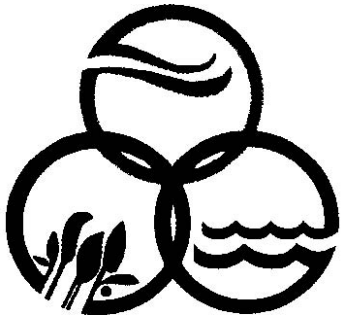

Mississippi NONPOINT Source Management Program
2000 Update

Prepared by The Mississippi Department of Environmental Quality

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Executive Summary

Mississippians have always valued their lakes and streams because of their recreational and economic potential. Both recreational and commercial fishing have been an important part of the State's heritage and swimming or boating in the local stream or lake continues to be an important aspect of living in Mississippi. However water quality monitoring and assessment reports have continued to indicate Nonpoint Source Pollution (NPS) as a potential source of pollution in many of our state waters. Nonpoint Source (NPS) Pollution is defined in general as pollution by diffuse sources. Runoff occurring after a rain event may transport sediment from plowed fields, construction sites, or logging operations, pesticides and fertilizers from farms and lawns, motor oil and grease from roads and parking lots, or bacteria from animal waste facilities or malfunctioning septic systems. The rain moves the pollutants across the land to the nearest water body or storm drain where they may impact the water quality in creeks, rivers, lakes, estuaries, and wetlands. Nonpoint source may also impact groundwaters when it is allowed to seep or percolate into aquifers. The adverse impacts of NPS Pollution include physical destruction of aquatic habitat, fish die-offs, elimination of recreational uses of a water body, closure of shellfish beds, reduce water supply or taste and odor problems in drinking water, and increased potential for flooding because waterbodies become choked with sediment.

The Mississippi NPS Pollution Assessment Report was first completed in 1989 pursuant to Section 3 19 of the Clean Water Act and subsequently updated in 1996. The purpose of the report was to identify state waters which, without additional action to control nonpoint source pollution, could not reasonably be expected to attain or maintain applicable water quality standards. This was done by using either current (at that time) monitoring data, or factors such as land use, location of pollution sources or citizen complaints. The report also listed pollutants or potential causes of impairment and the sources of those pollutants for each identified water body or watershed. According to the report, most of the state is potentially impacted by NPS pollution. However, most of the information was provided in the form of surveys completed by various state and federal resource agencies. Consequently, the report focuses mainly on information regarding potential agricultural, silvicultural, and urban sources of nonpoint pollution and includes many waterbody segments or watersheds for which no monitoring data were collected and therefore, no impairment was or is known to exist. The water quality of these waterbody segments or watersheds is of concern to the State and warrants further investigation. As part of implementing its rotating basin approach, MDEQ is committed to determining whether these waters actually are impaired and, if so, whether NPS pollutants and sources are responsible.

The Mississippi Nonpoint Source (NPS) Management Program Update outlines a statewide strategic plan for addressing current and future NPS pollution impacts. To accomplish this strategy 18 long-term goals for reducing or preventing NPS pollution have been established. To accomplish these goals, short-term (five year action strategies) have been developed for all categories of NPS pollution.

The State's strategy for the management and abatement of NPS pollution relies on a statewide

and targeted watershed approaches. These approaches are implemented through both regulatory and non-regulatory programs on the Federal, State, and local levels. Some of the activities regulated by the state include: construction, stormwater, mining, and hydrologic modifications. The strategy for the management of these activities is to continue to develop and implement educational programs and to continue to issue permits and maintain compliance and enforcement activities. The implementation of program activities or categories that are not regulated will rely primarily on the voluntary cooperation of stakeholders and will be supported financially through federal assistance programs such as Section 3 19 and also state resources.

The strategy for addressing NPS pollution on a statewide level includes education/outreach, assessment and monitoring, BMP demonstrations, BMP compliance, technical transfer, consensus building and partnering.

This NPS Management Plan Update will also implement a strategy that targets priority watersheds. Prioritization of these watersheds will be an evolving process identified in the Basinwide Approach to Water Quality Management. Within priority watersheds, activities will be implemented to address parameters of concern that appear on the State's 303(d) List. The State's NPS Updated Program also incorporates the Coastal NPS Program strategy, the Basinwide Approach strategy, and the State's strategy for the development and implementation of NPS Total Maximum Daily Loads (TMDLs).

The NPS Program will continue to be implemented in cooperation with numerous agencies, organizations and groups at all levels of government and in the private sector. A great focus will be given to activities that promote consensus building and partnering to increase the overall effectiveness of the State's NPS Program.

The program will be guided by the Mississippi Department of Environmental Quality's and the NPS Section's Mission Statements:

The Mission of the Mississippi Department of Environmental Quality is to safeguard the health, safety and welfare ofpresent andfuture generations of Mississippians by conserving and improving our environment andfostering wise economic growth through focused research and responsible regulation.

Mississippi's Nonpoint Source Program's Mission:

To conserve and improve State waters, for man's use and the sustainment and propagation of wildlife and aquatic life, through focused research, responsible regulation, widespread education, and cooperation with other agencies and the public.

The Mississippi NPS Management Plan Update fulfills the requirements of both Section 319 of the Clean Water Act Amendments of 1987, and Section 6217 of the Coastal *Zone* Act Reauthorization Amendments, It comprehensively describes a framework for agency coordination and cooperation and serves to implement a strategy for employing effective

management measures and programs to control NPS pollution statewide for the next five years. The plan is dynamic in nature and will be updated as new data becomes available.

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BMP	Best Management Practices
BOD	Biochemical Oxygen Demand
CES	USDA, Cooperative Extension Service
cfs	Cubic Feet per Second (water or waste flow)
COE	U.S. Army Corps of Engineers
CRO	MDEQ's Central Regional Office
CRP	Conservation Reserve Program
CWA	Clean Water Act
CWAP	Clean Water Action Plan
CZARA	Coastal Zone Act Reauthorization Amendments
DO	Dissolved Oxygen
EPA	U.S. Enviromnental Protection Agency
EQIP	USDA Environmental Quality Incentive Program
FSA	USDA Farm Services Agency
GRTS	Grants Reporting and Tracking System
HUC	Hydrologic Unit Code
UST	Underground Storage Tank
LUST	Leaking Underground Storage Tank
MAES	Mississippi Agriculture Extension Service
MDEQ	Mississippi Department of Environmental Quality
MDAC	Mississippi Department of Agriculture and Commerce
MDMR	Mississippi Department of Marine Resources
MDOT	Mississippi Department of Transportation
MDWFP	Mississippi Department of Wildlife, Fisheries, & Parks
MFA	Mississippi Forestry Association
MFC	Mississippi Forestry Commission
MSWCC	Mississippi Soil & Water Conservation Commission
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
NRCS	USDA, Natural Resource Conservation Service
NRO	MDEQ's North Regional Office
OPC	Mississippi Office of Pollution Control
SMZ	Streamside Management Zone
SRF	State Revolving Fund
SRO	MDEQ's South Regional Office
SWCD	Soil & Water Conservation District
TVA	Tennessee Valley Authority
TMDL	Total Maximum Daily Load
USDA	U.S. Department of Agriculture
USDA-FS	U.S. Department of Agriculture - Forest Service
USFWS	U.S. Fish and Wildlife Service

USGS	United States Geological Survey
UWA	Unified Watershed Assessment
WQMB	Water Quality Management Branch
WRAS	Watershed Restoration Action Strategy
WLA	Waste Load Allocation

CHAPTER 1

INTRODUCTION AND BACKGROUND

DEFINITION OF NONPOINT SOURCE POLLUTION

The 1987 United States Environmental Protection Agency's (EPA) Nonpoint Source Guidance gives the following definition "for the purpose of implementing the nonpoint source provisions of the [Clean Water Act]":

> *Nonpoint Source (NPS) Pollution is defined in general as pollution by diffuse sources that are not regulated as point sources and normally is associated with agriculture, forestry, and urban runoff runofffrom construction activities, etc. Such pollution results in the human induced alteration of the chemical, physical, biological, and radiological integrity of water. In practical terms, nonpoint source pollution dose not resultfrom a discharge at a specific. single location (such as a single pipe) but generally results from land runoff precipitation, atmospheric deposition, or percolation. It must be kept in mind that this definition is necessarily general. Legal and regulatory decisions have sometimes resulted in certain sources being assigned to either the point or nonpoint source categories because of considerations other thon their manner of discharge. For example, irrigation return flows are designated as "nonpoint sources" by section 402(1) of the Clean Water Act, even though the discharge is through discrete conveyance."*

The EPA has further segregated NPS pollution into eight main categories for the purpose of describing the sources of various contaminants. These categories are listed in Table I-l below.

According to the "Hand Book of NPS Pollution" by Novotny and Chesters, the general characteristics that describe NPS pollution are:

- Nonpoint source discharges enter surface waters in a diffuse manner and at intermittent intervals that are related mostly to the occurrence of meteorological events.
- Pollution arises over an extensive area of the land and is in transit overland before it reaches surface waters.
- Nonpoint sources generally cannot be monitored at their point of origin, and their exact source is difficult or impossible to trace.
- Elimination or control of pollutants must be directed at specific sites.
- In general, the most effective and economical controls are land management techniques and conservation practices in rural zones and architectural control in urban zones.
- Nonpoint source pollutants cannot be measured in terms of effluent limitations.
- The extent of NPS pollution is related, at least in part, to certain uncontrollable climatic events, as well as geographic and geologic conditions, and may differ greatly from place to place and year to year.
- Nonpoint sources are derived from consecutive operations on extensive unites of land, as opposed to industrial activities that typically are repetitive operations on intensive

(small) units of land.

TABLE l-l
Major Nonpoint Source Pollutant Categories and Subcategories

Agriculture Non-irrigated Crop Production Irrigated Crop Production Specialty Crop Production Pastureland Rangeland Feedlots (Confined Animal Feeding Operations) Aquaculture Animal Holding/Management Area Manure Lagoons	**Land disposal** Sludge Wastewater Landfills Industrial Land Treatment Onsite Wastewater Systems (Septic Tanks) Hazardous Waste Sewage Disposal
Forestry Harvest, Restoration, Residue Management Forest Management Logging Roads Construction Maintenance	**Hydro-modification/Habitat Modification** Channelization Dredging Dam Construction Flow Regulations/Modifications Bridge Construction Removal of Riparian Vegetation Streambank Modification/Destabilization Drainage/Filling of Wetlands
Construction Highway/Road/Bridge Construction Land Development	
Urban Runoff Nonindustrial Permitted Industrial Permitted Other Urban Runoff	**Other** Atmospheric Deposition Waste Storage/Storage Tank Leaks Highway Maintenance and Runoff Spills Contaminated Sediments Natural Recreational Activities Upstream Impoundments Salt Storage Sites Groundwater Loadings Groundwater Withdraw

Mining Surface Mining Subsurface Mining Placer Mining Dredge Mining Petroleum Mining Mill Tailings Mine Tailings Acid Mine Drainage	

CLEAN WATER ACT REQUIREMENTS

The Clean Water Act of 1987 established a national policy that programs be developed and implemented to control nonpoint sources (NPS) of pollution. To facilitate development of NPS programs, Section 3 19 of the Act requires each state to prepare two major documents: a State Assessment Report describing the State's NPS problems and a State Management Program explaining what the State plans to do in the next four years to address their NPS problems. This State Management Program is written to meet the specific requirements of Section 3 19 and EPA guidance documents.

This document is an update of the State Management Program of 1988. EPA specifies that these documents be updated when one or more of the following events occurs: 1) a change in state legislation affects the lead 'organization's responsibility; 2) the program milestones have expired; 3) technical information indicates the Management Program and Best Management Practices (BMPs) have changed; or 4) the State NPS program has matured and the implementation program has changed. This document represents a complete revision of the entire 1988 document. In the future, specific sections may be updated according to EPA revision process.

Tables I-2 and I-3 below highlight the specific requirements of the Clean Water Act. A copy of Section 3 19 of the CWA is provided in Appendix A.

TABLE l-2
State Assessment Report Requirements - 319(a)

Clean Water Act Section	Requirement
319(a)(1)(A)	"identifies those navigable waters within the State which, without additional action to control nonpoint sources of pollution, cannot reasonably be expected to attain or maintain applicable water quality standards or the goals and requirements of this act."

Clean Water Act Section	Requirement
319(a)(1)(B)	"identifies those categories and subcategories of nonpoint sources or, where appropriate, particular nonpoint sources which add significant pollution to each portion of the navigable waters identified [above]".
319(a)(1)(c)	"describes the process, including intergovernmental coordination and public participation, for identifying best management practices and measures to control each category and subcategory of nonpoint sources and, where appropriate, particular nonpoint sources identified under subparagraph (B) and to reduce, to the maximum extent practicable, the level of pollution resulting from each category, subcategory, or source; and
319(a)(1)(d)	identities and describes State and local programs for controlling pollution added from nonpoint sources to, and improving the quality of, each such portion of the navigable waters, including but not limited to those programs which are receiving Federal assistance under subsections (h) and (i).

TABLE 1-3
State Management Program Requirements - 319(b)

Clean Water Act Section	Requirement
319(b)(2)	Each management program proposed for implementation under this subsection shall include each of the following
319(b)(2)(A)	"An identification of the best management practices and measures which will be under taken to reduce pollutant loadings resulting from each category, subcategory, or particular nonpoint source designated under paragraph (1) (B), taking into account the impact of practices on ground water quality."
319(b)(2)(B)	An identification of programs (including, as appropriate, non-regulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer and demonstration projects) to achieve implementation of the best management practices by the categories, subcategories, and particular nonpoint sources designated under subparagraph (A)".

Clean Water Act Section	Requirement
319(b)(2)(C)	A schedule containing annual milestones for utilization of program implementation methods and implementation of best management practices.
319(b)(2)(D)	A certification from the attorney general that the laws of the State provide adequate authority to implement the management program or a list of needed authorities and a schedule for development.
319(b)(2)(E)	Sources of Federal assistance and other assistance and funding other than section 3 19 to implement practices and measures in the management program.
319(b)(2)(F)	A listing of the Federal financial assistance programs and Federal government projects for which the state will review individual applicants or development projects for consistency with the objectives of the State's nonpoint source management program.

HISTORY OF NATIONAL EFFORTS TO CONTROL NPS POLLUTION

In 1948, Congress passed the first Water Pollution Control Act which provided limited provisions for legal action against polluters of national waters. In 1956, these provisions were expanded and subsidies were provided for municipal wastewater treatment plant construction. The Water Quality Act of 1965 required states to set water quality standards and plans indicating how those standards would be met.

ln 1972, Congress amended the Federal Water Pollution Control Act and introduced national water quality standards and a national discharge permit system. This and the Clean Water Act of 1977 formed the basis for the "National Pollutant Discharge Elimination System" (NPDES) permits. Thus pollutant loads from point source discharges were greatly reduced and considerable progress was made in restoring and maintaining water quality. With the cleanup and regulation of point source discharges, EPA and the States realized that many waters throughout the nation were still impaired as a result of nonpoint source pollution (NPS). Nonpoint source pollution is defined in general as pollution caused by diffuse sources that are not regulated as point source discharges and normally is associated with agriculture, silviculture, urban runoff, and runoff from construction activities NPS pollution can impact groundwater as well as surface water. In 1987, Congress amended the Clean Water Act in order to address nonpoint sources of pollution. Section 101, "Declaration of Goals and Policy" had the following fundamental principle added:

It is the national policy that programs for the control of nonpoint sources ofpollution be developed and implemented in an expeditious manner so us to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution.

Therefore, Congress inserted Section 3 19 as one of the amendments. Section 3 19 established a national program to address nonpoint source pollution, It authorized EPA to issue grants to states and, in order for the states to receive these grants, required the states to assess NPS pollution problems and causes within the state, and to implement a management program to control NPS pollution. Every few years the states had to document their efforts and results in assessing pollution problems and implementing their management programs.

In 1990, Congress enacted the Coastal Zone Act Reauthorization Amendments (CZARA). These Amendments were intended to address several concerns, a major one of which is the impact of NPS pollution on coastal waters. Congress included Section 6217, "Protecting Coastal Waters," which was intended to specifically address the impacts of NPS pollution on coastal waters. This section required each state with an approved coastal zone management program submit a coastal nonpoint source pollution control program (CNPCP). This document had to be submitted to both EPA and the National Oceanic and Atmospheric Administration (NOAA) for their approval.

On October 18, 1997, Vice President Gore called for a "renewed effort to restore and protect water quality." The Vice President asked that the Secretary of Agriculture and the Administrator of the Environmental Protection Agency (EPA), working with other affected agencies, develop a Clean Water Action Plan (CWAP) that builds on clean water successes and addresses three major goals:

1) enhanced protection from public health threats posed by water pollution;
2) more effective control of polluted runoff; and
3) promotion of water quality protection on a watershed basis.

In the development of this plan there was a growing recognition of the need to better coordinate and tailor the implementation of national programs in specific geographic areas, such as watersheds, where water quality is impaired or needs to be protected. A watershed approach fosters the coordinated and more efficient implementation of programs to control point source discharges, reduce polluted runoff, enhance sensitive natural resources such as wetlands and coastal waters, and protect drinking water supplies. State, tribal and federal agencies currently use multiple processes to assess water quality and other natural resource conditions. Therefore one of the key actions in the CWAP called for Unified Watershed Assessments to be done. These assessments would provide a basis for linking state, tribal, and federal programs with common objectives and resolving conflicting agency priorities. States were to take the lead, working with federal agencies, tribes, and the public, to prepare a single, Unified Watershed Assessment.

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY'S MISSION STATEMENT

The Mission of the Mississippi Department of Environmental Quality (MDEQ) is to safeguard the health, safety and welfare ofpresent andfuture generations of Mississippians by conserving and improving our environment andfostering wise economic growth through focused research

and responsible regulation,

The overall objectives of Mississippi's Nonpoint Source Program are to conserve and improve State waters, for man's use and the sustainment and propagation of wildlife and aquatic life, through focused research, responsible regulation, widespread education, and cooperation with other agencies and the public.

LEGAL AUTHORITY

Section 3 19(b)(2)(d) requires the certification from the State Attorney General stating that the laws of the state provide adequate authority to implement this Management Program. This certification is provided in appendix A. The Mississippi Department of Environmental Quality (MDEQ), Office of Pollution Control serves as the lead agency in Mississippi for water quality management. The Office is not only responsible for the development of water quality standards, management of NPDES program, groundwater program, solid and hazardous waste program, clean lakes program, and ambient stream monitoring, but also for the development and implementation of the State's NPS Program.

The responsibility for NPS management is included in the programs of many Federal, State, and local units of government. In addition, owners and users of lands are responsible for NPS management. While MDEQ is the lead agency for program development and implementation, various portions of the program are delegated to other agencies based on their legal authority and/or expertise.

Both the Assessment Report and the Management Program are open-ended and designed to be updated with subsequent research, monitoring and technology to protect and improve water quality in the State.

CONSISTENCY REVIEW

The Federal consistency provisions in Section 3 19 of the CWA authorize each state to review Federal activities for consistency with the State NPS management program. If the State determines that an application or project is not consistent with the goals and objectives of its NPS management program and makes its concerns known to the responsible Federal agency, the Federal agency must make efforts to accommodate the State's concerns or explain its decision to decline in accordance with Executive Order (EO) 12372.

Section 3 19 directs each State, as part of its NPS management program, to develop a list of the Federal assistance programs and development projects which it will review for consistency with the State's program. MDEQ will be responsible for conducting Section 3 19 consistency reviews and will do so in accordance with the intergovernmental review process established by EO 12372. MDEQ will provide its list of the Federal programs and projects which it will review to the State Clearinghouse. The State Clearinghouse will then route appropriate Federal project information to

MDEQ for review.

Authority for MDEQ's Secl:ion 3 19 consistency review of Federal programs is found in the following provisions in Section 3 19 of the CWA. Section 3 19(b)(2)(F) directs States to list Federal assistance applications and development projects which they would like to review for consistency in their State management program. Section 3 19(k) directs Federal Agencies to "accommodate" the concerns of the State according to EO 12372. EO 12372 specifies:

- In Section 1, that Federal agencies must provide opportunities for State and local consultation on proposed Federal financial assistance and development;

- In Section 2, that Federal agencies communicate with the States according to their State processes and to do so as early as is "reasonably feasible."

- In Section 2(c), that States may develop their own processes to review and coordinate proposed Federal financial assistance and development.

The Federal agencies are then required to:

"Make efforts to accommodate State and local elected officials' concerns with proposed Federal financial assistance and direct Federal development that are communicated through the designated State process. For those cases where the concerns cannot be accommodated, Federal officials shall explain the bases for their decision in a timely manner."

CHAPTER 2

SUMMARY ASSESSMENT OF NPS POLLUTION

WATER QUALITY ASSESSMENT METHODOLOGY

Historically, the major water quality problems in Mississippi have been caused by waste discharges from point sources, notably from industrial and municipal discharges in the heavily populated Gulf Coast and Jackson Metropolitan areas, from nonpoint source pollution in the Mississippi Delta, and from the oil production industry. However, water quality impacts from waste discharges have been greatly reduced across the state due to point source control activities. Improvements have also been realized in the Delta from better pesticide use management, development of less persistent chemicals, and education of farmers in the installation of Best Management Practices. Also, many of the oil production related problems have been resolved.

At this time, the additional state-wide control of nonpoint source pollution appears to be one of our greatest challenges. While MDEQ's water pollution control program has been very effective in correcting water quality problems caused by point sources, current assessments of water quality indicate that nonpoint sources may cause impairment in many of the State's waters. Consequently, additional control of nonpoint sources of pollution will be needed to attain additional water quality improvements. Additional planning will be required to develop implementation strategies for nonpoint source control. Grants or cost-share programs will be necessary to implement control measures for agricultural activities.

The Mississippi Nonpoint Source Pollution Assessment Report was the primary source for evaluated assessments (no monitoring data) in the 1996 Section 305(b) and 1998 Section 305(b) reports. The NPS Pollution Assessment Report was completed in 1989 pursuant to Section 319 of the Clean Water Act. It was subsequently updated in 1996 by the OPC Water Quality Management Branch. This report was an assessment made of all waters of the State using either current (at that time) monitoring data, or factors such as land use, location of pollution sources or citizen complaints. The purpose of the NPS Pollution Assessment Report was to identify state waters which, without additional action to control nonpoint source pollution, could not reasonably be expected to attain or maintain applicable water quality standards. The report also listed pollutants or potential causes of impairment and the sources of those pollutants for each identified water body or watershed. Information regarding nonpoint source pollution was also solicited from various state and federal agencies, interested groups and citizens. The primary contributors of information were the Mississippi Soil and Water Conservation Commission, the Mississippi Forestry Commission, the Mississippi Department of Health, the U.S. Department of Agriculture-Natural Resources Conservation Service (NRCS), and the U.S. Forest Service. With the lack of extensive statewide ambient monitoring data, the majority of information received for this report was in the form of surveys returned to MDEQ by NRCS field personnel. Consequently, the report focuses mainly on information regarding potential agricultural, silvicultural, and urban sources of nonpoint pollution and includes many waterbody segments or watersheds for which no known monitoring data exist indicating impairment and for which

MDEQ was unable to perform any type of quality control analysis regarding the validity of the survey/questionnaire responses,

Because the NPS Pollution Assessment Report listed entire watersheds or drainage areas, as well as discrete stream segments, extra care was taken in 1996 not to apply the identified NPS pollutants described in the report to an entire watershed, unless warranted. To accomplish this, each watershed listed in the NPS Pollution Assessment Report was marked on quadrangle maps. Next, the land cover shown on the maps was reviewed to determine if the cause and source of pollution under consideration was typical of the entire watershed or only a part of the watershed. If only a part, the percentage of stream miles "assessed" in the watershed was determined using best professional judgment. Applying this percentage to the total stream miles in the watershed (taken from EPA's Reach File 3) prevented NPS impacts from being assigned in an unwarranted way.

Waters listed in the NPS Pollution Assessment Report were considered partially supporting of their uses for the 1996 and 1998 305(b) reports. However, it should be pointed out that most of the waters listed in the Nonpoint Source Assessment Report were not monitored and therefore, no impairment is known to exist. Consequently, the partially supporting determination for these waters is based strictly on an evaluation having no actual water quality monitoring data. OPC considers these evaluated waterbody segments (in many cases, large portions of or entire NRCS watersheds) as NPS "waters of concern" warranting further investigation. These NPS-evaluated waters make up the majority of the evaluated waters reported in the 1996 and 1998 305(b) Assessment Reports.

MDEQ is committed to determining whether these evaluated waters actually are impaired and, if so, whether NPS pollutants, and sources are responsible. MDEQ will monitor these waters as it implements and proceeds through the State's Basin Approach to Water Quality Management. If monitoring data indicate a waterbody segment is impaired, the segment will be moved to the monitored portion of the State's Section 303(d) list. Conversely, if monitoring indicates the water's uses are fully supported, the segment will be removed from the State's Section 303(d) list.

WATER QUALITY ASSESSMENT BY BASIN

I. Big Black River Basin

The Big Black River Basin lies totally within the state and is composed of 3,400 square miles. The basin is 155 miles long, averages 22 miles in width and has approximately 6,360 linear miles of river and streams. This basin originates in north-central Mississippi and flows in a southwesterly direction to the Mississippi River. The Big Black River itself enters the Mississippi River just soutln of Vicksburg after flowing approximately 300 miles. Major tributaries to the Big Black River include Big Byway Ditch, Zilpha Creek, Apookta Creek, Doaks Creek, Bear Creek, Bogue Chitto Creek and Fourteen Mile/Bakers Creek. The basin is sparsely populated and is hilly to gently rolling and largely forested. However, significant amounts of cattle ranching and farming are present. Oil and gas production is a major industry in the area.

The Big Black River Basin does not have large scale development and most of its tributaries are wild and undeveloped, and thus are in a relatively natural condition. Some tributaries in this basin, however, are impacted by high chloride concentrations from oil field wastes. Others are subject to agricultural impacts.

Generally, the Big Black River and most of its tributaries, especially in the northern part of the basin, carry large amounts of suspended sediment and are very turbid most of the time. Some of the streams in the basin are muddy and slow-flowing, while others have relatively clear water and are swift with sandy bottoms. Overall, the water quality in the basin is rated as fair.

II. Coastal Streams Basin

The Coastal Streams Basin includes 1,545 square miles of southern Mississippi. The inland areas of this basin are predominately rural with agriculture and silviculture being the major land uses, while the area along the coast has heavy urban, industrial, and recreational developments. The topography ranges from extensive pine forests and low rolling hills in the upper basin to low-lying flatlands and salt marsh on the coast. This basin includes the Biloxi Bay, St. Louis Bay, and Mississippi Sound estuaries. Other major waterways include the Tchoutacabouffa, Biloxi, Wolf, and Jourdan Rivers. Typically streams and rivers are shallow and clear, with moderate flow in the upper reaches and gradually become wider and deeper with more sluggish flow toward the coast due to tidal influence and the change in topography. Water quality tends to be good to excellent for the freshwater portion of the basin. Along the coast, overall water quality is rated as fair to good, with impacts occurring primarily due to elevated nutrient and bacteria levels. Impacts occur from the many point and nonpoint pollution sources concentrated in this heavily populated area.

III. Mississippi River Basin

The Mississippi River is the major artery for waterborne commerce in the state and nation. However, in Mississippi, the Mississippi River Basin constitutes only a narrow band along the western boundary of the state from the Tennessee state line to the Louisiana state line. With an extensive levee system along the river in the northern half of the state, relatively little direct land drainage actually enters the river from Mississippi. Drainage into the river from the state comes principally from three of the state's other river basins: Yazoo River, Big Black River, and South Independent Streams. All of these are discussed later in this section. The primary land use in this basin and its sub-basins is agriculture. Due to the river's extensive size and length, the water quality of the river can vary over a wide range from its headwaters to its mouth depending on localized conditions and inputs from all adjacent states. Generally, the water quality along the Mississippi boundary is fair, due to the recurring problems of elevated toxins, nutrients, and sediment from agricultural land use activities and some urban sources of pollution. The Mississippi River is not significantly impacted by point source discharges from Mississippi. Most discharges are near Greenville, Vicksburg, and Natchez. However, nonpoint source discharges from the Yazoo River drainage area likely impact the river to a lesser extent than upstream states.

IV. North Independent Streams Basin

The North tndependent Streams Basin drains an area of Tennessee and 1,075 square miles in north Mississippi. Land use in this basin is primarily agriculture. Major streams include the Tuscumbia, Wolf, and Hatchie Rivers. These rivers are classified for fish and wildlife use in Mississippi. However, these streams serve recreational and public water supply roles in Tennessee. The Tuscumbia River system near Corinth receives considerable discharge from agricultural and point sources. Overall, water quality is relatively poor due to sediment, nutrient and pesticide problems. However, the Hatchie River, Wolf River, and their tributaries flow through mostly forested areas and, thus, are rated as having good to excellent water quality. In extreme northwest Mississippi, Horn Lake and its main tributary, Horn Lake Creek have fair water quality due to agricultural runoff and increasing urban runoff from suburbs of the Memphis metropolitan area. Streams in this basin vary greatly and may have sandy or muddy bottoms and fast or sluggish flow.

V. Pascagoula River Basin

The Pascagoula River Basin is the second largest basin in the state and comprises most of southeastern Mississippi and a small part of southwestern Alabama. The Pascagoula River system drains an area of about 9,700 square miles and empties into the Gulf of Mexico. The main headwater streams are the Leaf and Chickasawhay Rivers which meet and form the Pascagoula River. This basin is approximately 164 miles long and at most 84 miles wide.

Much of the Pascagoula River drainage basin and adjacent coastal area which drains directly into the Gulf is forested. Near the coast, drainage areas are low-lying flatlands, forested wetlands, and marshlands. Farther inland, the basin consists primarily of low, rolling hills and broad, flat, flood plains. The main land uses are agriculture, silviculture, oil production, and industry. The major streams are deep to moderately deep, fast-flowing and perennial. These streams include the Leaf, Chickasawhay, and Escatawpa Rivers. Other significant tributaries in the basin include Tallahala Creek, Okatibber: Creek, Okatoma Creek, Bowie River, Red Creek, Chunky River, Black Creek and Bogue Homa. Stream conditions are usually natural, or unmodified, in appearance with clear water. Some streams are considered “blackwater streams” because they are stained by tannic acid leached from vegetation. Water quality is generally good to excellent with only localized pollution problems. Historically, industrial point sources and urban runoff near major population centers such as Meridian, Laurel, Hattiesburg, and Pascagoula have caused problems.

VI. Pearl River Basin

The Pearl River rises in east-central Mississippi, flows southwesterly to Jackson, then continues southeasterly to the Mississippi Sound. The river is about 490 miles long and drains an area of about 8,000 square miles. More than 60 percent of the basin is forested, and about 30 percent is farmed. Agriculture, silviculture, and industry are the principal land uses. Upstream of Jackson, the Pearl River flows into the Ross Bamett Flood Control Reservoir which is used extensively

for recreation. The river is also used as water supply for the City of Jackson.

Much of the upper two-thirds of the Pearl River Basin consists of gently rolling to hilly terrain. Significant tributaries include the Yockanookany River, Bogue Chitto River and Strong River. Streams in this area have fairly fast, deep flows for a short time after rain and relatively shallow base flows. Turbidity is often a problem and streams are of fair water quality. In the southern part of the basin, the land is much flatter. These streams, which include the Bogue Chitto River from Brookhaven to the Louisiana state line, usually have a fast deep flow and fair to good water quality. Municipal and industrial point source discharges into the Pearl River are more prevalent from Jackson south to the Mississippi Sound. Water quality impacts are noted below Jackson and at Columbia due to point and nonpoint sources. On the lower end of the Pearl River, the majority of flow has historically been diverted to Louisiana due to channel alterations, This left the original river channel near Picayune essentially dry during low-flow conditions, This situation was addressed in 1997 and 1998 through a cooperative effort between the states of Mississippi, Louisiana and local entities which called for a flow restricting structure to be constructed to divert more water into the original channel. Near the coast, the river becomes estuarine, bounded by salt marsh and affected by tidal influence.

VII. South Indeoendent Streams Basin

The South Independent Streams Basin drains an area of 4,418 square miles in southwestern Mississippi. Major streams in this basin include the Homochitto River, Bayou Pierre, Tangipahoa River and the east and west forks of the Amite River. Part or all of most of these streams are classified as Recreation. The one exception is the Tangipahoa River which is classified as Fish and Wildlife; however, in Louisiana the river is designated as Recreation. The principal land uses in the basin are agriculture and silviculture with some concentrated areas of industry at Natchez, Brookhaven, and McComb. Most streams in this basin have good flow, clear water, and sandy bottoms. In general, the streams are of fair to good water quality, especially those that flow through the Homochitto National Forest. Some tributaries in the basin, however, are impacted by chloride contamination from oil field activities and others experience localized problems with nutrients and bacteria from point sources and agricultural and urban runoff.

VIII. Tennessee River Basin

The Tennessee River Basin drains an area in Mississippi of only 417 square miles in the northeastern comer of the state. This basin consists of a small portion of the Tennessee River, much of which is referred to as Pickwick Lake, a portion of Bear Creek which flows into and from Alabama, and the Yellow Creek segment of the Tennessee-Tombigbee Waterway. All of theses waters are used heavily for recreational activities. The State of Mississippi has classified a portion of the Tennessee River in Mississippi (Pickwick Lake) as Public Water Supply. This is because this portion of the river is classified as Public Water Supply in Tennessee; however, no streams in this basin are used as a public water supply by the people of Mississippi. Streams in this basin are generally fast flowing and clear with gravel, sand, and rock bottoms. Due to the higher elevations in this part of the state, some of the streams are spring-fed and have cold water

year-round. Water quality in this basin is generally considered good to excellent, with some isolated problems from nonpoint sources of pollution.

IX. Tombiebee River Basin

The Tombigbee River system drains about 6,100 square miles in northeastern Mississippi and about 7,600 square miles in northwestern Alabama. The basin in Mississippi is about 190 miles long and averages 48 miles in width. The main headwater streams are Big Brown and Mackeys Creeks which converge to form the east fork of the Tombigbee River. Other major streams in the basin include Town Creek, Chuquatonchee Creek, Chiwapa Creek, Luxapallila Creek and the Buttahatchie, Sucamoochee and Noxubee Rivers. The predominant surface water feature in the basin is the Tennessee-Tombigbee Waterway which connects the northward flowing Tennessee River with the southward flowing Tombigbee River. The Term-Tom Waterway, having a length of 137 miles in Mississippi, stretches from Tishomingo County at the northern end of the basin through Lowndes county, into Alabama. In Mississippi, the Waterway parallels and combines with the Tombigbee River from its headwaters to the Alabama state line. This Waterway consists of a series of interconnected lakes, locks, and pools whose primary usage is recreational. Commercial usage is slowly increasing. Water quality in the Tennessee-Tombigbee Waterway is rated as excellent.

The topography of the basin is mostly hilly and elevations in the headwaters are about 500 to 600 feet above sea level. The northeastern and southwestern portions of the basin are largely forested. Livestock production and row crop farming are major land uses in the central part of the basin. Stream channels are usually relatively shallow with impervious shale and chalk bottoms. Many streams are perennial and stream flow is greatly affected by high runoff discharges during rainstorms. This results in frequent flooding of lowlands. In the western part of the basin, turbidity resulting from nonpoint sources can be high, resulting in poor water quality in some areas. But in the upper reaches of many of these same streams, water quality is excellent. In the eastern part of the basin, streams are fast flowing with sandy bottoms. With some exceptions, these streams are in a relatively natural condition with good to excellent water quality.

X. Yazoo River Basin

The Yazoo River Basin, Mississippi's largest basin, lies totally within the state and is composed of 13,355 square miles which eventually drains into the Mississippi River. The basin is about 200 miles long with a maximum width of about 110 miles. Major streams in the basin include the Coldwater, Little Tallahatchie, Tallahatchie, Yocona, Yalobusha, Big Sunflower, and Yazoo Rivers. The basin includes; a hilly upland in north-central Mississippi where four headwater tributaries originate, and extensive flat lowlands in the Mississippi Alluvial Plain, commonly referred to as the Delta. The upland part of the basin consists largely of forests, pastures, and small farms and is sparsely populated. In addition, the area is characterized by four large flood control reservoirs, whose recreational opportunities dominate the surface water usage of the upland area. Streams in the upland region tend to have muddy or sandy bottoms with sluggish to moderate flow, and water quality is generally fair.

The Delta Region of the Yazoo River Basin is part of the original flood plain of the Mississippi River and constitutes an area of almost 7,000 square miles. The Delta has some of the most fertile and productive farmland in the world. Due to the agricultural emphasis in the region, the Delta is sparsely populated. Streams in the Delta are typically sluggish with silt bottoms. Many streams and the river itself receive large amounts of sediment and other agricultural contaminants resulting in high turbidity, elevated nutrients, and periodic elevated toxins. This results in fair to poor water quality.

MISSISSIPPI'S UNIFIED WATERSHED ASSESSMENT

In February of 1998, the Clinton Administration announced the Clean Water Action Plan which provides for more than 100 specific actions that are designed to support continued progress toward clean water across the nation. A key theme of the Clean Water Action Plan is a new cooperative process called the "Unified Watershed Assessment" for identifying, restoring and protecting water quality on a watershed basis. This process encourages state and federal agencies to work more closely together on water quality issues by bringing the variety of water quality and natural resource assessment tools agencies are now using into a single unified assessment. The plan calls for the Natural Resources Conservation Service and the State Environmental Agency Directors in each state to jointly convene the watershed assessment process.

The Unified Watershed Assessment encourages states to identify watersheds that are in most need of attention beginning in the FY 1999-2000 period. In unifying existing processes and attempting to identify watersheds in the near term, we must rely on existing information, tools, and processes for assessing watershed conditions and setting priorities. The guidance also recognizes that the work will be preliminary and may be refined as additional water quality assessment information becomes available.

The preliminary nature of this assessment and prioritization of impaired watersheds must be recognized. Mississippi has not had a strong history of ambient water quality monitoring and information gathering. In response to the lack of adequate water quality information, the state legislature has provided additional resources to the Department of Environmental Quality which are being used to initiate watershed management planning. As the state implements this new watershed planning approach, working jointly with our resource agency partners, we will be gathering adequate water quality information to assess the conditions of the state's waters and will then have more accurate information upon which to identify priority watersheds. However, in the absence of comprehensive and adequate watershed information, the state is responding to the administrations guidance by developing this Unified Watershed Assessment. The assessment is by necessity based on existing information and on already committed work activities. In the future, this form of assessment will be integrated into our Basin Planning Approach to watershed protection.

I. Categorizing Mississippi's Watersheds

The unified watershed assessments and watershed restoration priorities in Mississippi were

cooperatively developed from participants representing various state and federal agencies. A working group consisting staff representing Mississippi Department of Environmental Quality, Natural Resources Conservation Service and Mississippi Soil and Water Conservation Commission (1) gathered information to be used in the assessment, (2) made preliminary prioritization, and (3) prepared materials for public dissemination.

Unified watershed assessments were developed through a cooperative integration of existing assessment reports and processes using existing and appropriate data and information. Watersheds defined by the U.S. Geological Survey (USGS) 8-digit hydrologic units were used (see Appendix F) for the evaluation and assessment process. The condition of the 8-digit watersheds was determined by aggregating assessments of smaller watersheds within. Because data is insufficient for most of the watersheds, the majority were placed in Category Iv. Only those which have been currently targeted for work under various nonpoint source programs were placed in Category I. Nationally, the S-digit hydrologic unit scale will serve as the common scale for reporting the results of watershed assessments as well as to help target resources. The State of Mississippi along with local stakeholder groups is implementing the Basin wide Management approach that will be used 'to assist in determining issues and setting water quality priorities across the state. It is realized that agency programs may be administered cooperatively or individually to address water quality and other natural resource goals. Once this process is complete, this report will be revised and all watersheds will be categorized using the following framework:

II. Category I - Watersheds in Need of Restoration.

These watersheds do not now meet, or face imminent threat of not meeting, clean water and other natural resource goals. The following factors were considered in assessing category I watersheds:

- 8-digit hydrologic: unit watersheds containing Mississippi Department of Environmental Quality 303(d) unpaired streams;
- 8-digit hydrologic: unit watersheds containing Mississippi Nonpoint Source Management Program 319 Priority Watersheds;
- 8-digit hydrologic: unit watersheds containing Natural Resources Conservation Service FY97 and FY98 Environmental Quality Incentives Program (EQIP) Priority Areas for Mississippi.

III. Category II - Watersheds Meeting Goals, Including Those Needing Action to Sustain Water Quality.

These watersheds meet clean water and other natural resource goals and standards and support healthy aquatic systems. All such watersheds need the continuing implementation of base clean water and natural resource programs to maintain water quality and conserve natural resources. The following factors were considered in assessing category II watersheds:

- S-digit hydrologic: unit watersheds containing Mississippi Department of Environmental Quality 303(d) impaired streams;
- 8-digit hydrologic, unit watersheds containing Mississippi Nonpoint Source

management Program 319 Priority watersheds;

- 8-digit hydrologic unit watersheds containing Natural Resources Conservation Service FY97, FY98 and FY99 Environmental Quality Incentives Program (EQIP) Priority Areas for Mississippi.

IV. Category III - Watersheds with Pristine or Sensitive Aouatic Systems Conditions on Lands Administered bv Federal, State. and Tribal Governments.

States and tribes work cooperatively with federal land managers to identify watersheds with exceptionally pristine water quality, drinking water sources, or other sensitive aquatic system conditions, which are located on lands administered by federal, state, or tribal governments,

V. Category IV - Watersheds with Insufficient Data to Make an Assessment.

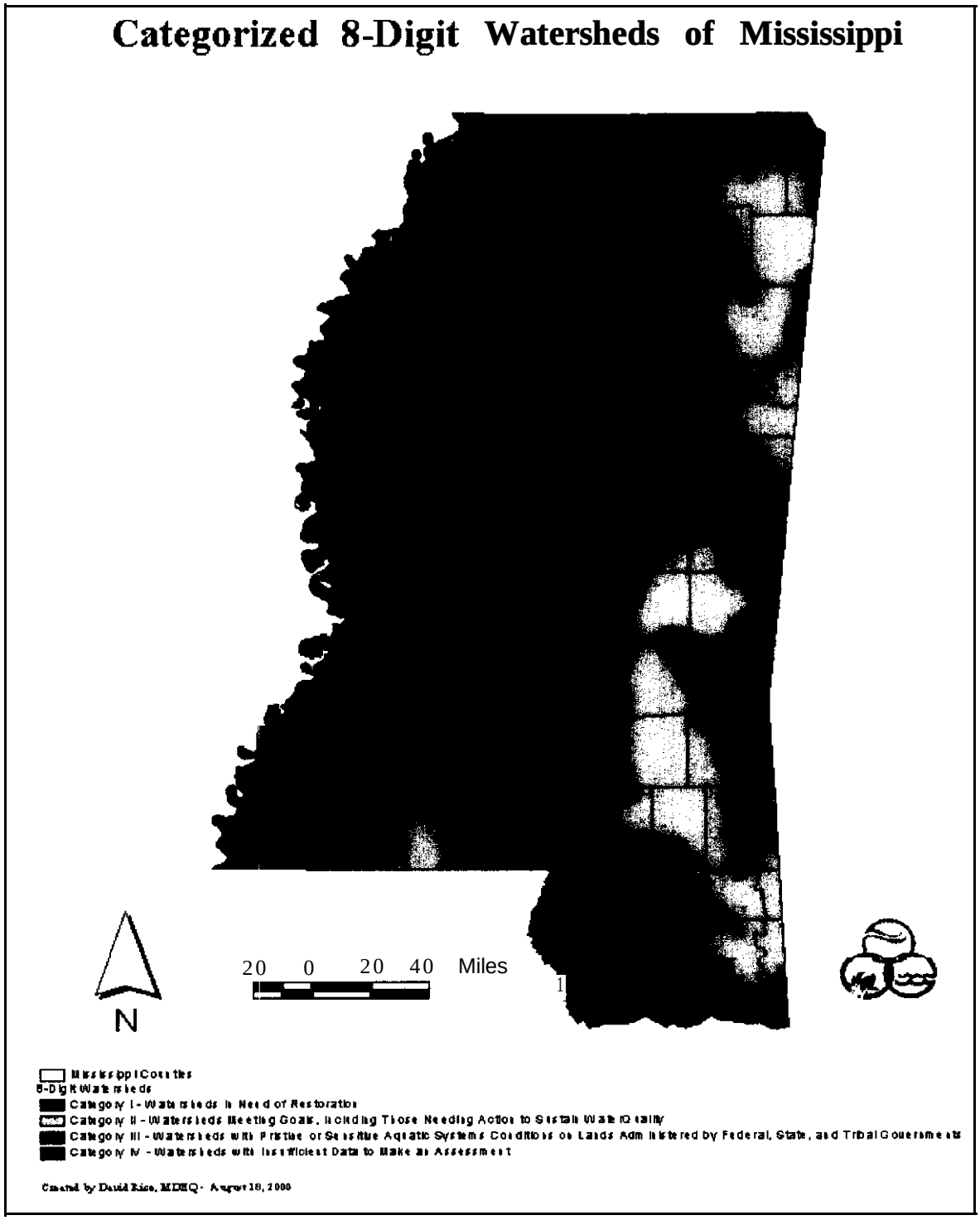
At the present time, these watersheds lack sufficient data, critical data elements, or the data density to make a reasonable assessment.

The 53 watersheds were classified as:

Category I - 6
Category II - 8
Category III - 1
Category IV - 39

Figure 2-4 provides a graphical representation of these watersheds. The updating of the Unified Watershed Assessment will be an ongoing process. Updates will be conducted as more information becomes available while implementing NPS related programs statewide. One major program activity that will influence the need for an update is the implementation of the Basin wide Management Approach.

Figure 2-l
FY '99 and 2000 **UWA**



CHAPTER 3

MISSISSIPPI'S NPS MANAGEMENT PROGRAM

HISTORY OF MISSISSIPPI EFFORTS TO CONTROL NPS POLLUTION

The Mississippi Department of Environmental Quality (MDEQ) initiated its first watershed planning activities (then called basin plans) in compliance with the requirements of Section 303 (e) of the Federal Clean Water Act (CWA) in the early 1970s. The next major planning activity was through Section 208 of the CWA. Section 208 required that the State prepare planning documents on an area wide basis. These planning documents were produced in the early 1980s.

With the passage of the CWA of 1987, the State had to comply with NPS provisions as stated in Section 3 19. A state wide NPS assessment document and a management plan was developed and approved by the Environmental Protection Agency. The States NPS Management program was approved in August, 1989, and funding for implementation in April, 1990. To date the MDEQ has been successful in securing nine annual grants (totaling approximately 14 million dollars) from the EPA. These funds were utilized to implement a variety NPS projects that included: watershed restoration, monitoring and assessment, best management practice demonstrations, and several educational and public out reach activities. Appendix D provides an up to date listing of the major projects funded under Section 319 of the CWA.

The implementation of Mississippi's Section 3 19 NPS Management Program has been and will always be a continuous process that accounts for available resources, emerging problems, institutional changes and implementation progress. This document is considered as the first major update to the State's NPS management Program since 1989.

This updated NPS Management Program defines the long term goals and short term actions needed to reach these goals and emphasizes management strategies and programs to address NPS pollution problems. The Program is designed to be balanced between two priorities; one to be implemented on a statewide basis (like enforcement of regulations, technical and financial support, and educational efforts), and another, with a narrower focus that involves targeting specific watersheds to either improve or protect valuable waters.

THE NINE KEY ELEMENTS OF THE NPS PROGRAM

In 1996, EPA amended the: Section 3 19 program guidance, which required the incorporation of nine key elements. The updated guidance contained specific requirements and instructions for updating State Nonpoint Source Programs. State Programs must incorporate these elements into management plan updates, and then be approved by EPA, in order to remain eligible for continuing Section 3 19 funding. These nine key elements caused states to become "forward looking" in their efforts to control and prevent NPS pollution. States were required to establish long-term and short-term goals and action strategies to identify and address waters impaired by NPS pollution on both a state-wide and watershed specific basis. Outlined below are the nine key elements and a brief synopsis of how Mississippi's NPS Management Program will address each one. Subsequent chapters will describe these elements in greater detail.

Element 1. The State program contains explicit short-term and long-term goals, objectives and strategies to protect surface and ground water.

Mississippi has established long-term goals and short-term goals and objectives designed to protect State waters from NPS pollution. Five year action plans have been developed for every category of NPS. These action plans outline specific steps that will be taken during the next five years to help achieve the State's log term goals. Mississippi will continue to rely on assessment and monitoring efforts to evaluate the progress made towards implementing these action plans and achieving the long term goals.

Element 2. The State strengthens its working partnerships and linkages to appropriate State, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.

The State is using and establishing a variety of formal and informal mechanisms in order to form and sustain partnerships on both a watershed and state-wide basis. MDEQ has Memoranda of Agreement (MOA) with the Mississippi Soil and Water Conservation Commission (MSWCC), Yazoo River Delta Water Management District, and the U S Forest Service (USFS). Also, to ensure coordination of efforts to control NPS pollution, the Program relies on the NPS Advisory Committee which has representatives from all State and Federal agencies (partners) in Mississippi that deal with NPS pollution. This Committee is designed to share information and coordinate activities.

Also, MDEQ is developing several Forums under its Basinwide Approach to Water Quality Managements. These Forums ensure stakeholder input on a statewide and a watershed level. Partnership groups will include all state and federal agencies, as well as private groups and individuals that are involved with water quality issues. These groups will be utilized to ensure that widespread cooperation and coordination take place in dealing with nonpoint source pollution problems and threat.

Currently, MDEQ is evaluating the need for a MOA with Mississippi Department of Marine Resources on jointly implementing Section 6217 of the Coastal Zone Act Reauthorization Amendments measures on the Mississippi Gulf Coast.

Element 3. The State uses a balanced approach that emphasizes both statewide NPS programs and on-the-ground management of individual watersheds where waters are impaired or threatened.

As shown in the following chapters, Mississippi's NPS program includes action strategies for each category of NPS pollution. These strategies rely on balanced statewide and watershed based implementation approaches that promote stakeholder involvement at all levels. This section outlines the activities and goals for controlling and abating NPS pollution on a state-wide basis. Also described are several educational programs that cover the state and address different categories of NPS pollution.

Mississippi has instituted the nationally recognized basin-wide approach to water quality management. The State's ten basins have been grouped into five major basin groups. These five basin groups are on a staggered five-year schedule for assessing water quality and implementing plans to restore and protect the waters within these basins. This basin-wide approach will be ongoing so that after the first five year cycle, the process of re-evaluating, assessing, and implementing water quality management plans will begin anew. In addition to the foregoing, six watersheds have been identified in the State's first Unified Watershed Assessment (UWA) as being watersheds in need of restoration (Category 1) in order to meet designated uses. The NPS Advisory Committee will target those watersheds for receiving special attention.

Element 4. The State program (a) abates known water quality impairments resulting from nonpoint source pollution and (b) prevents significant threats to water quality from present and future nonpoint source activities.

The main focus of the NPS Program is directed at abatement of known water quality problems. Several statewide and watershed based activities are currently in place and several more will be developed to address significant threats from existing nonpoint sources of pollution. The program will be continually reviewed and

updated as we progress in the implementation of the Basinwide Approach to Water Quality Management.

Element 5. An identification of waters and watersheds impaired or threatened by nonpoint source pollution and a process to progressively address these waters.

Mississippi's 305(b) Water Quality Assessment and 303(d) List delineate waters in the state not supporting all designated uses and identifies the most likely pollution source category for the impairment. Total maximum daily loads (TMDLs) are being developed for those waters and action strategies will be developed to mitigate all NPS impacts and restore these watersheds.

In addition, the Basinwide Management approach will be used statewide to update and enhance the quality of assessments made under sections 303 (d), 305 (b), 3 14, 3 19 (a), and others. This approach will aid MDEQ in better targeting threatened or impaired waters for protection and remediation work. The basin teams will also solicit public participation during the planning and data gathering phases so as to obtain local knowledge and concerns about water quality in the basin. All basin plans will be revised on a five-year cycle, allowing the basins to be reevaluated and priorities / actions adjusted accordingly.

Element 6. The State reviews, upgrades and implements all program components required by section 319 of the Clean Water Act, and establishes flexible, targeted, iterative approaches to achieve and maintain beneficial uses of water as expeditiously as practicable.

The main approach that the State will use to water quality management is the Basinwide Management Approach. The basin team coordinator is responsible for including all the necessary parties required to assess water quality in a given basin, working with the TMDL group to develop TMDLs in the basin, and working with the NPS Advisory Committee to make it aware of the water quality issues in a given basin. The NPS Advisory Committee will use that information to coordinate resources in tlne basin in order to abate NPS pollution.
The State's NPS Program includes a mix of water quality and technology based programs designed to achieve and maintain beneficial uses of water along with a mix of regulatory, non-regulatory, financial and technical assistance needed to achieve and maintain beneficial uses of water as expeditiously as possible.

Regulatory, voluntary, financial and technical assistance, information/education and public awareness programs are identified for each category of NPS pollution in Chapter four.

Element 7. An identification of Federal lands and activities which are not **managed consistently with State nonpoint source program objectives.**

There are numerous federal programs which offer financial assistance which should be beneficial 'to Mississippi's Nonpoint Source Program. There are also various Federal assistance programs and development projects which may hinder implementation of the Program. As provided by Executive Order 12372, the State is allowed to review any Federal program or project for consistency with its nonpoint source management program. If the State determines that a program or project is inconsistent with the goals and objectives of its NPS management program and makes its concerns known to the responsible Federal agency, that agency must (as required by EO 12372) make efforts to accommodate the State's concerns or explain its decision not to. In the event that accommodation cannot be reached, the State can ask EPA for assistance in resolving conflicts.

Element 8. Efficient and effective management and implementation of the State's nonpoint source program, including necessary financial management.

The State recognizes that focus on critical areas, and sources that are contributing to nonpoint source pollution, and ensuring that plans will be effectively implemented, requires widespread support and prioritization. The Basinwide Management Approach incorporates these concepts. The basin teams will work with the NPS Advisory Committee as well as private industrial, commercial, environmental groups, and the general public in order to involve everyone in identifying NPS problems and focusing resources on these problems.

Mississippi utilizes the Grants Reporting and Tracking System (GRTS) effectively in order to track the grant / project period. The State also provides clear written guidance and reporting instructions to cooperators on grant application and management.

Element 9. A feedback loop whereby the State reviews, evaluates, and revises its nonpoint source assessment and its management program at least every five years.

Using the Basinwide Management Approach on a five year cycle, the State will be reviewing, evaluating, and revising its nonpoint source assessment and management program on a five year schedule. After the first cycle is complete for a particular basin, the basin team will start anew on that basin by reviewing and evaluating the successful implementation of the previous cycle's plans, as well as looking at new concerns. This information will be shared with the NPS Advisory Committee which will then coordinate all the member agencies' resources and strategies in dealing with NPS pollution in that basin. Also, the NPS Annual Report will be utilized as a feed back loop to assess the status of meeting Program goals.

NINE KEY ELEMENTS INDEX

1. **The State program contains explicit short-term and long-term goals, objectives and**

strategies to protect surface and ground water.

Element Milestone	Section(s)
a. State program includes a vision statement	Executive Summary
b. State has specific long-term goals that are linked to its vision and are directed towards the expeditious achievement and maintenance of beneficial uses of water.	Ch. 4, Pg (1, 2, 3)
c. State has specific short-term objectives, expressed as activities, that are linked to its goals.	Ch. 4, Pg (7, 16.24, 32, 35, 37); Ch. 5, Pg(2, 4, 11, 23, 25, 35); Ch. 6, Pg 3; Ch. 7, Pg13
d. State has identified measures and indicators that will be used to assess the state's success in achieving its goals and objectives.	Ch. 5, Pg (2,22. 231, Ch. 7, Pg 13
e. State has identified specific, expeditious milestones for its activities.	Ch. 5, Pg (2, 11, 23, 25)
f. State has identified implementation steps and the expected effects of those steps on its water resources.	Same as "c"

2. **The State strengthens its working partnerships and linkages to appropriate State, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.**

a. The state uses a statewide collaborative team, NPS task force, advisory group, or other appropriate process, to provide for input and recommendations from representatives of federal, state, and local agencies, private sector groups and citizens groups, regarding NPS program direction, project selection, and other similar aspects of program administration.	Ch. 7
b. The task force meets regularly and promotes collaborative and inclusive decision making.	Ch. 7
c. The state program specifies procedures to provide for periodic public review.	Ch. 7, Pg 13
d. The state effectively incorporates a variety of organizations and interests into its implementation of NPS activities and projects.	Ch. 7
e. The state uses its partnerships effectively to avoid the transfer of problems among environmental media.	Ch. 7

3. **The State uses a balanced approach that emphasizes both statewide NPS programs and on-the-ground management of individual watersheds where waters are impaired or threatened.**

a. Annual or multi-year work plans contain NPS implementation actions directed at both specific priority watersheds and activities of a statewide nature.	Ch. 5, Pg1 Ch. 7

b. State tracks both statewide activities and watershed projects.	Ch. 5, Pg 2 Ch. 7
c. State has institutionalized its program beyond the annual implementation of 319 funded activities and projects.	Entire document
d. State uses an integrated watershed approach for assessment, protection and remediation that is well integrated with other water or natural resource programs.	Ch. 7

4. The State program (a) abates known water quality impairments resulting from nonpoint source pollution and (b) prevents significant threats to water quality from present and future nonpoint source activities.

a. State has comprehensively characterized water quality impairments and threats throughout the state which are caused or significantly contributed to by NPS pollution.	Ch. 2
b. State has comprehensively characterized reasonably foreseeable water quality impairments and threats that are likely to be caused by NPS pollution in the future.	Ch. 2
c. State program addresses all significant NPS categories and subcategories.	Ch. 4
d. State program has identified specific programs to abate pollution from categories of NPS pollution which cause or substantially contribute to the impairments identified in its assessments.	Ch. 4 Ch. 5 Ch. 6 Appendix B
e. State has identified specific programs to prevent future water quality impairments and threats that are likely to be caused by NPS pollution.	Ch. 5 Appendix B
f. Additional information.	

5. An identification of waters and watersheds impaired or threatened by nonpoint source pollution and a process to progressively address these waters.

a. State water quality assessments (including those performed under Section 305(b), 3 19(a), 303(d), 3 14, and others), along with analysis of changing land uses within the State, form the basis for identification of the State's planned NPS activities and projects.	Ch. 2 Ch. 5. Pg 32
b. State activities focus on remediating the identified impairments and threats, and on protecting the identified at-risk waters.	Ch. 5, Pg (27, 32)
c. State has provided for public participation in the overall identification of problems to be addressed in the State program, and in the establishment of a process to progressively address these problems.	Ch. 7
d. State NPS priorities are communicated to, consistent with, and reflected in program planning and implementation activities by other water resource management agencies operating within the state.	Ch. 7. Pg (1, 12)

e. State revises its identification of waters and revisits its process for progressively addressing these problems periodically (e.g., once every five years).	Ch. 7

6. The State reviews, upgrades and implements all program components required by section 319 of the Clean Water Act, and establishes flexible, targeted, iterative approaches to achieve and maintain beneficial uses of water as expeditiously as practicable. The state programs include: (I) A mix of water quality-based and/or technology based programs designed to achieve and maintain beneficial uses of water; and (II) A mix of regulatory, non-regulatory, financial and technical assistance as needed to achieve and maintain beneficial uses of water as expeditiously as practicable.

I. The state includes in its program and implements the following eight items:

a. Identification of the measures to be used to control NPS pollution, focusing on those measures which will be most effective to address the specific types of NPS pollution prevalent within the state. These measures may be individually identified or presented in manuals or compendiums, provided that they are specific and are related to the category or They may also be identified as part of a watershed approach towards achieving water quality standards, whether locally, within a watershed, or statewide.	Ch. 4, Pg 1 Ch. 6 Appendix E
b. Identification of programs to achieve implementation of the measures.	Ch. 5 Ch. 6 Ch. 7 Appendix B
c. Processes used to coordinate and, where appropriate, integrate various programs used to implement NPS controls in the state.	Ch. 7
d. A schedule with goals, objectives, and annual milestones for program implementation; legal authorities to implement the program; available resources; and institutional relationships.	Ch. 5 Ch. 6 Ch. 7
e. Attorney General certification (if program has changed substantially).	
f. Sources of funding from federal (other than 3 19), state, local, and private sources.	Ch. 5 Appendix B
g. Identification of federal programs and projects that the state will review for their effects on water quality and their consistency with the state program.	Ch. 4, Pg 1' 1
h. Monitoring and other evaluation programs to help determine short-term and long-term program effectiveness.	Ch. 2 Ch. 5, Pg 14

II. The state also incorporates or cross-references existing baseline requirements established by other applicable federal or state laws to the extent that they are relevant. Examples include but are not limited to:

a. Approved state coastal NPS pollution programs required by Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA).	Ch. 5, Pg 3

b State Forest Management Practices Acts.	Ch. 4, Pg 17-18
c. State construction, erosion or nutrient management laws.	Ch. 6, Pg 2-3
d. Federal or State transportation laws which govern construction site or maintenance runoff.	Ch. 4, Pg 2-3 Ch. 5

7. An identification of Federal lands and activities which are not managed consistently with State nonpoint source program objectives.

a. The State reviews Federal financial assistance programs, development projects, and other activities that may result in nonpoint source pollution for consistency with the State program.	Ch. 1, Pg 8 Ch. 7, Pg 13-14
b. The State works with Federal agencies to resolve potential inconsistencies between Federal programs and activities and the State programs.	Ch. 1, Pg 8 Ch. 7
c. Where the State cannot resolve Federal consistency issues to its satisfaction, it requests EPA assistance to help resolve the issues.	Ch. 1, Pg 8
d. The State coordinates with Federal agencies to promote consistent activities and programs, and to develop and implement joint or complementary activities and programs.	Ch. 7
e. Additional information:	

8. Efficient and effective management and implementation of the State's nonpoint source program, including necessary financial management.

a. The State's plans for watershed projects and state-wide activities are well designed, with sufficient detail to assure effective implementation.	Ch. 4 Ch. 5, Pg 5 Ch. 7
b. The State's watershed projects focus on the critical areas, and critical sources within those areas, that are contributing to nonpoint source problems.	Ch. 2, Pg 18 Ch. 5, Pg (3, 27, 32)
c. The State implements its activities and projects, including all tasks and outputs, in a timely manner.	Ch. 5, Pg 1
d. The State has established systems to assure that the State meets its reporting obligations.	Ch. 5, Pg 22 Ch. 7, Pg 14
e. The State utilizes the Grants Tracking and Reporting System effectively.	Ch. 5, Pg 23
f. The State has developed and uses a fiscal accounting system capable of hacking expenditures of both 319 and non-Federal match.	Ch. 5, Pg 3
g. NPS projects include appropriate monitoring and/or environmental indicators to gauge effectiveness.	Ch. 5, Pg 2
h. Additional information:	

9. A feedback loop whereby the State reviews, evaluates, and revises its nonpoint source

assessment and its management program at least every five years.

a. The State has and uses a process to periodically assess both improvements in water quality and new impairments or threats.	Ch. 5, Pg 23 Ch. 7
b. The State uses a feedback loop, based on monitoring and other evaluative information, to assess the effectiveness of the program in meeting its goals and objectives, and revises its activities and tailors its annual work plans, as appropriate, in light of its review.	Ch. 5, Pg (2.23) Ch. 7
c. Using its feedback loop, the State periodically reviews and assess the goals and objectives of the nonpoint source management program and revises the program as appropriate in light of its review.	Ch. 5, Pg 1 Ch. 7
d. The State's annual report successfully portrays the State's progress in meeting milestones, implementing BMPs, and achieving water quality goals.	Ch. 5, Pg 2
e. Additional information:	

CHAPTER 4

MISSISSIPPI'S NONPOINT SOURCE MANAGEMENT STRATEGY

The State's strategy for the management and abatement of NPS pollution relies on a statewide and targeted watershed approaches. These approaches are implemented through both regulatory and non-regulatory programs on the Federal, State, and local levels. Some of the activities regulated by the state include: construction, stormwater, mining, and hydrologic modifications. The strategy for the management of these activities is to continue to develop and implement educational programs and to continue to issue permits and maintain compliance and enforcement activities. The implementation of program activities or categories that are not regulated will rely primarily on the voluntary cooperation of stakeholders and will be supported financially through federal assistance programs such as Section 3 19 and also state resources.

The strategy for addressing NPS pollution on a statewide level includes education/outreach, assessment and monitoring, BMP demonstrations, BMP compliance, technical transfer, consensus building and partnering.

The NPS Management plan will also implement a strategy that targets priority watersheds. Prioritization of these watersheds will be an evolving process identified in the Basinwide Approach to Water Quality Management which will make use of the State's Watershed Restoration Action Strategy/ Unified Watershed Assessment (WRAS/UWA). Within priority watersheds, activities will be implemented to address parameters of concern that appear on the State's 303(d) List. The State's NPS Program also incorporates the Coastal NPS Program strategy, the Basinwide Approach strategy, and the State's strategy for the development and implementation of NPS Total Maximum Daily Loads (TMDLs).

The NPS Program will continue to be implemented in cooperation with several agencies, organizations and groups at all levels of government and in the private sector. A great focus will be given to activities that promote consensus building and partnering to increase the overall effectiveness of the State's NPS Program. The Program strategy will be implemented to meet the long-term goals listed below. The long-term goals will in turn be achieved by implementing five-year action plans. These plans will be modified as more data and new issues are identified under the Basinwide Approach to Water Quality Management (described in Chapter 7).

LONG TERM GOALS AND GUIDING PRINCIPLES

Mississippi has developed long term goals that are consistent with its NPS pollution control mission statement, *"To conserve and improve State waters, for man 's use and the sustainment and propagation of wildlife and aquatic life, through focused research, responsible regulation, widespread education. and cooperation with other agencies and the public."* These long term goals cover the next fifteen year period. Before the end of the fifteen year period, these goals,

and the status of state waters, will have been evaluated and a new fifteen year strategy will be adopted. To ensure that these long term goals are met, short term goals and action strategies have been adopted. These goals and strategies are intended to cover both our statewide and watershed specific approach and will be a mixture of regulatory and non-regulatory approaches.

The following goals will guide Mississippi's NPS Management Program for the next fifteen years:

1. To continually characterize and quantify impacts of NPS pollution on the State's surface and groundwater through scientific assessments and monitoring activities.

2. Develop NPS Total Maximum Daily Loads (TMDLs) for all impaired 303(d) listed waterbodies by 2010.

3. Implement all applicable NPS Best Management Practices (BMPs) within 15 years that will provide the mechanism(s) to delist 100 percent of 303(d) listed NPS waterlbodies.

4. To focus Section 319 incremental grant funds and non-federal matching resources on Category 1 Priority Watersheds as defined in the Watershed Restoration Action Strategy/Unified Watershed Assessment (WRAS/UWA) process and the 303(d) listed waterbodies within the priority watersheds.

5. Ensure that all applicable CZARA 6217(g) management measures and any additional measures to restore and protect coastal waters are implemented within 15 years.

6. Continue focusing Section 319 annual grant funds and non-federal matching resources on a statewide NPS management program that balances education, monitoring; and assessment, BMP implementation, regulation, and technical assistance activities in all NPS pollution categories.

7. Develop and implement comprehensive nutrient management plans for an estimated 1,137 permitted Animal Feeding Operations by 2010.

8. To maintain and expand partnerships and cooperative opportunities with NPS stakeholders, other agencies, organizations, and citizens.

9. Establish a program to address the regulation of large capacity septic systems (Class V injection wells) in the state by 2010 and continue management of in-ground wastewater treatment and land application and

disposal facilities by conducting site-specific evaluations during facility development and long-term compliance monitoring.

10. Expand the state ambient ground water program to assess the possible impact of nonpoint sources of pollution on vulnerable aquifers contributing base-flow to streams. Expansion to continue through 2014. In addition we will continue to develop and implement our program of protecting ground-waters of the State from NPS pollution.

11. By the year 2015 reduce siltation by at least 50% in targeted streams and lakes across Mississippi where habitat for federally endangered species is threatened from siltation caused by sheet erosion on surrounding lands and bank sloughing.

12. Maintain au adequate surface water monitoring program to observe long-term water quality trends and the collection of stream flow data to assess the beneficial effects of BMPs put in place to reduce NPS pollution, and support NPS TMDL development over the next 15 years.

13. Work over the next 15 years to reduce adverse affects from individual on-site wastewater disposal systems through homeowner and installer education, regulation of system installation and repair, and taking failing systems off-line by constructing central collection and treatment or constructing innovative on-site BMPs.

14. Provide education to policy makers for all cities with population greater than 5000 on storm water pollutant removal, storm water management, and stream corridor restoration by 2015.

15. To periodically review and assess the goals and objectives of the NPS Management Program and revise new information becomes available.

16. To assure effective and efficient use of all financial resources and to leverage funds with other programs to target priority issues and areas.

17. To continue to implement and promote programs and initiatives that will prevent NPS impact to water quality.

18. Incorporate water quality goals and objectives of the State's NPS Program into all of the federal and state programs that address a NPS Category.

19. Maintain drinking water quality standards for Pickwick Lake, the upper Pearl River, and the Tennessee-Tombigbee Waterway above the point of

diversion for Tupelo's public water system.

FIVE YEAR ACTION STRATEGY (SHORT TERM GOALS)

In order to meet the long term goals that are shown above, short term goals must be established. Any journey or process, no matter how long or ambitious, is composed of many short steps. By concentrating on the next step a long journey becomes manageable. The index below shows where the short term goals and action strategies may be found in the document.

Table 4-1 Action Strategy Index

A. FIVE YEAR ACTION STRATEGY FOR AGRICULTURE

Introduction

Agriculture is a significant portion of Mississippi's economy, second only to forestry and its related activities. Agricultural activities include livestock, poultry, row crops, aquaculture, horticultural crops, and orchards. Agricultural activities, without the use of BMPs, can generate significant amounts of NPS pollution in the state. This is due to the fact that agricultural activities are widespread throughout the state. Sediment, excessive nutrients, pathogens, and pesticides are the types of NPS pollutants that can be generated by agricultural activities. The use of BMPs in agricultural activities has a direct effect on reducing the amount of pollutants that make their way into state waters. EPA has identified six major categories of agricultural NPS

pollution sources. They are: cropland erosion, excessive nutrients and pathogens in runoff from livestock facilities, excessive nutrients in runoff from fertilized cropland, pesticides in runoff from cropland, erosion caused by improper grazing management, and pollutants in irrigation runoff from irrigated cropland.

Agency Partners

In Mississippi, the Mississippi Soil and Water Conservation Commission (MSWCC) is the lead agency responsible for abatement of agricultural NPS pollution through training, promotion, and installation of BMPs on agricultural lands, The Natural Resource Conservation Service (NRCS) provides technical assistance to the MSWCC through its conservation districts which are located in each county. NRCS assists animal producers in developing nutrient management plans and grazing management plans

MDEQ is the lead agency responsible for water quality and quantity protection and for NPS pollution management (overall). MDEQ permits waste treatment lagoons for Confined Animal Feeding Operations (CAFO) and all new CAFO permits require a "zero discharge" with land application. MDEQ also oversees permits for the washout facilities of aerial applicators of pesticides. MDEQ and MSWCC have a MOA concerning agricultural NPS pollution and work closely together to reduce agricultural NPS pollution through the Section 3 19 program.

The Mississippi Department of Agriculture and Commerce (MDAC) regulates the use, storage, and handling of pesticides on farms through training and certification of pesticide applicators.

The USDA Farm Service Agency (FSA) provides funding for federal cost-share programs and any producer receiving those funds must farm in an environmentally sensitive manner. There are also cost-share incentives for farmers to install conservation practices.

The Mississippi State University Cooperative Extension Service (CES) oversees several water quality and environmentally related programs as part of its broad educational mission.

Resource Conservation and Development Councils (RC&D) encourage economic development, conservation and utilization of the human and natural resources The six RC&D areas in Mississippi cover all 82 counties. These councils are relied upon to provide assistance on the local level to promote NPS education, planning, and the development and implementation of programs which will improve and enhance the social, economic and environmental conditions in rural Mississippi.

Action Strategies for Agriculture

Future objectives and action plans will build on the previous cooperative work that has been done to minimize NPS pollution impact from agricultural activities. Relationships with

agricultural agencies on the Federal, state, and local level will be strengthened, through formal and informal agreements, to better utilize existing resources to establish geographic priority areas across the state. This enhanced cooperative process is being established under the umbrella of the Basinwide Approach to Water Quality Management. The success of this process should result in improved implementation of best management practices and lead to achieving substantial reductions in NPS pollutants.

The following is a list of action strategies designed to address NPS pollution from agricultural practices statewide. This strategy outlines the specific tasks to be accomplished as part of the agricultural NPS program.

Table 4-2 Action Strategies for Agriculture

Action Item	***Long term Goal Ref.***	***Milestone***	***Implementing Agency(s)***	***Year***
I. Work with all agricultural agencies to develop and implement a method to track and document BMPs effectiveness.	1,3,5,7	Develop a GIS database to track BMPs installed in the state.	MDEQ lead agency for Sec. 319, NRCS for EQIP, and other programs	2000 to 2005
2. Continue to work through the NPS Advisory Committee and the Forums established under the Basinwide Approach to build partnerships to focus on controlling NPS pollution from agriculture.	8	Participate in the basinwide approach and convene the NPS advisory Committee at least 3 times a year.	MDEQ and all Ag. Cooperating agencies.	2000 to 2005
3. Provide continued support to Agriculture Chemical Groundwater Monitoring Program (Agchem)	3,10,17	Monitor 80 to 100 wells a year	MDEQ	2000 to 2005
4. Provide continued support to the Pesticide Container Recycling Program	3,17	Recycle at least 300,000 lbs/yr.	MDEQ/ MDAC, MCES, other agencies	2000 to 2005

Action Item	*Long term Goal Ref.*	*Milestone*	*Implementing Agency(s)*	*Year*
5. Implement agricultural watershed projects according to the MS Watershed Restoration Action Strategy (WRAS) in highest priority watersheds. As identified in FY-99 and FY-2000.	3,4	Implement projects identified in WRAS for FY-1999 and 2000 (See Appendix F) Implement projects to be determined by WRAS in FY-2001and 2002	MDEQ and all Ag. Cooperating agencies.	2000 to 2005
6.Continue to promote the use of BMPs by supporting more effective statewide educational programs.	6,8,14	1) Solicit input from Resource Agency Partners, the NPS Advisory Committee, Stakeholder Groups, and individuals to identify educational needs. 2) Develop program to disseminate voluntary farmland environmental assessment guidelines throughout the conservation districts to encourage the reduction of farm pollutants	MDEQ and all Ag. Cooperating agencies.	2000 to 2005

Action Item	*Long term Goal Ref.*	*Milestone*	*Implementing Agency(s)*	*Year*
7. Utilize Section 3 19 to continue to expand the implementation of BMPs in priority areas.	6,7,9,11,13	1) Install 54,000 feet of terrace system. *2)* Install 180 water and sediment control basins 3) Install 360 acres of permanent vegetation 4) Install 260 acres of critical area planting *5)* Install 120,000 acres of conservation tillage, and *34,000* acres of reduced tillage. *6)* Install 180 grade control structures. 7) Install 28,000 feet of diversions. 8) Install 130 acres of grassed waterways. 9) Install 160 acres of field borders 10) Install 140,000 acres of cover crops. 11) Install 3 1 animal waste control facilities. 12) Install 270 acres of pasture and hayland planting	MDEQ/MSW CC and other agencies.	*2000* to *2005*

Action Item	*Long term Goal Ref.*	*Milestone*	*Implementing Agency(s)*	*Year*
8. Apply annual Conservation Management Systems (CMS) established under existing NRCS Programs. The annual number of CMS applied and acres heated will vary depending on the annual funding level.	3,4,5,6,11	1) Conservation System Planned on Cropland, 128,321 Ac/Yr 2) Conservation System Applied on 91,134 Ac/Yr 3) Conservation System Planned on Pastureland, 96,268 Ac/Yr 4) Conservation System Applied on Pastureland (RMS), 63,159 Ac/Yr 5) Conservation System Planned on Forestland, 94,392 Ac/Yr 6) Conservation System Applied on Forestland, 63,365 Ac/Yr 7) Conservation System Planned on Wildlife land, 27,227 Ac/Yr 8) Conservation System Applied on Wildlife land ,18,707 Ac/Yr 9) Urban Plans Developed, 965 Ac/Yr IO) Urban Plans Implemented, 742 Ac/Yr 11) Irrigation Water Management, 31,606 Ac/Yr 12) Irrigation Water Management, 155,000 Ac/Yr 13) Waste Management Systems Planned & Applied, 410 14) Dry and Wet Waste Management Systems Applied, 82,986 Ac/Yr 15) Wetland Creation, Restoration, or Enhancement Applied, 26,187 Ac/Yr	NRCS Lead, with assistance form other agencies.	2000 to 2005

Action Item	*Long term Goal Ref.*	*Milestone*	*Implementing Agency(s)*	*Year*
8. Continued		16) Nutrient Management Systems Applied 95,000 Ac/Yr 17) Tillage & Residue Management Applied 55,500Ac/Yr 18) Past Management Systems Installed 75,620 Ac/Yr 19) Conservation Buffer Practices Installed 43,000 Ac/Yr 20) Prescribed Grazing 50,000 Ac/Yr 21) Wildlife Habitat Management Applied 21,000 Ac/Yr 22) Forest Stand Improvement Applied 29,725 Ac/Yr 23) Tree Establishment Applied 27,500 Ac/Yr 24) General Customers – Walk-ins 32,326 25) Inventory and Evaluation -Customers 2,566 26) Minority Assistance – Customers 10,000 27) Planning and Application -Customers 12,687 28) Information and Education-Customers 63,255 29) Cropland Protected Against Excessive Erosion (Before >2T, After <T) 15,000 Ac/Yr		
9. Support existing programs and fund new activities to reduce nutrient loadings from Animal Feeding Operations AFO.	7,8,17	1) Conduct educational demonstrations to identify alternative methods to utilize and/or dispose of poultry litter. 2) Develop and implement Comprehensive Nutrient Management Plans for 400 AFO.	CES, MDEQ, NRCS, MSWCC	2000 to 2005 2000 to 2005

Action Item	*Long term Goal Ref.*	*Milestone*	*Implementing Agency(s)*	*Year*
10. Continue and expand education related to water quality issues, nutrient management plans, and the use of BMPs in agriculture.	7,8,17	1)Develop a program to disseminate voluntary farmland environmental assessment guidelines throughout the conservation districts to encourage the reduction of farm pollutants. 2) Develop a broad water quality information and education program directed at rural and urban audiences. 3) Conduct nutrient management workshops for new Extension agents and NRCS personnel. 4) Establish a committee within MDEQ to study necessity of new regulations requiring nutrient management plans for all AFOs and including that plan as part of process. 5) Support expansion of CES's educational outreach and assistance in developing nutrient management plans for farmers with AFOs.	MSWCC, CES, MDEQ	2000 to 2005

Programs And Activities to Reduce NPS Pollution

The implementation of the State's NPS Program relies heavily on the contributions each federal, state, and local units of government, universities, citizen groups, and other organizations make towards controlling NPS pollution. The following discussion describes major programs which address NPS pollution from Agricultural sources. In addition to the effort listed below, Section 3 19 grants fund a number of statewide and watershed projects in priority areas. These combined efforts will work to reach the implementation goals of the NPS Management Program.

To ensure coordination amongst these various programs, several committees like the State Technical Committee, the Statewide NPS Advisory Committee, and the forums established under the Basinwide approach are: utilized (Refer to Chapter 7).

Conservation Reserve Program (CRP) - The CRP is the largest conservation initiative

undertaken by the USDA. 'The purpose of the program is to take highly erodible, or marginal cropland out of production and convert that land into conservation buffers by planting permanent cover. This is to provide buffers between remaining cropland and waters or other environmentally sensitive areas which aids in protecting water quality. This also provides wildlife habitat.

Environmental Quality Incentives Program (EQIP) - EQIP is a new program which replaces the Water Quality Incentives Program (WQIP). EQIP works to address NPS pollution. The program provides technical assistance and cost-share funds of up to 75 percent for the installation and management of conservation practices such as manure management systems, pest management, and erosion control. Under the rules of EQIP, states establish priority areas in cooperation with state and federal agencies and with the approval of the State Technical Committee.

Wetlands Reserve Program (WRP) - This program is similar to the CRP. The WRP provides incentive payments to landowners to take converted wetlands out of production and restore them to their natural state. The program has three options permanent easements, 30 year easement, and ten year agreements. If a landowner agrees to a permanent easement, USDA will pay 100 percent of the cost of restoration and 100 percent of the assessed value of the land. If the landowner agrees to a 30-year easement, USDA will pay up to 75 percent of these costs. Under the 10 year agreement option, USDA will pay up to 75 percent of the restoration cost.

Operation FUEL - The MSWCC oversees a program called "Operation FUEL (Farmers Using Energy Less)". This program is designed to promote the adoption of farm management practices that will conserve energy, reduce soil erosion, improve irrigation water management and enhance the efficiency of agricultural production. Although the primary purpose of this program is energy conservation, it will also reduce NPS pollution because it promotes conservation tillage, irrigation and water management and tree planting.

Delta F.A.R.M. - Delta F.A.R.M. (Farmers Advocating Resource Management) is an association of growers and landowners in the Mississippi Delta region. It is administered by the B. F. Smith Foundation and began in 1997. The mission of Delta F.A.R.M. is to encourage its members to implement recognized agricultural BMPs which will conserve, restore and enhance the environment of Northwest Mississippi. Membership is voluntary and members are only required to agree to try to improve their personal environmental stewardship level. The program assists farmers by helping them to do an evaluation of their existing management practices and preparing a work plan for the farmer which aid them in implementing additional conservation practices to benefit the environment and their bottom line. Delta F.A.R.M. works closely with several agencies in order to aid the farmer and inform them of current regulations. When the program was first started, 114,000 acres were enrolled and evaluated. The program now has 210,000 acres enrolled and has a goal of enrolling 300,000 acres by the year 2000. Their 1998 report showed the membership's stewardship level at 81.47%, which means that the membership is currently implementing 81.47% of the conservation practices advocated. The program has an ultimate goal of reaching a 100% stewardship level for its membership.

Nutrient Management and Water Quality Initiatives - The Mississippi State University Nutrient Management and Water Quality Task Force was established to address nutrient management and water quality related concerns associated with Mississippi agriculture. This multi-disciplinary task force includes research and Extension components, and is comprised of individuals with expertise in animal science, nutrient and waste management, water quality, agricultural engineering, environmental science and other areas pertinent to nutrient management and water quality. Its mission is to provide research and Extension leadership in nutrient management and water quality, develop research publications and Extension education curricula, and provide pro-active training to disseminate research-based education, with an emphasis on animal waste management and related issues. Work to date by the Task Force can be accessed electronically on the Mississippi State University Extension Service Web Page (http://www.ext.msstate.edu) and then clicking in succession on Division of Agriculture, Forestry, and Veterinary Medicine; Other Services and Cooperating Organizations; and Nutrient Management and Water Quality Task Force.

Animal Waste Management Initiatives - Extension was a partner in the Tangipahoa Hydrologic Unit Area special project, which worked to reduce the environmental impact of dairy operations in Pike, Amite, and Lincoln counties in southwest Mississippi. As a result of this project, conducted in cooperation with several other state and federal agencies, more than 30 animal waste management facilities were installed or renovated. As a result of this and related work, it is estimated that nutrient loads in the watershed were reduced by 27 percent, an important factor in reducing environmental impacts.

Mississippi Waste Pesticide Disposal Program - In this program which began in late 1994, more than 815,000 pounds of waste pesticides were disposed of through a licensed hazardous waste contractor. In all, 38 disposal events were held across the state in which more than 900 farmers and other property owners participated. In addition to directly benefitting participants, the program helped reduce risks to water quality and the rural environment. The program was a collective effort of farmers, the Mississippi Department of Agriculture and Commerce, Mississippi State University Extension Service, Mississippi Farm Bureau Federation, Mississippi Department of Environmental Quality, Delta Council, Mississippi Agricultural Chemical Council, Mississippi Soil and Water Conservation Commission, Mississippi Nurserymen's Association, Mississippi Pest Control Association, and the Nature Conservancy.

Mississippi Pesticide Container Recycling Program - Each year, farmers recycle about 500,000 pounds of plastic pesticide containers through this program. Since 1989, more than 4 million pounds of containers have been recycled. Mississippi is among the nation's leaders in pesticide container recycling, with more than 40 of 82 counties participating. It is estimated that 3 1 percent of all plastic pesticide containers in Mississippi is recycled in this program. By properly rinsing container:: and using the pesticide rinse water, farmers save the cost of an estimated 16,000 gallons of pesticides each year that would be lost without rinsing. The program not only reduces potential environmental risks associated with pesticides, but also produces a market for a waste product: while reducing the burden to landfills. The program is a cooperative effort involving a private recycler, farmers, the Mississippi State University Extension Service,

Mississippi Department of Agriculture and Commerce, Mississippi Department of Environmental Quality, and the Mississippi Farm Bureau Federation.

Farm-A-SystiHome-A-Syst Education Programs - This program is patterned after a national drinking water quality model and is designed to help farmers and other rural homeowners reduce risks to drinking water quality in private wells, The program was pilot-tested in the Tangipahoa Hydrologic Unit Area (portions of Pike, Amite, and Lincoln counties), and educational materials developed through the program are now available statewide. More than 3,000 citizens have received educational information about how to protect drinking water quality through Farm-A- components of the Mississippi Farm-A-Syst Program were incorporated into the Delta. Farmers Advocating Resource Management (Delta F.A.R.M.) Program, which promotes environmental stewardship among Mississippi Delta farmers.

Water Quality Education Programs for Youth - These programs are aimed at helping youth and other citizens learn how they can protect and preserve drinking water quality. Collectively, these programs reach several thousand people each year, through water quality demonstrations in schools, field days, meetings, and other occasions, For example, an estimated 10,000 youth have been reached using an aquifer model, which demonstrates groundwater flow and potential sources of contamination. Other school-administered programs were developed with assistance through the Extension water quality program, including Water Riches, a water conservation program designed to reach 30,000 to 50,000 youth in grades 4-7 in 840 schools in the state, A-Way With Waste, a waste management curriculum for public schools, and Give Water A Hand, a program to help youth develop a water quality action plan.

In-Service Training Programs - In-service training in water quality and environmental education is conducted for county Extension staff. County staff receive in-service training in areas such as general water quality, Farm-A-SystIHome-A-Syst, animal waste management, and public policy related to water quality issues. A quarterly newsletter, *Waterwords*, also is distributed as water quality resource material for county Extension staff. In addition to training for county Extension staff, Extension also coordinates and conducts educational training for other agencies in areas related to nutrient management.

Recycling Initiatives - Several recycling efforts are supported through the Extension water quality program. One helps Mississippi Delta farmers dispose of used polypipe (flexible irrigation tubing), a waste 'disposal problem for many farmers. The program helps farmers address this problem while: creating new markets for used tubing through recycling. More than 3.5 million pounds of used, polypipe have been recycled in the program, which is a cooperative effort of farmers, Extension, the recycler, and local Boards of Supervisors. A video highlighting recycling and waste disposal activities in the Delta also has been developed. On a statewide scale, Extension cooperates with other agencies through the Mississippi Recycling Coalition, which sponsors annual conferences to promote recycling and waste management in Mississippi.

Special Water Quality Programs - Special water quality and environmental education programs are conducted on request for the poultry industry and other livestock interests. These

programs have been presented to more than 300 poultry farmers and poultry service representatives. Emphasis is on environmental regulations affecting the poultry industry as well as management of poultry waste and mortality associated with poultry production.

State and Regional Water Quality Linkages - The Mississippi State University Extension water quality program serves as a coordinating link for drinking water quality related activities, The program also serves as linkage to the Southern Region Extension Water Quality Coordinating Committee, which works to strengthen Extension's ability to deliver water quality programs through the biennial Southern Region Extension Water Quality Workshop. This regional workshop in conducted in cooperation with Alcom State University and other 1890 land-grant institutions across the southern region. The program also serves as a link to the Mississippi Non-Point Source Advisory Committee, a multi-agency group which works to reduce the impact of nonpoint source pollution generating activities on the environment.

Well Water Testing and Education Program - More than 1,500 private drinking wells in Mississippi have been tested through this program. Well owners receive a water quality analysis as well as information on how to reduce the risk of contamination.

Programs for Aerial Applicators - The Extension water quality program assists in conducting a pesticide and fertilizer spray pattern education program for aerial applicators. This program helps aerial applicators "tine-tune" applications for increased efficiency and reduced risk of over spray to unintended areas.

AgChem Monitoring Program- In order to determine the potential impact of agricultural chemicals on groundwater,, Senate Bill 2778 was passed and became effective July 1, 1987. This Bill allows the MDEQ to establish groundwater standards and monitor for agricultural chemicals and other pollutants. The F'rogram currently operates with an annual estimated budget of $210,000 and monitors about 80 to 100 wells a year.

Mississippi Delta Management Systems Evaluation Areas (MSEA) Project- The purpose of this project is to demonstrate the benefits and effectiveness of selected agricultural BMPs on water quality in the Mississippi Delta Management Systems Evaluation Areas (MSEA). The Project is located in three oxbow lake watershed in the Delta and is being cooperatively administered by a consortium of local, State and federal agencies and organizations. The associated monitoring activities for the MSEA project are comprehensive designed to assess how agricultural activities impact water quality. The project also seeks to increase the knowledge needed to design and evaluate BMPs as components to farming systems. In addition, educational and public awareness programs will be developed to communicate those ideas that help reduce potential impacts to ground and surface waters.

B. FIVE YEAR ACTION STRATEGY FOR FORESTRY

Introduction

Mississippi is a state blessed with the soils and climate that provide for good forest growth. Sixty two percent (18.6 million acres) of the State's total land area is in forests. Ten percent of Mississippi's forest land is publicly owned. Of the remaining ninety percent, sixty six percent of that is owned by individuals and twenty four percent is corporate owned. Forestry is estimated to be an 11.4 billion dollar industry in the state. These contributions provide a stronghold for growing trees in the state and allow us the opportunity to continually reap not only economic benefits, but environmental, aesthetic, social, and health benefits as well.

While studies have shown that forestry activities contribute approximately ten percent of NPS pollution in the State, a poorly managed site can create a severe, localized, impact on receiving waters. Therefore, BMPs lhave been developed for logging operations and their use is encouraged throughout the State. Mississippi Forestry Commission (MFC), in cooperation with the Mississippi Forestry Association (MFA) and Mississippi State University (MSU), have taken a leadership role in the development and promotion of the use of BMPs in Mississippi. These entities, along with some assistance from MDEQ, created the *Mississippi's Best Management Practices Handbook.* This handbook was first created with Section 319 funds in 1989 and is currently undergoing its third revision. Appendix E provides a list of BMPs designed to reduce the impact of NPS pollution to state waters.

Agency Partners

The MFC is responsible for managing forestry practices on state-owned forest lands and providing technical and financial assistance to nonindustrial private landowners. MFC also provides technical and financial assistance on urban forest management to Mississippi cities and towns. The all forestry activities taking place in the six National Forests in Mississippi. The NRCS provides technical assistance to local governments, landowners, and land users. The Farm Service Agency (FSA) provides funding for forestry cost-share programs. The CES provides education on BMPs, and timber management to landowners and loggers.

The MFC with assistance from the MFA, MCES and the forestry industry are instrumental in ensuring that forestry activities do not impact water quality.

In an effort to improve coordination activities in addressing NPS pollution on Federal lands the USFS and the MDEQ entered into an agreement on February of 1990. The USFS accepted the responsibility for the development, implementation, and monitoring of BMPs for management activities on national forests system lands and to reduce NPS pollution.

Although the use of BMPs is voluntary in Mississippi, MDEQ does handle all investigation of, and enforcement against, loggers who negatively impact state waters and degrade water quality because of their operations. This is done using State law Section 49-17-29 (2) (a) which states:

> *It shall be unlawful for any person (i) to cause pollution of any waters of the state or to place or cause to be placed any wastes in a location where they are likely to cause*

pollution of any waters of the state; (ii) to discharge any wastes into any waters of the state which reduce the quality of such waters below the water quality standards established therefor by the commission; or (iii, co violate any applicable pretreatment standards or limitations, technology-based effluent limitations, toxic standards or any other limitations established by the commission. Any such action is hereby declared to be a public nuisance.

Normal ongoing silvicultural activities which involve deposition of dredged or fill in wetlands are exempt from Section 404 of the Clean Water Act provided the activity complies with BMPs. Should the activity not comply with BMPs, a permit will be required and all the standards and provisions under Section 404 apply. A separate handbook, Mississippi's Best Management Practices for Wetlands, contains specific BMPs recommendations for wetland areas. This handbook is currently being revised.

Action Strategies for Forestry

The forestry NPS Program will be implemented primarily through existing programs that include voluntary use of BMPs, education and outreach, and BMP compliance monitoring. These programs will be implemented through a cooperative approach that involves key agencies like the USFS, MFC, MFA, USDA, MDEQ, MCES private industry and individuals. Stakeholder input on the Forestry NPS Program will be solicited on the watershed level under the Basinwide Approach to Water Quality Management. Stakeholders will be given an opportunity to present their issues during stakeholder meeting, held in their perspective watershed, during the earlier phases of the Basin Wide Approach.

Close cooperation among the MFC, MS Forestry Association (MFA), and he MS Cooperative Extension Service (MCES), and other interested groups and individuals has allowed a broad representation of the forestry community to have input into the development and implementation of the State's Forestry NPS Program. The following five-year action strategy outlines the specific tasks to be accomplished as part of the Forestry NPS Program. These activities will ensure compliance and implementation of BMPs to protect ground and surface water.

Table 4-3 Five Year Action Plan for Forestry

Action Item	*Long term Goal Ref.*	*Implementing Agency(s)*	*Year*
1. Continue monitoring BMP compliance and promoting use of BMPs until compliance reaches 100 percent.	1,2,4	MFC	2000 to 2005
2. Expand educational efforts to target problem areas identified by monitoring for BMPs compliance	6	MFC, MDEQ, MFA, MCES	2000 to 2005
3. Implement a public lands management program to include sustainable forestry guidelines integrated within a GIS database.	1,3	MFC, MFA, MCES	2005
4. Continue to support and implement BMP training programs.	6	MFC, MDEQ, MFA, MCES	2000 to 2005
5. Complete the third revision of Mississippi's BMP Handbook and release for general distribution.	6	MFC, MDEQ, MFA, MCES	2000
6. Complete revision of Mississippi's BMP Handbook for Forestry Operations in Wetlands and release for general distribution.	6	MFC, MDEQ, MFA, MCES	2000
7. Develop a forest land status assessment and conduct assessment on a 3 year cycle, with the first assessment to be completed in 2000.	1	MFC, MDEQ, MFA, MCES	2000 and 2003
8. Continue to promote Urban Forestry program by working with cities and towns to develop local management capabilities.	6,14	MFC, MDEQ, MFA, MCES	2000 to 2005
9. Conduct annual forestry education workshops for landowners.	6,17	MFC, MDEQ, MFA, MCES	2000 to 2005
10. Evaluate the need to establish a memorandum of understanding between the MFC and MDEQ.	8	MDEQ/MFC	2001
11. Develop a complaints database in order to track and enforce stiffer penalties against repeat offenders who degrade water quality through logging operations without the use of BMPs.	6,17	MDEQ	2001

Programs And Activities to Reduce NPS Pollution

Sustainable Forestry Initiative

The Sustainable Forestry Initiative (SFI) was developed nationally through the American Forest

and Paper Association. Compliance with the SFI guidelines on company-owned forest land is mandatory for AF&PA company membership. The Mississippi Forestry Association, through its Sustainable Forestry Initiative/State Implementation Committee, is leading the implementation of the SFI in Mississippi. Other active participants are forest resource companies, the Mississippi Forestry Commission, the U.S. Forest Service, the Mississippi State University Extension Service, Mississippi State University College of Forest Resources, logging contractors, and other members of the forestry community.

The SFI in Mississippi involves logger education under the direction of the Mississippi State University Extension Service and the Logger Education Council. The Extension Service presents environmentally sound logging practices and harvest planning, communicates and works with the public, and promotes good business management and safety. By the end of 1998, more than 7300 participants had attended 209 workshops, Since sixty-nine percent of forest land in Mississippi is owned by private individuals, SFI also involves landowner outreach. During the timber sale process, AF&PA members in Mississippi will encourage private, nonindustrial landowners who sell timber to participate in the SFI by reforesting following harvest, and by requiring the use of BMPs on their land. By the end of 1998 CES had helped to distribute and prepare about 20,000 information packets to landowners through company foresters, loggers, and consulting foresters.

The SFI requires member-company compliance with the SFI principles on company-owned land as a requirement for AF&PA membership. These include:

- Reforesting within a certain time after final harvest. For example, within two years if the acreage is replanted, five years if the acreage is naturally regenerated.
- Protecting water quality and wildlife habitats by meeting or exceeding forestry Best Management Practices (BMPs) established by each state and approved by the Environmental Protection Agency.
- Minimizing the impact of forestry operations on visual quality by limiting the maximum average size of clear-cut to 120 acres and requiring green-up periods before adjacent areas can be clear-cut.
- Identifying special sites with unique historical or biological significance and, when the opportunity presents itself, working with independent experts to manage and protect these sites.
- Continuing to improve wood utilization in an effort to ease the pressure on forests created by an increasing consumer demand for forest products.
- Continuing the prudent use of forest chemicals to improve forest health while protecting employees, the public, and water quality.

State Forestry Cost Share Program

The MFC administers the largest state funded cost-share program for forest regeneration and improvement in the nation,. The Program has been credited with the replanting of one million acres since its inception back in 1974. A total of 50 million dollars has been to implement cost sharing activities throughout the state. The Program currently operates with a four million dollar annual budget. The implementation of BMPs is mandatory in order to be eligible for this program. MFC also provides technical assistance on USDA funded forestry cost-share programs. The use of BMPs is a part of every recommendation.

Reforestation Tax Credit

In a strong show of support for sustainable forestry in Mississippi, in 1999 the Legislature passed House Bill 832, a bill to provide a Reforestation Income Tax Credit (RTC), to encourage reforestation practices by nonindustrial private timberland owners. Even though Mississippi is traditionally a national leader in reforestation each year, replanting on nonindustrial private lands hasn't kept pace with the increased demand for timber over the last decade. This new reforestation tax credit is designed to provide the incentive for nonindustrial private landowners to reforest their cut-over or idle land. Key provisions of House Bill 832 are that the RTC applies only to individuals or groups of nonindustrial private landowners and that the bill provides a 50 percent income tax credit for the cost of approved hardwood and pine reforestation practices. Although this bill is to encourage reforestation, it will have an direct impact on abating NPS runoff by encouraging landowners to replant sooner after timber harvest.

Extension Forestry Programs

Extension forestry educational programs reach hundreds of landowners each year with information about best management practices. Workshops which teach best management practices are conducted throughout Mississippi at Mississippi Forestry Association meetings with instructors from MDEQ, the Mississippi Forestry Commission and Mississippi State University Cooperative Extension Service. In 1998, 40 short courses were held reaching 856 landowners representing almost 225,000 acres. In addition, 60 workshops were held for 540 professional loggers. Specialists also conducted five presentations reaching 118 others. A focus of these programs is best management practices to help landowners and loggers understand environmental impacts associated with forestry activities. Special forestry meetings coordinated by Extension also reached under-served landowners in the state. CES will continue to develop literature and sample contracts to assist landowners with the bidding process, the contract writing, and the cutting of their timber. Landowners need to know the importance of stream-side buffer zones and how to mark this timber or block it out for the bidding process. Landowners also need to know their options and benefits in different methods of replanting or allowing natural reestablishment of mixed stands.

Urban and Community Forestry program

Through the MFC's Urban and Community Forestry program, technical and financial assistance is provided to cities and towns on urban forest management. The agency's goal is to aid local

communities in developing long-term, self sustaining urban forest management programs. These programs focus on growing and managing trees for the benefits they provide to people in urban areas, including enhancing water quality.

C. FIVE YEAR ACTION PLAN FOR URBAN STORMWATER AND CONSTRUCTION

Introduction

Rainwater running off roofs, lawns, streets, industrial sites, and other pervious and impervious areas washes of important constituents into urban lakes and streams. A large volume of these constituents in urban runoff is comprised of sediment and debris from decaying pavements and buildings that can clog sewers and waterways, reducing hydraulic capacity and thus increasing the chance of flooding and degrading aquatic habitat. Heavy metals and inorganic chemicals (including copper, zinc, lead, and cyanides) arising from transportation activities, building materials, and other sources are also significant pollutants. Nutrients added to urban runoff from fertilizers applied around homes, golf courses and parks. Petroleum products from spills and leaks, particularly from service station storage tanks, and fecal bacteria from animal wastes and ineffective septic tanks are other important contaminants and may affect groundwater as well as surface water. Construction sites are a major source of sediment erosion. The most significant and widespread type of construction ongoing in Mississippi is highway construction. This type of construction involves the clearing of long narrow strips of land, usually crossing streams and waterways. Deep cuts and high fills are common for many highway projects.

In Mississippi it is estimated that the water quality degradation caused by runoff from urban stormwater and construction sites is not as great as the amount caused by agriculture. However, where construction activities are intensive and impervious surfaces reach 20 percent or more, the localized impacts on water quality may be severe because of the high unit loads involved. Erosion rates from construction sites typically are 10 to 20 times that of agricultural lands and runoff rates can be as high as 100 times that of agricultural lands. Thus, even a small amount of construction may have significant negative impact on water quality in localized areas.

Solutions to urban and construction NPS problems are well developed and understood. Both structural and are available. These various practices involve protecting disturbed areas from rainfall and *from* flowing runoff water, dissipating the energy of the runoff, trapping sediment that is being transported, and using good housekeeping practices to prevent potential pollutants other than sediment from being transported by runoff. Appendix E provides a list of these practices.

Action Strategy for Urban Stormwater and Construction

The MDEQ is designated as the lead agency for implementing an Urban NPS Pollution Control Program. As with other categories of NPS pollution, the Program relies on a combination of

regulatory, nonregulatory, and public outreach programs and activities to minimize pollution to state waters. The main focus of these activities is the implementation of preventative measures at the source rather than trying to clean up receiving waters after they have been damaged. Proper land management and future planning to facilitates **smart** growth is highly emphasized as the most efficient way to minimize this type of pollution and enhance the quality of life.

The following five year action plan outlines the specific tasks to be accomplished as part of the Urban NPS Program. These activities lead toward meeting the long-term goals and ensure continuing compliance and implementation of BMPs to protect ground and surface water.

Table 4-4. Five Year Action Plan for Urban Stormwater and Construction.

Action Item	*Long term Goal Ref.*	*Milestone*	*Implementing Agency(s)*	*Year*
1. Increased protection for sensitive waters.	2.3	Address 303 (d) listed streams in the construction general permit and require appropriate additional protection.	MDEQ	2000 to 2005
2. Promote stormwater management on the local level (local ordinances, etc.)	8.14	Implementation of Phase II of the Storm Water Program. Local ordinances for 3 1 counties and cities will become mandatory. Other cities will be discretionary by the permitting authority	MDEQ	2000 to 2005
3. Introduce a new Bill to make eligible new entities to receive State SRF low interest loans for stormwater management.	16.17		MDEQ	2001
4. Encourage and assist municipalities and county government in obtaining SRF loans to address local NPS pollution control issues.	14.16	Develop educational material to advertise changes in the SRF program and explaining its benefits. Develop a new guidance for new applicant.	MDEQ	2000 to 2005
5. Increase compliance and enforcement activities for construction projects.	6,14,17	Develop a storm water compliance and enforcement strategy. Allocate additional personnel in ECED so more time can be devoted to storm water compliance and enforcement.	MDEQ	2000 to 2005

Action Item	*Long term Goal Ref.*	*Milestone*	*Implementing Agency(s)*	*Year*
5. Establish a Statewide Urban NPS Education Program similar to the National Nonpoint Source Education for Municipal Official (NEMO) Program.	6,14,17		MDEQ	2002
7. Provide technical assistance to all municipalities impacted by Stormwater Regulation.	6,14,17	A) Produce guidance material. B) Target Gulf Coast, greater Jackson metro area, and De Soto county (all Stormwater Phase II communities) for presentation. C) Conduct education presentation in all other communities over 5000.. D) Conduct follow-up with all communities that receive training to determine if changes had been made in policy and outlook. E) Continue to provide and increase participation in Certified Professional in Erosion and Sediment Control (CPESC	MDEQ, RC&D Councils.	2000 to 2005
8. Establish four Urban NPS BMPs demonstration sites at different regions in the state.	6,14,17	Identify partners, establish site selection criteria, identify sites, implement.	MDEQ, RC&D	2001 to 2005

Programs and activities to Reduce NPS Pollution

Stormwater

The 1987 amendments to the Clean Water Act (CWA) required EPA to establish regulations to control discharges of stormwater associated with industrial activity. EPA completed the regulations in November of 1990. Mississippi received authority to issue general permits on September 27, 1991. On July 14, 1992, the Mississippi Permit Board issued eight general NPDES permits for industrial activities. Until February, 1998, the Industrial Division had responsibility for the Storm Water Program. As a result of internal re-engineering, the Environmental Permits Division of the Office of Pollution Control, General Permits Branch, is primarily responsible for developing storm water related general permits, reissuing general permits and granting coverages under the general permits. The existing general permits, designed to reduce the introduction of pollutants to storm water are: Industrial, Construction, SARA Title III, Landfill, Primary Metals, Wood Treaters, and Oil and Gas. Construction activities that disturb five or more acres are defined as an industrial activity by EPA.

Under Phase II of the Stormwater Program, by 2003 large, rapidly growing communities (greater Jackson area, the Coast, and Desoto county) will be required to obtain a stormwater permit which will require them to conduct local education and pass ordinances to control erosion, sediment, and stormwater. Phase II rules will also require all construction activities that disturb more than one acre to use BMPs. Table 4.5 provides a list of incorporated places and counties impacted by Phase II Stormwater Regulation.

Stormwater Compliance and Enforcement Program

MDEQ is the lead agency responsible for stormwater compliance and enforcement in the state. All construction activities that disturb five or more acres are required to submit a stormwater pollution prevention plan (SWPPP) and obtain a copy of the general permit to cover their activities. Construction activities which impact wetlands (even if it is less than five acres) or state waters, are required to obtain a 401 Water Quality Certification and a 404 Permit. The 401 certification requires the use of BMPs to minimize erosion and control sediment during construction, establishment of permanent cover when construction is complete, and the treatment of the first ½ inch of runoff from impervious surfaces. MDEQ is working with local governments in order to promote their involvement in controlling erosion, sediment, and stormwater through the passing of ordinances and local enforcement.

State Revolving Funds Loan

The federal Clean Water Act (CWA) amendments of 1987 authorized a Clean Water State Revolving Fund (CWSRF) loan program to assist states with the financing of publicly owned treatment facilities (Section 212), Non-point Source (NPS) management activities (Section 319) and Storm Water pollution control projects (Section 402). Title VI, Section 601 of the CWA authorizes the Administrator of EPA to award capitalization grants to states for the purpose of establishing a low interest loan program to assist eligible CWSRF loan recipients. Under the program, EPA provides "seed money" to states in order to capitalize state loan funds. The states in turn make below-market interest rate loans to eligible public entities for projects that remediate water quality problems. To date, most SRF loans have been made to public entities to construct or improve wastewater treatment facilities.

MDEQ realizes that non-point source projects offer some of the highest environmental benefits for the dollar in the State of Mississippi today, and in an effort to capitalize on those environmental benefits the MDEQ is to go to the state legislature during the next legislative session to seek changes to the Mississippi Water Pollution Control Revolving Fund Act to make non-profit organizations eligible CWSRF loan recipients.

Table 4-5. EPA's Proposed Phase II Storm Water Regulations

Incorporated Places and Counties Proposed to be
Automatically Designated Under the Storm Water Phase II Proposed Rule
(From the 1990 Census of Population and Housing - U.S. Census Bureau)
(This list may change with the Decennial Census)

Bay St. Louis	Harrison County	Ocean Springs
Biloxi	Hattiesburg	Pascagoula
Brandon	Hinds County	Pass Christian
Clinton	Horn Lake	Pearl
D'Iberville	Jackson County	Petal
DeSoto County	Lamar County	Rankin County
Flowood	Long Beach	Richland
Forrest County	Madison	Ridgeland
Gautier	Madison County	Southaven
Gulfport	Moss Point	Waveland
Hancock		

Incorporated Places and Counties
(with a population of at least 10,000 and a population density
of at least 1,000 people/sq mile) Potentially Designated [1,2]
Outside Urbanized Areas Under the Storm Water Phase II Proposed Rule
(This list may change with the Decennial Census)

Brookhaven	Greenwood	Meridian
Canton	Grenada	Natchez
Clarksdale	Indianola	Starkville
Cleveland	Laurel	Vicksburg
Columbus	McComb	Yazoo City
Greenville		

[1] Recommended proposed designation criteria: Discharge to sensitive waters, high growth or growth potential, high population density, contiguity to an urbanized area, significant contributor of pollutants to waters of the U.S., ineffective protection of water quality by other programs, etc.

D. FIVE YEAR ACTION PLAN FOR LAND DISPOSAL AND GROUNDWATER PROTECTION

Introduction

One of the primary goals of Mississippi's land disposal control activities is the protection of the state's groundwater resources; hence, these two activities are discussed together. Land disposal activities are discussed first with a following sub-section for groundwater protection,

Land Disposal

Although modem solid waste disposal sites are considered point sources of pollution and are regulated, leachate from sanitary landfills and other types of landfills have the potential to contaminate adjacent groundwater aquifers. Toxic compounds are commonly a part of the overall composition of landfill leachate, especially when the landfill has been used for the disposal of municipal garbage which contains household hazardous wastes.

Regulatory authority in Mississippi over solid waste disposal activities resides with the Mississippi Department of Environmental Quality (MDEQ). The disposal of solid waste is regulated by the Department under the authority of the Mississippi Solid Waste Law of 1974. The Mississippi Nonhazardous Waste Management Regulations were originally promulgated in the mid-1970's when the program was administered by the State Health Department. In the 1990's, these regulations have been amended several times, as a result of additional requirements of state and federal solid waste laws and due to public demand. Requirements which have been incorporated into the regulations include location restrictions (in relation to adjacent properties, residential areas wetlands, surface water, groundwater acquifers, seismic impact zones, floodplains etc.), operation and design plans, runoff controls, leachate management, and groundwater monitoring provisions.

There are currently 186 permitted, active landfills in the State of Mississippi. This total represents 18 active municipal solid waste (MSW) landfills, 53 industrial waste landfills, 115 rubbish landfills, and one municipal incinerator ash monotill. The materials disposed in these facilities vary depending on the type of landfill facility. MSW landfills accept municipal solid waste, commercial business wastes, industrial solid waste from manufacturing firms and other special wastes. Industrial Solid waste landfills are generally located on the site of or near manufacturing facilities and are permitted to accept waste streams specifically from the facility at which they are located. Rubbish landfills accept construction and demolition type debris and other nonputrescible waste streams which are specifically defined in the Section VII of the Mississippi Nonhazardous Waste Management Regulations. The state's only ash monofill is permitted to accept municipal incinerator ash from the City of Pascagoula's municipal incinerator.

In addition to the active landfills, there are 124 closed municipal landfills in the state and 61 closed rubbish sites. These facilities have the potential, even though closed, to continue to have impacts on groundwater quality, since most were unlined landfills. The Department administers the Mississippi Nonhazardous Solid Waste Corrective Action Trust Fund which provides corrective assistance to owners of municipal landfills which closed prior to 1993. Thus far, owners of 4 closed landfills in the state have utilized this funding assistance for corrective action purposes at landfills in Hinds, Forrest, and Lee Counties.

Another component of the Department's land disposal programs involves beneficial uses of wastewater sludge. Wastewater sludge from both domestic and industrial sources are typically referred to as wastewater biosolids. Land application of biosolids may be beneficial and environmentally sound when applied at the correct agronomic rate. Land application is also considered a form of recycling because it allows recovery of elements or nutrients beneficial for crop production. Land applying biosolids can benefit farmers by offsetting the costs of commercial fertilizer and lime while reducing the amount of wastes occupying valuable landfill space. The best scientific evidence shows that properly treated biosolids can be applied to agricultural lands and forest lands with limited detrimental effects on water quality. To qualify for land application, biosolids must first be treated to reduce pathogens, to reduce the potential to attract vectors, and must meet certain standards for pollutants. The Mississippi Department of Environmental Quality regulates the land application of sludge (wastewater biosolids) though its permitting and compliance programs.

State regulations require that all solid waste disposal facilities obtain a solid waste management permit prior to commencing operation. The permits require the implementation of necessary design and operational features. Permitting authority for land disposal activities currently resides with the Environmental Permits Division of MDEQ. The permitting staff currently apply the locational and operational criteria described in the Mississippi Nonhazardous Waste Management Regulations when reviewing permit applications and plans and when developing permits for such projects.

Applications for permits typically require the Submittal of comprehensive engineering reports addressing geological and hydrological conditions, siting criteria, proper facility design in accordance with specific regulations, operational criteria, closure procedures, and post-closure care (typically 30 years after closure for municipal solid waste landfills).

MDEQ's Environmental Compliance and Enforcement Division (ECED) conducts compliance programs to prevent, monitor, and correct groundwater and surface water contamination from nonpoint source pollution from all types of landfills and from the land application of wastewater biosohds, animal manures, sewage sludge and other biosolids. All permitted sites are closely monitored and inspected on a regular basis to ensure compliance with state regulations. Facilities which do not meet state standards are sent a compliance schedule to either correct deficiencies or close the site. The staff reviews groundwater data of existing sites and monitoring proposals for new sites.

In cases where groundwater impact has been identified in violation of Mississippi Ground Water Quality Standards or the Mississippi Nonhazardous Waste Management Regulations, appropriate actions will be coordinated with the facility owner to ensure regulatory compliance and proper corrective actions. The Department coordinates with the facility owner to implement source identification, contaminant extent assessments, initiation of contaminant remediation systems and performance evaluations of corrective actions. Sites with confirmed groundwater impact may be placed under Order for appropriate corrective action.

Groundwater Protection

More than 80% of the total water supply used in Mississippi (an estimated 2,600 million gallons) is obtained from ground water resources. This reliance on ground water is atypical of most states which are much more dependent on surface water than Mississippi. Fourteen major aquifers and numerous minor aquifers occur in the state. This widespread availability allows water users in many regions of Mississippi to select among several fresh water aquifers at various depths depending on the specific water quantity and quality needed for their intended beneficial use. Ground water is used exclusively to supply the water needs for more than 93% of the potable water consumed in Mississippi and for over 100,000 acres of catfish ponds located throughout the state.

The overall quality of the ground water resources in Mississippi is quite good. Incidents of ground water contamination impacting large segments of the population have been rare, because most of the drinking water supply in the state is obtained from deep aquifers that are naturally protected to some extent by overlying (confining) layers. The recharge areas where confined aquifers crop out at the surface, as well as the regions of the state underlain with shallow unconfined aquifers, are especially vulnerable areas of the state. Special efforts are being made to protect these areas of concern from contamination. Most of the documented cases involving ground water contamination have been localized incidents involving point sources such as leaky underground (gasoline) storage tanks and abandoned water wells. However, nonpoint sources of pollution, such as septic systems and areas where pesticide and fertilizer are applied, are major concerns for ground water as well.

MDEQ's Ground Water Planning Branch in the Office of Pollution Control administers several programs that are directly involved in addressing ground water protection in the state. The Wellhead Protection and Source Water Assessment programs address the protection of the 1,535 public water systems operating in Mississippi. These programs attempt to identify contaminant sources that could potentially impact the water systems and then develop and implement appropriate management plans to enhance ground water protection efforts. The Agricultural Chemical Ground Water Monitoring (AgChem) program, which serves as the state ambient ground water monitoring program, samples shallow water wells to determine the possible impact of pesticide and fertilizer use on the aquifers located in the state. Other agencies involved in ground water protection activities in Mississippi are MDEQ's Office of Land and Water Resources, the Department of Agriculture and Commence's Bureau of Plant Industry, and the

U.S. Geological Survey.

Groundwater Protection Division staff are devoted to protecting the water resources of the state that lie beneath the surface of the ground. These resources are vital to Mississippi's economy as the principle source of water for much of the state's industrial and agricultural base. Groundwater also provides the primary source of drinking water for more than 90% of the population of the state.

Keeping Mississippi's groundwater supply free of contaminants is the goal of the Groundwater Division. Two sources ofpotential contamination to groundwater found in all areas of the state are improperly disposed solid wastes and leaking underground storage tanks. Consequently, the Groundwater Division has several programs that address concerns regarding these potential contamination sources, the Underground Storage Tanks program, the Solid Waste Branch and the Groundwater Planning Branch.

The Groundwater Protection Division staff focus on additional sources of contamination that could affect groundwater supplies in the future. The Groundwater Planning Branch was created to monitor these contaminants, provide for prevention programs, and plan for adequate groundwater protection for our future. The Groundwater Planning Branch administers the following programs for the protection of the state's groundwater resources:

* **Agricultural Chemical Groundwater Monitoring Program**

  The use of pesticides and other chemicals has not harmed our groundwater supply. Continually, MDEQ monitors areas of major agricultural chemical usage to ensure the quality of our groundwater. In state fiscal year 1998, staff collected 101 samples from 93 wells. Through June 30, 1998, we had sampled 655 wells throughout all 82 counties.

* **Mississippi Pesticide Container Recycling Program**

  Through the Mississippi Pesticide Container Recycling Program, we help farmers and aerial applicators dispose of pesticide containers properly. Many of these containers in the past have been disposed in a manner which could detrimentally impact our surface water and groundwater. Since Mississippi created this program in 1989, we have recycled more than 5.4 million containers. The program has preserved nearly 30,000 cubic yards of landfill space and saved farmers millions of dollars in disposal costs.

  Officials have recognized Mississippi for leading the nation in total pesticide container recycling for six consecutive years (1990-95).

  Although Mississippi finished second to California in the number of pesticide containers recycled in 1996 and 1997, our state actually has lead the nation in the percentage of pesticide containers recycled.

* **Wellhead Protection Program**

By promoting volunteer efforts and stressing public awareness,
Protection Program fights the pollution of our water supply. Our approach forestalls well contamination and thus avoids clean-up costs.

able 4-6. Action Strategy for Land Disposal and Groundwater

Action Item	*Long term Goal Ref*	*Milestone*	*Implementing Agency(s)*	*Year*
1. Develop effective training for waste-water installers which includes NPS information, water model demonstrations, ways to improve failing systems and information on selecting the right system for soils in which a septic tank doesn't work.	6,9,13, 16	A) Utilize NPS demonstration projects in Mississippi to teach installers how to repair failing septic systems and other on-site systems by providing educational field days as a part of the recertification training for on-site wastewater installers. B) Initiate a specific grading system of installer licencing, which would require higher levels of training for installers wishing to install alternative disposal systems.	MDEQ, MDH	2000 to 2005
2. Provide 30 more training sessions which include NPS education to wastewater installers by the year 2015.	6,9,10, 13	Conduct at least 2 training sessions per year per health district.	MDEQ, MDH	2000 to 2005
3. Continue and expand education and outreach to all homeowners with on-site systems	6,10,13 17	A) Distribute video produced from current 319 project to homeowners. Video shows homeowners how to manage their system in an economical and environmentally safe manner in order to reduce system failures, as well as how to make effective repairs. B) Develop or order literature/information and distribute it to homeowners through each county's Cooperative Extension Service and the MDH. The literature will inform homeowners of ways to maintain their septic tanks or other on-site system and make them aware of the different systems that are available.	MDEQ, MDH	2000 to 2005
4. Continue to enforce regulations to control non-point source runoff and leachate from landfills.	9			2000 to 2005
5. Continue monitoring groundwater and where appropriate, surface waters to prevent and 'detect impacts to water quality from land	10	Evaluate current resources to ensure proper implementation.	MDEQ	2000 to 2005

Action Item	*Long term Goal Ref*	*Milestone*	*Implementing Agency(s)*	*Year*
disposal activities				
6. Support the reduction and recycling recommendations of the Mississippi Waste Minimization Act of 1991.	6,17	Eva'ua' ' resources to ensure proper implementation.	MDEQ	2000 to 2005
7. Continue to identify non-p"int sources from solid waste sources and evaluate the need for groundwater monitoring at existing non-point source sites within each of the state's basins.	1,9,10	Solicit input from stakeholders identified under the Basinwide Approach.	MDEQ	2000 to 2005
8. Continue to screen proposed solid waste facility sites for State Locational Criteria prior to approval of land disposal.	6,17		MDEQ	2000 to 2005
9. Develop upgraded programs for monitoring of land spreading of animal manures.	6,7,17		MDEQ	2002
10. Initiate groundwater assessments and corrective actions at land disposal sites where regulatory violations have been documented	9,10	Evaluate current resources to ensure proper implementation.	MDEQ	2000 to 2005
11. Conduct a" assessment to estimate the number of Brownfields in Mississippi.	1,17	Make available Section 3 19 funds if needed.	MDEQ	2002
12. Seek candidate landfill and Brownfields projects for SRF loans	10,17		MDEQ	2000 to 2005
13. Continue supporting Groundwater protection programs	1,17	Evaluate current resources to ensure proper implementation.	MDEQ	2000 to 2005
14. Identify all large capacity septic systems located within delineated source water protection areas around public water supply wells and surface water intakes.	1,9		MDEQ	2000 to 2003

E. FIVE YEAR ACTION STRATEGY FOR MINING

Introduction

Mississippi's mineral production consists of both fuel and non-fuel minerals that provide raw materials for construction products, road and dam construction, and energy production. Current law does not allow for the collection of information regarding the amounts of material mined or the value of the materials. The Office of Geology maintains an inventory of mining sites located in the state. Currently, the number of facilities are listed under one of three categories; Grand fathered (existing prior to April 15, 1978) - 2,947, Exempt (sites under 4 acres in size) - 873, and Permitted - 805.

Surface mining has the potential to generate nonpoint source (NPS) pollution at any phase of operation. The phases of operation of a mining site usually include mineral exploration, mine development extraction, transportation, mining and processing, product storage, waste disposal, and reclamation. A particular set of potential surface and/or groundwater pollutants must be identified for each mine due to the differing range of geologic, hydrologic, and surface conditions encountered at each site. NPS impacts related to surface mining activities include hydrologic modification, erosion and sedimentation, water quality deterioration, fish and wildlife disturbances, and public nuisances.

Activities associated with mining can result in changes to the hydrologic cycle of the local area. Removing vegetation and topsoil can cause an increase in surface runoff and subsequent decrease in infiltration to the groundwater system. Accelerated soil erosion can then occur and the displaced sediment is washed into nearby streams. The increased sediment load to nearby streams reduces the volume of water carried by the stream and may result in increased damage in the floodplain. Dredging operations, although no longer permitted in flowing streams, have changed the stream's characteristics by increasing its ability to carry water. This increase in flow may lead to lowering the local groundwater levels or increased drainage from local wetland systems. Stream diversion, a practice often necessary in recovering materials, can have significant impacts on both water quality and quantity at downstream locations.

Erosion and sedimentation are the most common adverse impacts mining exerts on the environment. These impacts include water quality degradation from increased turbidity in local water bodies, damage to aquatic flora and wildlife habitat, and fluctuations in pH resulting from the leaching of various soils being exposed to weathering. Mining areas exposed to extensive erosion activity include the active and past extraction areas, unpaved haul and access roads, and areas cleared for plant or other mine site structures. Stockpiles of product, overburden, or waste fines materials can be easily eroded due to steep slope angles and the presence of fine grained materials.

Mining Program Description

The Mississippi Surface Mining & Reclamation Act (Sec. 53-7-l-75 MS Code 1972 Annotated) serves as part of an overall management plan towards effective control ofnonpoint source

pollution in the state. Prior to the granting of a mining permit, the applicant must address certain issues to ensure there will be no significant or adverse water pollution impacts resulting from the mining activities. Provisions that address the control of nonpoint source pollution must be included as part of the mine reclamation plan. However, control of pollution, especially NPS, from Grand fathered or abandoned mines poses a more difficult problem because associated costs and lack of regulatory controls.

The Mississippi Department of Environmental Quality, Office of Geology has primary regulatory responsibility within the state. Within the Office, the Division of Surface Mining and Reclamation is responsible: for administering and implementing both the MS Act and the federal Surface Mining and Reclamation Control Act and their associated regulations. The Office of Geology is currently using GPS technology to add the locations of exempt and abandoned surface mines to the Department's geographic information system (GIS). Information obtained during inspections of these pits will be used to determine to impact of NPS pollution from these sites.

On November 10, 1992, the Permit Board issued the Mining Storm Water General Permit for active or inactive surface mining operations.

Table 4-7. Five-year Action Plan for Mining

Action Item	Long Term Ref.	1999	2000	2001	2002	2003
1. Continue to implement the regulatory provisions of the MS Mining Act and Rules and Regulations and cooperate with the Office of Pollution Control in addressing NPS pollution.	17	X	X	X	X	X
2. Provide technical assistance to mine operators in the use of BMPs to control conditions that may result in surface or groundwater contamination.	6,16	X	X	X	X	X
3. Continue to develop new BMPs to improve water quality on sites where NPDES permits are note required.	3,11, 17	x	x	x	x	x
4. Continue to offer sample applications and assistance for permitting, operation, and reclamation of mining sites.	6,11, 17	X	X	X	X	X
5. Inventory of both permitted and exempt mining sites using GPS technology to support DEQ's GIS database.	1,11	x	x	x	x	x

Action Item	Long Term Ref.	1999	2000	2001	2002	2003
6. Develop and publish a mine operator's guide to permitting, oueration, and reclamation.	6,17 I I		X	X	X	

F. FIVE YEAR ACTION STRATEGY FOR HYDROLOGIC MODIFICATION AND WETLANDS

Introduction

Hydrologic modification consists of activities such as stream channel modification, dam construction, and streambank and shoreline erosion. Hydrologic modification activities in Mississippi are managed primarily through COE's Section 10 and Section 404 Permits, MDEQ's 401 Water Quality Certification, and MDEQ dam permit. The type of permit required is dependent on the location and type of activity.

The Section 404 permit is required for all activities taking place in federally navigable waters. All stream channelization and channel modification projects require a Section 404 permit as well as a State 401 Water Quality Certification. The certification ensures that such activities will be conducted in a manner so as to not violate state water quality standards. The following condition is routinely placed in the certifications: implementation of BMPs during construction so as to minimize erosion and prevent sediment from being moved off-site and permanent stabilization of all disturbed land surfaces upon completion of construction.

Wetland losses is another concern of the state. Nearly half of the wetlands in the United States (lower 48) are in the southeast region of the country. In Mississippi, 14 percent of the State's area, or 3.7 million acres, is wetlands. This is predominantly pristine forested wetlands. Now more than 365,000 acres of that has been lost or converted over to other wetland types. Over half of this change can be attributed to agricultural development in the lower Mississippi Alluvial Plain.

Wetlands provide many benefits, including fish and wildlife habitat, erosion control and water quality improvement. Water quality functions include flood water retention, ground water recharge, sediment stabilization, and pollutant assimilation. Historically, Mississippi's wetland losses were due primarily to conversion to agriculture. Urban wetlands are now at higher risk due to increased pressure from residential and commercial development.

Mississippi has a wetland protection program integrated into a variety of state laws and regulations. No one agency is solely responsible for wetlands protection and regulation. EPA and the COE are responsible for administering the federal program for regulating development in wetlands. The COE delineates wetlands and determines which wetlands fall under regulatory jurisdiction and requires a federal permit for development.

MDEQ administers the 401 Water Quality Certification Program which is the primary focus of wetland regulation and protection at the state level. MDEQ looks at proposed physical and hydrological impacts on wetlands and water quality in order to protect existing uses and prevent degradation. MDEQ may waive, issue with conditions, or deny a 401 certification. The federal 404 permit from the COE :is not issued until MDEQ gives a 401 certification.

The Mississippi Department of Marine Resources becomes involved in the permitting process if the proposed wetland alteration takes place in the coastal zone. The coastal zone is the area represented by Hancock, Harrison, and Jackson counties. MDMR considers the critical area of the coastal zone to be that area seaward of mean high tide. Projects proposed in that area are reviewed by MDMR, and if consistent with the Coastal Zone Management Program, are issued a critical area permit. If the project is outside of the critical area, but within the coastal zone, then MDMR will review the project for consistency with the Coastal Zone Management Program. In general, MDMR will not approve a project proposal unless no feasible alternatives exist or an overriding public interest can be demonstrated and any substantial environmental impact be minimized.

Wetland Protection and Restoration

When development or construction is proposed that will have an impact on, or be in, wetlands, a Section 404 permit and a Section 401 certification is required. This permit and certification require a mitigation process. The mitigation process is required by an applicant prior to impacting a wetland. The process consists of seeing first if impacts can be avoided altogether, then, if that is not possible, if the impact can be minimized, and lastly, if the first two are not possible, then compensation is required. Compensation can consist of wetland restoration, enhancement, creation, preservation, or some combination thereof. Onsite compensation is more desirable than off-site, and the State follows that guidance when reviewing applications for 401 certification. In Mississippi the acreage of wetland compensation is at least a one and a half acres of wetland compensation for every acre filled in. Commonly MDEQ requires two acres of wetland compensation for every acre tilled in. Compensation alternatives are required to be protected forever by placing those wetlands in a deed restriction or conservation easement.

Five Year Action Strategy

All necessary management: measures and enforceable mechanisms are in place to implement the program for wetlands disturbance statewide, including the coastal zone. The state's strategy for the protection of wetlands is to continue implementing the current program in place. No new actions are needed.

G. OTHER CATEGORIES

Atmospheric Depositions

Pollutants in the atmosphere carried by the wind can settle onto waterbodies. Precipitation may also contain pollutants. MDEQ is not currently doing any depositional monitoring. However,

one site has recently been established in Perry County, Mississippi as part of a national Mercury Deposition Network (MDN) which is part of the National Atmospheric Deposition Program (NADP). The network is designed to measure wet deposition of total mercury and methyl mercury. MDN operates over 50 sites in the U.S. and Canada, and the program is coordinated by the Illinois Water Survey. Mississippi has an immediate need to add several MDN sites to assist in TMDL development for streams with mercury advisories, and to help identify sources of the contamination. According to the Survey, these sites cost approximately $7500 to set up, plus approximately $13,000/year to run the site, including analysis, sample shipment, data management, quality assurance and equipment repair. These costs do not include site specific start up costs such as providing 110 VAC power and all weather access.

Farm crops can be affected by rain precipitation that is considered more acidic than normal. Forests may also be damaged from acid rain exposure. The growth and reproduction of aquatic life and plants in waterbodies may also be adversely affected by atmospheric deposition of acid.

Sediment Contamination

The MDEQ Laboratory collects sediment samples for mercury analysis when they collect samples for fish tissue analysis at approximately 25 sites per year. Sediment samples will also be collected at 35 estuarine sites for metals, pesticides and other semi-volatile compounds as part of the Coastal 2000 estuarine sampling that is scheduled to start this fall and run for at least five years. Additional sediment samples are collected on a case by case basis as part of other investigations, but these two studies represent the only sediment monitoring that is conducted on a routine basis.

Table 4-8. Five Year Action Strategy For Other Categories

Action Item	Long Term Goal Ref.	Complete
Contingent upon future funding, expand the number of sites and parameters to monitor atmospheric deposition.	1,8,10	2001 to 2005
Continue ambient mercury sampling through the NADP program	1,8,10	2000 to 2005
Consider adding sediment monitoring for metals, pesticides, and semi-volitales as part of the ambient monitoring program	1,8,10	2001

CHAPTER 5

PROGRAMS AND ACTIVITIES THAT SUPPORT MISSISSIPPI'S NPS MANAGEMENT PROGRAM

SECTION 319 GRANTS

The Clean Water Act of 1987 (CWA) states: **"It is the national policy that programs for the control of NPSs of pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and NPSs of pollution."** This legislation points out the importance of controlling NPSs of water pollution. With the enactment of Section 3 19 of the CWA, new direction and significant federal financial assistance for the implementation of state NPS programs was authorized. The CWA authorized financial assistance for implementing the State's NPS Management Program through annual grants. The Management Program provides the framework for determining what activities and projects are eligible for funding under Section319. In Mississippi, all funds spent using Section 3 19 grants must be linked to a stated goal or objective of the NPS Management Program. At the same time, the implementation of the state's Program is a continuous process and must account for available resources, emerging problems and causes within the state, institutional changes, and implementation progress. The state will periodically review and amend the goals and objectives of the NPS Management Plan at the third phase of every Basin Management cycle (see Chapter 7).

Description

The state began receiving annual Section 3 19 grants beginning in Fiscal year 1990. That year Mississippi received $703,200 to implement its NPS program. The allocation has steadily increased in subsequent years and in FY 1999, the state's allocation reached $3, 830,000. This amount includes incremental funding in support of the Clean Water Action Plan, awarded for the first time in FY 1999. Incremental funding are used according to the state's Watershed Restoration Action Strategy (WRAS) described in Appendix F. The Section 3 19 grant funds represent sixty percent of the total financial resources spent. The state matches the Section 3 19 federal funds with a minimum of forty percent state and other non-federal sources. Appendix D provides a detailed list of projects funded under Section 319 of the CWA.

Each year the MDEQ NPS staff develops a comprehensive workplan that contains activities and projects that implement the goals and objectives of the NPS Management Program strategy. The total amount of funds requested equals the state's annual allocation of Section 3 19 funds for that year.

The following grant management related milestones will be completed under Section 3 19 Program.

Table 5.1. Milestones for Section 319 Grant Management

Milestone	Complete
Prepare and submit to EPA annual NPS workplans and applications, and manage all workplans.	2000 to 2005
Continue to utilize EPA's Grant Recording and Tracking System (GRTS) to track the status of NPS Projects.	2000 to 2005
Establish a new procedure that streamlines project contract establishment and negotiation.	2001
Close out two Section 319 grants	2002
Restructure the format of the Annual Report to better reflect the progress made in meeting NPS program goals and provide a feedback loop.	

Section 3 19 funds are also made available to a variety of agencies and organizations for NPS projects through a competitive grant proposal process, Annually, Mississippi awards agencies and organizations a portion of Section 3 19 grant funds through a formal competitive request for proposals. The NPS Grant Guidance is promoted through various meetings, workshops, advertisements, mailings and in the near future on the agency's web page.

The guidance is also distributed to the State NPS Advisory Committee. The Committee is a group of water pollution experts and stakeholders who provide direction to the NPS program.

Within the Priority Watersheds projects targeted toward correcting problems in impaired waters will be weighted heavily in the project review process. Impaired waters are those included on the 1998 Priority Ranked List of Waterbodies Targeted for Water Quality Management Action, also known as the 303 (d) list. Examples of recommended project types are included in the NPS Grants Guidance. Projects are required to provide appropriate monitoring and/or functional measures of success in order to gauge effectiveness.

For the project review process, grant proposals are submitted to MDEQ annually. The NPS Coordinator reviews the proposals and divides them into two categories for evaluation. These categories are implementation and assessment. Copies of the grant proposals , NPS Grant Guidance, and other information necessary for review are provided to the NPS Advisory committee. Individual members also have expertise in various NPS categories such as agriculture, urban activities, wetlands, forestry, land application of waste, hydrologic modification, and water quality monitoring. The committee evaluates all proposals and ranks them. The NPS Grants Coordinator prepares a summary sheet by category listing the proposal number, proposal title, lead agency, federal amount requested, non-federal amount, project duration, and the proposal rank.

Typically, annual funding requests far exceed available grant money, therefore only top ranked proposals are funded.

The selected proposals are combined with MDEQ's base program to form a draft NPS workplan. When finalized, the workplan is submitted to the Environmental Protection Agency, along with an application for final project selection and funding approval.

The Department distributes Section 3 19 funds through a contract agreement. This process is not initiated until EPA awards the funds to MDEQ. The entire selection and contract award process routinely takes one year from the date of submission of proposals.

SECTION 6217 COASTAL NONPOINT POLLUTION CONTROL PROGRAM

Description

Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 required states with approved coastal management programs to develop and implement a Coastal Nonpoint Pollution Control Program (CNPCP). This program builds on existing coastal management and NPS pollution programs to reduce and prevent coastal water quality problems. The program is administered jointly at the federal level by the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA). The Mississippi Department of Marine Resources (MDMR) is the lead state agency responsible for the Coastal Nonpoint Pollution Control Program. MDMR is working cooperatively with the Section 3 19 NPS staff in MDEQ, office of pollution control and with other agencies, to implement this program.

Section 62 17 requires state Coastal Nonpoint Pollution Control Programs to have enforceable mechanisms and/or policies to ensure implementation and compliance with the program objectives. The term "enforceable policy" has been defined by NOAA and EPA as "state policies which are legally binding through constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decisions, by which a state experts control over private and public land and water uses and natural resources in the coastal zone." These enforceable mechanisms can be either regulatory or non-regulatory. Non-regulatory approaches must be backed by enforceable state authorities which ensure that the management measures will be implemented. States must demonstrate that they have the authority to take enforcement actions where incentive or other non-regulatory programs do not result in implementation of management measures, or where significant harm to coastal waters is found or threatened. Mississippi is utilizing a combination of both regulatory and non-regulatory approaches.

Mississippi's Nonpoint Source Management Program incorporates the elements and requirements of Sections 319 and Section 6217. The NPS pollution categories addressed by Section 6217 are not identical to those addressed by the 319 NPS Program. The federally

designated NPS categories and subcategories to be addressed under Section 6217 are listed below, along with the equivalent Section 3 19 category or categories.

Table **5.2.** Section 319 **and Section 6217 Categories**

Section 6217 NPS Category	Section 319 Equivalent Category
Agriculture	Agriculture
Forestry	Silviculture
Urban Areas	Construction, Urban Runoff, portion of Land Disposal that includes onsite disposal systems
Marinas and Recreational Boating	No equivalent
Hydromoditicaton	Hydrologic/habitat Modification
Wetlands, Riparian Areas, and Vegetated Treatment Systems	No equivalent
No equivalent	Resource Extraction
No equivalent	Land Disposal

Mississippi's Program

Initially submitted on August 17,1995, the program was conditionally approved by NOAA and EPA on November 18, 199'7. It focuses resources on preventing and controlling significant impacts of NPS pollution on coastal resources and human health. Coordination and integration of coastal nonpoint programs with other programs and water quality initiatives [e.g., state 319 NPS programs, the development of Total Maximum Daily Loads (TMDLs) under Section 303(d) of the Clean Water Act, the Environmental Quality Incentives Program (EQIP) under the 1996 Farm Bill, National Estuary Programs, and State Watershed Plans] are considered in establishing priorities and developing strategies.

In establishing priorities, Mississippi's program addresses pollution prevention and water quality improvement goals, including the protection of pristine areas and coastal waters that are threatened by reasonably foreseeable increases in pollution loadings from new or expanding sources. Targeting program resources involves a balance between the need to implement NPS controls broadly and the need to address specific water quality problems for particular watersheds.

MDMR, in cooperation with MDEQ, prepared a 15-year program strategy that describes the state's overall approach and schedule to ensure implementation of management measures for the categories described above, and improve water quality within 15 years of the date of conditional approval. The strategy focuses on meeting CZARA requirements in the coastal zone.

Additionally, a five-year implementation plan was developed to provide detailed milestones for meeting overall program goals in the coastal zone. It describes voluntary or incentive-based programs, backed by existing state enforcement authorities.

NONPOINT SOURCE EDUCATION AND PUBLIC OUTREACH PROGRAM

Description

Cleaning up and preventing NPS pollution in a watershed involves extensive education of the public; students, land managers, road builders, entire communities, politicians and just about everyone. The process of mobilizing the cleanup or protection of a watershed crosses political boundaries and must extend into the philosophy of individual commitment. Proof exists that in order for a NPS education project to effectively bring about a change of habit, the participants should be actively involved with the project, a community spirit should be generated, and the participants should be able to perpetuate the learning and educational experience with a long term commitment.

The most important goal of Mississippi's NPS pollution education program is to create an awareness among school children and adults of where and how polluted runoff is generated; how it affects our quality of life; and the practices and habits which can be implemented to improve water quality or to maintain a pristine water body.

After increasing awareness MDEQ will use extended and active education projects and events to shape the philosophies, habits and practices of young people and to depend on them to immediately teach their parents by making changes at home as well as to use NPS Best Management Practices in their adult lives.

To accomplish the goals described above, the strategy is to continue with and expand on-going programs and events which are proven to shape the philosophy of young minds; and, to continue effective methods which have remolded the traditional way of growing crops, raising livestock, disposing of motor oil and other adult issues. Through coordination and partnerships with Mississippi Environmental Education Organizations, the NPS Advisory committee and the different team meetings for the Basin Approach to Water Quality Management, new ways of addressing NPS problems with education will emerge. Through public meetings held in each river basin, MDEQ has learned that the public is most concerned about their drinking water, the discharge of raw sewage from homes, and unsightly garbage dumps. If the public fears drinking water contamination and then learns ways to prevent it, this is an incentive to change a habit. The most important teaching tools that are used to increase this awareness in Mississippi are groundwater aquifer models and watershed landscape models. By using these visual aids, the public can understand NPS pollution concepts and are inspired to change what they do. MDEQ NPS staff realized the importance of statewide water model demonstrations, and is using 319 funds to purchase models for statewide distribution. MDEQ NPS staff conducts training sessions for educators who will house the models. Many of the recipients are either county agents or 4-H

agents with the Mississippi Cooperative Extension Service, Mississippi's NPS staff promotes and supports education programs such as the Master Naturalist Program which is aimed at increasing the appreciation of unique and functioning aquatic ecosystems.

MDEQ reaches the general public with statewide distribution campaigns of NPS literature, the MDEQ Mississippi *Environment* newsletter. NPS/Water lesson plans to libraries and schools, NPS messages for radio statewide, NPS exhibits and within the next few years, NPS information on the Internet. More intensive and interactive methods of teaching the public include: The Mississippi Aqua Fair event, Adopt-A-Stream workshops, teacher workshops, storm drain stenciling projects, and school and civic club presentations with the groundwater and landscape model demonstrations. Other forms of NPS education relate directly to a specific best management practice used for agriculture, forestry, on-site wastewater disposal, urban, construction, and in the future, restoration of riparian zones and wetlands (hydrologic modification). Usually a field day or field trip connected with a workshop or meeting is used to feature these practices.

Intricate partnerships with other agencies, state, county and federal agencies, nonprofit organizations and industries were developed as a part of the NPS program in Mississippi during the 1990s. These partnerships are now well established and will continue to prove beneficial in carrying forth the goals of the NPS Pollution Education Program into the new millennium. These environmental education organizations include: the Mississippi Environmental Education Alliance (MEEA), the Mississippi Council for Agriculture and Natural Resource Education (MSCAN), the South Mississippi Environmental and Agricultural Coordination Organization (SMEACO), and the NPS Advisory Committee. Another partnership effort is the Mississippi Aqua Fair event, which is moved to a different region of Mississippi each year. Aqua Fair pulls together a large steering committee and resource presenters from 40 different agencies, nonprofit organizations, and industries to annually achieve this large event. This strengthens the bond and common purpose of protecting and cleaning up the environment in communities that extends beyond political boundaries

Educating Mississippi's school children about NPS pollution is a top priority of MDEQ's NPS staff, This is accomplished by educating the teachers as well as students. Each year, MDEQ coordinates the Mississippi Aqua Fair event which teaches approximately 2000 fifth grade students, 100 teachers and 250 adults about NPS pollution and other water-related issues. In addition, NPS staff regularly makes presentations in classrooms, at Earth Day events, conservation carnivals, and other environmental events. The tabletop watershed model, a groundwater aquifer model, and a NPS display are used regularly to teach the NPS message. MDEQ NPS staff also coordinates teacher workshops and assists with other teacher/student workshops conducted by other agencies or universities. Most Adopt-A-Stream workshops are made up of about 50% teachers.

Other programs at MDEQ which complement the NPS education and information activities include the groundwater protection program which includes a well-head protection program, a

source water protection program, an Agriculture Chemical Monitoring program and a pesticide container recycling program. Household hazardous waste amnesty grants are made available to communities in Mississippi to give citizens a safe way to dispose of paint, chemicals, and motor oil. Also, many projects related to NPS education and information are implemented by other agencies and organizations using Section 3 19 grant funds. Some of these projects are statewide in scope, while others aim to educate and inform citizens within a particular watershed.

Activities. Projects, and Programs

Specific activities and projects related to NPS education and information have resulted in specific products.

NPS Newsletter, *Watershed Harmony,* was developed to provide current NPS project and program information to a wide audience including municipal officials, teachers, other state and federal agencies, Adopt-A-!Stream participants, and interested citizens. This newsletter has been incorporated into MDEQ's Mississippi *Environment* magazine. Articles are submitted from both MDEQ and other government agencies, non-profit groups, and other professionals and may be technical or nontechnical. *Mississippi Environment* has a biannual mail-out of about 5000 issues each time.

Community NPS Education is developed to increase the awareness of the public, encourage changes in habit or lifestyle, and ultimately improve water quality through reducing NPS pollution. The program goals are to encourage the adoption of NPS pollution prevention techniques and practices by citizens through a variety of media, presentations and outreach activities.

Brochures and fact sheets are developed or ordered and distributed at fairs, conservation carnivals, presentations, events, and workshops. The NPS table-top and pop-up display are used at events and workshops when possible. Large-scale NPS distributions are carried out by means of the MDEQ *Mississippi Environment* magazine mailing list and through sending brochures and booklets to the Mississippi State University Cooperative Extension Service to make them available to the public in the county agent's office. When conducting *Storm Drain Stenciling* projects in a neighborhood, NPS literature is distributed to the public, New methods to be used are a NPS drama, an environmental school bus for South Mississippi and construction of several large water models for the children's museum.

The Aqua Fair - This event is moved to a different region of the state each year and reaches an audience of about 2000 fifth graders, 100 teachers and 250 resource people annually. The students participate in 5 different activities ranging from "building a watershed in a pan" to "running a relay race with buckets of water". Every session is interactive and teaches a concept about water. Within each rotation, at least one of the lessons is about NPS pollution and water quality.

The Adopt-A-Stream Program - This began in 1993 in Mississippi and is designed to involve the public and local communities in water quality protection. Through participation in an educational 2-day workshop, citizens and teachers learn watershed and land use mapping; and, how to make water quality determinations by conducting water chemistry tests and macroinvertebrate counts on a perennial stream within small watersheds. Some participants attend for the educational benefits and others commit to monitoring a stream for several years. Each participant receives the ***Adopt A Stream Field Manual*** and if they commit to monitoring, a chemistry kit. Approximately 2-3 workshops are conducted per year with about 25 participants attending each.

Teacher Education is an important component of the NPS pollution education program because when you educate a teacher, she or he will educate about 30 - 150 students per year. Since 1992, MDEQ NPS staff has supported and coordinated, Project Earth Environmental Education Workshops for Teachers. 'These workshops usually last one full week and emphasize water quality, NPS pollution, wetlands, wildlife, and forestry. Interactive lesson plans and field trips add a hands-on learning approach to this workshop. MDEQ NPS staff also assists with teacher workshops sponsored by other agencies or universities usually providing water model demonstrations, field trips, lesson plan packages and implementing lesson plans with the teachers.

Oh Give Me a Home for K - 6th grades and ***The Unclear Future of Clear Creek*** for grades 7 - 12 were developed in Mississippi and initially distributed to the County Soil and Water Conservation Districts who placed them in the schools of each county. These continue to be distributed at teacher workshops and at Adopt A Stream Workshops. Recently " The Water ***Source*** Book" and " The Wonders of Wetlands" books were distributed to 250 different public libraries in Mississippi through the Mississippi Library Commission. In addition, MDEQ also uses 3 19 funding to purchase these lesson plan books to distribute them at workshops.

Enviroscape and Groundwater Model Distribution - In order to increase NPS education for students and adults throughout Mississippi, MDEQ is distributing water models to active environmental educators. Many of the models are in the hands of county agents or 4-H youth educators who work for the: Mississippi State University Cooperative Extension Service; or, environmentalist with the Mississippi Department of Health in some of Mississippi's 82 counties and the Choctaw reservation. About 35 models were distributed by 1999. Each recipient receives training on how to properly demonstrate the models and their names are added to MDEQ's list of contacts so that requests for presentations can be directed to them by location.

Multi media outreach - through the NPS program has predominantly consisted of radio NPS messages. MDEQ will also use the Champions of the Environment program to recognize and reward students, teachers and others on television and through award ceremonies for their achievements in the environmental field. Also, TV commercials with a NPS message are a great way to reach the public, particularly on the evening news. A NPS section will be included on the MDEQ web page and other Internet possibilities will evolve through the years as a means of

conveying NPS information in Mississippi and to the world.

Urban BMP projects thus far include, the Storm Drain Stenciling Project, the Madison, Mississippi Project, the Natural Science Museum Project, the Birds, Bees and Butterflies event and the Backyard Conservation literature campaign and demonstration project.

Storm Drain Stenciling - An urban project which can be performed in any small or large town or within neighborhood settings. Two stencil designs are used, one which is rectangular and mimics the *Adopt* a *Stream* logo and the other which is long strips of words. Both convey the message "Dump No Waste., Drains to River" or "Dump no Waste, Drains to Gulf'. This message is painted on or near the storm drain inlet to let people know that whatever they put in the storm drain ends up in our water. Stencils are available to Mississippian's who request them by contacting source pollution staff or public relations. MDEQ promotes this program by distributing the brochure "How to Conduct a Strom Drain Stenciling Project", publicizing it in the *Mississippi Environment* magazine, and publishing it in the Mississippi Wildlife Federation newsletter and others. This project may be used by scout troops to obtain their environmental badge or by Eagle Scouts as a community project. It also makes a great project for environmental clubs.

The Backyard Conservatiion Literature Campaign and Demonstration Projects - this is a MDEQ NPS sponsored project which will be conducted through a partnership/community effort. Backyard Conservation literature and Backyard Wildlife habitat literature will be distributed in all Mississippi Counties by the year 2008. Demonstration projects will begin in 2000 and continue until 2015. This literature contains information on how to reduce pesticide usage, how to have a water garden that doubles as a retention basin and how to attract wildlife to your own backyard or front yard.

Mississippi's Planning and Design Manualfor the Control of Erosion, Sediment, *and* ***Stormwater*** - This was completed in 1993 and order forms to buy the manual were widely distributed to the Mississippi Highway Department, engineering firms, landscape architects, Homebuilders Association members, and Universities with engineering programs in Mississippi. Some manuals were initially given to the Soil and Water Districts of Mississippi, the Highway Department and Universities. Several workshops have been held to teach professionals about the concepts within the manual.

The Madison Project - An urban project conducted in this rapidly developing town near Jackson, Mississippi. Education components include the passing of city ordinances to control erosion, and to promote riparian vegetation and green spaces. BMP demonstrations include signs near practices such as retention basins, constructed wetlands, and streambank restoration through bioengineering techniques, Educational components include: workshops with developers and city managers which include invited guest speakers on the forefront of urban management, urban BMP demonstrations with field days; a model educational manual which other city's can use in designing urban plans, and an event called *Birds, Bees and Butterflies* which promotes native

plants, backyard conservation, and features water model presentations and invited guest speakers.

The Master Naturalist Program - This is a program similar to the Master Gardner program of the Mississippi State University Cooperative Extension Service by which individuals learn about the unique ecosystems around them and how to protect their unique balance. The program originated on the coast with the Coastal Research and Extension Center. Participants take the Adopt-A-Stream workshop as a part of their training and participate in additional field trips and workshops to learn plant and animal identification, ecology and water quality.

The **SMEACO event for high school students** reaches approximately 400 students from the coastal region of Mississippi each year and includes demonstration talks on general NPS pollution with the Enviroscape, on-site waste water/soil sampling demonstration, marine debris and other NPS-related topics with an Environmental Jeopardy Quiz Bowl after lunch where all students are verbally questioned about the topics which they learned at the field day. SMEACO is the South Mississippi Environmental and Agriculture Coordination Organization.

Celebrate the Gulf is an annual environmental event held at the marina in Pass Christian, Interactive exhibits which focus on marine and coastal issues are displayed. Children and adults attend this festive outdoor event to learn about water quality, NPS pollution, marine and fresh water animals, and marine debris. The children also get to catch fish with shrimp bait,

The **Gulf Islands National Seashore** hosts a large Earth Day event each year when 3000 children and adults visit different booths where they learn about the aquatic environment of the Mississippi Gulf coast through interactive exhibits and activities.

The Marine Education Center conducts summer Sea Camps and teacher workshops each year, as well as, hosting thousands of visitors to the aquarium exhibits throughout the year. In addition, the center carries its education campaign into schools and to civic groups.

C.A.R.E. (Caring Adolescents Reshaping the Earth) developed of the MEEA organization which is the Mississippi Environmental Education Alliance. Adolescents involved with this project conduct community projects to promote a clean and healthy environment.

Environmental Youth Clubs as part of each county's Cooperative Extension Service are being actively promoted is Mississippi. MDEQ's water model distribution campaign is focusing on county agents and 4-H youth agents in counties with active Environmental Youth Clubs.

The **Environmental Youth Camp** is sponsored each summer by the Mississippi Soil and Water Conservation Commission and the Association of Conservation Districts. The camp lasts for one week and includes agriculture and environmental topics including a water quality monitoring session at a stream.

The **Envirothon Competition** is a statewide event in Mississippi coordinated by the Mississippi

Soil and Water Conservation Commission. Students learn about water, wildlife, soils, forestry and related topics and first (compete on the county level. The winners of the county level attend the state-wide competition with the winning team attending the national competition.

C.A.R.E. - Caring Adolescents for Resources and the Environment. A program which encourages environmental stewardship of the environment and is sponsored by the Mississippi Environmental Education Alliance.

'able 5.3 Action Plan for the NPS Education Pro gram

Milestones	Long-Term Goal Ref.	2001	2002	2003	2004	2005
Expand the Envirothon competition into 10 more counties of Mississippi.	3,5,6,17	X	X	X	X	
Develop the Master Naturalist Program into a statewide program.	3,5,6,17					X
Conduct 5 more workshops about the control of sediment, erosion, and stormwater, streambank restoration, and hydrologic modification.	3,6,14,17	X	X	X	X	X
Conduct 5 more Storm Drain Stenciling demonstration projects in priority areas.	3,6,14,17	X	X	X	X	X
Develop a NPS web page as part of the MDEQ web page by the year.	6		X			
Create the Champions of the Environment program in Mississippi and develop it into an active, viable awards and recognition program with TV coverage.	6,17				X	
Distribute 40 more water models throughout Mississippi and provide training on proper use to all counties in MS.	6,17	X	X	X	X	X
Continue printing or ordering lesson plan packages and distributing to teachers and resource people as needed.	6.17	X	X	X	X	X
Conduct 10 *Adopt* A Stream workshops by the year 2005.	1,3,6,17	X	X	X	X	X
Conduct 5 more Aqua Fair events.	3,6,17	X	X	X	X	X
Distribute *Backyard Conservation* literature statewide.	6,17	X	X	X		

Milestones	Long-Term Goal Ref.	2001	2002	2003	2004	2005
Develop a drama about NPS pollution and carry it on the road to schools and for special events by 2005	6,17	X	X	X	X	X
Publish 10 issues of the Mississippi Environment magazine.	6,17	X	X	X	X	X

NPS Education/Information Publications

The following listed publications are available upon request and are distributed widely. Descriptions of the publications are provided elsewhere in this document.

Nonpoint Source Pollution, Problems and Solutions brochure.
Planning and Design Manualfor the Control of Erosion, Sediment and Stormwater.
Its *Up* to Us video on erosion, stormwater and sediment control.
Oh Give Me a *Home* lesson plan package and video for grades K - 6.
The Unclear Future of Clear Creek and video for grades 7 - 12.
Silviculture Best Management Practices for Mississippi Manual (for layman).
Silviculture Best Management Practices for Mississippi Manual (for technical people).
How to Conduct a Storm Drain Stenciling Program brochure.
Mississippi Environment magazine.
Mississippi Wellhead Protection Program brochure.
Our Little River (video only).
A Citizen's Guide to Reducing Urban NPS Pollution brochure.
H20 Facts - What You Can Do to Help Reduce Nonpoint Source Pollution (fact sheet).
Agriculture NPS Problems and Solutions (fact sheet).
Farmers Improving Water Quality brochure.
Animal Waste Control Facility Improving Water Quality.
Urban Nonpoint Source Pollution Poster
Urban Nonpoint Source Pollution, Causes and Solutions, A Citizen's Guide (video only).
Nonpoint Source News, The Urban NPS Pollution Newsletter
Procedurefor Plugging Shallow Agriculture Wells in the Delta brochure.

WATER QUALITY MONITORING AND ASSESSMENT

Description

The objectives of the water quality monitoring program in Mississippi are diverse. The first objective is to develop and maintain an understanding of the quality of all waters within the state and the causes and effects of such quality, The second objective is to acquire the necessary data

to accurately report on this water quality and its causes and effects. Thirdly, the monitoring program is utilized to support the state's water quality management and regulatory programs and to assess the overall effectiveness of the state's pollution control program. This program effectiveness monitoring will not only document environmental improvements and successes, but also can identify problem areas where management practices and resources need to be focused.

In order to accomplish these objectives the MDEQ carries out a broad range of monitoring activities before and after implementing controls. These multi-faceted activities consist of actual measurements of water quality parameters in state waters followed by the investigation and evaluation of factors detemining these water quality findings. The monitoring process culminates with an overall assessment of the specific effects of such quality upon the beneficial uses of state waters.

Monitoring Strategy

The MDEQ's monitoring strategy utilizes a multi-faceted approach to realize program objectives. The Program includes the following basic components:

1. Ambient fixed station monitoring network (including statewide coverage and geographically-targeted watershed or basin monitoring);

2. Intensive surveys and special studies;

3. Source compliance and environmental damage assessment monitoring;

4. Citizen's (volunteer) monitoring;

5. Quality Assurance/ Quality Control;

6. Data acquisition/data sharing with other agencies;

7. Data management, assessment and reporting.

Ambient Fixed Station Monitoring Network

The MDEQ maintains a statewide fixed network of monitoring stations which are sampled routinely for a broad range of water quality parameters and indices. In 1997, OPC redesigned its ambient surface water monitoring program due to the critical need to increase the amount of assessed waters in the state: and the availability of increased monitoring resources to meet this and other EPA and State Water Program needs. This resulted in a major increase in the number of ambient monitoring stations relative to the number of historical OPC ambient fixed network stations. In addition, this redesign of the OPC Ambient Surface Water Monitoring Program led to the establishment of a dual system of ambient fixed sampling stations which now consists of a

statewide Primary Fixed Monitoring Network and a rotating Basin Fixed Monitoring Network,

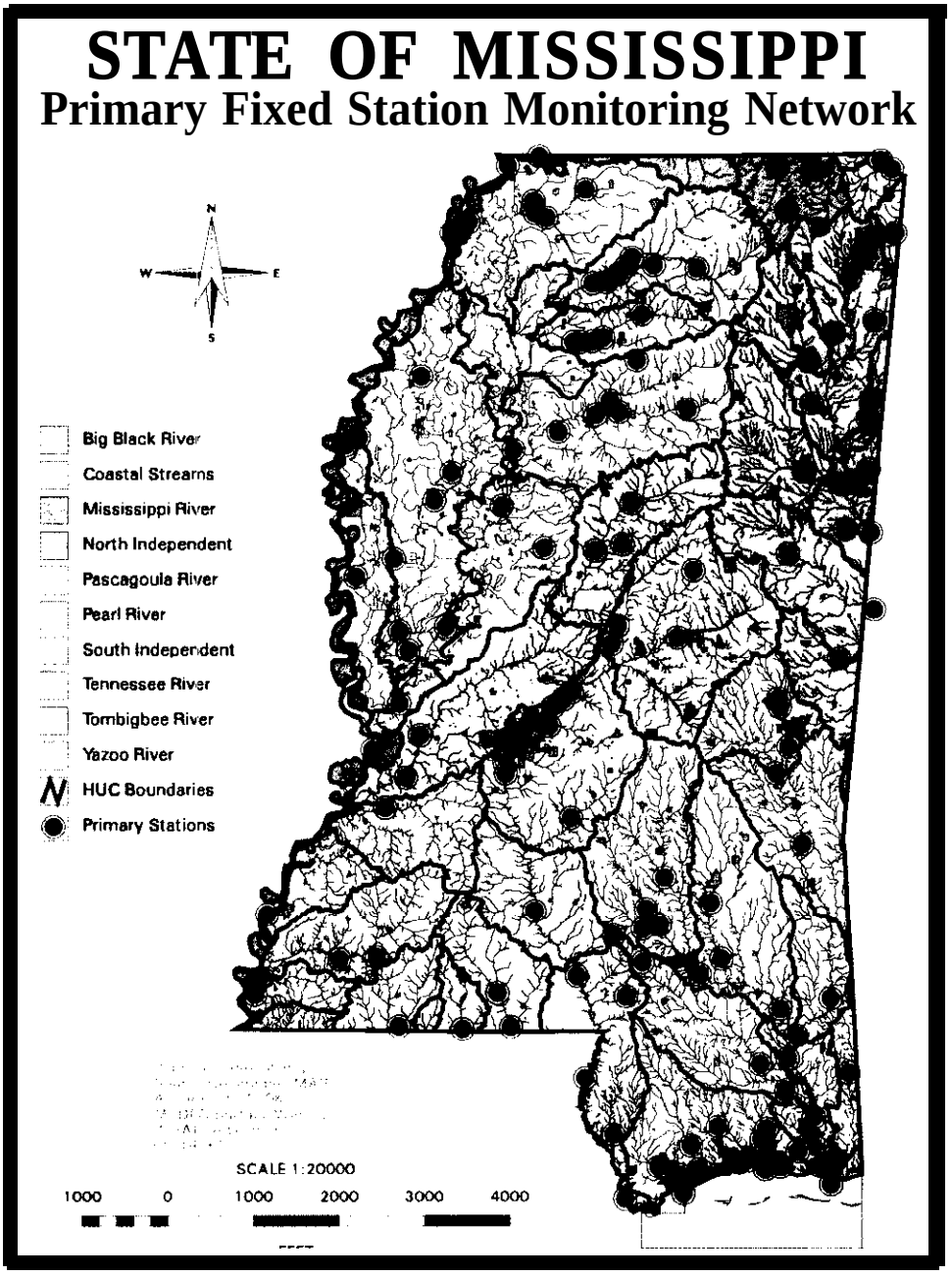
Primary Fixed Station Monitoring Network

The locations of primary fixed monitoring stations operated for long-term water quality status and trends data collection are shown in Figure 5-1. OPC's Primary Fixed Station Network consists of a total of 143 stations across the state and became operational in 1997. Prior to this time, OPC's ambient monitoring network only numbered approximately 25 stations in any given year. In addition, the network has also enabled, for the first time, MDEQ to conduct *routine,* comprehensive long-term ambient monitoring of the states' major lakes and reservoirs, as well as the open waters of the Mississippi Sound and its associated bays.

Ambient - Physical/Chemical/Bacteriological Monitoring

The network of statewide ambient primary fixed stations was established for systematic water quality sampling at regular intervals and for uniform parametric coverage to monitor water quality status and trends over a long-term period. Physical, chemical and bacteriological parameters monitored at each station. The ambient fixed stations targeted for physical, chemical and bacteriological sampling are sampled either monthly (bridge sites) or quarterly (boat sites) depending on the designated access.

Figure 5-l


STATE OF MISSISSIPPI
Primary Fixed Station Monitoring Network
N
W
E
S
Big Black River
Coastal Streams
Mississippi River
North Independent
Pascagoula River
Pearl River
South Independent
Tennessee River
Tombigbee River
Yazoo River
HUC Boundaries
Primary Stations
SCALE 1:20000
1000 0 1000 2000 3000 4000

Ambient Biological and Fish Tissue Monitoring

The purpose of ambient biological monitoring is to assess the health or biological integrity of the aquatic community at a surface water site. This monitoring serves as a long-term indicator of stream water quality. The OPC's ambient biological monitoring program utilizes macroinvertebrate bioassessments in fresh waters, determinations of levels of chlorophyll a in lentic, marine and estuarine: waters as well as fish tissue analysis at selected freshwater and estuarine sites. Ambient fish tissue sampling occurs annually at 24 primary fixed stations across the state and at selected basin network sites. Additional fish tissue sampling for fish kill investigations, monitoring of fish advisory areas, and for special studies amounts to a significantly greater amount of the OPC fish tissue sampling load than ambient fixed station network sampling.

Ambient biological monitoring for benthic macro invertebrates also occurs at selected fixed stations in wadeable freshwater streams.

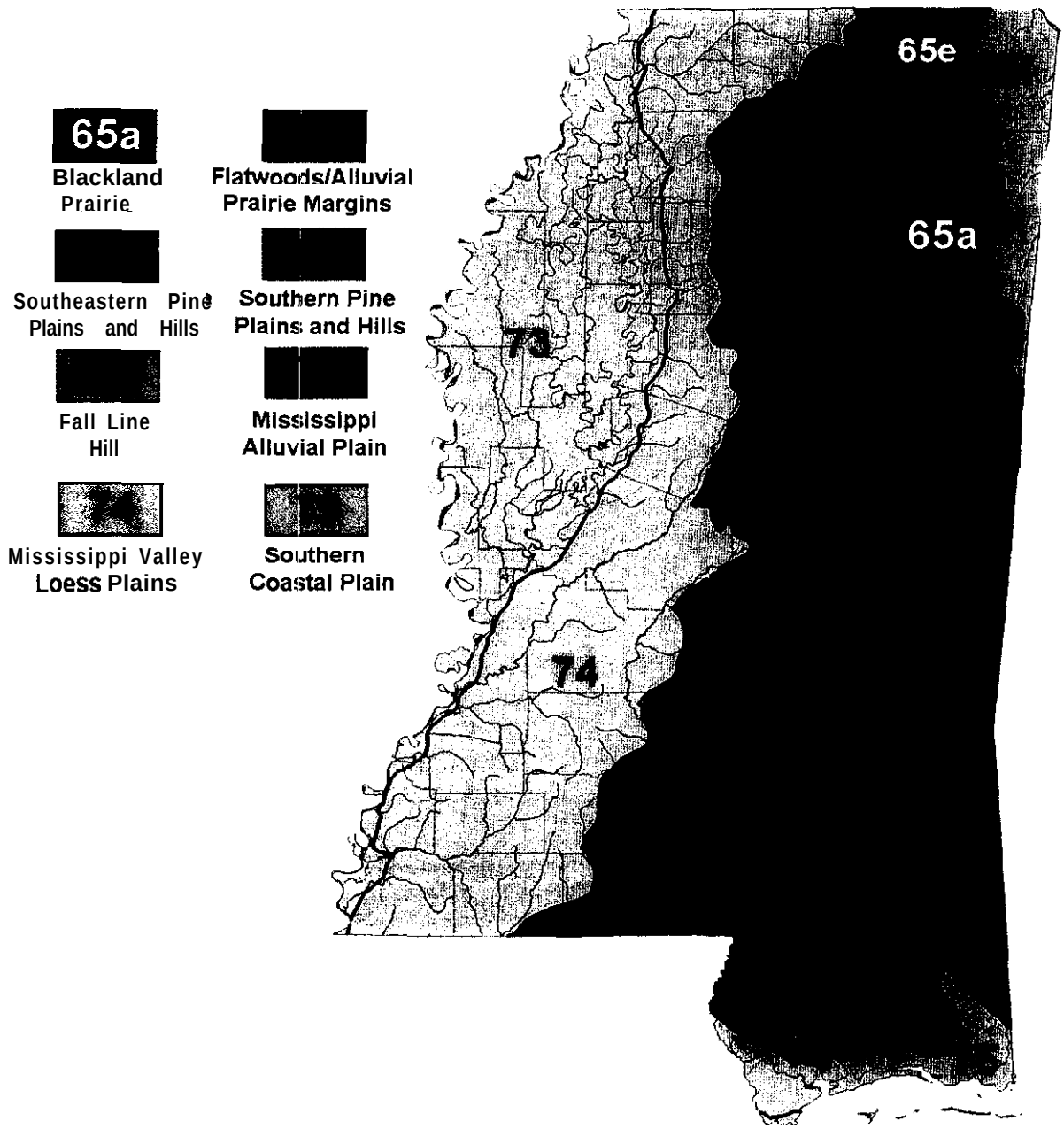
For the past several years, a portion of the monitoring effort using macrobenthos has focused on streams considered to be "least disturbed". This monitoring has been done in conjunction with the Alabama/Mississippi Pilot Ecoregional Reference Site Project, the Mississippi Alluvial Plains Ecoregion Study, and as independent efforts in the Mississippi Valley Loess Hills ecoregions. Ecoregions, or ecological regions, identify areas of relatively similar ecological systems. Ecoregions provide resource managers with a logical regional strategy for locating representative reference sites, designing sampling schemes, analyzing and evaluating data and assessing regional patterns of attainable terrestrial and aquatic ecosystem quality. To examine seasonal patterns of benthic abundance, sampling at a selected number of those ecoregional streams deemed "least disturbed" occurred several times during 1994 and 1995. This important effort was abandoned in 1996 due to budgetary constraints, but was resumed in 1998. The data from these streams may become the foundation for the development of biological criteria for the state's water quality standards. Figure 5-2 shows the ecoregions and subecoregions present in Mississippi.

Basin Fixed Station Monitoring Network

The Basinwide Approach to Water Quality Management strategy is supported by a basin fixed station monitoring network which augments the statewide primary fixed station network by adding monitoring sites in specific drainage basins or watersheds. One objective of the basin monitoring network is to increase the total area1 coverage of waters monitored in Mississippi. This objective is achieved by concentrating monitoring and assessment resources in specific drainage basins thereby maximizing sampling efficiency. As a consequence, basin management plans and implementation strategies may be developed. Another major objective of the basin network is to verify the actual water quality of waters assessed as "potentially impaired" and classified as "waters of concern" during a previous Section 305(b) reporting period, in cases where these assessments were based on evaluations rather than actual monitoring data. Such

verification by monitoring ultimately confirms the accuracy of the state's list of waterbodies prepared pursuant to Section 303(d).

Figure 5-2. Ecoregiou Map of Mississippi



Volunteer Monitoring

The Mississippi Department of Environmental Quality (MDEQ), Office of Pollution Control, in cooperation with the Mississippi Wildlife Federation (MWF), has developed the Adopt-A-Stream Volunteer Monitoring Program in Mississippi. This program trains volunteers to conduct water quality monitoring on streams and rivers in the state and educates them on the relationship between point and nonpoint source pollution and water quality. This program seeks to foster a relationship between the MDEQ and the public in order to enhance awareness of and appreciation for our natural resources as well as to supplement existing government water quality data.

The objectives of the Adopt-A-Stream program are four-fold: (1) to educate the public about the concept of watersheds and the effects of point and nonpoint source pollution on water quality; (2) to serve as a "first alert" for the MDEQ in spotting a water quality problem on a previously unmonitored waterbody; (3) to form a database of historical water quality information; and (4) to supplement agency data for the Section 305(b) report.

To date, 169 people have been educated at workshops and chemical and/or biological monitoring data has been received from 44 streams. Table 5-l lists volunteer monitored streams with sufficient data to meet the assessment criteria required for use in this Section 305(b) Report.

Control Program

Many of the decisions made by the MDEQ in its pollution control programs are based on analytical data obtained by its field and laboratory staff. Therefore, it is imperative that the validity of the data be assured and documented. A strong program of quality assurance helps provide that assurance and is an absolute necessity for operation of an effective water quality monitoring program. This validation of data is the foundation of the entire analytical process, from the planning stages through sample collection, analysis, and dissemination of data. Quality assurance and validity of results are stressed in all monitoring program activities undertaken or reviewed by the agency, All areas of environmental monitoring require rigorous adherence to the use of validated methods and repetitive quality control procedures.

All projects that include environmental monitoring, measurements or data generation must comply with an EPA/MDEQ approved Quality Assurance Project Plan (QAPP).Information related to the development of a QAPP can be found at *http:es.epa.gov/ncerqa/qa/qad-docs/epaqag5.pdf.* The central element in an effective quality assurance program is the routine and rigorous use of standard operating procedures.

TABLE 5.4
Volunteer Monitored Streams

STREAM	LOCATION	BASIN
Shoaf Creek	Near Bigbee	Tombigbee
Sand Creek	Near Starkville	Tombigbee
Perkins Creek	At Clyde	Pascagoula
Clark Bayou Trib	Near Coll Town	Pascagoula
Okatoma Creek	Near Sanford	Pascagoula
Milky Creek	At New Augusta	Pascagoula
Vaughn Bayou	Near Three Rvrs	Pascagoula
Beaverdam Branch	Near Talowah	Pascagoula
Red Creek	Near Beatrice	Pascagoula
Brushy Creek	Near Lucedale	Pascagoula
Black Creek	Near Brooklyn	Pascagoula
Wolf Creek	Nr Philadelphia	Pearl
Wolf Creek Trib.	Nr Philadelphia	Pearl
Kentawka Canal	Near Philadelphia	Pearl
Big Branch	Near Poplarville	Pearl
Big Creek	At Bogue Chitto	Pearl
Topisaw Creek	At Holmesville	Pearl
Catahoula Creek	Near Santa Rosa	Coastal
Tuxachanie Creek	Near Latimer	Coastal
King Creek	At New Albany	Yazoo
Millstone Cr. Trib.	Near Kiern	Yazoo
Spring Branch	Near Kiern	Yazoo
Unnamed Trib. of Tuscumbia R. Canal	At Rienzi	N. Independent
Love Creek	Near Peoria	S. Independent
Tanyard Creek	Near Liberty	S. Independent
Shiloh Creek	Near Edwards	Big Black
Baker's Creek	Near Clinton	Big Black

Agricultural Chemical Groundwater Monitoring Program

The use of pesticides and other chemicals has not harmed our groundwater supply. Continually, MDEQ monitors areas of major agricultural chemical usage to ensure the quality of our groundwater. In state fiscal year 1998, staffcollected 101 samples from 93 wells. Through June 30, 1998, we had sampled 655 wells throughout all 82 counties

Other Agency Monitoring

In addition to the MDEQ monitoring programs listed above, other agencies perform monitoring activities in different regions in the state. These agencies include:

U.S. Army Corps of Engineers (USACE);
U.S. Forest Service (USFS);
U.S. Geological Survey (USGS);
Tennessee Valley Authority (TVA);
EPA's Environmental Monitoring and Assessment Program (EMAP);
Mississippi Department of Marine Resources (MDMR);
Mississippi State University Coastal Research and Extension Center; and
Gulf Coast Research Lab (GCRL).

To ensure proper data management, assessment and reporting, The MDEQ compiles monitoring data collected by the various divisions within and outside the agency for ready access to facilitate data entry into and retrieval1 from computer data bases (i.e. GIS, waterbody system, STORET, GRTS).

Surface Water Information Management System (SWIMS)

In July 1996, the Water Quality Assessment Branch (WQAB) of MDEQ and Mississippi Automated Resource Infonnation System (MARIS) entered into a contract (SPB-33) to determine the best GIS methodology to model the Surface Water Division system and to identify, gather information about and study the various databases involved with the Surface Water Division, incorporating PCS, STORET, the National Hydrologic and ADB (formerly WBS). The resulting document, "Surface Water Information Management Svstem [SWIMS)," prepared September 1997, provides the strategy and design for the future of the Surface Water Division GIS as an integrated part of the Division's spatial and tabular information network. Pursuant to this study, MDEQ has contracted with Tetra Tech to implement the SWIMS project.

The proposed SWIMS is described as a graphical user interface (GUI) linking the spatial and tabular data maintained within the SWD. In addition to graphical and tabular data maintenance, queries, and reporting in a networking environment, its functionality will include identifying, analyzing, and reporting assessment, permitting, and compliance data as it passes along stream

flow routes over time. It is anticipated that the use of SWIMS will enhance current GIS and data management tools available in the NPS Program.

The following NPS Monitoring Related milestones will be completed under Section 3 19 Program.

Table 5.5. Monitoring and Assessment Program Activity Milestone

Milestone	Complete
Continue to provide technical and financial assistance to support data collection and analysis for monitoring programs under the Basinwide Approach.	2000 to 2005
Increase the number of citizen volunteer monitors by at least 20 percent.	2003
Establish a statewide watershed NPS impact characterization criteria.	2001
Utilize a GIS system to characterize and assess NPS impacts in Basin Group I.	2002
Utilize the NPS Annual Report to document progress (feedback loop).	2000 to 2005
Utilize GRTS to track progress made in implementing NPS projects and to evaluate success.	2000 to 2005

CLEAN WATER STATE REVOLVING LOANS FOR NPS PROJECTS

Description

The federal Clean Water Act (CWA) amendments of 1987 authorized a Clean Water State Revolving Fund (CWSRF) loan program to assist states with the financing of publicly owned treatment facilities (Section 212), Non-point Source (NPS) management activities (Section 319) and Storm Water pollution control projects (Section 402).Title VI, Section 601 of the CWA authorizes the Administrator of EPA to award capitalization grants to states for the purpose of establishing a low interest loan program to assist eligible CWSRF loan recipients. Under the program, EPA provides "seed money" to states in order to capitalize state loan funds. The states in turn make below-market interest rate loans to eligible public entities for projects that remediate water quality problems. To date, most SRF loans have been made to public entities to construct or improve wastewater treatment facilities.

Based on evidence that NPS pollution is now the greatest threat to the nation's waters, EPA and the State would like to see the CWSRF become a major source of funding to address polluted runoff, In creating the CWSRF, Congress ensured that it would be able to fund virtually any type

of water quality project, including NPS, wetlands restoration and protection, estuary protection, watershed, brown field remediation and storm water pollution control, as well as the more traditional municipal wastcwater treatment systems.

The CWSRF loan program is managed by the MS Department of Environmental Quality (MDEQ). An applicant for a CWSRF loan is termed a loan recipient. In MS an eligible CWSRF loan recipient is defined as a county, municipality, municipal public utility, authority, district, political subdivision or other governmental unit created under state law which has authority to dispose of domestic wastewater, industrial wastewater, wastewater sludge resulting from the treatment of such wastewater, stormwater, or nonpoint sources of pollution, has the authority under state law to receive CWSRF loan assistance, has the ability to comply with CWSRF program regulations and the requirements of the loan agreement, and is not in arrears in repayments of any previous loan.

The MDEQ is the designated state agency to apply for and administer the capitalization grant for the CWSRF.

The CWA requires that an Intended Use Plan (IUP) be developed, reviewed by the public and submitted as part of the state's grant application package to EPA. The purpose of the IUP is to describe how the state intends to use the funds in the CWSRF loan program for the year and how those uses support the objectives of the CWA in the protection of public health and the environment. The following information is included in the IUP:

Goals of the CWSRF loan program;
Information on CWSRF activities to be supported;
Coordination schedule for jointly funded projects;
A list of projects expected to receive funding in the first year after the grant is awarded and a planning list of eligible projects for funding in future years;
Priority System for ranking projects based upon water quality criteria;
-there are nine categories of projects included in the priority system with category one receiving highest priority for funding. Category five projects are those involving improvements to address NPS and stormwater correction projects.
Assumed available funds;
Proposed payment schedule;
Projected Schedule of drawdowns against federal letter of credit; and
Compliance status of publicly owned treatment works.

Strategy for Attracting Loans for NPS Projects

The CWSRF staff realizes that non-point source projects offer some of the highest environmental benefits for the dollar in the State of Mississippi today, and in an effort to capitalize on those environmental benefits the staff is to go to the state legislature during the next legislative session to seek changes to the Mississippi Water Pollution Control Revolving Fund Act@ to make non-

profit organizations eligible CWSRF loan recipients. The staff feels that this group is the most likely candidates for NPS loans. The MDEQ will implement the following milestones/activities as part of its strategy to attract loans for NPS Projects.

able 5.6 Milestones for Attracting Loans for NPS Projects

Milestone	*Complete*
To coordinate with the five Basin Planning Teams to identify and work toward funding eligible NPS loan projects, A CWSRF staff member is assigned to each Basin Planning Team.	2000 to 2005
To increase state awareness of Non-Point Source CWSRF Loan eligibility through the following outreach efforts each year:	2000 to 2005
a) Four mail-outs each year to all potential loan recipients, consulting engineers, Planning & Development Districts, and all other interested parties that have asked to be placed on our mailing list. These mail-outs describe the program, the funds available, the actions needed to obtain CWSRF loan funding, and the projects the Department intends to fund each year	2000 to 2005
b) Exhibit booths at each years Mississippi Municipal League (MML) convention, Consulting Engineers Council (CEC) meetings, Mississippi Association of Supervisors (MAS) conventions, Operators Association (OA) trade shows, Mississippi Rural Water Association (RWA) convention, and Water Environment Association (WEA) convention;	2000 to 2005
c) Speaking engagements at MML convention, Associated General Contractors (AGC) meetings, WEA convention, DEQ operator training workshops, RWA convention, Mississippi Engineering Society (MES) convention, CEC meetings, and all other meetings when so requested;	2000 to 2005
d) Creation and distribution of brochures for mail-outs and handouts at conventions/meetings, advertising the CWSRF loan program;	2000 to 2005
e) Upon issuance of any enforcement order by the Commission on Environmental Quality that requires construction of water pollution control facilities, the CWSRF staff contacts the community by phone, and if a major project in writing, and reminds them of CWSRF loan funds availability for the project;	2000 to 2005
f) When a potential CWSRF loan recipient expresses an interest in the CWSRF loan program, the CWSRF staff visits the potential loan recipient at their convenience to explain the CWSRF loan program;	2000 to 2005

Milestone	Complete
g) Each year, the Department requests an article on the upcoming CWSRF funding cycle be published in the MMA magazine, the MAS magazine, and the DEQ newsletter.	2000 to 2005
h) When the CWSRF staff learns of a water pollution control project need from any source, the potential CWSRF recipient is contacted and is reminded of CWSRF loan funds availability.	2000 to 2005

Examoles of NPS uroiects Eligible for CWSRF Loans

In MS, only units of government are currently eligible for CWSRF loans. This makes a county, municipality, municipal public utility, authority, district, political subdivision or other governmental unit created under state law which has authority to dispose of domestic wastewater, industrial wastewater, wastewater sludge resulting from the treatment of such wastewater, stormwater, or nonpoint sources of pollution legally eligible to accept CWSRF loans for NPS activities. Some examples of projects that these entities might implement with loans include:

a) Construction of stormwater management facilities including sediment control and stormwater control structures and constructed wetlands.

b) Purchase of land for wetlands preservation, buffers, riparian zones, etc.

c) Rehabilitation of streambanks, lakeshores, or riparian corridors.

d) Groundwater protection activities such as implementation of source water protection assessments.

e) Remediation of abandoned, contaminated industrial or commercial sites (Brownfields)

f) Collection systems that would eliminate failing onsite wastewater disposal systems.

g) Installation of BMPs for agricultural activities,

GROUNDWATER PROTECTION PROGRAM

MDEQ's Ground Water Planning Branch in the Office of Pollution Control administers several programs that are directly involved in addressing ground water protection in the state. The Wellhead Protection and Source Water Assessment programs address the protection of the 1,535 public water systems operating in Mississippi. These programs attempt to identify contaminant sources that could potentially impact the water systems and then develop and implement

appropriate management plans to enhance ground water protection efforts. The Agricultural Chemical Ground Water program, which serves as the state ambient ground water monitoring program, samples shallow water wells to determine the possible impact of pesticide and fertilizer use on the aquifers located in the state. Other agencies involved in ground water protection activities in Mississippi are MDEQ's Office of Land and Water Resources, the Department of Agriculture and Commence's Bureau of Plant Industry, and the U.S. Geological Survey.

Groundwater Protection Division staff are devoted to protecting the water resources of the state that lie beneath the surface of the ground. These resources are vital to Mississippi's economy as the principle source of water for much of the state's industrial and agricultural base. Groundwater also provides the primary source of drinking water for more than 90% of the population of the state.

Keeping Mississippi's groundwater supply free of contaminants is the goal of the Groundwater Division. Two sources of potential contamination to groundwater found in all areas of the state are improperly disposed solid wastes and leaking underground storage tanks, Consequently, the Groundwater Division has several programs that address concerns regarding these potential contamination sources, the Underground Storage Tanks program, the Solid Waste Branch and the Groundwater Planning Branch.

The Groundwater Protection Division staff focus on additional sources of contamination that could affect groundwater supplies in the future. The Groundwater Planning Branch was created to monitor these contaminants, provide for prevention programs, and plan for adequate groundwater protection for our future. The Groundwater Planning Branch administers the following programs for the protection of the state's groundwater resources:

1) Agricultural Chemical Groundwater Monitoring Program;
2) Mississippi Pesticide Container Recycling Program;
3) Wellhead Protection Program; and
4) Source Water Assessment.

A description of these programs and the five year plan for the groundwater protection program are provided in Chapter 4.

CLEAN WATER ACTION PLAN, UNIFIED WATERSHED ASSESSMENT (CWAP/UWA)

The Clean Water Action *Plan* (Plan) was released in February 1998 by the US Environmental Protection Agency (EPA), the US Department of Agriculture (USDA), and other federal agencies, That document outlines a plan to accelerate efforts to protect and restore the nation's water resources, A central element of the *Plan* is a set of actions that are designed to promote a renewed focus by state, federal, tribal, and local governments on (1) identifying watersheds that have critical water quality concerns and (2) working together to focus resources and implement Watershed Restoration Action Strategies (WRAS) to solve these problems.

In order to achieve this renewed focus on watersheds of particular concern, the *Plan* called upon states to look at all watersheds within their boundaries and determine whether they (1) meet clean water and other natural resource goals and support healthy aquatic systems or (2) are in need of restoration because the water within them do not meet, or face imminent threat of not meeting, clean water and other natural resource goals. This assessment process is known as the Unified Watershed Assessment (UWA). In addition, states were asked to select priority watersheds for fiscal years 1999 and 2000. Federal guidance required the assessment and selection of priorities to be done at the S-digit hydrologic unit level. The MS Department of Environmental Quality (MDEQ) and the USDA, Natural Resources Conservation Service (NRCS) worked with other state and federal stakeholders to complete a Unified Watershed Assessment for Mississippi and to select six watersheds as restoration priorities for FY 1999 and 2000 (Appendix F). These priority watersheds are:

03170009	Jourdan River (in Coastal Streams Basin)
03180004	Lower Pearl River (in Pearl River Basin)
03180001 & 03 180002	Upper Pearl River (in Pearl River Basin)
08030204	Coldwater River (in Yazoo River Basin)
08030207	Bogue Phalia River (in Yazoo River Basin)

The Plan calls for states to develop a WRAS for priority watersheds in cooperation with federal and local agencies, watershed-based organizations, and the public. The Plan provides that new resources be targeted to restoration of priority watersheds for FY 2000, directed to those activities identified in the WRAS.

I. Coordination

On July 13, 1998, a meeting between the USDA NRCS, the MSWCC and MDEQ was held to discuss Mississippi's UWA and identify potential sources of readily available information that may be used for the assessment. This work group was assigned to the tasks of 1) making recommendations for infonmation to be used in the assessment; 2) developing prioritization methods to use; and 3) preparing material for public dissemination. The group met several more days and, on August 3 1, 1998, completed the assigned tasks. On September 4, 1998, Stakeholders on Mississippi's State Technical Committee list were mailed a draft of the selected Category I UWA for review and comment.

Participating Stakeholders:

Alcom State University, Div. of Agriculture, Research Extension, and Applied Sciences
Audubon Society
Delta Council
Delta Land Trust Association
Delta Wildlife Foundation
Ducks Unlimited
Indian Springs Farmers Association
Mississippi Association of Conservation Districts
MS Association of Cooperatives and MS State FSA Committee
Mississippi Association of Realtors

Mississippi Band of Choctaw Indians, Agricultural, Rural Development
Mississippi Cattleman's Association
Mississippi Cooperative Extension Service
Mississippi Department of Agriculture and Commerce
Mississippi Department of Environmental Quality
Mississippi Department of Wildlife, Fisheries, and Parks
Mississippi Farm Bureau Federation
Mississippi Forestry Association
Mississippi Forestry Commission
Mississippi Soil and Water Conservation Commission
Mississippi Soil and Water Conservation Society Chapter
Mississippi Soybean Association
Mississippi Wildlife Federation
Sierra Club
The Nature Conservancy
US Army Corps of Engineers
USDA, Agricultural Research Service, National Sedimentation Laboratory
USDA Farm Services Agency
USDA Forest Service
USDA Natural Resources Conservation Service
US EPA Region 4
US Fish and Wildlife Service
US Forest Service

Various State and Federal Agencies, in addition to key stakeholders, were notified of the current Category I watersheds. These stakeholders submitted applications for FY 1999 and FY 2000 incremental funding using the UWA Category I watershed list developed in 1998.

Annual NPS Grant guidance packets will be developed and distributed for use of the incremental 3 19 NPS funds allocated to states in support of WRAS implementation. Future guidance and the projects funded through it will constitute critical first steps in the implementation of WRAS in updated priority watersheds. In the future, many grant packets will be distributed. Stakeholders who participate in UWA development will also receive a copy of the guidance. It is anticipated that several will submit proposals for funding.

The MDEQ continues to manage watersheds using the Basinwide Approach to Water Quality Management(Refer to Chapter 7). Once the basinwide management approach completes its first cycle within a basin, a WRAS will developed for it. Until then, the UWA will be used. While the UWA is being used, the MDEQ Water Quality Management Branch (WQMB) will coordinate agency and public involvement in WRAS implementation and work closely with the MDEQ Water Quality Assessment Branch (WQAB) Basin Coordinators. These individuals, each responsible for a Basin Group, are trained in water quality data evaluation and serve as liaisons with stakeholders. They assist in the development of Mississippi's 303(d) list of impaired waters, nonpoint source TMDLs, and coordinate the Basinwide Approach to Water Quality Management approach WRAS implementation.

II. Monitoring

MDEQ operates a permanent statewide network of over 143 ambient water quality and biological monitoring sites. Progress toward achieving water quality and natural resource goals is assessed through analysis of data collected via this extensive network.

Three projects targeted for incremental FY 2000 319 funding will provide important additional information on sources of water quality problems in priority watersheds. Their monitoring evaluations include concise goals and specific milestones, and will contribute directly toward Watershed Restoration Action Strategy implementation within their respective watersheds. See Appendix 2 for descriptions of projects targeted for incremental funding.

III. Impairments

According to the Mississippi's UWA, Category I watersheds account for 10 percent of the combined 53 watersheds in the State. Mississippi's five priority watersheds were among those classified as Category I and thirty-nine watersheds were classified as Category IV (insufficient data to make an assessment). While the five priority Category I watersheds are reported under EPA's 8-digit HUC reporting requirements, only select 11- and 14- digit HUCs segments are actually impaired. Water quality impairments in each of the Category I priority watersheds are listed in the following sections. Water quality impairment statewide is reassessed every two years as part of 303(d) list development.

Appendix F shows the maps and corresponding 11-digit HUC tables of UWA Impaired Watershed segments.

V. Action Strategies

Listed below are general strategies for assessment and implementation activities in priority watersheds. This list is not exhaustive; other types of projects will be considered.

Planning and Assessment

Develop Total Maximum Daily Loads (TMDLs) for waterbodies within priority watersheds.

Work with local officials, planners, and other key stakeholders to develop comprehensive watershed management plans and implementation strategies (e.g., workshops, education campaigns, restoration projects, zoning changes, or local stream corridor protection ordinances).

Design and implement monitoring projects to identify specific pollutant sources, fate, and transport. Develop specific recommendations for reducing inputs from identified sources.

Develop GIS layers for a watershed, including specific land uses and locations of pollutant sources.

Analyze data.

Developing Areas

Develop and implement informational and technical assistance strategies to educate local

officials on how land use policies impact watershed health and water quality.

Hold workshops for local elected officials, planners, and other interested parties on planned development and "green growth" strategies to deal with urban sprawl. Topics include: the advantages and application of environmentally friendly zoning, stormwater treatment through created wetlands and riparian forests, and how local entities can offset the adverse impacts of rapid growth on existing natural resources.

Design and implement programs (workshops/field days) for developers and contractors promoting reduction of impervious surface areas, bio-retention, alternative materials, retention and restoration of forested riparian buffers, and other conservation-oriented design and development practices. The programs may be sponsored or presented by developers or contractors familiar with these practices.

Develop and distribute educational brochures on innovative site planning and BMPs for new development.

Construct public parks for stormwater treatment and flood control.

Construct wetlands for urban runoff treatment.

Developed Areas

Retrofit large impervious areas, such as parking lots, with bio-retention systems for stormwater treatment.

Implement education/outreach programs emphasizing awareness of runoff pollution from urban/suburban areas and the overall effect on the watershed, perhaps a "know your watershed address" program or Adopt-A-Stream activity. Write television, radio, local media releases on runoff pollution and how individuals can reduce it. Work simultaneously in schools to promote NPS awareness.

Agricultural Areas

Install livestock access management practices (fence cattle out of streams, establish stream crossings, develop alternative watering sources, etc.).

Install riparian forest buffers as a best management practice adjacent to fields and pastures.

Construct wetlands for treatment of runoff from animal operations

All Land Uses

Implement TMDLs

Restore forested riparian (Streamside/lakeside) buffers

Undertake stream restoration projects that include restoration of in-stream habitat, streambank

stabilization, and riparian forest restoration.

Schedule

Category I watersheds in Mississippi will be addressed on an appropriate time-line, taking into account the five-year rotating basin schedule. As the criteria used to determine priority order (e.g., water quality, land use, land management practices, Federal and State program objectives, etc.) are not static, but are 'continually changing, Mississippi reserves the right to revisit these priority rankings and schedule, and to revise them as needed.

Restoration measures will be implemented and maintained by stakeholder organizations, and monitored and evaluated by the funding agencies.

MISSISSIPPI'S TMDL STRATEGY

I. Description

The identification of waterbodies not meeting their designated use and the development of total maximum daily loads (TMDLs) for those waterbodies are required by Section 303(d) of the Clean Water Act and EPA Water Quality Planning and Management Regulations (40 CFR part 130). The TMDL process is designed to restore and maintain the quality of those impaired waterbodies through the establishment of pollutant specific allowable loads. The TMDL process can be used to establish water quality based controls to reduce pollution from both point and nonpoint sources, and restore and maintain the quality of water resources.

II. Public Participation

Public participation is required for all TMDLs under Clean Water Act regulation 40 CFR Part 25. All TMDL notices are sent out for a 30-day public notice. During this time, the public will be notified by publication in the statewide newspaper and in a newspaper near the watershed affected by the TMDL The public is given an opportunity to review the TMDL and submit comments.

All comments received during the public notice period and at any public hearings become a part of the record of TMDLs. ,411 comments will be considered in the ultimate approval of the TMDL and for submission of the TMDL to EPA Region IV for final approval.

III. Relevant Basin Management Processes

MDEQ intends to utilize existing programs to enhance the implementation of NPS load reduction measures in watersheds with NPS impairment. The NPS Program is an integral part of TMDL implementation, Using Section 3 19 funds, the NPS Program is a vital funding mechanism for implementation projects in watersheds requiring NPS load reductions. The NPS Program includes projects conducted by MDEQ or by other natural resource cooperators. The NPS Program now has a balanced watershed and a statewide focus that prioritizes projects based on type and degree of impairment.

Section 208 Water Quality Management Planning has the potential of being a significant tool for NPS TMDL implementation by involving regional planning agencies and local governments, both key watershed partners, in TMDL implementation. As with point source related TMDLs, MDEQ will, for example, encourage local governments and regional planning agencies to use Section 208 planning as a guideline for implementing some NPS controls.

IV. Mississiopi's Approach to TMDL Implementation

Mississippi will address the implementation of TMDLs through Mississippi's Basin Approach to Water Quality Management. This program organizes Mississippi's river basins into five groups. Waterbodies will be monitored in each basin group in a five-year rotation schedule.

Current water quality monitoring data and watershed land use evaluations indicate that many of the TMDLs needed will be for pollutants related to nonpoint sources. Therefore, the State NPS Program will be relied on heavily for the implementation of TMDLs. Best Management Practices (BMPs) have been identified in the NPS Program to address the various categories of nonpoint source pollution. This program has been very effective in promoting and implementing these BMPs across the state.

A TMDL will be developed for each waterbody listed on the State's 1998 303(d) List as monitored as impaired by nonpoint sources unless subsequent data indicate compliance with water quality standards. These TMDLs may include specific recommendations for reducing NPS loads. Appropriate BMPs may be included in these recommendations. NPS Program directors have gained considerable expertise in promoting and implementing NPS BMPs through the NPS Program. Priority will be given in this program to fund activities which will address 303(d) listed waters.

MDEQ will utilize a non-regulatory, incentive-based approach to TMDL implementation. Through the Basin Approach and the NPS Program, MDEQ will seek support and voluntary involvement of key stakeholders in each watershed. MDEQ has ongoing programs aimed at educating and enlisting the support of the citizenry towards the goal of reducing each person's contribution to nonpoint source pollution. Using the Basin Approach, such programs have built and will continue to build partnerships between MDEQ and private and public stakeholders.

Another key component of NPS TMDL implementation will be the close coordination between MDEQ and other state and federal agencies. In addition to the Basin Approach, initiatives such as the Clean Water Action Plan, the Unified Watershed Approach, and Consistency Review of the Section 3 19 Program, will strongly encourage that funds earmarked for nonpoint source activities be directed as much as possible to prioritized TMDLs.

Based on continuing and past successes in working on NPS pollution at the statewide level and with the cooperation of our statewide NPS partners, MDEQ supports this approach to provide a reasonable assurance that TMDL NPS load reductions can be achieved. It should be clear though that the Basin Approach will be an evolving process. The programs will be refined and augmented as necessary to meet changing needs and to take advantage of new knowledge and opportunities.

V. Action Strategy for NPS TMDLs

In December 1998, EPA Region IV entered into a settlement agreement and consent decree with the plaintiff for *Sierra* Club *v. Hankinson,* No. *97-CV-3683 (N. D.* Ga.) which includes TMDL completion deadlines. The consent decree requires EPA Region N to "back-stop" MDEQ in TMDL development. MDEQ intends to complete all of the TMDLs for Mississippi waters. For more information contact MDEQ, Office of Pollution Control, Water Quality Assessment Branch, TMDL Section.

OTHER SUPPORT PROGRAMS

The State's Nonpoint Source Program is dependent upon the cooperation of all levels of government, the private sector stakeholders, and especially the citizens of the state in order to successfully implement all available programs. Many organizations have expertise that can be beneficial to the NPS Program. To ensure maximum utilization, these organizations are represented on several forums under the basinwide approach and the NPS Advisory Committee

Appendix B provides a description of other programs that contribute to the implementation of the State's NPS program.

Table 5.7. Five -Year Action Strategy for Support Programs

Action Item	Long Term Goal Ref.	Implementing Agency	Year
1. Make SRF loans more accessible for NPS projects.	6,16,17	MDEQ	2001
2. Actively seek NPS projects for SRF loans and track progress annually.	15,16	MDEQ	2000 to 2005
3. Concentrate NPS educational and outreach activities in specific watershed areas as planned under the Basinwide Approach cycle.	3,4,6	MDEQ, all other	2000 to 2005
4. Continue to utilize Section 319 annual and incremental funds to support TMDLs development and implementation.	2,3	MDEQ	2000 to 2005
5. Monitor all evaluated waters on the 303(d) list potentially impaired by NPS activities.	1,2,4,11	MDEQ	2005
6. Continue to utilize Section 3 19 annual and incremental funds to target watersheds in need of restoration	4,6	MDEQ	2000 to 2005

CHAPTER 6

NPS ENFORCEABLE MECHANISMS AND POLICIES

Description

Mississippi's efforts to regulate NPS pollution utilizes legal authorities on both federal and state law. MDEQ is designated as the lead agency in Mississippi for purposes of the Clean Water Act (CWA), and all of its provisions. Federal statutory authority for NPS water quality regulatory programs is provided by the 1987 amendments to the CWA through Sections 319,401, 402, etc. NPS compliance and enforcement program elements are critical component of Mississippi's total NPS management program towards achieving *success* in reducing NPS pollutant discharges to surface waters and groundwaters. Both voluntary and regulatory efforts are needed to accomplish these objectives, The state's NPS regulatory programs are water quality-based and require that the regulated sector comply with state water quality standards.

Mississippi State Law

MDEQ does handle all investigation of, and enforcement against those who negatively impact state waters and degrade water quality because of their operations. This is done using State law Section 49-17-29 (2) (a) which states:

> *It shall be unlawful for any person (i) to cause pollution of any waters of the state or to place or cause to be placed any wastes in a location where they are likely to cause pollution of any waters of the state; (ii) to discharge any wastes into any waters of the state which reduce the quality of such waters below the water quality standards established therefor by the commission: or (iii) to violate any applicable pretreatment standards or limitations, technology-based effluent limitations, toxic standards or any other limitations established by the commission. Any such action is hereby declared to be a public nuisance.*

Regulations for NPS Pollution Activities

In addition to statutory authority, the state has many regulations that relate to abatement of NPS pollution. Among the regulations that MDEQ implements are regulations for permitting and control of agricultural animal facilities, stormwater management and sediment control, NPDES stormwater discharges, onsite disposal systems, solid waste disposal activities, mining operations, permits for construction in navigable waters, and others. Other state agencies such as the MS Department of Transportation and the Department o f Health also have applicable NPS-related regulations.

NPDES Stormwater Permits

The 1987 amendments to the Clean Water Act (CWA) required EPA to establish regulations to control discharges of stormwater associated with industrial activity. EPA completed the regulations in November of 1990. Mississippi received authority to issue general permits on September 27, 1991. On July 14, 1992, the Mississippi Permit Board issued eight general NPDES permits for industrial activities, Until February, 1998, the Industrial Division had responsibility for the Storm Water Program. As a result of internal re-engineering, the Environmental Permits Division of the Office of Pollution Control, General Permits Branch, is primarily responsible for developing storm water related general permits, reissuing general permits and granting coverages under the general permits. The existing general permits, designed to reduce the introduction of pollutants to storm water are: Industrial, Construction, SARA Title III, Landfill, Primary Metals, Wood Treaters, and Oil and Gas. Construction activities that disturb five or more acres are defined as an industrial activity by EPA.

Under Phase II of the Stormwater Program, by 2003 large, rapidly growing communities (greater Jackson area, the Coast, and Desoto county) will be required to obtain a stormwater permit which will require them to conduct local education and pass ordinances to control erosion, sediment, and stormwater. Phase II rules will also require all construction activities that disturb more than one acre to use BMPs. Table 4-5 in Chapter 4 provides a list of incorporated places and counties impacted by Phase II Stormwater Regulation.

Mining Permitting Program

The Mississippi Surface Mining & Reclamation Act (Sec. 53-7-l-75 MS Code 1972 Annotated) serves as part of an overall. management plan towards effective control of nonpoint source pollution in the state. Prior to the granting of a mining permit, the applicant must address certain issues to ensure there will be no significant or adverse water pollution impacts resulting from the mining activities. Provisions that address the control of nonpoint source pollution must be included as part of the mine reclamation plan. However, control of pollution, especially NPS, from Grand fathered or abandoned mines poses a more difficult problem because associated costs and lack of regulatory controls.

The Mississippi Department of Environmental Quality, Office of Geology has primary regulatory responsibility within the state. Within the Office, the Division of Surface Mining and Reclamation is responsible for administering and implementing both the MS Act and the federal Surface Mining and Reclamation Control Act and their associated regulations. The Office of Geology is currently using GPS technology to add the locations of exempt and abandoned surface mines to the Department's geographic information system (GIS). Information obtained during inspections of these pits will be used to determine to impact of NPS pollution from these sites.

On November 10, 1992, the Permit Board issued the Mining Storm Water General Permit for active or inactive surface mining operations.

Water Quality Certification

Section 401 of the Clean Water Act provides that any applicant for a federal license or permit which results in discharge to navigable waters, shall provide the licensing or permitting agency a state certification that the discharge will comply with applicable sections of the law. In Mississippi MDEQ must certify that the discharge will comply with state water quality standards MDEQ may require that appropriate BMPs be implemented in order to meet these standards. Examples of construction activities needing Section 401 certification include docks, bridges, and dams, The certification also applies to certain activities that may adversely affect wetlands. A certification is denied if the activity will have permanent adverse effects on existing or designated uses. Most certifications are issued with conditions that are enforceable by the permitting or licensing of the activity.

Compliance and Enforcement

State law Section 49-17-29(2)(a) authorizes MDEQ to implement corrective action against parties responsible for NPS-related water quality violations. Responsive action to NPS incidents minimizes further degradation of surface waters. MDEQ has 3 regional offices, each with staff assigned to investigating and resolving NPS incidents. Regional personnel assess NPS incidents and investigate NPS complaints as received and, (if necessary) will involve relevant Central Office personnel. The agency is typically notified about acute NPS problems through citizen complaints, while chronic NPS problems are often identified through the state's monitoring and watershed programs and referred by problems monitoring staff. Attempts are made to resolve problems by working with land owners or land users to either stop the pollution causing activity or apply proper BMPs.

Land disturbing activities resulting in soil erosion (and subsequent sedimentation and destruction of aquatic habitat) do result in enforcement proceedings. Most often, these activities are the result of non-compliance with state stormwater permits. Enforcement proceedings typically include conferences, negotiations, and the issuance of a Consent Order. Consent orders usually consist of stipulations agreeing to the incident, resultant damage, necessary corrective action, and a civil penalty. Refusal by a violator to sign a Consent Order results in issuing a non-negotiable Administrative Order mandating mitigation and penalties. Administrative Orders may be appealed through the state's legal system.

Table 6.1 Milestones for Enforceable Mechanisms

Milestone	Complete
Annually Inspect all Confined Animal Feeding Operations (CAFO) for compliance with discharge permits	2000 to 2005
Conduct initial inspections on all new Animal Feeding Operations	2000 to 2005
Respond to NPS related complaints.	2000 to 2005

Explore the need to hire additional staff to assist in complaint response and enforcement related to stormwater.	2001
Synchronize all permit issuances activities with the Basinwide Approach cvcle.	2000 to 2005

CHAPTER 7

PROGRAM INTEGRATION, CONSENSUS BUILDING, AND PARTNERING

Description

It is recognized by the MDEQ that the level of success achieved in developing and implementing an effective NPS Program is greatly influenced by the level of stakeholder involvement both on the watershed and the statewide levels. Therefore, the State is using and establishing a variety of formal and informal mechanisms in order to form and sustain partnerships on both a watershed and state-wide basis. The NPS Program will continue to be developed and implemented in cooperation with several agencies, organizations and groups at all levels of government and in the private sector. A great focus will be given to activities that promote consensus building and partnering to increase the overall effectiveness of the State's NPS Program.

MDEQ collaborates with a number of other agencies and organizations involved in resource management through formal and informal relationships. These partners include federal agencies, other state agencies, local government, commodity and industry groups, watershed groups, etc. The state anticipate strengthening existing relationships and forging new ones throughout the state under its new Basinwide Approach to Water Quality Management.

BASINWIDE APPROACH TO WATER QUALITY MANAGEMENT

I. Introduction

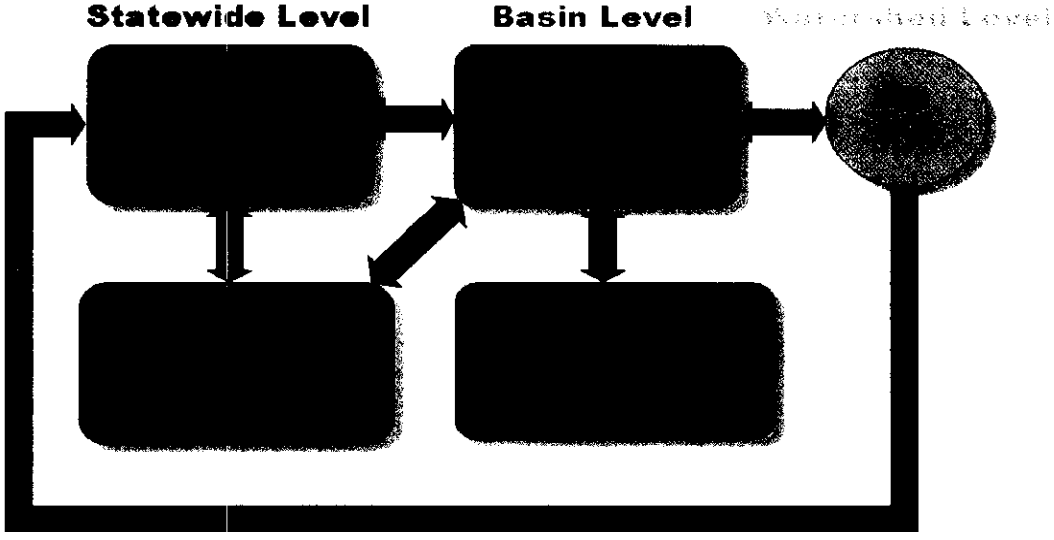
The State's strategy for managing and abating NPS pollution will predominately be developed under the umbrella of the Basinwide Approach to Water Quality management. This initiative is designed to provide a coordinated approach to river basin development and water quality management or improvement; to better address congressional and legislative mandates; to better utilize current resources; and to better inform and involve the general public and the regulated community of existing and future water quality issues. Basin wide water quality management recognizes the interdependence of water quality and all the activities that occur in the associated drainage basin including: monitoring, assessment, problem identification and prioritization, water quality modeling, planning,, permitting, nonpoint source pollution control, watershed restoration, and other activities. In Mississippi's Basin wide Approach to Water Quality Management, these activities will be integrated by basin resulting in basin management plans and implementation strategies which will serve to appropriately focus water quality protection and restoration efforts statewide and also on the watershed levels.

One of the greatest benefits of using a basin wide approach is that MDEQ programs will be able to coordinate efforts among themselves and with other agencies and stakeholders. Significant effort will be exerted by program managers and staff to ensure that management efforts maximize efficiency and effectiveness while providing for regulatory consistency and equitability. The coordinating features of the Basin wide Approach provide the means for all

MDEQ, and other agencies, programs to join in joint management efforts where needed. The Forums established under this approach are designed to ensure broad involvement from federal, state, and local agencies and private organizations, citizen groups, associations, etc. This promotes the proper identification and prioritization of water quality issues and consensus building on a statewide a a watershed level. The NPS Program will heavily rely on these newly formed forums to solicit input on relevant NPS Management Program issues. Figure 7-l describes the different forums established under the Basinwide Approach to Water Quality Management.

Figure 7-l

Primary Basin Planning Framework Forums



Limited resources require the targeting of work efforts in order to obtain maximum benefit. Focusing on one basin each year will allow the OPC to coordinate staff activities, thus making efficient use of available resources. The OPC's staff can concentrate on collecting data on the targeted basin rather than randomly across the state. While the ambient monitoring network will be maintained, additional monitoring effort will be directed on waters located in the targeted basin. This will result in greater monitoring coverage and more sophisticated water quality assessments. The monitoring activities will not only determine the general quality of the basin's waters, but will also support the development of wasteload allocations (WLAs) and total maximum daily loads (TMDLs). Developing WLAs and TMDLs on a basin or watershed basis

allows for an equitable assessment of all actual and potential impacts on the water quality from both point and nonpoint sources of pollution.

Planning on a basinwide scale is consistent with basic ecological principles of watershed management. It allows the: coordination of implementation activities so that all actual and potential impacts on water quality can be evaluated. Both nonpoint and point source impacts can be evaluated when making water quality protection decisions. Problem areas located in a particular drainage area can be identified and existing and potential contributors can be examined. Subsequently, waste assimilative capacities can be determined and allocated in a more equitable fashion since all activities are taken into account. In addition, identifying sensitive resource areas should help prevent future ecological impacts and promote sound economic planning. The basinwide management plans will provide the focus for the NPS management program's decisions. The NPS management program will take advantage of the field surveys to update the NPS assessment report and to determine a more accurate and current use support for streams. Thus streams can be correctly classified and protected, and the program will have more accurate information in order to more effectively target NPS projects.

II. Core Components of the Basinwide Approach

Component #1: Basin Management Units

The waters of Mississippi are divided into ten (10) major river basins. These basins are grouped into five major Basin Management Units (Groups): 1) Big Black and Tombigbee Rivers, 2) Yazoo River, 3) Pearl River / South Independent Streams, 4) Pascagoula River, and 5) Coastal Streams / North Independent / Tennessee River. Figure 7-l provides a graphical representation of these five groups.

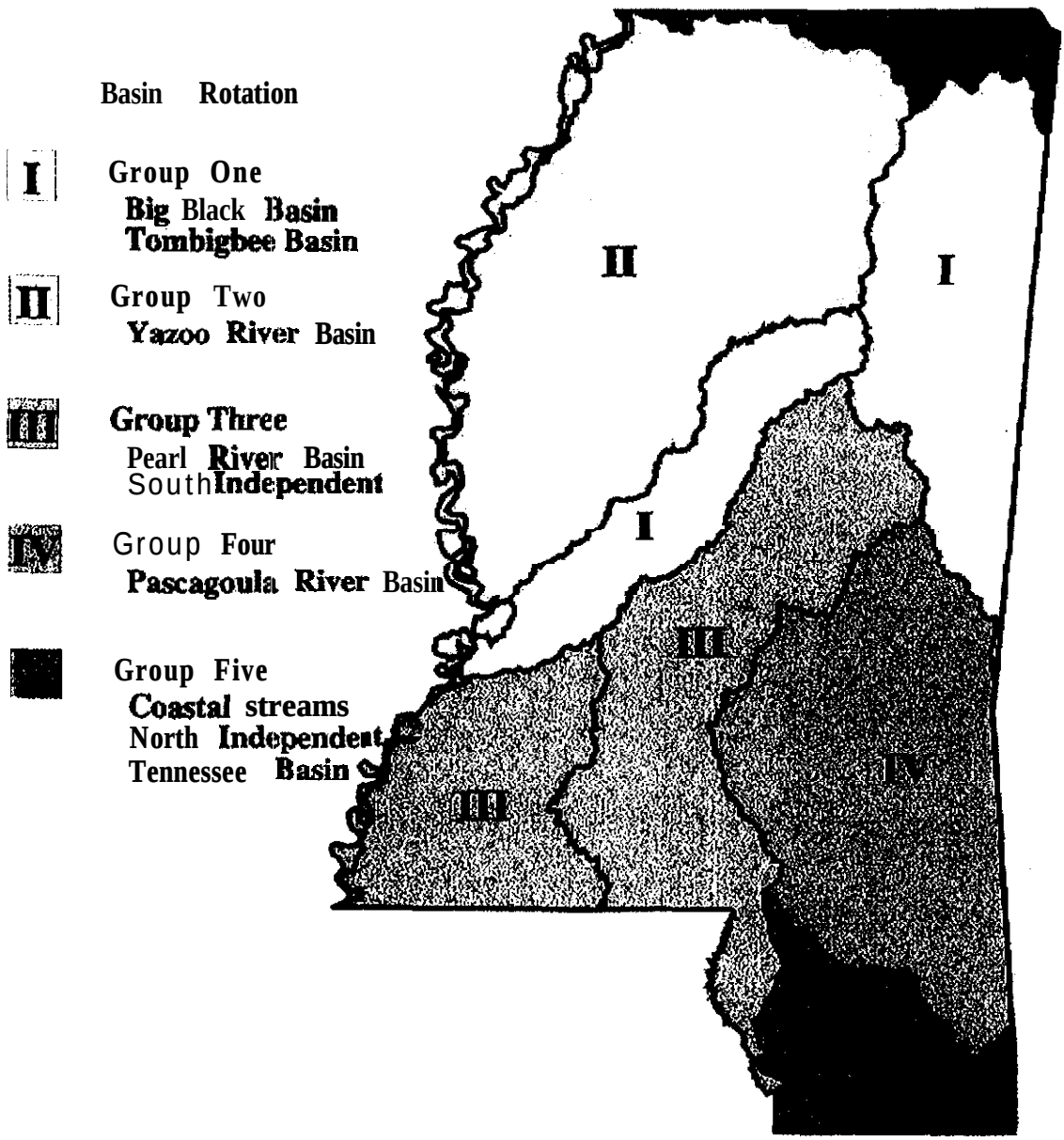
Component #2: Basin Management Cycle

Mississippi's basin management cycle has five activity phases that are sequenced and repeated for each basin management at fixed 5-year intervals (Figure 7-2). This cycle ensures that management goals, priorities, and implementation strategies are routinely updated and implemented on an ongoing basis.

The first phase of the basin management cycle is the planning phase. During this phase the following activities are conducted:

- Identification of broad issues of concern and establishment of partner agency participation.
- Gathering of relevant existing information on basin characteristics and water quality and quantity (this includes gathering information from other agencies).

Figure 7-2
Basin Management Rotation under the Mississippi Basinwide Approach to Water Quality Management



- Working with stakeholders within the basin to increase their understanding of the Basinwide Approach, to refine short and long term management goals for the basin (this is where many of the NPS management program goals will be tit in and implemented), to identify important information gaps, and to receive public input regarding basin conditions and priorities.

- Prioritization of issues for DEQ to address during this particular iteration of the basin management cycle.

- Issuing a joint *Basin Status and Direction Report* on existing conditions, ongoing management activities, and management priorities and needs within the basin management unit.

Once the status report is issued, then interested MDEQ programs and agency partners develop a Strategic Data Collection Plan. This Plan addresses how to cost effectively obtain data needed to characterize river basin features and conditions, review water quality standards, clarify and quantify causes and sources of watershed problems, calibrate models for TMDL and WLA development, and evaluate the effectiveness of previous management efforts.

The next phase (phase 2) of the basin management cycle is the data gathering phase. During this phase field data, facility data, and other types of information are collected in accordance with the Strategic Data Collection Plan. Field and facility data are collected for supplemental basin ambient sites, support of TMDL development, additional information for 305(b) and 319 purposes, WLA verification studies, assessment of water quantity, studies to identify and characterize outstanding resource waters, and to assess compliance of target facilities.

The third phase of the basin management cycle is the data evaluation phase. Here information gathered under the Strategic Data Collection Plan is interpreted. Quantitative and qualitative analyses are performed to evaluate and document the severity, extent, causes, and sources of stress to watershed resources. DEQ staff and agency partners are assigned assessment responsibilities according to their expertise, available resources, and willingness to participate. For example, USFWS could focus its expertise and resources on assessing critical habitat restoration and protection needs for endangered species and protecting NWRs (see Chapter 4), while the DEQ Water Quality Assessment Branch assesses water quality use support status within the basin. Key summaries of DEQ and agency partner assessments are compiled to update the Basin Status Report and provide the basis for establishing management priorities and allocating resources to address the most urgent problems.

During the fourth phase (plan development) technical and policy experts from DEQ and its agency partners work with other stakeholders to identify, evaluate, and select management strategies to address priority issues. Sound science and stakeholder consensus are emphasized to establish cost-effective solutions that are supported or accepted by those who must take the actions. Implementation strategies are documented in a draft basin plan. The strategy section of the plan is expected to contain:

- General discussion of management actions to apply throughout the basin.

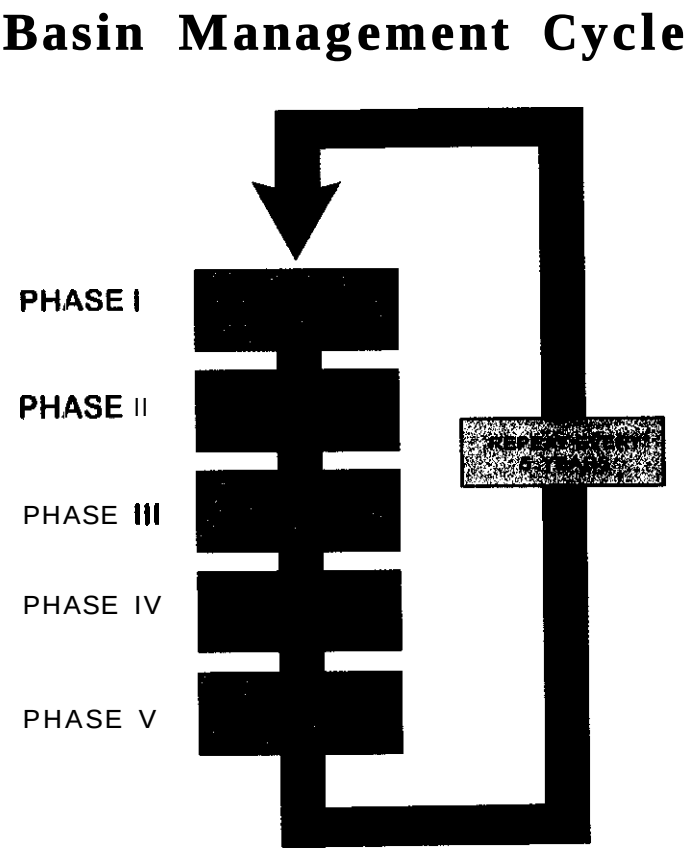
- Summaries of TMDLs/WLAs/LAs, including existing allocations and remaining loads for future allocations.
- TMDL implementation plans.
- An update to the Nonpoint Source Management Report for the basin.
- Point source management strategy updates.
- Pollution prevention plans.
- Strategies for addressing problems related to enforcement.
- Strategies for waters in need of special protection.
- Strategies for protecting wetlands.
- Strategies for protecting groundwater.

During phase 5 (Implementation phase) of the basin management cycle, MDEQ, agency partners, and relevant stakeholders carry out and guide management actions in accordance with the basin management plan. Probable actions include:

- Conducting education and outreach to promote broad public understanding and participation.
- Issuing, modifying, or denying regulatory permits such as NPDES permits for wastewater discharges.
- Awarding NPS Program grants to facilitate implementation of best management practices.
- Funding and constructing pollution control and abatement facilities.
- Implementing pollution prevention plans
- Implementing provisions of source water protection plans where they exist.
- Revising regulations, statutes, and ordinances as needed.
- Sharing information among partners and stakeholders regarding activities.
- Targeting enforcement activities toward priority problem areas and persistent violators.
- Providing technical assistance to stakeholders, including environmental information to the economic development community.

- Monitoring progress of basin plan implementation.

Figure 7-3
Basin Management Cycle under the Mississippi Basinwide Approach to Water Quality Management



Component #3: Basin Management Schedule

The basin management cycle will be on a staggered startup between the five basin management groups. This was designed. to make it possible for partners to focus watershed management activities on one portion of the state during a given period of time, allowing more efficient use of human and financial resources.

Basin management cycle activities will begin in each of the five groups of river basins as follows:

1. Big Black and Tombigbee Rivers	July 1998
2. Yazoo River	January 1999
3. Pearl River / South Independent Streams	January 2000
4. Pascagoula River	January 2001
5. Coastal Streams / 'North Independent / Tennessee River	January 2002

Thus, by the year 2002, activities will have been initiated, and will be ongoing, in each basin management unit. This illustrates one of the core features of the framework: at any one point in time, different activities are happening across all five basin groups, providing regional focus and balanced workloads among partners operating statewide. The full schedule through 2007 is shown in Figure 7-3.

Component #4: Forums to Support Agency Coordination and Stakeholder Participation

There are five forums envisioned to provide for oversight and coordination of the basin management. These five are: Basin Planning Committee, Resource Agency Partners, Basin Teams, Basin Stakeholder Groups, and Ad Hoc Groups. The Basin Planning Committee's purpose is to oversee the basinwide management framework, to develop policy, and to ensure that adequate support and staff are provided. The Resource Agency Partners includes upper-level management from MDEQ and partner agencies involved in water quality and quantity management in Mississippi. This forum discusses the big issues, both statewide and within each basin, available data and information on the issues, and availability of staff and funds to further address the issues. The Basin Teams serve as the primary forum for technical coordination. Basin Team members are accountable for communicating needed actions and time frames to their respective programs. The Basin Stakeholder Groups are formed in each basin, and serve as a forum for sharing information with interested groups in the basin. These groups will also provide the Basin Team with input on issues, priorities, strategies, and implementation activities. The Ad Hoc Groups are designed to involve the general public.

Component #5: Basin Plans

A Basin Plan will be developed for each basin management unit and updated every live years. The primary purpose of these Basin Plans is to provide a common reference guide for implementation of watershed management activities. In general, the plans will include:

- A description of the physical and cultural characteristics of the basin.
- An overview of water quantity resources and concerns.
- An overview of water quality assessment in the basin.
- A description of point and nonpoint sources of pollution.
- Identification of priority issues.
- A description of water quality management strategies.
- A description of stakeholder involvement in basin planning.
- Long range goals, plans, and strategies,

The long term goals and action plans for the NPS Management Program are designed to follow the basinwide approach schedule. This will result in the development of five separate NPS Basinwide Assessment Reports and five NPS Management Plans. The NPS assessment report will be updated during the third year of every basin cycle to ensure the availability of the data needed to develop a comprehensive Management Plan which will be updated the following year (year four). The long term goals and action plans for the Basinwide Approach are summarized in a schedule provided in Table 7-1.

Table 7-l

Mississippi Statewide Basin Management Schedule, 1998 - 2002

Basin Group	Management Cycle Phase	1998				1999				2000				2001				2002			
		J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D
1. Big Black, Tombigbee	1. Planning																				
	2. Data Gathering																				
	3. Data Evaluation																				
	4. Plan Development																				
	5. Implementation																				
2. Yazoo	1. Planning																				
	2. Data Gathering																				
	3. Data Evaluation																				
	4. Plan Development																				
	5. Implementation																				
3. Pearl, South Independent Streams	1. Planning																				
	2. Data Gathering																				
	3. Data Evaluation																				
	4. Plan Development																				
	5. Implementation																				
4. Pascagoula	1. Planning																				
	2. Data Gathering																				
	3. Data Evaluation																				
	4. Plan Development																				
	5. Implementation																				
5. Coastal Streams, North Independent Streams, Tennessee	1. Planning																				
	2. Data Gathering																				
	3. Data Evaluation																				
	4. Plan Development																				
	5. Implementation																				

Key to calendar months: **J-M** =January, February, March **A-J**=April, May, June **J-S** =July, August, September **O-D** =October, November, December

Table 7-1 Continued

Mississippi Statewide Basin Management Schedule, 2003 - 2007

Basin Group	Management Cycle Phase	2003				2004				2005				2006				2007			
		J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D
1. Big Black, Tombigbee	1. Planning																				
	2. Data Gathering																				
	3. Data Evaluation																				
	4. Plan Development																				
	5. Implementation																				
2. Yazoo	1. Planning																				
	2. Data Gathering																				
	3. Data Evaluation																				
	4. Plan Development																				
	5. Implementation																				
3. Pearl, South Independent Streams	1. Planning																				
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	3. Data Evaluation																				
	4. Plan Development																				
	5. Implementation																				
4. Pascagoula	1. Planning																				
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	3. Data Evaluation																				
	4. Plan Development																				
	5. Implementation																				
5. Coastal Streams, North Independent Streams, Tennessee	1. Planning																				
	2. Data Gathering																				
	3. Data Evaluation																				
	4. Plan Development																				
	5. Implementation																				

Key to calendar months: **J-M** =January, February, March **A-J**=April, May, June **J-S** =July, August, September **O-D** =October, November, December

Memorandums of Agreements

The Nonpoint Source Program is strengthening its working partnerships and linkages to appropriate State, interstate, tribal, regional, and local entities including conservation districts, private sector groups, citizen groups, and federal agencies. In addition to utilizing the existing forums in the Basinwide Approach, the State is using and establishing a variety of formal and informal partnerships on both a watershed and a statewide basis. MDEQ has Memoranda of Agreement (MOA) with the Mississippi Soil and Water Conservation Commission (MSWCC), the U S Forest Service (USFS), and the Yazoo River Water Management District (YMD).

Currently, MDEQ is evaluating the need for a MOA with the Mississippi Department of Marine Resources (MDMR) on jointly implementing Section 62 17 measures on the Mississippi Gulf Coast.

Nonnoint Source (NPS) Statewide Advisory Committee

The State NPS Advisory Committee (then called NPS Task Force) was formed originally in 1990. This committee provides direction and input for the State's NPS Program, determines priority areas for Program implementation, and provides comments on new program initiatives and outputs such as Management Plan Updates. Many of the represented agencies are also grant recipient, or otherwise involved in implementing NPS projects.

The Committee meets at least three times a year, and special meetings are called if necessary. The Task Force was re-formed in 1999 to increase membership to focus additional attention to other NPS categories beside agriculture.

NRCS State Technical Committee

The NRCS Technical Committee is made up of representatives of several agricultural and natural resource-related agencies. MDEQ, the lead water quality management agency in the state is represented by a NPS staff member. The Committee provides direct input to NRCS programs such as the Conservation Reserve Program (CRP), Environmental Quality Incentive Program (EQIP), Wildlife Habitat Incentives Program (WHIP), Wetlands Reserve Program (WRP), and the Forest Incentive Program (FIP). MDEQ's involvement in this committee has provided the opportunity to try to direct more projects to waterbodies in need of water quality improvement.

EQIP projects are currently confined to areas within county borders or watersheds within a county. MDEQ and NRCS will explore ways to change EQIP rules so that EQIP projects can follow watershed boundaries and integrate with the State's Basinwide Approach.

Interagency 404 Review

The Section 404 permit is required for all activities taking place in federally navigable waters. All stream channelization and channel modification projects require a Section 404 permit as well as a State 401 Certification. The certification ensures that such activities will be conducted in a manner so as to not violate state water quality standards.

MDEQ administers the 4011 Water Quality Certification which is the primary focus of wetland regulation and protection at the state level. MDEQ looks at proposed physical and hydrological impacts on wetlands and water quality in order to protect existing uses and prevent degradation. MDEQ may waive, issue with conditions, or deny a 401 certification. The federal 404 permit is not issues until MDEQ gives a 401 certification.

This certification process is also coordinated with the Mississippi Department of marine Resources (MDMR), if the proposed wetland alteration takes place in the coastal zone area.

Nutrient Task Force

This is an MDEQ led task force composed of state and federal agriculture water resource experts with various areas of discipline such as hydrology, chemistry, fisheries biology, soil sciences and water quality modeling. The purpose of the task force is to evaluate existing nutrient data, identify data gaps, and ultimately recommend to MDEQ nutrient criteria. The task force recommendation will be considered when adopting nutrient criteria for state waters, The Gulf of Mexico Program is providing funding and technical assistance in coordination with the EPA

Public Input Into The NPS program

NPS stakeholders and the public have opportunity to comment and provide input into this NPS Management Program Update document before it was finalized. Stakeholder input is provided through the State NPS Advisory Committee and the forums established under the Basinwide Approach to Water Quality Management. Comments from the public on the draft will be solicited through the standard public notice and comment period.

'able 7-2 Five Year Action Strategy for Program Integration

Action Item	*Long Term Ref.*	*Milestone*	*Complete*
Ensure stakeholder input by working with all basin team coordinators to incorporate relevant NPS agenda items during planned meeting of the various forums.	8,17,18	Designate the NPS Section Chief to serve on the Basin Planning Committee. Designate a NPS project officer for each Basin Team.	**2000 to 2005**
Provide an opportunity for the citizens of Mississippi to have input into the state's NPS Management Program.	8,14,15	Solicit public input on draft NPS documents via public notices.	**2000**