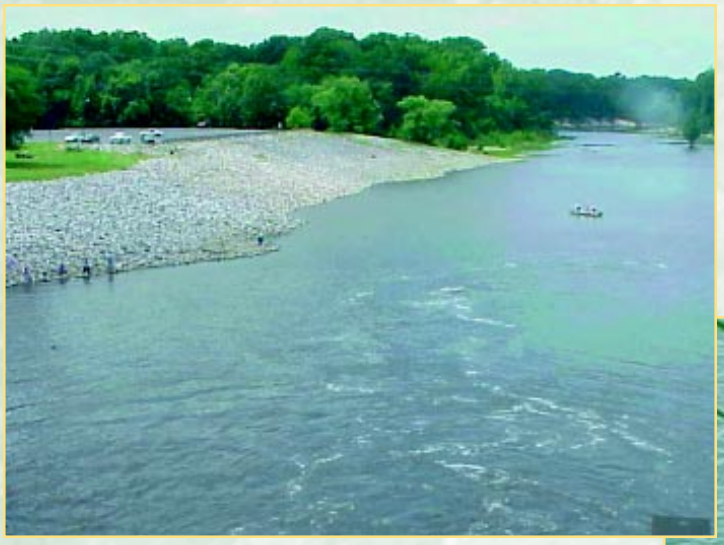
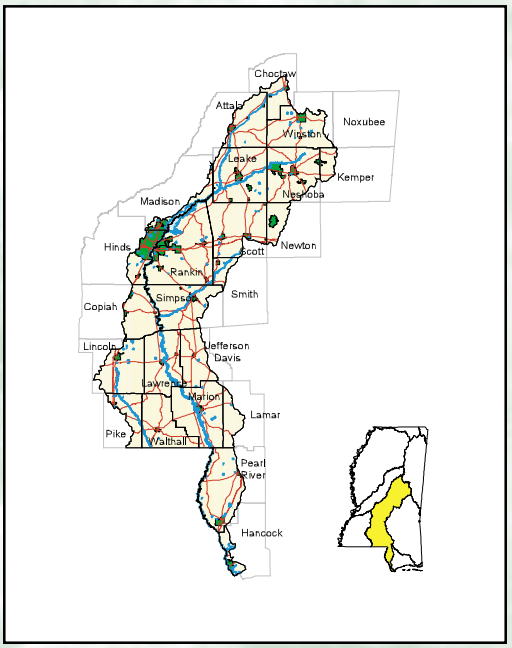
Pearl River Basin



Status Report

2000



Cover Photographs:

The upper left cover photo was taken at the Ross Barnett Reservoir in Rankin County. This area of the Pearl River, immediately south of the spillway, is used for fishing and boating.

The upper right cover photo was taken at the Bogue Chitto Water Park in Pike County. Residents of Mississippi and nearby Louisiana enjoy recreational activities along the Bogue Chitto River.

The center left cover photo was taken at the Hancock County Boat Launch in Pearlington. The facility provides access to the lower Pearl River, near the Mississippi Gulf Coast.

The lower left cover photo was taken in Hinds County. The young tot enjoys playing in the apartment pool with parents. Both goundwater and surface water sources provide potable water to the City of Jackson.

The lower right cover illustration depicts the boundary of the Pearl River Basin, as well as county lines, major roads, major streams and lakes in the basin.

ACKNOWLEDGMENTS

This document is a product of the Pearl River Basin Team, which consists of representatives from twenty-seven agencies, and was developed under the leadership of the Basin Management Approach staff of the Mississippi Department of Environmental Quality (MDEQ). The Pearl River Basin Team consists of the following resource agency partners:

State of Mississippi and Local Agencies

Agriculture and Commerce (MDAC)

Agricultural and Forestry Experiment Station (MAFES)

City of Jackson

Development Authority (MDA)

Emergency Management Agency (MEMA)

Environmental Quality (MDEQ)

Forestry Commission (MFC)

Health (MDH)

Institute of Higher Learning (IHL/MARIS)

Marine Resources (MDMR)

Mississippi Army National Guard

Mississippi Band of Choctaw Indians

MSU Cooperative Extension Service (MSU/CES)

MSU Water Resources Research Institute (WRRI)

Pearl River Basin Development District (PRBDD)

Pearl River Valley Water Supply District (PRVWSD)

Soil and Water Conservation Commission (MSWCC)

Transportation (MDOT)

Wildlife, Fisheries, and Parks (MDWFP)

United States Government Agencies

Army Corps of Engineers, Vicksburg District (USACOE)

Environmental Protection Agency (Region IV)

Fish and Wildlife Service (USFWS)

Forest Service (USDA/USFS)

Geological Survey (USGS)

Gulf of Mexico Program (EPA/GOMP)

National Oceanographic Office (Stennis Space Center)

Natural Resource Conservation Service (USDA/NRCS)

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TABLE OF CONTENTS

LIST OF FIGURES

What Is The Pearl River Basin Status Report?

Mississippi Department of Environmental Quality (MDEQ) manages its water programs on a drainage basin scale and has established a process that coordinates the water assessment and management activities of numerous state and federal agencies. This process, the Mississippi Basin Approach to Water Quality Management, will culminate with the development of basin management plans for each of Mississippi's major river basins (Figure 1). The development of each of the basin management plans will be carried out in 5 successive phases, referred to as the Basin Management Cycle - Planning, Data Gathering, Data Evaluation, Management Plan Development, and Implementation (Figure 2). An early activity under the planning phase of the Basin Management Cycle is the preparation of a Basin Status Report. This document provides an overview of the Pearl River Basin, describes the basin's current water quality conditions, and identifies current assessment and management activities within the basin.

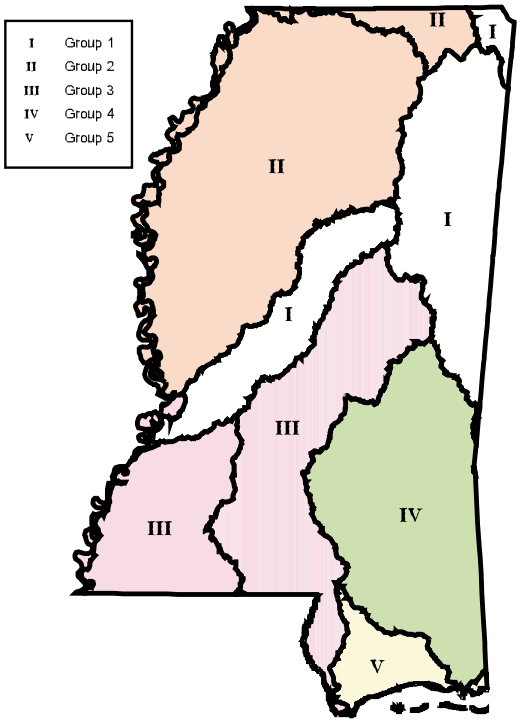


Figure 1. Basin Management Groups under the Mississippi Basin Approach to Water Quality Management (MDEQ)

What's Inside

After this introduction, the report is divided into three major sections. Each section builds on the previous one to explain the condition of water resources within the Pearl River Basin. The *first section* provides an overall description of the basin and its major features, including hydrology, land use characteristics, and biological features.

The *second section* summarizes how water quality in Mississippi is assessed and describes the current data collection efforts and research programs that are occurring within the basin. The status of water quality conditions in the basin for ground water and surface water is reviewed. This section also identifies some of the activities that may affect the water quality in the basin. Additional management needs that are already known and future steps in the basin management cycle are discussed.

The *third section* provides information on the current management programs that are used to assess and improve water quality conditions in the basin.

Who Should Read This Document

Everyone in the basin-from families living off the land to large and small business owners-can use the information in this report to better understand the current conditions of water resources in the basin, as well as activities designed to protect those resources. Local government officials can use this report to find out about water resource assistance programs. State and federal agencies can use the report to learn about existing data collection activities within the basin.

Individuals and local organizations can use the report to identify potential causes of water quality problems in their community and learn how to get involved in local watershed protection activities. The purpose of Mississippi's Basin Management Approach is to restore and protect the quality of the State's water resources by developing and implementing effective management strategies that address water quality issues while supporting wise economic development. The process will culminate in the development and implementation of a basin management plan designed to address priority water resource problems in the basin. This status report is an early product of the process.

How The Status Report Relates To Other Basin Planning Activities

Mississippi's Basin Approach to Water Quality Management, or Basin Management Approach, is an effort led by MDEQ to facilitate comprehensive water quality planning and to foster the implementation of practices that will result in water protection on a basinwide scale. This approach recognizes the interdependence of various water quality management activities by numerous state and federal agencies that routinely occur within the basin.

These activities include monitoring, assessment, problem identification and prioritization, planning, permitting, and implementation of best management practices. The goals of the Basin Management Approach are the coordination of these activities and the integration of information on a basinwide scale that will serve to better focus water quality protection efforts.

Basin Groups and Cycle Year		
Group	Basins	Year Started
I	Big Black , Tombigbee, and Tennessee River Basins	1998
II	Yazoo River and North Independent Streams Basins, and adjacent tributaries of the Mississippi River	1999
III	Pearl River and South Independent Streams Basins, and adjacent tributaries of the Mississippi River	2000
IV	Pascagoula River Basin	2001
V	Coastal Streams Basin	2002

Team members from state, federal, and local agencies work on water quality issues of the Pearl River basin.

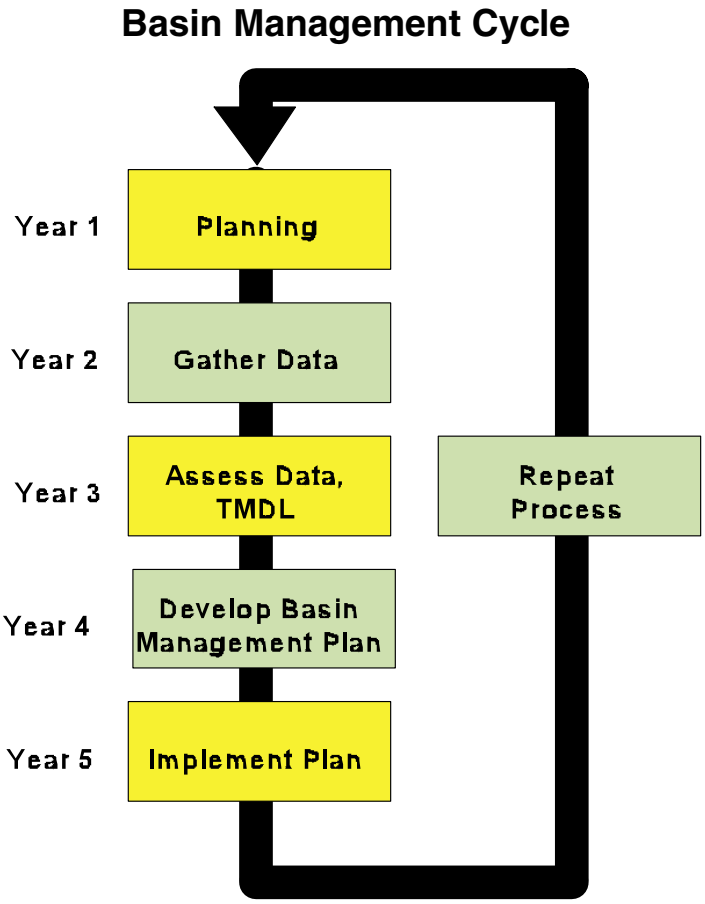


Figure 2. Basin Management Cycle **(MDEQ)**

The progression of water quality management activities in the basin will be based on a repeating five-year management cycle. During Year 1 of the Basin Management Cycle, water quality-related issues of concern in the basin are identified and prioritized, a Basin Status Report is prepared, and a Data Collection Plan is developed that concentrates on assessment of the priority issues of concern. During Year 2, the Data Collection Plan is implemented and existing data sources are identified. Year 3 activities focus on the interpretation of information identified and collected, as well as coordination with development of water quality-related modeling applications (TMDLs). Year 4 addresses the development of a basin management plan and action strategy to address priority issues. Implementation of the management plan is the objective of Year 5.

Where Is The Pearl River Basin?

The Pearl River Basin is located in east-central and southwest Mississippi and in the southeastern part of Louisiana. The river is approximately 490 miles long, drains an area of 8,760 square miles and comprises all or part of 24 counties in east-central and southern Mississippi. Some significant tributaries to the river include the Yockanookany River, Bogue Chitto River, and Strong River.

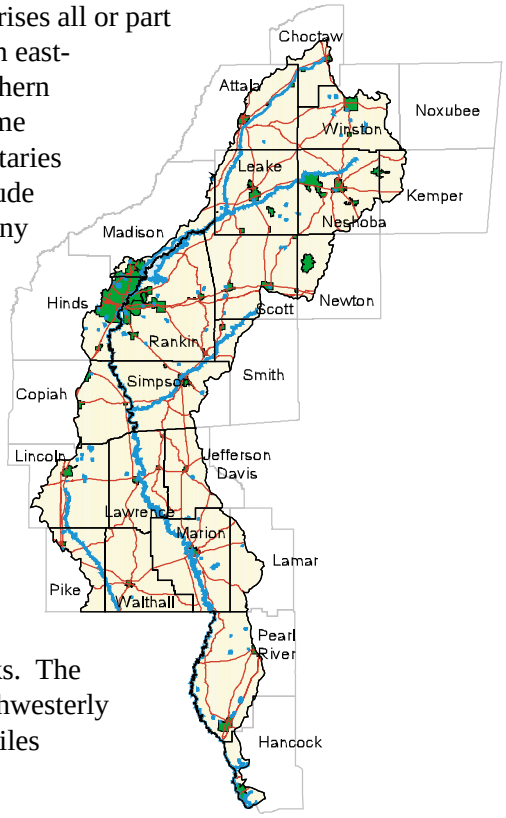


Figure 3. Pearl River Basin **(MDEQ)**

The Pearl River is formed in Neshoba County, by the confluence of Nanawaya and Tallahaga Creeks. The river flows southwesterly for about 146 miles past Jackson to Byram, then 217 miles in a southerly direction to the head of its outlet channels, the Pearl and West Pearl Rivers. These channels continue in the same general direction for 48 and 44 miles, respectively, and empty in Lake Borgne and the Mississippi Sound. The West Pearl River lies entirely within the State of Louisiana. The lower 61 miles of Pearl River form part of the boundary between Mississippi and Louisiana. This report will only address that portion of the Pearl River Basin situated in the State of Mississippi.

The Historical Background Of The Basin

Between Nanawaya Creek and the Gulf, the Pearl River Basin contains a wealth of historical and legendary tradition. The Pearl River and its major tributaries were well traveled, hunted, and fished by native groups. Legend proclaims the Great Spirit told the Choctaw Indians to make their home along the banks of the upper portion of what they called - “Rock River”. The French explorer d’Iberville later re-named the river “Pearl” after he and his men discovered pearls at the mouth of the river in 1698.

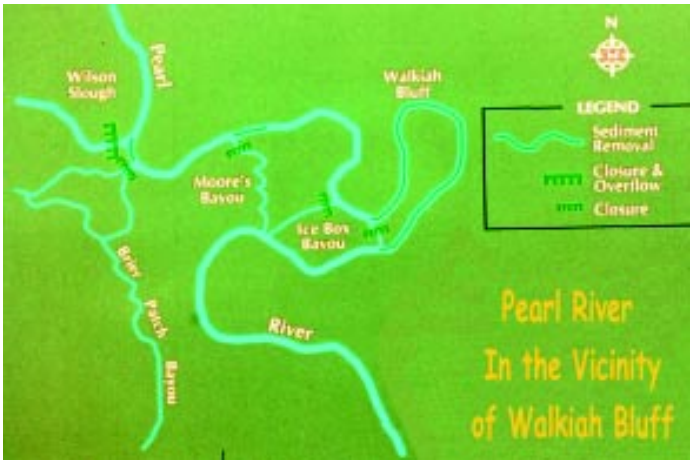
European civilization came to this region in the 1600’s with the Spanish and French explorers taking advantage of the area’s resources. Before the river became a highway of commerce and transportation, it was a route into the wilderness. The French recognized the Pearl as a potentially important transportation route for settlers and in 1731 explored and mapped the river. One of the settlers, a French Canadian named Louis LeFleur, established a trading post in an area that would later become Mississippi’s capital city, Jackson.

The Pearl River Basin maintained a small population until the 1830’s, when cotton and timber production intensified. With the onset of agricultural and commercial development, the Pearl served as a water highway to transport tremendous harvests of virgin pine and hardwood timber. Steamboats were common sights as far up river as Edinburg, bringing supplies to the settlers and returning with marketable cargo. The population increased in areas where the crops were successful and the river was navigable. Timber harvesting expanded as more settlers used the Pearl River and its tributaries to float or raft logs down to the larger mills along the coast. Because of this “golden age” of commerce, areas such as the City of Jackson and other towns along the lower Pearl River experienced enormous economic growth until the Civil War. After the war, much of the river traffic subsided, and many of the towns depopulated. However, the mid-1900s saw a rebirth of the timber industry with newer innovations in transportation, relying less on the river system.

Periodic flooding has occurred throughout the region, but only the recent flooding (1979, 1980, 1983) along the Pearl River has caused significant damage. From April 11 to 13, 1979, almost 20 inches of rain fell in the Upper Pearl River Basin, forcing thousand of residents from their homes. The Pearl River crested in Jackson on April 17 at 43 feet, almost 25 feet above flood stage. Called the “Great Easter Flood of 1979”, it is the second worst recorded flood in the state’s history and caused $257 million in damage within the Pearl River Basin.

The City of Jackson sustained major damage during the flood of 1979. It is recorded as the second worst flood in the state's history.

In recent history, the majority of flow in the lower end of the Pearl River has been diverted to Louisiana due to channel alterations. These alterations 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 and Louisiana and local entities, which called for construction of a weir and closures to restore flows into the original channel. The project was completed in 1998, but is still being monitored by the U.S. Army Corps of Engineers.



Construction of control structures in 1998 helped to route waters of the Lower Pearl River back into the original channel.

Control structures, like the one at Icebox Bayou, restore river flows to residents of Walkiah Bluff.

What Are The Water Resources In The Basin?

Surface Water. The Pearl River basin contains 5 major sub-basins (Figure 4), which represent drainage areas for major rivers (delineation by sub-basins is used to provide useful boundaries for planning, assessment, and management activities).

Streams in much of the Upper, Upper Middle and Lower Middle Pearl River sub-basins generally 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. Within this section is the Ross Barnett Reservoir, an impoundment of some 33,000 acres, located just north of Jackson and stretching about 43 miles in length. Much of the land in this area consists of gently rolling to hilly terrain. Principal tributaries in the upper three sub-basins include Yockanookany River, Lobutcha Creek, Tuscalometa Creek, Pelahatchie Creek, Silver Creek, Fair River, Holiday Creek, White Sands Creek and the Strong River.

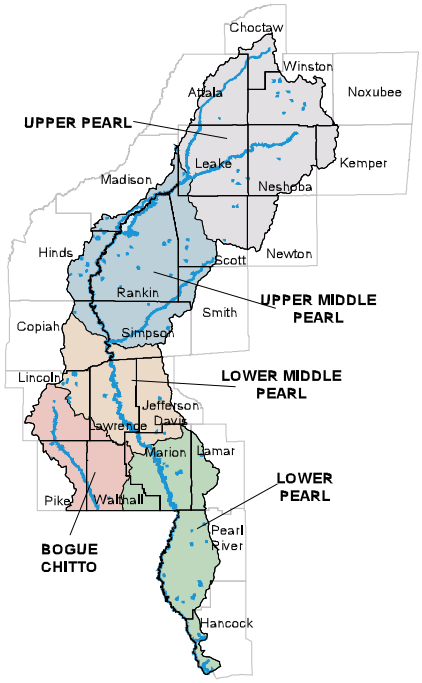


Figure 4. Sub-basins of the Pearl River Basin **(MDEQ)**

Pearl River Basin Statistics

Area: ~ 8760 square miles

Number of Counties: 24

Number of Sub-basins: 5

2000 Census Population (24 basin counties): ~ 956,574

Major Land Cover: Forestry

PEARL RIVER BASIN DESCRIPTION

Streams in most of the Bogue Chitto and the Lower Pearl sub-basins usually have a fast deep base flow and fair to good water quality. Near the Mississippi Gulf Coast, the Pearl River becomes estuarine where it is bounded by salt marsh and is tidally influenced. The land in the lower part of the basin is generally much flatter than the land in the upper region. Major streams in Bogue Chitto and Lower Pearl sub-basins include the Bogue Chitto River, Hobolochitto Creek, Pushepatapa Creek, Magees Creek and Upper Little Creek.

Pearl River Basin Sub-basins		
Sub-basin	Hydrologic Unit	Area (mi^2)
Upper Pearl	03180001	2460
Upper Middle Pearl (Above Strong River)	03180002	1980
Lower Middle Pearl	03180003	1224
Lower Pearl	03180004	1278
Bogue Chitto	03180005	840

According to the *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters*, the majority of the waters in the Pearl River Basin are classified as Fish and Wildlife streams. Waters in this classification are intended for fishing, the propagation of fish, aquatic life and wildlife and are also intended for secondary contact recreation (e.g. incidental contact with the water, including wading and occasional swimming). In addition to the Fish and Wildlife Classification, two lakes in the basin (Lake Dixie Springs and Lake Columbia) along with portions of the Pearl, Strong, and Bogue Chitto Rivers and the Ross Barnett Reservoir, are classified for Recreation. Waters in this classification are intended for such water contact activities as swimming and water skiing. Portions of the Pearl River and the Ross Barnett Reservoir are also classified as Public Water Supplies and are intended for use as a source of raw water supply for drinking and food processing purposes.

Ground Water Aquifers. Included in this rather large basin are outcrops of at least thirteen geologic formations ranging in age from Lower Eocene to Holocene. The recharge areas for the ten or more distinct aquifers included in the basin are characterized by unconfined aquifers that furnish base flow to surface waterbodies in the basin. The predominance of sandy strata at or near land surface in these recharge areas denotes the relative vulnerability of these shallow aquifers to contamination from surface or above ground activities. With the exception of the City of Jackson, most of the public water supply in the basin is obtain from deep confined aquifers.

Ground Water Storage Tank in Copiah County.

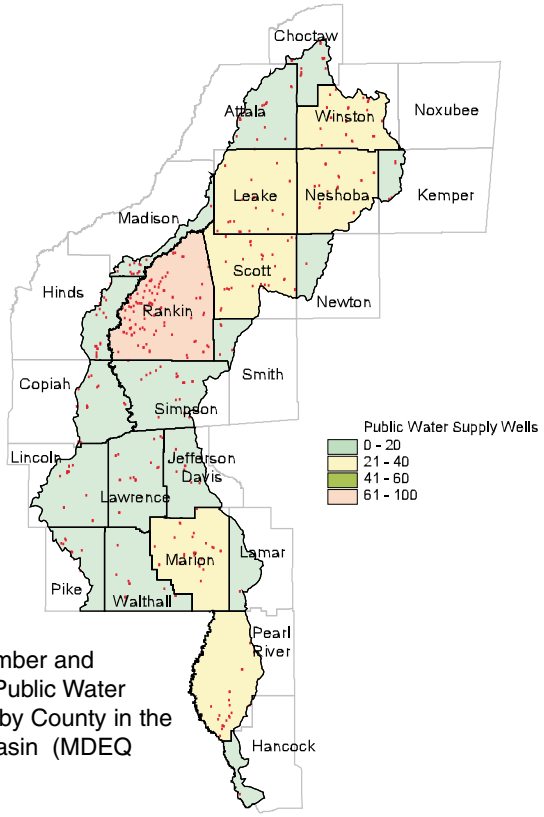


Figure 5. Number and Locations of Public Water Supply Wells by County in the Pearl River Basin (MDEQ 1999)

Both groundwater and surface water sources provides drinking water to the City of Jackson.

The Importance Of Ground Water

As in most of Mississippi, ground water is predominantly used throughout the Pearl River Basin for a variety of purposes. The region includes the most populous area of the state, the Jackson metropolitan area, as well as some sparsely populated rural areas. Noteworthy are some concentrated industrialized areas, such as Jackson, which contribute significantly to the estimated 75 million gallons of ground water pumped each day for beneficial use. Potable water supply typically is obtained from one of the 604 large capacity public water system wells operating within the basin (Figure 5) or from private domestic wells that are being used to a lesser extent in the more rural areas.

Due to current and projected growth in the Jackson metropolitan area, water management is a priority issue that is currently generating much discussion and planning. Local officials are focusing on ways to provide the most effective beneficial use of the available ground water and surface water resources in the Hinds, Madison, and Rankin County area.

The Importance Of Surface Water

The City of Jackson operates the largest public surface water supply system in the state (and the only one in the basin). A daily average of 32 million gallons of surface water or 90% of the city's water needs is diverted from the Pearl River and the Ross Barnett Reservoir. Ground water is pumped from deep aquifers to supplement the surface water supply in some parts of the city. Because the area surrounding Jackson remains dependent upon ground water, increased pumping from the underlying aquifers may eventually lead to additional utilization of available surface water resources. Discussions are currently underway in Madison and Rankin counties to develop a treated surface water supply from the Ross Barnett Reservoir to augment ground water supplies.

Ross Barnett Reservoir serves as an ever-increasing source of drinking water for the City of Jackson.

The Importance Of Wetlands

Wetlands play an important role in maintaining and improving the water quality of Mississippi's rivers and streams. An important aspect of the Pearl River Basin is the role it plays in maintaining the health and diversity of the Mississippi Sound. The Mississippi Sound is a brackish waterbody that is largely a product of the rivers that feed it. The Pearl River Basin, along with the Pascagoula River Basin, supplies a large portion of the fresh water entering the Mississippi Sound. In so doing, the basin replenishes nutrients and sediments that play a critical role in maintaining the productivity of the coastal waters. The sediment the freshwater carries maintains an extensive salt marsh habitat that in turn regulates the discharge of nutrients to coastal waters. For instance, runoff from agricultural land may put excess nitrogen and phosphorus (the components of fertilizers) into rivers and streams. Wetlands can absorb these nutrients as well as return some of the nitrogen back to the atmosphere. Marshes are effective filters, removing sediment and non-point source and point source pollutants from the water and, at the same time, are some of the most productive habitats in the world. Wetlands also recharge aquifers, reduce flooding and help to control erosion.

In addition to their ability to enhance water quality, wetlands are among Mississippi's most productive habitats, providing diverse habitats for a variety of mammals, birds, reptiles, amphibians and fish. Nearly one-third of the nation's endangered and threatened species live in or are dependent upon wetland habitats. In addition, millions of waterfowl use them for breeding and wintering grounds every year.

Pearl River Coastal Wetland in Hancock County.

Because the marshes are important for sustaining the coastal ecosystem, changes in marsh area, plant species, and bio-geological habitats can alter the waterbodies that they help buffer. Evolution of coastal wetland habitats through historical and pre-historical times has largely shaped the Mississippi coastal environment into what we see today. In addition to the prolific productivity and filtering capabilities, the environmental landscape created by wetlands is also beneficial. Protective bays and shallows are important habitats for seagrass, oysters, fish and shellfish. Similar to the components carried by the rivers, these landforms have evolved through time. Coastal erosion, river meandering or capture, and changes in river transport have markedly effected the geometry and geography of Mississippi's marsh habitats.

Protection of wetlands is important to oyster, fish and other shellfish harvesting areas near Pearlington. In Mississippi, coastal wetlands support $50 million per year in commercial and recreational fishery.

The total coastal marsh (marsh below the 15 ft contour) within Mississippi's Pearl River Basin is approximately 9,000 acres, making up roughly 40% of the total marsh habitat in Hancock County. From the 1950's to the 1990's, coastal marsh loss caused by development and coastal erosion totaled about 0.1% per year in the Pearl River Basin. By comparison, the Coastal Streams Basin in Hancock County lost about 0.6% per year, which is about 70 acres per year.

Because of their benefits and important functions, the protection of freshwater wetlands in coastal Mississippi is mandatory. Authorization is required for any activities that will result in the discharge of dredged or fill material into waters of the state, including wetlands. The nearest US Army Corps of Engineers (USACOE) district office can help identify whether wetlands are on your property and advise you whether a proposed activity will require a permit. The Natural Resources Conservation Service (NRCS) can supply the same information for planned agricultural activities.

Under a joint agreement with USACOE and MDEQ, Mississippi Department of Marine Resources (MDMR) is the one-stop permitting office in the Mississippi coastal counties. An application for wetland activity can be filed with MDMR for the most expedient processing.

Where People Live In The Basin

The population for the counties within the Pearl River Basin was estimated in 2000 at 956,574. There has been an 11% increase since 1990. From an entire basin standpoint, the greatest concentration of people is found in the Upper Middle Pearl sub-basin, which includes the Jackson metropolitan area. The average population density of this sub-basin is 154 people per square mile.

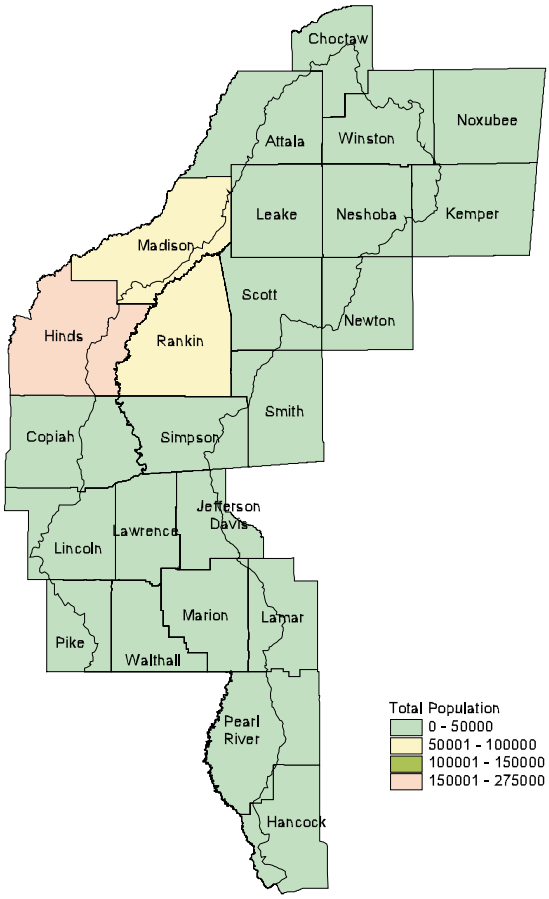


Figure 6. Population by County (US Census Bureau)

Pearl River Basin Area Population				
			Change 1990-2000	
County	1990	2000	People	%
Attala	18,481	19,661	1,180	6
Choctaw	9,071	9,758	687	7
Copiah	27,592	28,757	1,165	4
Hancock	31,760	42,967	11,207	26
Hinds	254,441	250,800	-3,641	-1
Jefferson Davis	14,051	13,962	-89	-1
Kemper	10,356	10,453	97	1
Lamar	30,424	39,070	8,646	22
Lawrence	12,458	13,253	795	6
Leake	18,436	20,940	2,504	12
Lincoln	30,278	33,166	2,888	9
Madison	53,794	74,674	20,880	28
Marion	25,544	25,595	51	0
Neshoba	24,800	28,684	3,884	14
Newton	20,291	21,838	1,547	7
Noxubee	12,604	12,548	-56	0
Pearl River	38,718	48,621	9,903	20
Pike	36,882	38,940	2,058	5
Rankin	87,161	115,327	28,166	24
Scott	24,137	28,423	4,286	15
Simpson	23,953	27,639	3,686	13
Smith	14,798	16,182	1,384	9
Walthall	14,352	15,156	804	5
Winston	19,433	20,160	727	4
MS	2,573,16	2,844,658	271,442	10
PR Basin	853,815	956,574	102,759	11

County Population (US Census)

Where People Recreate in The Basin

Recreation in the Pearl River Basin is as diverse as the people and land of the river basin. Recreation encompasses both public and private development including: city and community parks, state parks, parks of the Pearl River Basin Development District and the Pearl River Valley Water Supply District. Other recreation areas include preserved wildlife areas, forests, and water based recreation which includes the Pearl River, its tributaries, and lakes within the basin. Private development includes hunting camps, campgrounds and residential and commercial development in which many utilize the lakes and rivers as recreational and scenic amenities. The use of the basin resources for recreation increases with the population and changes to meet their recreational needs.

Columbia Water park is one of many facilities constructed along the Pearl River to enhance the enjoyment of water resources.

Public Parks	
Atwood Water Park	Leake County Water Park
Bogue Chitto Water Park	LeFleurs Bluff State Park
Buccaneer State Park	Legion State Park
Burnside Lake Water Park	Low Head Dam Campground
Coal Bluff Park and Campground	McLeod Water Park
Columbia Water Park	Merit Water Park
Crossroads Water Park	Old Trace Park
D'Lo Water Park	Pelahatchie Shore Park
Goshen Springs Campground	Percy Quinn State Park
Holmes Water Park	Roosevelt State Park
Lake Lincoln State Park	Timberlake Campground
Lake Pelahatchie Campground	Walkiah Bluff Water Park
Lakeshore Recreation Area	Wanilla Water Park
Wildlife Management Areas (WMA) and Forests	
Nanih Waiya WMA	
Yockanookany WMA	
Bienville National Forest	
Hillsboro Bienville WMA	
Caney Creek WMA	
Marion County WMA	
Wolf River WMA	
Old River WMA	
Bogue Chitto WMA	

Residents of Mississippi and Louisiana enjoy canoeing, tubing, camping or other recreational activities on the Bogue Chitto River.

The Pearl River and its tributaries are the backbone of many public recreational developments that provide access to the rivers and lakes. The developments offer recreational activities such as camping, hiking, fishing, swimming, boating, skiing and picnicking.

How Lands Are Used In The Basin

Land use patterns in portions of the Pearl River Basin are slowly changing. Traditional row cropland in the Upper Pearl River basin has been forested and the effects of increased urbanization are becoming more evident throughout the basin. The transition to urban landscape is especially evident around the Jackson Metropolitan area.

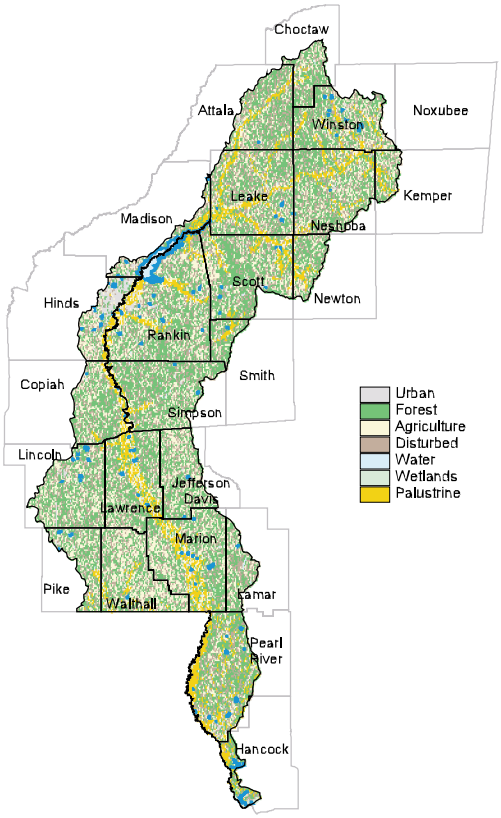


Figure 7. Major Land Cover in the Pearl River Basin (MARIS)

Despite their increasing impact on the basin, Urban areas make up only 1% of the land cover (Figure 8). The basin's land cover is dominated by natural *Forest* (43%), which includes evergreen, deciduous and mixed-forested areas. *Agricultural* area comprises the next largest portion (27%) and includes croplands and pastures. *Disturbed areas* that include strip mines, gravel pits, sandy areas, barren, and transitional areas make up 18% of the basin. Marshy or swampy areas, called *Palustrine*, make up 10% of the land cover. Water sources, which include streams, lakes, reservoir and estuaries, and *Wetland*, which includes forested and nonforested wetlands comprise the remaining 1% of the basin.

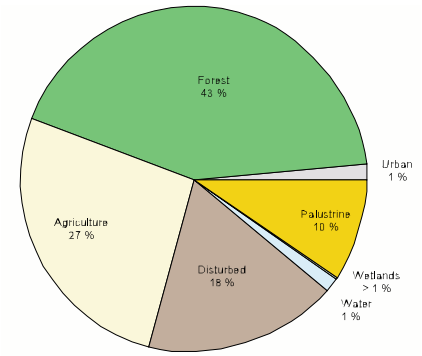


Figure 8. Distribution of Land Cover in the Pearl River Basin (MARIS)

How Land Uses Impact Water Quality

Many anthropogenic or human influenced activities that could potentially affect water quality routinely occur in the basin. These activities include forestry, agriculture, poultry and livestock operations, urbanization, mining operations, direct discharge of pollutants from industrial or wastewater facilities, solid waste management and oil and gas exploration.

Forestry. The primary land use in the Pearl River Basin is forestry, with about 43 percent of the basin's 8,760 square miles covered in forests. Our forests are essential to clean water. Forested land absorbs rain, refills underground aquifers, cools and cleanses water, slows storm runoff, reduces flooding, sustains watershed stability and resilience, and provides critical habitat for fish and wildlife. Forestry provides a solution to water quality issues. Non-point source (NPS) pollution can be reduced by improving forest cover on depleted forest lands, rapidly reforesting abandoned lands, and reestablishing and maintaining riparian forests.

Crop of small pines in Leake County field.

Though forest management is vital to the protection of our water resources, forestry activities can contribute to impairment of rivers and streams. The principal NPS pollution concern regarding forestry is sedimentation to water bodies from forest roads and skid trails, and where other forest activities result in exposure of mineral soil. Timber harvesting activities are typically infrequent and carried out over short periods of time resulting in only short-term impacts when compared with other NPS categories. Best Management Practices (BMPs) have been designed and are being implemented statewide to address NPS pollution from forestry activities. When proper management practices are not used, potential water quality impacts from erosion and sediment runoff can be significant.

Recently harvested timber land in Scott County. When proper management practices are not used, potential water quality impacts from erosion and sediment runoff can be significant.

Agriculture. Less than 30 percent of the land area is farmed, the primary crops being forages, corn, soybeans and cotton. In 1998, an estimated 20,500 acres of corn, 18,200 acres acre of cotton, and 12,500 acres of soybeans were produced in the counties that are a part of the basin. Where proper management practices are not used, sediment, nutrients (e.g., nitrogen and phosphorus from fertilizers), and pesticides can be transported from cropland into surface waters. Collectively, the predominant non-agricultural nature of the basin and best management practices for farmers have helped to mitigate local water quality concerns and support the generally fair to good water quality prevalent in the basin.

Stand of recently planted corn in Pearl River County

Poultry. A significant percentage of the state's poultry production is located in or in areas adjacent to the basin. Scott County leads the state in poultry production (105 million broilers produced in 1998) and is the fourth largest producer in the nation.

Several efforts are under way to reduce the impact of poultry operations on water resources. For example, agricultural agencies work with producers to develop nutrient management plans by which to utilize poultry litter more efficiently and by environmentally approved methods. According to estimates by these agencies, more than 85 percent of the farmers and landowners in major poultry producing areas in or adjacent to the basin have developed waste utilization plans for poultry operations.

Scott County leads the state in poultry production.

In addition, new requirements for buffer zones and other requirements for producers contained in the Natural Resources Conservation Service Code 590 further reduce the potential impact of these operations on water resources. Many producers have received direct training on these requirements through programs offered by the Extension Service and other agencies.

Further reducing these concerns is the presence of at least one private enterprise located in the basin, which markets locally produced litter to areas outside of the basin. More than 800 dead-bird composters are installed in and around the basin to reduce the environmental impact of poultry mortality. These composters have replaced burial pits, which are no longer permitted, as the primary method of poultry mortality disposal.

Livestock Operation. According to the Mississippi Agricultural Statistics Service (1998), an estimated 230,500 cattle and calves, 106,000 beef cattle and 14,700 dairy cows are produced in and around the basin. Beef cattle are produced in all counties included in the basin, and production is of a non-concentrated nature (Figure 9).

Cows pasture in Leake County.

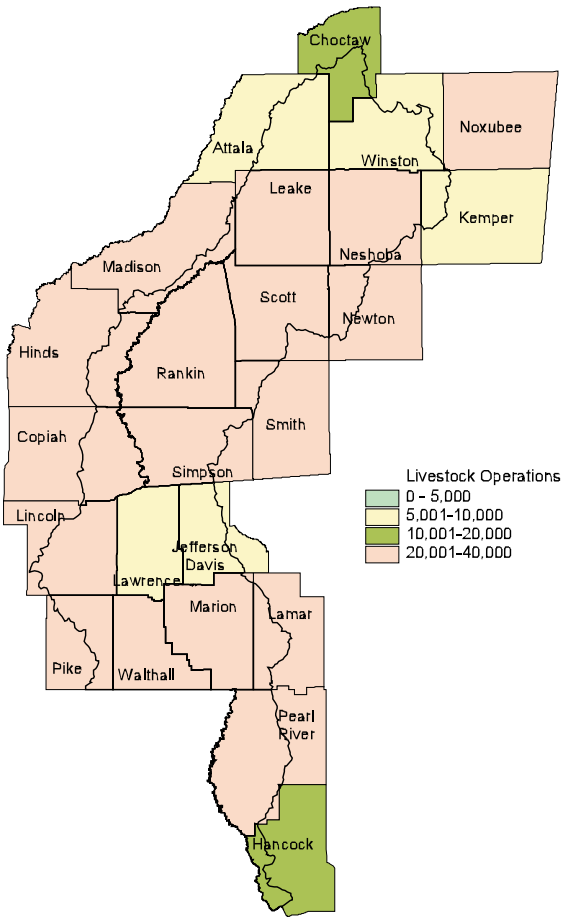


Figure 9. Numbers of Livestock Operations by County (USDA 1997)

Urban Non-point Source Runoff. Urban areas contribute nonpoint source pollution (pollution that comes mainly from stormwater runoff that picks up pollutants over an area and washes them into nearby streams and lakes) in three main ways. First, stormwater runoff carries sediment from construction sites. This sediment is then washed into storm drains and drainage ways where it is carried to nearby streams. Increased amounts of sediment cause various problems such as blocked storm drains, silted up streams and lakes, and degraded fish habitat. The Pearl River Valley Water Supply District has had to dredge Pelahatchie Bay more in the 1990s than at any other time since its inception.

Failing silt fence and eroding bank causes heavy siltation in stream near construction site.

The second contribution of nonpoint source pollution from urban areas is the pollutants from established areas that are picked up by stormwater and washed into nearby streams. These pollutants include pesticides and fertilizers from lawns, oil and greases and heavy metals from roads and parking lots and litter.

In the past the runoff soaked into the ground or was absorbed by plants. Now, with more impervious surface, runoff can flow straight into the nearest stream or river.

The third contribution, and perhaps the most damaging to aquatic habitat, is the increasing amount of stormwater that flows into streams from growing urban areas. As an urban area grows, more and more of the land surface in a watershed is made impervious (parking lots, roads, sidewalks, rooftops, etc.). Where in the past the runoff soaked into the ground or was absorbed by plants, now the runoff flows straight to the nearest stream. In other words, more water flows more quickly into streams causing increased flooding and habitat loss as the stream channel erodes in order to handle the increased flow.

Mining Operations. The mining of sand and gravel can cause major local changes to the earth's suface and has the potential to greatly affect ground and surface water quality and flow patterns. These effects become a major concern when the mining activity is taking place immediately adjacent to a stream or in the streambed. Surface mining disturbs original topography, vegetation, and often the flow patterns of nearby streams and creeks. Potential water quality impacts include increases in sediment and metals, as well as changes in pH. There are at least 643 mining operations in the Pearl River Basin. This number does not include those mines, both active or abandoned before April 1978, when the Mississippi Mining and Reclamation Act (1977) went into effect. Materials being mined include dirt, sand, gravel, brick clay, and topping material.

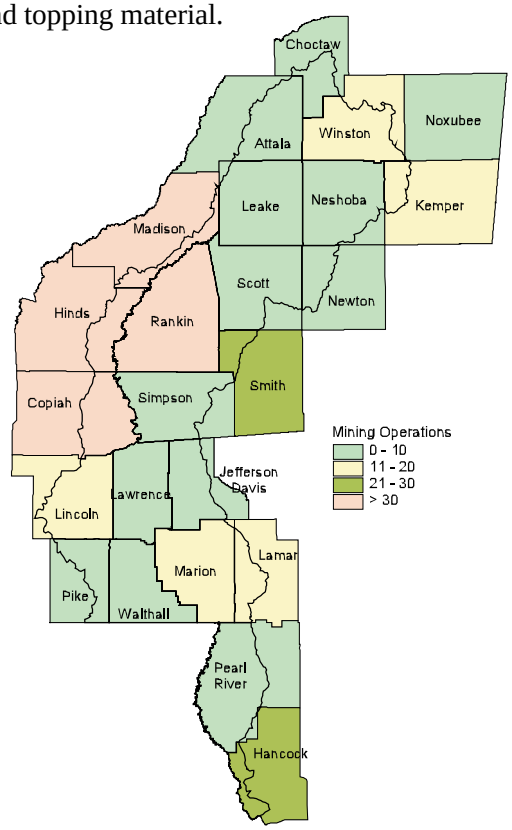
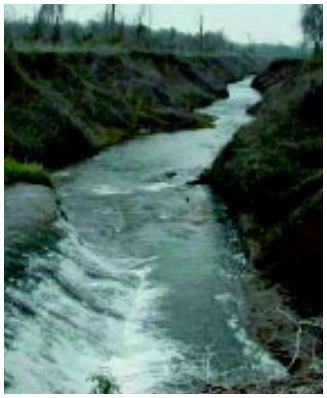


Figure 10. Number of Mining Operations by County (MDEQ1999)

The Mississippi Mining and Reclamation act requires that all mining operations of more than four (4) acres in size or closer than 1,320 feet to another operation, regardless of size, be permitted by the state (Figure 10). The operator is required to file a schedule and plan for reclaiming the site when the mining is completed. A performance bond is required of the operator to insure that the work will be done, should the operator be unable or unwilling to reclaim the site. Such operations are inspected on an annual basis, or more often if needed, to insure that erosion, sediment or pollution is confined to only the permitted area.

Potential water quality impacts from surface mining operations include increases in sediment and metals, as well as changes in pH.



Upstream (left) and down stream (right) of headcutting activity. As the down stream photo indicates, this activity can leave the stream areas much wider and shallower.

Operations that affect less than four (4) acres and are greater than 1,320 feet from another operation are not required to be permitted or reclaimed, nor are any operations, regardless of size, in place prior to April 15, 1978. Operators or landowners, however, are held responsible for any effects outside of these otherwise "exempt" areas.

Mining in streambeds is a major concern of the Mining and Reclamation Division of MDEQ's Office of Geology. If certain guidelines are not followed, such mining may lead to what is called "headward erosion or headcutting" of the streambed. The water in the upstream beds, along with the adjacent banks, has a tendency to flow into the excavation, thus making the stream much wider and shallower. This activity destroys the natural banks. Moreover, such erosion has a tendency to progress upstream and change the stream characteristic miles from the initial excavation. No laws exist that forbid mining in streambeds. The Mining and Reclamation Division examines each such operation on a case-by-case basis for its potential to affect the stream out of the designated permit area or four-acre exempted site. The Division can either refuse to permit or call for a "Cease and Desist" order if it deems that a given operation may damage or is damaging a stream system.

NPDES Permitted Dischargers. A National Pollutant Discharge Elimination System (NPDES) permit is issued to any facility discharging treated wastewater to state waters. These permits specify the types, quantity, and concentrations of pollutants that may be discharged. Facilities receiving NPDES permits include industrial dischargers, municipal sewage dischargers, and commercial/private dischargers rearrange order. Municipal and industrial point source discharges into the Pearl River are more prevalent from Jackson south to the Mississippi Sound.

Facilities receiving NPDES permits include industrial dischargers, municipal sewage dischargers, and commercial/private dischargers.

Industrial Dischargers. Approximately 122 industrial point source dischargers and 5 industrial park dischargers are permitted in the basin (Figure 11). Several types of industries are represented by these dischargers, including timber products; energy production; and chemical, agricultural, metal manufacturing and other miscellaneous industries.

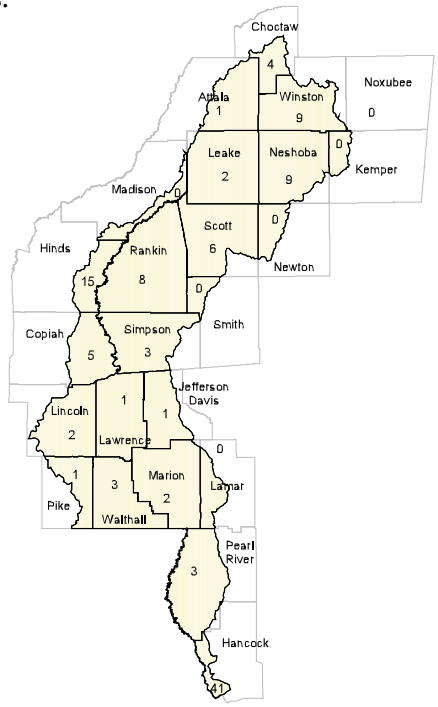


Figure 11. Number of Permitted Industrial Dischargers by County (MDEQ 1999)

Municipal Dischargers. Where people live and work, they must have a way to collect and treat their sewage. The Pearl River Basin includes 232 communities. Forty-six of these are incorporated communities. One hundred eighty-six are unincorporated communities. Of the 46 incorporated communities, 41 have centralized wastewater collection and treatment facilities, including eight major dischargers (>1.0 MGD). Five incorporated communities remain unsewered. One hundred eighty-eight organized communities do not have centralized collection and treatment facilities. Of these 188 communities without centralized collection and treatment facilities, 52 clearly need such facilities, and 16 do not. The Basin Team has no data on the other 120 communities in the basin.

Of the 44 communities with central collection and treatment facilities, 23 need treatment plant upgrades, 32 need to remove excessive infiltration/inflow from their systems and 23 need to expand their collection systems.

Municipal Dischargers	
Total Communities	232
Incorporated	46
Centralized Wastewater Treatment Facility (CWTF)	41
Without CWTF	5
Major Dischargers >1.0 million\gal\day	8
Unincorporated	186
CWTF	44
Need Upgrade	23
Needs Expansion	23
Excessive Infiltration	32
Without CWTF	188
Need CWTF	52
Do Not Need CWTF	16

Note - No data available on 120 communities

Communities without central sewage collection and treatment are assumed to use individual residential onsite wastewater treatment systems. Such systems include septic tanks and small package treatment systems with or without on-site disposal. Individual treatment systems are also in use in rural areas in the basin. When such systems are not used, not maintained or are used in unsuitable soils, contamination of ground water or surface water is probable, and public health concerns can exist.

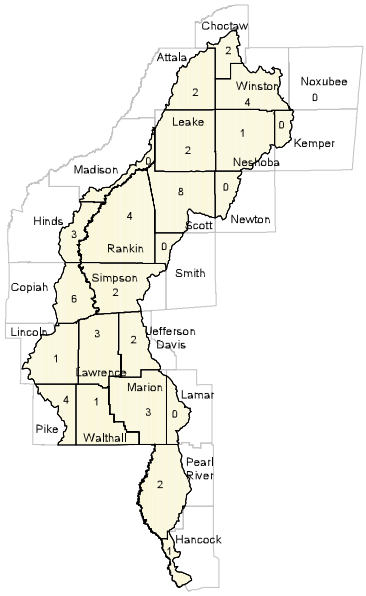


Figure 12. Number of Permitted Municipal Dischargers by County (MDEQ 1999)

Commercial/Private Dischargers. Numerous other facilities exist in the basin that discharge wastewater but are not classified as industrial or municipal dischargers. These commercial/private dischargers include schools, trailer parks, and residential subdivisions. Typically, these facilities do not individually discharge the large volumes of treated wastewater like industrial and municipal facilities.

Hazardous Waste Operations. Numerous uncontrolled hazardous substance sites throughout the Pearl River Basin pose potential localized threats to human health and the environment through releases to the soil, sediment, or groundwater. An uncontrolled site is a facility or location where hazardous or toxic substances have been released into the environment and where no federal environmental program exists to handle the problem. These sites have been contaminated by leaking chemical tanks (both above and below ground), abandoned landfills, and various chemical spills. The majority of the sites are found in those areas of the state that are highly industrialized. MDEQ has regulatory authority over all 230 sites in the basin. Seventeen are being actively investigated by MDEQ or have remediation under way, and 19 have been remediated or determined to require no further action. Figure 13 shows the number of hazardous waste sites, requiring no further action, the number of active sites (those on which MDEQ is currently working), and the total number of sites within each county.

Additionally, there are 637 facilities within the basin that have notified MDEQ that they generate quantities of hazardous waste that require proper disposal. The hazardous waste generators are classified as either: 1) Conditionally Exempt Small Quantity Generators, who generate less than 220 pounds of hazardous waste in any given month during the year, 2) Small Quantity Generators, who generate between 220 pounds and 2200 pounds in any given month during the year, and 3) Large Quantity Generators, who generate greater than 2200 pounds in any given month during the year. Figure 14 shows the number of each of these generators in each county as CESQG\SQG\LQG.

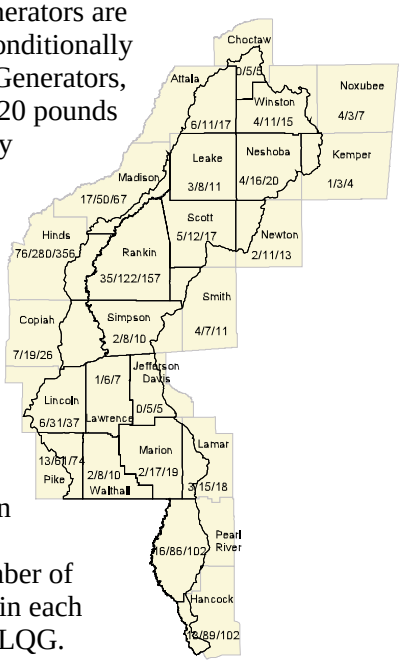


Figure 13. Number of Hazardous Waste Sites Requiring No Further Action/Active Sites/Total Number of Sites by County

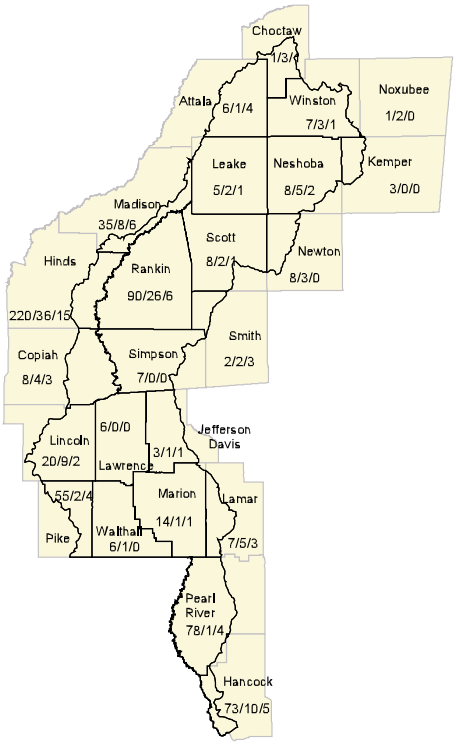


Figure 14. Number of Conditionally-exempt Small Quantity Generators/Small Quantity Generators/Large Quantity Generators (MDEQ)

Solid Waste Management. Solid wastes are garbage, refuse, and commercial and industrial nonhazardous wastes. In the past, state and federal guidelines on the disposal of solid wastes were not as stringent as today. As a result, older dumps and other sites where solid wastes were disposed may threaten ground and surface water resources in the basin. In recent years, however, new guidelines on siting and operating landfills have greatly reduced the risk of contamination from solid wastes.

New guidelines on siting, construction and operation have greatly reduced the risk of water contamination from solid wastes landfills. New liner being constructed in Winston County.

Numerous solid waste management facilities exist throughout the Pearl River Basin. These facilities include municipal landfills (4), rubbish sites (17), land application facilities (7), transfer stations (9), waste tire collection sites (28), industrial/special waste landfills (7), industrial/special waste rubbish sites (9), waste tire processing facilities (2), and composting facilities (3). In addition to the potential problems posed by older landfills, illegal random dumping of solid wastes also threatens to pollute ground and surface waters.

Daily cover and compaction being applied to City Of Louisville's landfill.

Oil and Gas Production. Many people are surprised to hear that Mississippi is a significant producer of oil and gas. It ranks 12th in oil production per year among the producing states and 16th in natural gas production per year. The Mississippi Oil and Gas Board's 1998 annual report shows that the state produced 21,304,763 barrels of oil and a little over 127 billion cubic feet of natural gas.

The Pearl River Basin area is a contributor of oil and gas to our state's national status. Within the Pearl River Basin, there are 14 counties or portions of counties that produce oil and/or natural gas. The 1998 production totals for these 14 counties were 4,285,168 barrels of oil or 20% of the state oil production. These same counties produced just over 127 billion cubic feet of natural gas, which amounts to 76% of the state's gas production. These numbers translate to many oil and gas wells within the basin as well as the related infrastructure, which includes underground pipelines.

Drilling operations also generated 37,088,822 barrels of salt water in 1998, which had to be disposed or re-injecting at a nearby well location. Contaminated drilling mud must also be disposed of in an environmentally sound manner.

The exploration, development, and production of oil and gas resources make a significant economic contribution to life in the Pearl River Basin. Many individuals receive royalty income. Schools and county governments receive royalty and/or tax revenues from the production. Many jobs relate directly and indirectly to this industry. When these resources are developed in an environmentally sound manner, they can be a very positive component in the Pearl River Basin.

The Mississippi Oil and Gas Board is the state agency charged with the majority of governmental oversight and regulatory authority for drilling and producing. Other agencies, such as the Department of Environmental Quality, play a role in various aspects of the industry activities.

Oil well platform in Pike County.

What Are Water Resource Assessments and How Are They Used?

Water resource assessments determine the quality of waterbodies within a basin. Are fish caught from a waterbody safe to eat? Is the water safe for swimming or to use to irrigate our food crops? Does the waterbody support healthy and diverse aquatic life?

The information collected in such an assessment is used to support sound decision-making by identifying good quality waterbodies and tracking their condition over time, to provide clues to the sources and levels of pollutants for waterbodies that are impaired or threatened, and to help managers understand the impacts of human activities within a watershed and the effectiveness of installed management practices.

Designated Uses. All waterbodies in the state are classified by MDEQ according to a primary designated use. Generally, waters that are used as drinking water intakes and for recreational purposes are held to higher standards that those which only support aquatic life. The purpose for the designated use is to provide a basis for establishing water quality standards for all of the waterbodies in the state.

Designated Uses of Mississippi Waters
1. Drinking Water Supply and Food Processing
2. Shellfish Harvesting
3. Contact Recreation
4. Secondary Contact Recreation
5. Fishing and Fish Consumption
6. Aquatic Life Support

Water Quality Criteria. Water quality criteria are designed to protect the designated uses of waterbodies in the state. They are comprised of both numeric and narrative criteria. The numeric criteria consist of sets of parameter-specific requirements related to potentially harmful chemical constituents that, if exceeded, could potentially harm aquatic life and/or human health. As an example, MDEQ has numeric criteria for dissolved oxygen, which is a common indicator of aquatic life support.

Monitoring Equipment Shed Used to Assess River Conditions.

Narrative criteria address more general conditions that may be detrimental to water quality but for which no actual numeric standard has been adopted. For assessment of the state's narrative water quality standards, screening or target levels for parameters, such as nutrients or turbidity, for which the state has no adopted numeric criteria, are used as thresholds for potential water quality degradation and are compared against measured water quality data.

What Are The Main Assessment Reports In The State?

A primary objective of the Mississippi Basin Management Approach is to coordinate the assessments of water quality for the basin's streams, lakes, and estuaries. Two of the main analysis efforts, the 305(b) Water Quality Assessment Report and the 303(d) List of Impaired Waterbodies, are prepared to meet requirements contained in the Clean Water Act.

Section 305(b) Report. Mississippi's biennial Water Quality Assessment Report is prepared by MDEQ pursuant to Section 305(b) of the Federal Clean Water Act. The purpose of the 305(b) Report is to describe for EPA, Congress, and the public the status of the quality of the state's waters. Along with water quality information, the report lists the causes and sources of pollution for those waters determined to be impaired, identifies and discusses water pollution control programs for point and nonpoint sources of pollution, documents environmental improvements for the previous two years, notes special water quality concerns and problems, and describes the state's water quality monitoring program.

The major focus of the report is to determine if the designated uses of the state's surface waterbodies are supported. Each designated use assessed for a waterbody is determined to be Fully Supported, Fully Supported But Threatened, Partially Supported, or Not Supported in accordance with its water quality standards. These determinations are based on the percentage of samples that exceed established water quality standards.

Determination of Support	
Support	% of Samples Exceeding Water Quality Standards
Fully Supported	≤10%
Partially Supported	11-25%
Not Supported	>25%

The Section 305(b) Report also includes recommendations for needed studies, programs, and funding to adequately manage Mississippi's water quality resources.

Section 303(d) List. Section 303(d) of the Clean Water Act requires the State to identify and list waterbody segments where water quality standards are not met and the designated use is impaired. Additionally, the State is required to establish a priority ranking system of the impaired waters (taking into account the severity of the pollution and the importance of the water's impaired use) and to develop total maximum daily loads for those pollutants impairing any use of the waterbody.

Because the list is biennial, the number of waterbodies listed changes, depending upon monitoring results. Water quality monitoring can result in a stream being listed, if impaired, or de-listed, if found not to be impaired.

TMDLs. Total maximum daily loads (TMDLs) are defined by EPA as written plans and analyses established to ensure that the waterbody will attain and maintain water quality standards. It contains calculations of the sum of the allowable loads, of a single pollutant, from all contributing point and nonpoint sources. The calculation must include a margin of safety and must account for seasonable variation in water quality, including consideration of reasonably foreseeable increases in pollutant loads. The TMDL should establish pollutant level reductions that will cause the impaired use to be fully supported.

What are TMDLs?

TMDLs = WLA + LA + MOS

- Waste Load Allocations (WLA) (Point Sources)
- Load Allocation (LA) (Nonpoint Sources)
- Margin of Safety
- Plan to restore polluted streams

Datasonde Used To Collect In-Stream Water Quality Data

What Are The Assessments Based Upon?

For water quality assessment purposes, all readily available water quality information is utilized in watershed assessments. The information is compiled and then categorized as one of two types of assessments, evaluated or monitored, based on the quality and quantity of the data available. These two types of assessments are necessary to provide a comprehensive assessment and understanding of water quality conditions and trends within an entire watershed.

Evaluated assessments focus on stream reaches where no current site specific monitoring data is available. These assessments take into consideration land use activities, surveys and questionnaires from other agencies, locations of potential pollution sources, volunteer monitoring data, limited monitoring data of lower confidence, monitoring data greater than five years old, and data that has been extrapolated from an adjacent monitored stream reach.

Monitored assessments focus on stream reaches where current site specific monitoring data is available. Current data is defined as data collected within five years of the assessment analysis. These assessments are based on one or more different types of monitoring data that have been grouped together by waterbody and then are analyzed collectively in order to determine water quality status or condition for the waterbody. Monitoring data can come in many different forms but primarily consists of one or more of the following data types: physical/chemical, biological, habitat, bacteriological, and/or toxicological.

MDEQ and other state, federal and local agencies have programs that routinely monitor the conditions of surface and ground waters to determine their quality and quantity relative to human health considerations, ecological conditions, and designated water uses. MDEQ also uses this data to assess the quality of the waterbody by comparing observed measurements to the State's water quality standards for the water's designated uses.

Common methods used to monitor water quality include fixed network routine ambient monitoring for long-term status and trends, as well as targeted basin monitoring to address specific data needs. Both of these monitoring methods are used to obtain water quality data on physical, chemical, bacteriological and biological indicators.

The concept of using biological indicators such as biodiversity to evaluate water quality is based upon the premise that healthy ecological systems should support diverse populations of many different types of organisms. Streams that are degraded due to poor water quality or habitat loss tend to have a population shift to more pollution-tolerant organisms and/or fewer species and, therefore, less biodiversity.

What Are The Findings Of These Assessments?

Observed Water Quality Condition. Basin water quality can be measured directly or indirectly. Monitoring of water quality, aquatic life, water quantity, and soils provides direct information on the water quality in a basin and the water's potential for affecting human health and aquatic life. MDEQ and other resource agencies monitor the condition of the surface and ground waters to determine their quality and quantity relative to human and ecological health. The following sections describe the condition of the Pearl River Basin's surface water, aquatic life, groundwater and soils based on recent monitoring.

Surface Water Quality. For the current Water Quality Assessment Report, MDEQ assessed approximately 42% of the total miles of streams and rivers in the Pearl River Basin. The status of water quality on the remaining 58% of the basin's rivers and streams is unknown. Of the amount studied, evaluated assessments made up approximately 93%, while monitored assessments made up the remaining 7%. However, most of the river miles (65%) in the basin are composed of intermittent streams and therefore are not readily assessable.

Of the Pearl River Basin's monitored stream and river miles, approximately 66% fully support all assessed uses; while about 34% are partially or not supported for one or more uses and are considered to be impaired. Of the evaluated assessments, almost all (99%) are listed as partially supporting of the aquatic life use. These evaluated waters, however, were not (and are not) known to be impaired. They are considered not fully supporting of their use due to anecdotal information (land-use activity interpretation) from Mississippi's 1989 Non-point Source Assessment document. Monitoring of all of these waters to verify water quality impacts is currently on going by MDEQ.

Monitoring of all basin waters, to verify water quality impacts, is currently on going by MDEQ and Resource Agencies.

MDEQ assessed approximately 92% of its estimated 38,000 acres of freshwater lakes in the Pearl River Basin. Of the assessed lake acres in the basin, 95% fully support all assessed uses. In this basin, 97% of the use support determinations were based on monitored assessments. The water quality status of the remaining 8% of the lake acres in the basin is unknown.

Mississippi's 1998 303(d) List of Impaired Waterbodies identifies all of the waterbodies within the state that are considered to be impaired. Sources of data for this list include monitored and evaluated assessments from various water quality programs. Within the Pearl River Basin, impairment has been established for 21 monitored causes in 13 waterbody segments. Twenty-one TMDLs are planned for those waterbodies for the identified causes of impairment. Thirteen of these 21 TMDLs within the Pearl River Basin have been completed.

Monitored Causes of Impairment for the Pearl River Basin Streams and Lakes*		
Cause	Number	%
Pathogens	6	29
Mercury	5	24
pH	4	19
Biological Impairment	4	19
PCBs	2	9
Total	21	100

*21 monitored causes for 13 waterbody segments. Each waterboy segment can have more than one cause of impairment.

Seventy-seven waterbody segments have been evaluated as being potentially impaired. These evaluated segments will be targeted for additional monitoring during the upcoming basin management cycle to verify actual water quality conditions.

Evaluated Causes of Impairment for the Pearl River Basin Streams and Lakes*		
Cause	Number	%
Siltation	67	23
Organic Enrichment	62	21
Nutrients	61	20
Pesticides	55	18
Pathogens	37	13
Others	14	5
Total	296	100

Ground Water Quality. Ground water contamination has not been a major problem throughout the Pearl River Basin. This is especially true in the Jackson metropolitan area and parts of Madison, Rankin, and Scott Counties, which are underlain by thick layers of Yazoo clay that effectively protect deeper aquifers.

Analytical results obtained from sampling 71 shallow water wells as part of MDEQ's Agricultural Chemical Ground Water Monitoring Program and the Mississippi State Department of Health's sampling the 604 public water system wells indicate that the ground water quality of the basin is quite good.

What Are The Main Pollutants Of Concern In The Basin?

Monitored Causes. In the Basin, the parameters that account for the monitored impairments listed in the 1998 303(d) List include pathogens, mercury, pH, biological impairment, and PCBs. These impairments affect waterbodies with designated uses of Contact Recreation, Secondary Contact Recreation, Fish Consumption, and Aquatic Life Support

Pathogens. Pathogens are bacteria that may cause illness in humans. Pathogens occur in human and animal wastes and pose a threat to humans primarily through skin contact or ingestion. Fecal coliform is a bacterium that is used in the monitoring process to indicate the potential for exposure to pathogens. The Mississippi water quality standard for fecal coliform specifies the maximum safe concentration of this bacterium.

The 1998 303(d) List identified six stream segments within the Pearl and Bogue Chitto Rivers that were considered to be impaired due to pathogens. Potential sources for this impairment are often attributed to wildlife, livestock production, and wastewater discharge.

Monitored Waterbodies Impaired by Pathogens in the Pearl River Basin		
Designated Use: Contact Recreation		
Waterbody	Support	Total Combined Segment Miles
Bogue Chitto River	Not	13
Pearl River	Partially	16
Pearl River	Not	37
Designated Use: Secondary Contact Recreation		
Waterbody	Support	Total Combined Segment Miles
Bogue Chitto River	Partially	7
Pearl River	Partially	18

Mercury. Human exposure to inorganic mercury in large amounts can cause a variety of health effects. The two organ systems most likely affected are the central nervous system and the kidneys. However, the most significant concerns regarding chronic exposure to low concentrations of methyl mercury in fish are for neurological effects on children and developing fetuses.

PEARL RIVER BASIN FISH TISSUE ADVISORIES June 2001			
STREAM REACH	**CHEMICAL**	**DATE ISSUED**	**ACTION**
Little Conehoma Creek and Yockanookany River in Attala and Leake Counties. From Hwy 35 near Kosciusko, downstream to Hwy 429 near Thomastown	PCB's	June 1987	Consumption Advisory All Species Commercial Fishing Ban
Bogue Chitto River, entire length in Mississippi.	Mercury	May 1995	Limit Consumption Advisory for largemouth bass and large catfish (>27 in.)*
Yockanookany River, entire length.	Mercury	May 1995	Same as above
Pearl River from Hwy 25 near Carthage, downstream to the Leake County Water Park.	Mercury	June 2001	Same as above
*The Mississippi State Health Department recommends that people limit the amount of bass and large catfish that they eat from these areas, because of high levels of mercury in the fish. Children under seven and women of childbearing age should eat no more than one meal of these fish every two months. Other adults should eat no more that one meal every two weeks of these fish.			

No point source dischargers of mercury have been identified in the basin. The majority of the scientific community believes that elemental mercury is widely distributed in the environment due to a combination of natural geologic conditions, old industrial sources, and atmospheric deposition from coal-fired power plants and incinerators. Many scientist also believe that water quality conditions in certain waterbodies favor the conversion of this elemental mercury, which is relatively inert, through a process known as methylation to the more toxic methyl mercury. Methyl mercury is much more bioavailable and therefore enters the food web more readily.

The 1998 303(d) List identified five different stream segments within the Bogue Chitto and Yockanookany Rivers that were considered to be impaired due to mercury in fish tissue.

pH. Healthy aquatic systems exist in a relatively neutral range of pH. The acceptable range specified by Mississippi's water quality standards is 6.5 to 9.0.

The 1998 303(d) List identified four stream segments within the Bogue Chitto and Pearl Rivers that were considered to be impaired due to low pH levels.

Monitored Waterbodies Impaired by pH in the Pearl River Basin		
Designated Use: Aquatic Life Support		
Waterbody	Support	Total Combined Segment Miles
Bogue Chitto River	Partially	7
Pearl River	Partially	46

Biological Impairment: For some waterbodies, biological data (i.e., aquatic insect community, and fish community) is the primary data available for water quality assessments. Because no numerical water quality standards exist for biological data, narrative standards are applied during assessment; e.g., "the waterbody must support a healthy aquatic community". A "healthy aquatic community" is defined by comparing the biological data of the stream in question to that of a pre-established reference stream or condition. If this comparison indicates that the health of the aquatic community is substandard, the stream is considered "impaired" and biological impairment (BI) is listed as the cause of impairment. When these situations occur, additional monitoring is required to determine the specific causes (chemical or physical) of impairment so Total Maximum Daily Loads (TMDLs) can be established for the specific pollutants.

The 1998 303(d) List identified four stream segments that were considered to be impaired due to biological impairment.

A "healthy aquatic community" is defined by comparing the biological data of the stream in question to that of a pre-established reference stream or condition.

Monitored Waterbodies Impaired by Biological Impairments in the Pearl River Basin		
Designated Use: Aquatic Life Support		
Waterbody	Support	Miles
Copiah Creek	Partially	16
Hurricane Creek	Not	4
Pearl River	Partially	12
Red Cane Creek	Not	4

Polychlorinated Biphenols (PCBs). PCBs are a family of man-made chemicals that contain 209 individual compounds with varying toxicity. PCBs have been used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment. The manufacture of PCBs stopped in the United States in October 1977 because of evidence that PCBs accumulate in the environment and may also cause health hazards for humans.

Although PCBs are no longer manufactured, human exposure still occurs. Many older transformers and capacitors still contain fluids that contain PCBs. The useful lifetime of many of these transformers can be 30 years or more.

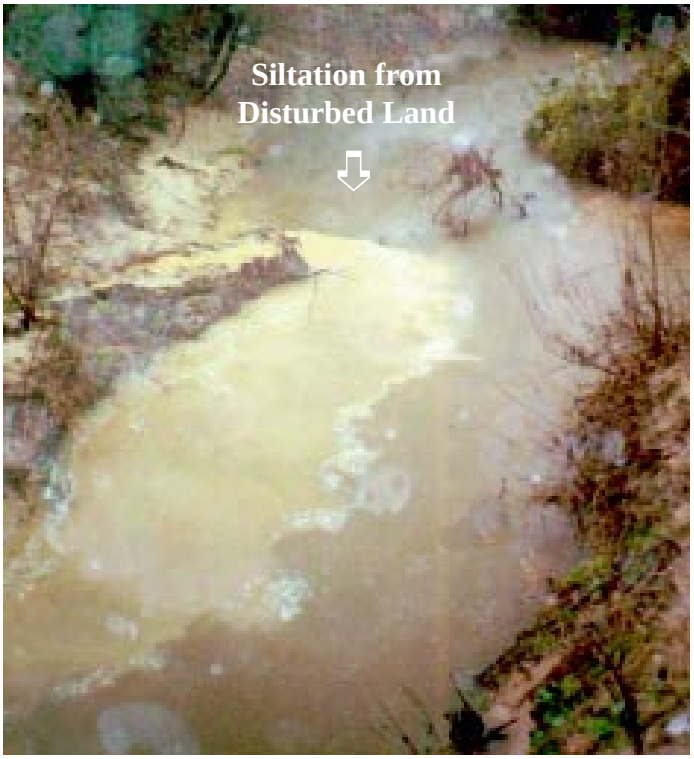
Eating contaminated fish can be a major source of PCB exposure to humans. These PCBs originate in contaminated water, sediment, PCB-laden particulates, and fish that have eaten PCB-contaminated prey. Although PCBs found in fish are generally concentrated in nonedible portions, the amounts in edible portions are high enough to make consumption a major source of exposure for humans.

The 1998 303(d) List identified two stream segments that were considered to be impaired due to PCBs.

Monitored Waterbodies Impaired by Polycarbinated Biphenols (PCB) in Pearl River Basin		
Designated Use: Fish Consumption		
Waterbody	Support	Miles
Conehoma Creek	Not	3
Yockanookany River	Not	12

Evaluated Causes. The four main pollutants identified by the evaluation process are siltation, organic enrichment, nutrients, and pesticides. These pollutants are known to have detrimental effects on aquatic life if existing in higher than recommended concentrations.

Siltation. Disturbance of lands adjacent to streambeds can significantly increase the loading of sand, silt, and clay to streambeds. This siltation reduces the available aquatic habitat and flow capacity of a stream, as well as increases siltation in downstream lakes and reservoirs.



Silt entering the stream from nearby land disturbance.

Organic Enrichment/Low Dissolved Oxygen. Elevated levels of carbon-based materials and nutrients can cause significant depletion of dissolved oxygen concentrations in the water column through processes like nitrification of ammonia and carbonaceous decay. Aquatic life needs a minimum level of dissolved oxygen to sustain life. In Mississippi, this water quality standard has been designated as a minimum daily average of 5.0 mg/L, with an instantaneous minimum of 4.0 mg/L. The 1998 303(d) List identified seven streams or stream segments that were considered to be impaired due to organic enrichment/low dissolved oxygen. Potential sources for this impairment are often attributed to agricultural practices and wastewater discharge.

Nutrients. Elevated levels of nutrients can cause excessive growth of aquatic plant communities. Excessive growth of these plants, such as algae, can impair the growth of other life, deplete the dissolved oxygen in surface water, and cause eutrophication.

Pesticides. Excessive levels of pesticides can cause adverse effects on a number of aquatic species. Additionally, bioaccumulation of pesticides in fish can result in higher pesticide levels over time. Because many people in the basin rely on fish as a source of food, pesticide concentrations in fish and their potential related human health impacts are a significant concern.

Fish Kills. From January 1996 through December 1998, MDEQ investigated 16 fish kills in the Pearl River Basin. Of these, 10 were related to low dissolved oxygen levels, 3 were of unknown origin, 2 were attributed to the insecticide chlorpyrifos, and 1 was related to elevated ammonia levels. Most of the fish kills attributed to low dissolved oxygen were natural occurrences in backwater areas. By the time many of the kills were reported, the dead fish were deteriorated to the point that the cause was difficult to discern. In these situations, the kills were categorized as unknown.

Air Quality. The ambient air quality in the Pearl River Basin is in attainment with National Ambient Air Quality Standards (NAAQS) for carbon monoxide, ozone, nitrogen dioxide, particulate matter 10 microns or less (PM10), sulfur dioxide, and lead. Attainment status for fine particulate matter of 2.5 microns or less (PM2.5) is not currently known. Mississippi does not monitor for deposition of air pollutants in this basin region; therefore, the impact of air pollutants on water quality, if any, is not known.

What Programs Are Working to Improve Water Quality?

Numerous state and federal programs support the managed protection of the quality of Mississippi's waterbodies including regulatory programs that focus on permitting and compliance requirements, as well as voluntary management/assistance programs that encourage the implementation of management practices.

State-Administered Regulatory Programs

A number of statewide regulatory programs work to protect and improve the quality of Mississippi's waterbodies. MDEQ is the lead agency for the State for a number of these programs that have been delegated from the U.S. Environmental Protection Agency. Additionally, MDEQ administers several regulatory programs enabled by state laws.

National Pollutant Discharge Elimination System (NPDES). The NPDES program issues permits to any facility discharging treated wastewater to state waters. These permits specify the types, quantity, and concentrations of pollutants that may be discharged by a facility.

Other MDEQ Programs. Additional permitting programs exist for a variety of activities, including the generation of hazardous wastes; the transportation, storage, and disposal of hazardous and non-hazardous wastes; underground storage tank installation and monitoring; concentrated animal feeding operations; air emissions; surface and ground water withdrawals; and surface mining operations. In addition, the agency reviews proposed projects that could potentially impact wetlands areas through the Wetlands Protection Program (also known as 401 Certification).

The issuance of permits necessitates monitoring and enforcement of permit requirements. MDEQ has an active permit compliance and enforcement program for all of the permitted activities described in the previous paragraph. To simplify the permitting process and ensure an effective compliance and enforcement program, MDEQ recently established separate permitting and compliance/enforcement divisions.

Source Water Protection. The relationship between water quality and source water protection for public water supply systems is an important consideration in the Pearl River Basin. Ground water is used by most of Mississippi's community and non-community water supply systems. However, the City of Jackson's water supply is mostly dependent on surface waters. Specifically, the City of Jackson has a water intake structure on the Ross Barnett Reservoir and another downstream on the Pearl River. The 1999 Mississippi Source Water Assessment Program (SWAP) recognized that MDEQ's Basin Approach provides an opportunity to better coordinate the various water-related programs that will result in the evolution of effective management planning and enhanced protection of Public Water Systems that use public surface water systems. In short, the SWAP recognizes that a watershed or basin approach is necessary to address the entire watershed area upstream of water intakes that fall within the hydrologic boundaries of the drainage area. In this case, Basin Management upstream of the City of Jackson's Pearl River water intake, including the Ross Barnett Reservoir and the headwaters of the Pearl and Yockanookany Rivers, can efficiently and economically address water quality and source water protection. The voluntary formation of local advisory committees, ad hoc watershed groups, and source water protection partnerships can assist MDEQ to develop and implement applicable best management practices to satisfy these dual objectives in the Basin Approach's subsequent data gathering, data evaluation, plan development and implementation phases.

Municipal Storm Water Management Program. Polluted storm water runoff is often transported to municipal separate storm sewer systems (MS4s) and ultimately discharged into local rivers and streams without treatment. EPA's Storm Water Phase II Rule establishes a MS4 storm water management program that is intended to improve the nation's water by reducing the quantity of pollutants that storm water picks up and carries into storm sewer systems during storm events.

What constitutes an MS4 is often misinterpreted and misunderstood. The term MS4 does not solely refer to municipally owned storm sewer systems, but rather is a term with a much broader application that can include, in addition to local jurisdictions, state departments of transportation, universities, local sewer districts, hospitals, military bases, and prisons. An MS4 is not always just a system of underground pipes - it can include roads with drainage systems, gutters and ditches.

Pollutants such as oil and grease from roadways, pesticides from lawns, sediment from construction sites and litter can runoff into storm water system.

Common pollutants include oil and grease from roadways, pesticides from lawns, sediment from construction sites, and carelessly discarded trash, such as cigarette butts, paper wrappers, and plastic bottles. When deposited into nearby waterways through MS4, these pollutants can impair the waterways, thereby discouraging recreational use of the resource, contaminating drinking water supplies, and interfering with the habitat for fish, other aquatic organisms, and wildlife.

The 1987 amendments to the Clean Water Act mandated EPA to develop a tiered implementation strategy for the NPDES Storm Water Program. The first phase of this approach (published on November 16, 1990) targeted storm water discharges associated with the most likely sources of wet weather pollution: medium and large MS4s and eleven categories of industrial activity including construction. These sources were required to apply for coverage under an NPDES storm water permit unless eligible for exemption. The second phase of this approach (published on December 8, 1999), covers: small MS4s, construction activity from 1-5 acres, and revision to the "no exposure" exclusion for industrial facilities.

The Storm Water Phase II regulations require operators of identified MS4s to obtain NPDES Permit coverage. The Environmental Permits Division of MDEQ will issue a General NPDES Storm Water Permits for these facilities. General permits prescribe one set of requirements for all applicable permittees. General permits are drafted and then published for public comment before being finalized and issued. A Notice of Intent (NOI) serves as the application for the general permit. The NOI must describe a storm water management plan, including best management practices (BMPs) and measurable goals. A Phase II applicant has the flexibility to develop an individualized storm water program that addresses the characteristics and needs of its system, provided the basic requirements of the general permit are satisfied.

Development of Total Maximum Daily Loads (TMDLs). MDEQ has implemented the basin planning process to help develop TMDLs. Several activities must be carried out during established phases of the basin management cycle in order to establish TMDLs that are scientifically based, technically sound, and acceptable to the public. Some of these activities include clarifying specific causes and sources of evaluated water quality impairments, developing predictive means (for example, water quality models) for establishing pollutant loading capacity, and setting point source load allocations and nonpoint source load allocations. The Basin Team will follow the framework established for developing TMDLs while seeking stakeholder input at key points in the process. These efforts will be needed for each of the monitored waterbody segments identified on the 303(d) List of Impaired Waterbodies in the Pearl River Basin.

Confirming Impairment. Significant numbers of stream segments were placed on the 1998 303(d) List as evaluated waters due to the lack of monitoring information. A major effort is underway to develop water quality information through biological assessments that will provide information necessary to support or disprove these listings. Additional information is required to gain a better understanding of the conditions and contaminants that caused the impairment.

Evaluating BMPs. Information from programs designed to evaluate the economic, management and environmental benefits of best management practices will support the decisions required to improve the water quality within the basin.

Office of Pollution Control's Water Monitoring Network. The MDEQ Office of Pollution Control (OPC) maintains a statewide fixed network of monitoring stations, which are sampled routinely for a broad range of water quality parameters and indices. This effort is done in order to support the design and implementation of OPC's Surface Water Division water management programs including NPDES, nonpoint source, water quality standards, TMDL development, basin initiatives and water quality planning/management. Parametric coverage at the stations includes physical, chemical, bacteriological, biological, and/or fish tissue components.

Currently, 19 primary fixed stations are distributed throughout the Pearl River Basin. As the Basin process continues, a basin fixed station-monitoring network will also be established. This network will augment the statewide primary fixed station network by adding monitoring sites in specific drainage areas within the Pearl River Basin. In addition, flow information, which is key to the analysis and interpretation of water quality samples, will be monitored.

State-Administered Management/ Assistance Programs

A number of state-administered management/ assistance programs exist in a variety of state agencies. Many of these are briefly described below. In an effort to increase the effectiveness and efficiency of these management/assistance programs, coordination of these programs will be a focus of the Basin Management Approach.

Mississippi Department of Environmental Quality (MDEQ). MDEQ manages several major water quality management programs that issue grants and low-interest loans and provide technical assistance to the public and municipal entities. These programs include the Section 319 Nonpoint Source Pollution Grant Program and the Solid Waste Assistance Grant Program.

The Section 319 program requires a forty percent non-federal match. Nonpoint source pollution is defined in general as pollution by diffuse sources that are not regulated as point sources and normally is associated with agriculture, forestry, urban runoff, and runoff from construction activities.

The Comprehensive Multimedia Pollution Prevention Assistance Program is an outreach/assistance program that focuses on helping businesses to identify and reduce generated wastes and identifies and encourages recycling opportunities.

Several statewide financial assistance programs are available for funding potential water pollution abatement and drinking water system improvement projects. MDEQ operates the Water Pollution Control Revolving Loan Fund Program (WPCRLF), the Water Pollution Control Emergency Loan Fund Program (WPCELF), and is contracted to the Mississippi Department of Health to administer both the Local Governments and Rural Water Systems Improvements and Emergency Revolving Fund Loan Programs. The CWSRF has an average of $26 million available each year, the WPCELFP has about $3.3 million available, the Drinking Water Improvements Loan Fund provides about $10 million each year, and the Drinking Water Emergency Loan Fund has about $5 million to fund water pollution control and drinking water system construction projects, respectively. Other financial assistance programs include: MDA, CDBG and Capital Improvements Revolving Loan programs; USDA Rural Development; and U.S. Dept. of Commerce, Economic Development Administration.

Mississippi Department of Agriculture and Commerce (MDAC). The Pesticide and Plant Protection Division is responsible for licensing pesticide applicators, as well as providing applicator training in conjunction with the Agricultural Extension Service. Technical assistance is also provided on a case-by-case basis to farmers experiencing pesticide application problems, plus as those needing assistance with the disposal of obsolete pesticides.

Mississippi Agricultural and Forestry Experiment Station (MAFES). The MAFES was established for the express purpose of conducting scientific research in agriculture, forestry and related sciences. The agency focuses on both basic and applied research.

Program areas that MAFES actively pursues include environment and natural resources planning, new food and nutrition products research, analyses of economic and social issues, animal production systems research, and crop production systems research.

Mississippi Development Authority (MDA). Through its programs and activities, MDA's Energy Division promotes the efficient and environmentally acceptable use of energy in all sectors of the State's economy. The Energy Division also encourages an environment that enhances the State's access to cost competitive, available energy resources, ultimately benefiting economic development in Mississippi. These programs and services are funded by U. S. Department of Energy funds, oil overcharge restitution funds, and state funds. Staff members compile and analyze energy data, administer grant and loan programs, research policy initiatives, conduct energy audits, and support the development and application of alternative energy technologies.

Mississippi Forestry Commission (MFC). The MFC provides technical assistance for state and federal programs relating to nonpoint source pollution from forestry activities. Major programs include the Federal Forestry Incentive Program, Agricultural Conservation Program, Reforestation of Timberlands Act, and Cooperative Forest Management Program. MFC, in cooperation with the U.S. Forest Service and the Mississippi Forestry Association, developed a set of best management practices for forestry activities, which is available to the public.

Mississippi State Department of Health (MSDH). The Bureau of Environmental Health, within MSDH, has the responsibility of developing, implementing, and enforcing regulations pertaining to on-site wastewater disposal. County health officials are available to assist and inform the public regarding on-site wastewater requirements.

Mississippi Department of Marine Resources (MDMR). The Department of Marine Resources is dedicated to enhancing, protecting and conserving the marine interests of Mississippi for present and future generations. It manages all marine life, public trust wetlands, adjacent uplands and waterfront areas for the long-term recreational, educational, commercial and economic benefit of everyone.

Mississippi Soil and Water Conservation Commission (MSWCC). MSWCC is designated as the management agency for agricultural nonpoint source pollution in the state. The agency provides educational programs and agricultural nonpoint source assessments and facilitates projects designed to demonstrate the effectiveness of implemented best management practices.

Mississippi State University Extension Service (MSU/CES). The MSU Extension Service conducts outreach programs and facilitates demonstration projects designed to encourage the use of best management practices for erosion control and management of nutrients, pesticides, and animal wastes.

Mississippi State University Water Resource Research Institute (MSU/WRRI). Located on Mississippi State University's campus, the institute administers and coordinates research programs dealing with water and related resources. The institute is authorized by Section 104 of the Water Resources Research Act of 1984 and by Mississippi Code Annotated 57-55-7, as amended. Its activities are developed in close consultation and collaboration with leading water resources officials within the state. The Institute's purpose is to provide a coordinated research and development program that contributes to the solution of water related land use problems in Mississippi, the region, and the nation.

Planning and Development Districts. Nine Planning and Development Districts in Mississippi serve as regional planning organizations to serve local governments in their districts. The Districts offer professional and technical assistance such as land use planning, zoning, developing subdivision regulations, computer mapping, and other services. The Districts also address nonpoint source pollution issues in their planning efforts.

Resource Conservation and Development Councils. Seven Resource Conservation and Development Council districts exist in Mississippi. These councils promote rural economic development. Projects include emergency work, establishing recreational areas, and erosion control. Activities of these councils are administered by NRCS.

Soil and Water Conservation Districts. Soil and Water Conservation Districts are established in each of the eighty-two counties of the state. The districts assist landowners and operators in developing and implementing soil erosion control and water conservation plans.

Federally-Administered Management/ Assistance Programs

A number of management/assistance programs also exist in a variety of federal agencies. In an effort to increase the effectiveness and efficiency of these management/assistance efforts, program coordination will be a focus of the Basin Management Approach. Brief descriptions of these programs follow.

Agricultural Research Service (ARS). ARS measures the impacts of farming and ranching practices and other processes on water quality. ARS also assess processes that control the transport and fate of chemicals and other contaminants. Using this information, the agency develops effective alternative practices designed to protect and enhance water quality.

Cooperative State Research, Education, and Extension Service. This federal program provides educational and technical assistance to farmers for voluntary implementation of improved management practices that enhance and protect water quality and for agricultural nonpoint source pollution problems.

Gulf of Mexico Program (GMP). GMP works with state, federal, and non-governmental organizations to identify and implement voluntary, non-regulatory solutions to environmental problems in the Gulf of Mexico and its associated coastal watersheds.

Natural Resources Conservation Service (NRCS). NRCS provides a number of management/assistance programs. These programs include the Environmental Quality Incentives Program (EQUIP) which provides technical, educational, and financial assistance to producers that face the most serious threats to soil, water, and related natural resources; the Watershed Protection and Flood Prevention Program which focuses on cooperation with other state and local agencies to plan and carry out work to improve soil conservation and for other purposes, such as flood prevention, conservation, development, and water utilization; and the Wetland Reserve Program developed to protect, restore, and

enhance the functions and values of wetland ecosystems.

Additional NRCS management/assistance programs include the Conservation Reserve Program (CRP) developed to cost-effectively reduce water and wind erosion, create and enhance wildlife habitat, and encourage more permanent conservation practices and tree planting and the Emergency Conservation Program designed to rehabilitate farm land damaged by natural disasters and to carry out emergency water conservation measures during periods of severe drought.

U.S. Fish and Wildlife Service (USFWS). USFWS provides a number of management/assistance programs that include the Partners for Fish and Wildlife Program that restores habitat for federal trust species through voluntary agreements with private landowners and the Off-Refuge and On-Refuge Investigation Programs that are designed to protect and enhance the quality of habitat and environment for fish and wildlife in and near Natural Wildlife Refuges.

U.S. Forest Service (USFS). In cooperation with the Mississippi Forestry Commission and the Mississippi Forestry Association, this federal agency assists in the development of a set of best management practices for forestry activities, which is available to the public.

U.S. Geological Survey (USGS). USGS works to identify the status and trends in water quality conditions and the human and natural conditions that cause existing water quality problems and communicates these findings to resource managers and policy-makers.

Basin-Specific Agencies and Management Programs That Address Water Quality

Additionally, a number of agencies and programs are specific to the Pearl River Basin, and are described in more detail below.

Mississippi Band of Choctaw Indians (MBCI). The MBCI Environmental Program Office actively protects the biological, chemical, and physical integrity of the environment through monthly monitoring of identified sites and educational outreach activities. The goal is to increase tribal public awareness of various environmental issues that are regulated and monitored by the MBCI Environmental Program Office, as well as build tribal capacity in environmental protection. Various environmental projects include monthly water monitoring, radon testing, lead education, solid waste management, sustainable development, and many educational outreach activities.

Pearl River Basin Development District (PRBDD). PRBDD was created by the State Legislature in 1964 as a special fund agency to assume the legal responsibilities involved in coordinating local, state and federal programs for water resource development. The enabling legislation was designed to permit those counties within the Pearl River Basin to join together for the purpose of planning and constructing projects for recreational uses, flood control, pollution abatement and soil conservation. Member counties include Attala, Copiah, Hancock, Hinds, Lawrence, Leake, Lincoln, Marion, Neshoba, Pearl River, Pike, Rankin, Scott, Simpson and Walthall.

Pearl River Valley Water Supply District (PRVWSD). PRVWSD maintains the 33,000 acre Ross Barnett Reservoir and surrounding District lands to

provide water supply, flood reduction, recreation opportunities, multiple forest uses, and quality communities and to generate sufficient revenue to meet these goals without tax support from the member counties. The district provides water and wastewater utilities to the residences and businesses in these communities and provides law enforcement protection for the 50 district-operated recreation facilities, which include campgrounds, parks, boat launches and fishing areas. Member counties include Hinds, Rankin, Madison, Scott and Leake.

Identifying, Evaluating, and Addressing Issues of Concern Through the Basin Management Approach

A major endeavor of the Basin Management Approach process is the identification, evaluation, and prioritization of issues of concern within a basin. The ultimate goal is the development of a basin management plan designed to address the prioritized and quantified (through data collection and assessment) issues of concern. Prioritized issues of concern within the Pearl River Basin were identified by basin stakeholders and resource agency partners.

Identification, Evaluation, and Prioritization of Issues. All of the identified issues will be reviewed and evaluated to ensure that an adequate description was developed, to determine if data is available to assess them, and to establish a relative ranking of priority for each issue based upon it's potential impact on water quality.

Issues of concern in the basin include, but are not limited to:

- Protection of drinking water sources
- Impacts of turbidity/suspended sediments in streams on water quality
- Habitat loss
- Management of erosion, sediment control, nutrient, pesticide, and storm water in urban areas
- Unsewered communities and/or failing septic systems
- Effects of channelization
- Illegal dumping
- Effects of pathogens
- Flood Control

Data Collection Plan Development. The next major milestone for the Pearl River Basin Team will be the preparation and implementation of a Data Collection Plan to evaluate the priority basin issues of concern. For each priority issue, the Data Collection Plan will identify what information is needed and why, who will collect the information, by what means and methods, over what period of time, and how the information will be stored and managed. A primary use of the Data Collection Plan will be to provide a central point of reference for all basin planning partners, as well as the public, which should help to improve the coordination and efficiency of data collection and evaluation.

Stakeholder Involvement. A basin stakeholder is a person who lives or works in the basin, recreates on its waters, or has an interest in the basin. The Basin Team will work with stakeholders in the Pearl River Basin through each phase of the basin management cycle. The Basin Team will seek both resource agency and stakeholder input on development of a Data Collection Plan that is needed to guide data collection efforts to address the priority basin issues of concern. Stakeholders will also be given the opportunity to help gather appropriate information during the data collection process and will be informed of data collection results once the Basin Team of technical experts has evaluated the information.

During the basin management plan development phase, stakeholder input will be solicited and assistance requested for the identification of management strategies. Technical assistance will be provided by the Basin Team. When completed, public meetings will be held to review the plans and obtain additional public input. Finally, during implementation of the basin management plan, stakeholders will be encouraged to actively participate in outreach and implementation activities.

What You Can Do To Help

Steady progress is being made in solving water quality problems in the state. However, we all need to do more to protect our water resources for future generations.

Properly dispose of wastes. Do not accept the illegal dumping of non-toxic and toxic wastes in your community as a way of life. Non-toxic wastes include household garbage and inert debris like stumps and concrete. Toxic wastes include solvents, paints, oil, pesticides, and many cleaning agents. Encourage those in your community to find out the locations of non-toxic waste collection facilities and free collection days where you can bring in toxic materials for disposal.

Couch and other waste debris dumped in streambed. Open dumping of solid waste continues to be a basin-wide issue.

Use Best Management Practices. Many management practices have been developed and proven to reduce pollution of our water resources. Many of our resource agencies have programs designed to help the public learn about appropriate management practices for a range of land uses. Contact them: they will be glad to help.

Conserve water-inside and out. By conserving the amount of water we use, we reduce the amount that must be treated and discharged. We also place less stress on our ground water aquifers and help to maintain stream levels.

Public Involvement and Participation. Because public involvement is a cornerstone of the Basin Management Approach, your participation and support are essential to meet the goals and objectives of the process.

Public concerns and input is gathered during public stakeholders meetings.

There are a number of things that you can do:

Get informed. Attend stakeholder meetings and actively participate. Find out about your local water resource problems. A database for basin stakeholders has been established for mailing information about meetings and other Basin Management Approach activities in the Pearl River Basin.

Get involved. Join or form a local watershed group. A key element of the Basin Management Approach is the formation of local watershed groups to assist in planning, monitoring, and implementation activities. This group is an opportunity for you to make a difference.

Who Can You Contact To Learn More?

If you or your organization would like assistance with forming a local watershed group or notification of upcoming stakeholder meetings or simply desire information concerning the Pearl River Basin Management Approach, please contact the following person:

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