrating salmon and trout during spring and fall spawning runs. The actual biological communities vary according to natural and man-altered habitat conditions and by changes in water quality resulting from point and nonpoint source pollutants. Significant (50 percent) reductions in nutrient and sediment loading to streams in the project area are necessary for meaningful water quality improvements to occur.

SOURCES OF POLLUTION

RURAL NONPOINT POLLUTANT SOURCES

The Brown and Calumet County Land Conservation Departments collected data on all agricultural lands, barnyards, manure storage sites, and streambanks in the watershed. These data were used to estimate the pollutant potentials of these nonpoint sources. The amount of phosphorus carried in runoff from each barnyard to a receiving creek was calculated. The amount of sediment reaching streams from eroding agricultural lands and streambanks was also determined. In the East River Watershed, 75 percent of the sediment annually deposited in streams is derived from agricultural upland erosion.

The results of the investigations of rural nonpoint sources are summarized below.

Barnyard Runoff Inventory Results:

- Two hundred eighty-nine active barnyards were assessed, of which 285 have runoff that reaches streams.
- Four barnyards were identified as being internally drained and will be further investigated for the potential of adversely impact groundwater.

Manure Spreading Inventory Results:

- Two hundred eighty-nine livestock operations produce 100,000 tons of manure.
- About 550 acres have high pollution potential.
- Eight thousand acres of suitable land are needed to safely spread this manure.

Streambank Erosion Inventory Results:

- Seventy-five stream miles were inventoried.
- There are approximately 15 miles of eroding sites, involving 115 sites.
- Three thousand tons of sediment reach streams from eroding sites.
- Sediment from streambank erosion constitutes only about ten percent of that from upland sources.
- Stream-side and stream bed degradation resulting from cattle access amounts to about 20 miles of habitat, especially along the East River.

Upland Sediment Inventory Results:

- Ninety-five thousand acres were inventoried.
- A total of 27,500 tons of sediment are delivered to streams.
- The highest sediment delivery rates are found in the East River and Bower Subwatershed.

URBAN NONPOINT POLLUTANT SOURCES

Urban nonpoint sources include runoff from existing urban areas including established commercial, industrial, institutional, freeways and residential land uses; and runoff from areas where new urbanization is anticipated.

An inventory of existing 1986 and planned year 2010 conditions was conducted by the Brown County Planning Commission and the Bay Lake Regional Planning Commission. The delivery of urban pollutants to streams from existing urban areas was calculated using an urban runoff model which uses information regarding land uses, stormwater conveyance, and urban housekeeping practices. Five pollutants (sediment, phosphorus, lead, zinc and copper) were chosen to characterize the sources and severity of urban nonpoint pollution.

The results of the investigations of urban nonpoint sources are summarized below.

Combined Pollutant Results:

- The city of Green Bay contributes more than 50 percent of the estimated urban sediment load, and between 60 percent and 70 percent of the phosphorus, lead,

zinc and copper loads originating from urban areas in the watershed. This is not surprising since the city of Green Bay is the largest urban area in the watershed.

Sediment:

- The total sediment load from urban areas in the watershed is 11,300 tons per year (about 25 percent of the total sediment load from both rural and urban sources).

- The most important source of sediment reaching surface waters from urban areas in the watershed is erosion from construction sites (which make up less than one percent of the urban land in the watershed). Construction erosion was estimated to contribute 8,000 tons of sediment to surface waters in the watershed. This is nearly 70 percent of the total from all urban nonpoint sources.

Phosphorus, Lead Zinc and Copper:

- Overall, contributions of these materials to surface waters in the watershed project area are moderate when compared with other highly urbanized areas statewide. Freeways, industrial areas, commercial areas, and high density residential areas are the greatest contributors of lead (as well as sediment) on a per-acre basis. However, as these types of land uses increase, increased levels of lead and other heavy metals may be anticipated.

Other Urban Pollutants:

- Medium density residential areas are significant sources of pesticides and bacteria. In addition, data from other urban areas have often identified various household or automotive maintenance products which have been dumped into the storm sewer systems. These contaminants are delivered directly to streams and lakes.

POLLUTANT REDUCTION LEVELS

To improve water quality in the East River system, and ultimately the near-shore waters of Lake Michigan, this plan calls for:

- A 50 percent reduction in the sediment reaching streams and the lower Green Bay.

- A 50 percent to 70 percent reduction in phosphorus loading to the main stem segments of the East River is necessary to reduce the nutrients which cause excessive weed and algae growth.

- For urban sources, the following reduction levels have been established:

    1. For the communities of Green Bay, De Pere, Allouez, Ashwaubenon, Bellevue, (as a group) the urban nonpoint source control targets are:

        a. A 50 percent reduction of the 1986 sediment load from the incorporated area.

        b. A 40 percent to 60 percent reduction of the 1986 heavy metal load (as measured in zinc or copper) to reduce the potential of violating the state water quality standards of stormwater.

MANAGEMENT ACTIONS

Management actions are carried out through the installation of Best Management Practices (BMPs). In rural areas, these BMPs may range from alterations in farm management (changes in manure-spreading, crop rotations) to engineered structures (diversions, sediment basins, manure storage facilities), and are generally tailored to specific landowner situations. The county land conservation departments will assist owners, managers, and renters of agricultural lands in constructing BMPs. In urban areas, control practices may range from hydrologic alterations designed to detain pollutants or slow flows (wet detention ponds, grassed swales) to housekeeping practices (reducing sources of pet waste, road salts, lawn fertilizers and pesticides) to governmental controls (construction site erosion ordinances). The DNR and others will assist local units of government in the development of urban nonpoint pollutant source control measures.

Cost-share funds for installing pollutant control measures will be targeted at sources which contribute the greatest amounts of pollutants. Landowner and municipality eligibility for cost sharing of these practices will depend on whether pollutant loads from their lands fall into the established pollutant reduction ranges set for each nonpoint source category. Cost-share funds will be available through the Wisconsin Nonpoint Source Water Pollution Abatement Program for certain management actions. As shown in Table 2, cost-share rates for rural BMPs range from 50 to 70 percent. Cost-share rates for urban BMPs are shown in Table 3 and rates for other urban activities are shown in Table 4.

The following briefly describes the critical nonpoint pollutant sources, project eligibility criteria, and BMP design targets for the project.

Agricultural Lands

Almost 49,000 of the most critical upland agricultural acres are targeted for the highest level of pollutant control. When controlled, these acres will reduce the contribution of sediment from this source by 46 percent.

The BMPs identified by the county land conservation departments emphasize both improving farm management and controlling pollutants. Table 2 shows the eligible practices and cost-share rates.

Animal Lots

Of the 289 active barnyards inventoried, 285 were assessed for possible impacts on surface waters. As a result, 167 lots were identified as needing pollutant controls.

Four internally drained barnyards will be evaluated for groundwater pollution potential and cost-sharing eligibility during the implementation phase of the project.

Table 2. State Cost-Share Rates for Rural Best Management Practices

BEST MANAGEMENT PRACTICE	STATE COST-SHARE RATE
Contour Farming	50%
Contour Strip Cropping	50%
Field Strip Cropping	50%
Field Diversions and Terraces	70%
Grassed Waterways	70%
Reduced Tillage	50%
Critical Area Stabilization	70% (1)
Grade Stabilization Structures	70%
Agricultural Sediment Basins	70%
Shoreline and Streambank Stabilization	70%
Shoreline Buffers	70% (1)
Barnyard Runoff Management	70%
Animal Lot Relocation	70%
Manure Storage Facilities	70% **
Livestock Exclusion from Woodlots	50%
Wetland Restoration	70% (2)
Roofs for Barnyard Runoff Management and Manure Storage Facilities	70%
Nutrient and Pesticide Management	50% (2)

(1) Easements may be entered into with landowners identified in the watershed plan in conjunction with these BMPs.

(2) Spill control basins have a state cost-share rate of 70 percent.

* Wildlife habitat restoration components of this practice are cost-shared at 70 percent.

** Maximum cost-share amount is $10,000 including no more than $5,000 for manure transfer equipment.

Table 3. State-Cost Share Rates for Urban Management Practices	
BEST MANAGEMENT PRACTICE	STATE COST-SHARE RATE
Critical Area Stabilization	70% (1)
Grade Stabilization Structures	70%
Shoreline and Stream Bank Stabilization	70%
Shoreline Buffers	70% (1)
Wetland Restoration	70% (1)
Structural Urban Practices	70% (2)
Upgraded Street Cleaning	50%

(1) Easements may be available in conjunction with these practices.
(2) Applies only to structures for established urban areas.

Table 4. Urban Implementation Activities Eligible For State Funding	
ACTIVITY	STATE FUNDING RATE
Develop Construction Erosion Control Ordinances	100%
Develop Stormwater Management Ordinances	100%
Engineering Feasibility Studies (Existing Urban Area)	100% (1)
Stormwater Management Studies (Planned Urban Area)	100% (1)
Design and Engineering for Structural BMPs	100%
Development of Alternative Financing and Administrative Strategies	100%
Staff for Enforcing Construction Erosion and Stormwater Management Ordinances	100% (2)

(1) Funding not available for drainage or flood control.

(2) Funding limited to five years. Staffing level based on approved work plan.

MANURE SPREADING

The participants of the East River Project who winterspread manure on more than 10 acres of "unsuitable" land will be targeted as the highest priority for control measures. Operators who winterspread on 7 to 10 acres will also be eligible. In this project "unsuitable" lands for winter manure spreading are those lands with greater than six percent slope or which are flood prone. The county LCDs will assist farm operators in preparing management plans for proper manure spreading. A manure management plan identifies the proper spreading periods, application rates, and acceptable fields for manure spreading. A small number of the manure management plans may identify needs for manure storage facilities to prevent winter manure spreading on unsuitable lands.

STREAMBANKS

All project participants must restrict livestock access to perennial creeks in the watershed where there is evidence of trampling along the bank, damaged stream beds, or eroded streambanks from livestock. An estimated 100,000 feet of streambank in the watershed will require restricted cattle access.

Overall, approximately 3,600 tons per year of sediment must be controlled in the East River Watershed. The restriction of livestock access may achieve all or part of this goal.Land acquisition in the form of easements may be used along the riparian lands of East River, Bower Creek, and Baird Creek.

URBAN PRACTICES

The following two-step approach to controlling urban pollutant sources has been devised.

- ***Adopting "Core" Elements:*** The "core" elements of the urban nonpoint source control program applicable to local units of government include basic measures that can be adopted without further technical study. Communities are eligible to receive technical and/or financial assistance through the priority watershed project provided they commit to implementing a core program consistent with attaining pollutant reduction goals and water resource objectives for existing urban land uses within the first three years of the project. Sites that are currently undeveloped are expected to be controlled as part of the cost of development and thus are not eligible for cost-sharing.

The basic elements of the "core" program include:

1. Developing, adopting, and enforcing a construction erosion control ordinance consistent with the "model" developed jointly by the Wisconsin League of Municipalities and the DNR. Construction erosion control practices should be consistent with the standards and specifications in the ***Wisconsin Construction Site Best Management Practice Handbook.***

2. Developing and implementing a community-specific program of urban "housekeeping" practices which reduce urban nonpoint source pollutants. This may include a combination of information and education efforts, adoption of ordinances regulating pet wastes, or changes in the timing and scheduling of leaf and brush collection.

3. Implementing an information and education program.

- ***Adopting "Segmented" Elements:*** The "segmented" elements of the urban nonpoint source program include those requiring site-specific investigations prior to implementation (for example: the construction of detention ponds following the completion of an engineering feasibility study). Communities are eligible to receive cost-sharing for "segmented" elements provided "core" elements have been developed and implementation has begun. Cost-sharing will be limited to those elements of the segmented program completed within the eight-year implementation period of the project.

The higher costs of implementing this portion of the urban management program will require communities to budget expenditures over the course of several years. The BMPs implemented under this portion of the program may include detention ponds, infiltration devices, streambank erosion controls and other structural means for reducing urban nonpoint source pollutants. This element also includes changes in street sweeping schedules and equipment.

Eligible components of the "segmented" program include:

1. Conducting detailed engineering studies to determine the best means of implementing community-specific nonpoint source control measures for identified existing land uses.

2. Designing and installing structural urban BMPs for existing urban areas.

3. Developing management plans for planned future urban development. These plans will identify types and locations of structural urban BMPs.

4. Adopting and enforcing a comprehensive stormwater management ordinance that encompasses current and planned future areas.

In order to reach the goals targeted for urban areas, the key land uses in all of the communities which will need controls were identified. These land uses are industrial, commercial, multi-family residential and medium density residential. These land uses currently total 16,000 acres, with an additional 8,400 acres to be added by the year 2010.

FUNDS NEEDED FOR COST-SHARING, STAFFING, AND EDUCATIONAL ACTIVITIES

The DNR will award grants to each county or municipality for cost-sharing, staff support and educational activities. Table 5 includes estimates of the financial assistance needed to implement the necessary nonpoint source controls in the East River Watershed, assuming a 75 percent participation rate of eligible landowners.

Table 5. Cost Estimates for the East River Project

	Total Cost	State Share
Rural: Management Practices:	$4,800,000	$3,300,000
Easements:	$ 600,000	$ 600,000
Information/Education:	$ 40,000	$ 40,000
Staff Needs:	$1,300,000	$1,300,000
Other Direct Costs:	$ 90,000	$ 63,000
Subtotal	$6,830,000	$5,303,000
Urban: Management Practices *	$17,000,000	$7,000,000
Information/Education	$ 150,000	$ 150,000
Staff Needs & Other Costs:	- unknown at this time -	
Total:	$23,980,000	$12,453,000

* Does not include costs of land or storm sewer rerouting.

PROJECT IMPLEMENTATION SCHEDULE

Project implementation was scheduled to begin in July 1991. The first three years of implementation is the period for participants to sign cost-share agreements. There is a five-year period for practice installation. While an eligible landowner or operator has three years to decide whether to participate in the program, the installation of practices can begin as soon as a landowner has signed a cost-share agreement with the appropriate unit of local government.

INFORMATION AND EDUCATION

An information and education program will be conducted throughout the project period with Brown and Calumet Counties serving as leaders for multi-county educational activities in rural areas. In urban areas, each city will conduct an information and education program. University of Wisconsin-Extension staff will provide assistance. This program will be most intensive during the first four years of the project and the activities will taper off during the rest of the project. The activities will include BMP demonstrations, tours, newsletters, and public meetings.

PROJECT EVALUATION

The evaluation strategy for the project involves the collection, analysis, and reporting of information so that progress may be tracked in three areas; administration of the project, and the status of pollutant reduction levels and water resources.

ADMINISTRATIVE

This category includes the progress in providing technical and financial assistance to eligible landowners, and carrying out educational activities identified in the plan. The LCD or municipality will track the progress in this area and report to the DNR and DATCP quarterly.

POLLUTANT REDUCTION LEVELS

Reductions in nonpoint source pollutant loadings resulting from changes in land use practices will be calculated by the LCD or municipality and reported to DNR and DATCP at an annual review meeting.

WATER RESOURCES

The DNR will monitor changes in water quality, habitat, and water resource characteristics during the first two years of implementation and at the end of the project.

CHAPTER I
INTRODUCTION, PURPOSE AND LEGAL STATUS

The 209 square-mile East River Watershed was designated as a "priority watershed" in 1987 under the Wisconsin Nonpoint Source Water Pollution Abatement Program (Figure I-1). The ***Lower Green Bay Remedial Action Plan*** identified the East River as one of five high priority watersheds for control of nonpoint sources of pollution. The East River Priority Watershed Project initiates implementation of the nonpoint source pollution control recommendations in the ***Lower Green Bay Remedial Action Plan*** (WDNR 1988).

NONPOINT SOURCE WATER POLLUTION ABATEMENT PROGRAM

The Wisconsin Nonpoint Source Water Pollution Abatement Program (NPS Program) was created in 1978 by the Wisconsin State Legislature. The NPS Program's goal is to improve and protect the water quality of streams, lakes, wetlands, and groundwater by reducing pollutants from urban and rural nonpoint sources.

Nonpoint sources of pollution include: eroding agricultural lands; streambanks; roadsides; and developing urban areas; runoff from livestock wastes and established urban areas. Pollutants from nonpoint sources are carried to the surface water or groundwater through the action of rainfall runoff, snowmelt, and seepage.

The following is an overview of the NPS Program:

1. The NPS Program is administered by the Wisconsin Department of Natural Resources (DNR) and the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP). It focuses on critical hydrologic units called priority watersheds. The NPS Program is implemented through priority watershed projects.

2. A priority watershed project is guided by a plan prepared cooperatively by the DNR, DATCP, and local units of government, with input from a local citizen's advisory committee. Project staff evaluate the conditions of surface water and groundwater, and inventory land uses and nonpoint sources of pollution throughout the area. The priority watershed plan assesses nonpoint and other sources of water pollution, and identifies the best management practices (BMPs)

needed to meet specific water resources objectives. The plan guides implementation of these practices in an effort to improve water quality.

3. After plan approval by the counties, the DNR, and the DATCP, local units of government implement the plan. Water quality improvement is achieved through the voluntary implementation of nonpoint source controls--best management practices--and the adoption of ordinances. Landowners, land renters, counties, cities, villages, towns, metropolitan sewerage districts, sanitary districts, lake districts, and regional planning commissions are eligible to participate.

4. In urban and rural areas, technical assistance is provided to aid the design of best management practices (BMPs). State level cost-share assistance is available to help offset the cost of installing these practices.

   In rural areas, the County Land Conservation Department(s) contacts eligible landowners and local units of government to determine interest in voluntarily installing the BMPs or participating through other appropriate means identified in the plan. The DNR assists local units of government in implementing plan recommendations that are applicable to urban nonpoint pollution sources.

5. Informational and educational activities are offered to encourage participation.

6. The DNR and the DATCP review the progress of the counties and other implementing units of government, and provide assistance throughout the eight-year life of the project. The DNR monitors improvements in water quality resulting from control of nonpoint sources.

LEGAL STATUS OF THE NONPOINT SOURCE CONTROL PLAN

This priority watershed plan was prepared under the authority of the Wisconsin Nonpoint Source Water Pollution Abatement Program described in Section 144.25 of the Wisconsin Statutes and Chapter NR 120 of the Wisconsin Administrative Code. It was prepared under the cooperative efforts of the DNR, the DATCP, Brown County, Calumet County, the Brown County Planning Commission, Bay Lake Regional Planning Commission, local units of government, and the East River Watershed Advisory Committee.

This plan is the basis for the DNR to enter into cost-share and local assistance grants, and is used as a guide to implement measures to achieve desired water quality conditions.

In the event that a discrepancy occurs between this plan and the statutes or the administrative rules, or if the statutes or rules change during implementation, the statutes and rules will supersede the plan.

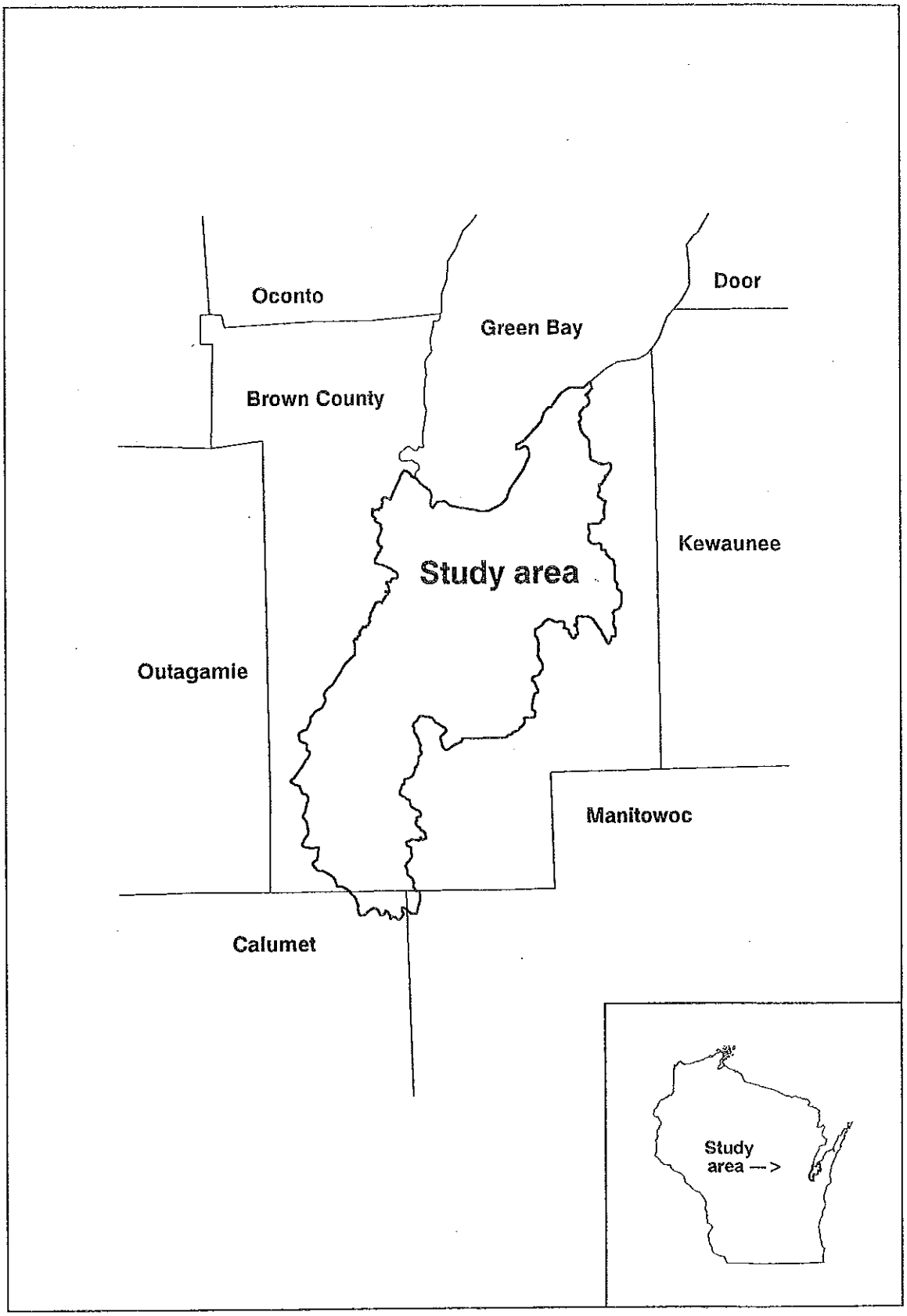

Figure I-1. East River Priority Watershed project area.

OTHER PLANNING ACTIVITIES IN THE WATERSHED

The East River Watershed, the Fox River and the Bay of Green Bay are the focus of several water resource planning efforts which are summarized below.

1. The Lower Fox River Water Quality Management Plan (Valvassori, 1991) identified water quality goals, problems, improvements, and management needs for the Lower Fox River Basin which includes the East River Watershed Project area. This priority watershed plan is an amendment to the above referenced areawide water quality management plan which identifies the nonpoint source control needs for this priority watershed.

2. The International Joint Commission (IJC), the U.S. Environmental Protection Agency's Great Lakes National Program Office (GLNPO) and the DNR targeted the Lower Fox River and the Lower Green Bay as an Area of Concern for remedial action. The ***Lower Green Bay Remedial Action Plan*** (WDNR, 1988) identifies specific management strategies to control and abate surface water and bottom sediment contamination due to the presence of toxic substances. It contains recommendations pertaining to the need for nonpoint source pollution controls. This priority watershed plan identifies a control strategy which complies with the reduction goals identified in the Remedial Action Plan for the East River Watershed.

3. The East River Watershed is one of eight special project areas identified nationwide to demonstrate the effects of agricultural chemical management on farm profitability and water quality. The demonstration project is being carried out by the U.S. Department of Agriculture, Soil Conservation Service and Agricultural Stabilization and Conservation Service, and the University of Wisconsin Extension Service cooperatively with other units of government. Innovative fertilizer, pesticide and manure management techniques, soil erosion control and other techniques and practices are applied to improve farming operations and protect water quality.

   The Bower Creek Subwatershed was targeted for the most intensive work during this five-year effort. Information and education efforts will assist landowners throughout the East River Watershed. Implementation of this project will compliment the control of nonpoint sources targeted by the priority watershed project.

RELATIONSHIP OF THE NONPOINT SOURCE CONTROL PLAN TO THE FEDERAL STORM WATER DISCHARGE PERMIT PROGRAM

Recent changes to the Federal Water Quality Act will play an important role in improving water quality in the East River Project area. Amendments to the act, approved in 1987, required large cities, major industries, and other municipalities to apply for a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of pollutants from separate storm water sewer systems by February 4, 1990. These permits (called WPDES in Wisconsin) are the same as those issued by the DNR for public and private wastewater treatment plants and industrial wastewater dischargers.

The DNR in accordance with regulations issued by the U.S. Environmental Protection Agency (EPA), has responsibility for implementing this new program. The EPA published regulations in October 1990. Additional regulations scheduled to be issued in October 1992, which become effective in 1995, may apply to the city of Green Bay and other moderately sized cities statewide.

The amendments to the above referenced Federal Water Quality Act require pollutants in municipal storm water discharges to be controlled to the "maximum extent practicable". Many of the probable permit requirements needed to improve water quality in the project area overlap with the management actions in this plan. For example, adoption and enforcement of construction site erosion control ordinances are specifically mentioned in the draft regulations and are identified in this nonpoint source plan as a critical component of the sediment control strategy. Implementation of the East River nonpoint source plan will most likely meet this and many other permit requirements.

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

The coordinated implementation of the federal program and this nonpoint source control plan will help ensure that the water quality objectives for the East River and its tributaries will be achieved. Specific information on the relationship between implementing these two programs is presented in Chapter V, "Local Government's Implementation Program".

PLAN ORGANIZATION

The remainder of this plan is divided into three parts: "The Watershed Assessment", "A Detailed Program for Implementation" and "Project Evaluation". The contents of each part are described below:

PART ONE: THE WATERSHED ASSESSMENT

Chapter II, "Description of the Watershed", is an overview of the cultural and natural resource features pertinent to planning and implementation efforts for the priority watershed project.

Chapter III, "Water Quality Conditions, Objectives and Nonpoint Sources", identifies the water quality or water resource problems and objectives that can be achieved through a nonpoint source control project. The chapter determines the level of pollutant control needed to achieve the objectives, describes the nonpoint sources and other sources of pollution.

Chapter IV, "Management Actions", identifies the level of urban and rural nonpoint source control needed to meet the water quality objectives. The decision criteria and the nonpoint sources eligible for funding under the priority watershed project are also presented.

PART TWO: A DETAILED PROGRAM FOR IMPLEMENTATION

Chapter V, "Local Government's Implementation Program", describes the means by which the local units of government administer the project, estimates a local assistance and management practice cost-share budget and identifies an information and education program.

Chapter VI, "Integrated Resource Management Activities", presents the strategy for involving DNR resource management programs (fisheries management, wildlife etc.) in the nonpoint source pollution abatement efforts in the East River Watershed.

PART THREE: PROJECT EVALUATION

Chapter VII, "Progress Assessments", discusses the means for assessing the amount of nonpoint source control gained through installation of best management practices. Chapter VIII, "Evaluation Monitoring", presents a strategy and a schedule for stream monitoring to determine the water quality impacts of implementing nonpoint source controls.

PART ONE
THE WATERSHED ASSESSMENT

CHAPTER II: DESCRIPTION OF WATERSHED

CHAPTER III: WATER QUALITY CONDITIONS, OBJECTIVES, AND NONPOINT SOURCES

CHAPTER IV: MANAGEMENT ACTIONS

CHAPTER II
DESCRIPTION OF THE WATERSHED

The East River Watershed Project Area is a 209 square-mile elongated drainage area in northeastern Wisconsin. The watershed is part of the larger Fox River Basin. This priority watershed project area includes: the East River Watershed (148 square miles); areas draining directly to the lower portion of the Fox River from the village of Wrightstown to the Bay of Green Bay (28 square miles); and areas draining either directly or through small streams to the east side of the Bay of Green Bay (33 square miles). It includes portions of Brown, Calumet, and Manitowoc Counties.

The East River is the major stream, originating in Calumet County and flowing north a distance of 33 miles through Brown County before emptying into the Fox River about 1.3 miles upstream from the mouth of the Fox River (Figure II-1). The other major surface water features are the lower portion of Green Bay from Point au Sable on the eastern shore to Long Tail Point on the western shore and the lower portion of the Fox River from Wrightstown downstream to the Green Bay.

The following is a brief overview of the watershed's cultural and natural resource features important in planning a nonpoint source pollution control effort.

CULTURAL FEATURES

Civil Divisions

Nearly all of the watershed lies within Brown County (99 percent) with the remaining one percent in Calumet and Manitowoc Counties. Civil divisions are presented in Figure II-2 (Bay Lake Regional Planning Commission, 1989). Incorporated areas total 50 square miles or 24 percent of the watershed. They include the cities of De Pere (seven square miles, 85 percent of the city's area) and Green Bay (38 square miles, 85 percent of the city's area) and the villages of Allouez (four square miles, 100 percent of the village's area), Ashwaubenon (one square mile, 15 percent of the village's area) and Wrightstown (one square mile, 50 percent of the village's area) together encompass about six square miles. The watershed also includes all or portions of 11 townships which comprise the remaining 159 square miles or 76 percent.

POPULATION SIZE AND DISTRIBUTION

The estimated 1990 population in the watershed is 131,500 with 98 percent residing in Brown County. This represents approximately 68 percent of the entire Brown County population. The fastest growing portions of the watershed include portions of the cities of Green Bay and De Pere, and the northern area of the town of Bellevue. Regional trends suggest that the watershed's population will increase by 5 to 10 percent over the next 20 years (Bay Lake Regional Planning Commission, 1989).

LAND USES

Rural land uses predominate, encompassing 152 square miles, or 73 percent of the watershed. Agricultural and related open space uses are the most important land uses, comprising 80 percent of the rural area. Urban land uses characterize the remaining 57 square miles, or 27 percent of the area. The predominant urban land uses are residential, parks, and undeveloped open space which together comprise about 83 percent. Generalized land uses are shown on Figure II-3.

MUNICIPAL AND INDUSTRIAL POINT SOURCES OF WATER POLLUTION

Discharges of wastewater from permitted municipal and industrial sources are important considerations for improving and protecting surface water resources. An inventory of point sources is presented in the "East River Water Quality Appraisal Report" (DNR, 1990). All point sources are controlled through permits issued by the DNR under the Wisconsin Pollution Discharge Elimination System (WPDES) permit system. Additional information on these pollution sources is presented in Chapter III, "Water Quality Conditions, Objectives and Nonpoint Sources".

SANITARY SEWER SERVICE

Sanitary sewer service availability is extensive throughout the watershed. Approximately 124,700 persons, 95 percent of the watershed's population, receive this service. The remainder are not served by sanitary sewer service and rely on private onsite systems.

The Green Bay Metropolitan Sewerage District and the city of De Pere Wastewater Treatment Plant provide service for most of the area. The Wrightstown Sanitary District 1 and the Royal Scot Sanitary District serve portions of Greenleaf, an unincorporated community, and urban development in the town of Scott respectively. Treated wastewater from the Green Bay Metropolitan Sewerage District is discharged to the bay of Green Bay. Effluent from the remaining municipal sewage treatment plants is discharged to small streams draining to either the bay of Green Bay, the Fox River or the East River.

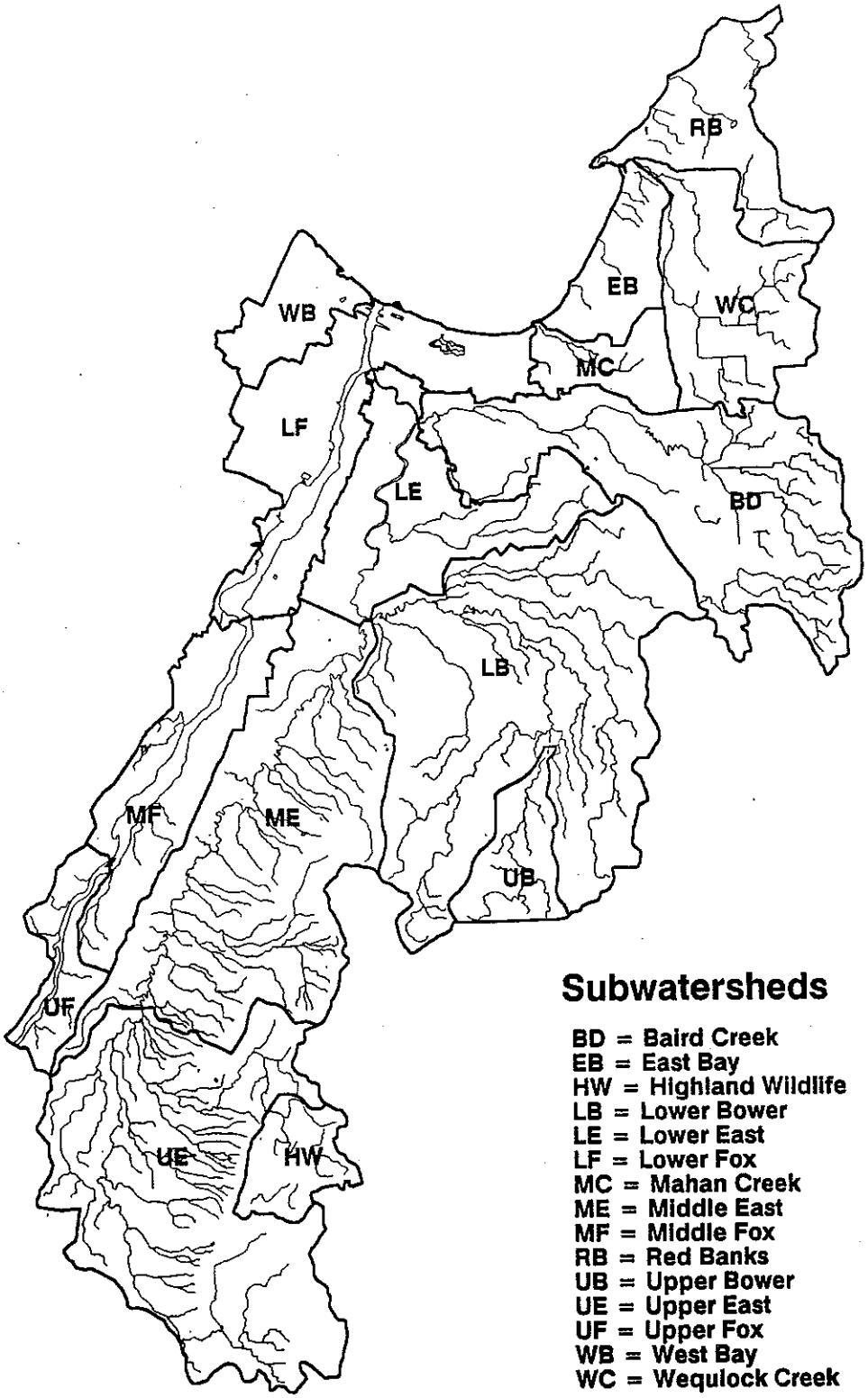

Figure II-1. Subwatersheds and surface water features in the East River Priority Watershed project area.

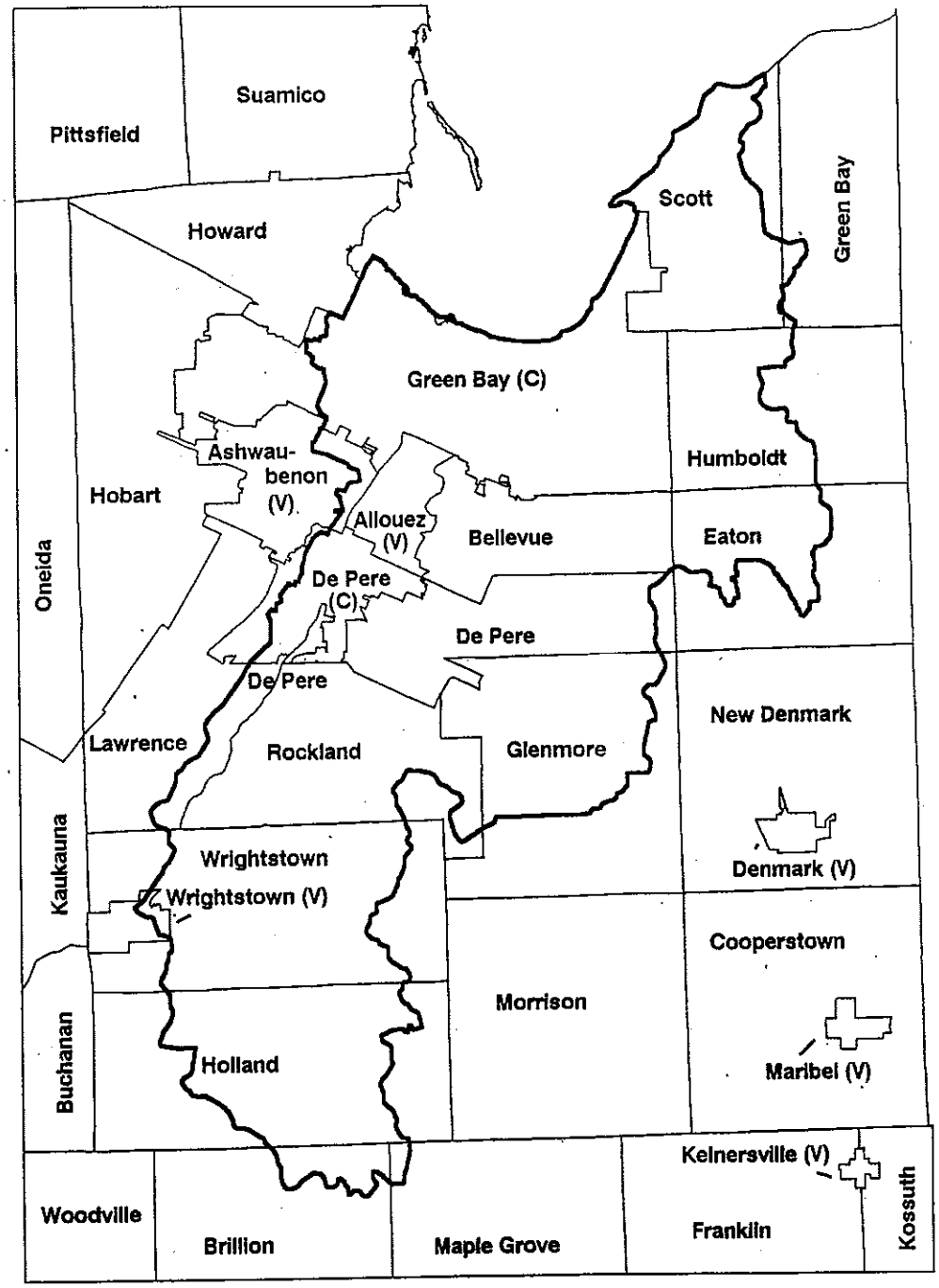

Figure II-2. Civil Divisions in the East River Priority Watershed area. All divisions are townships except where denoted by "C" (city) or "V" (village).