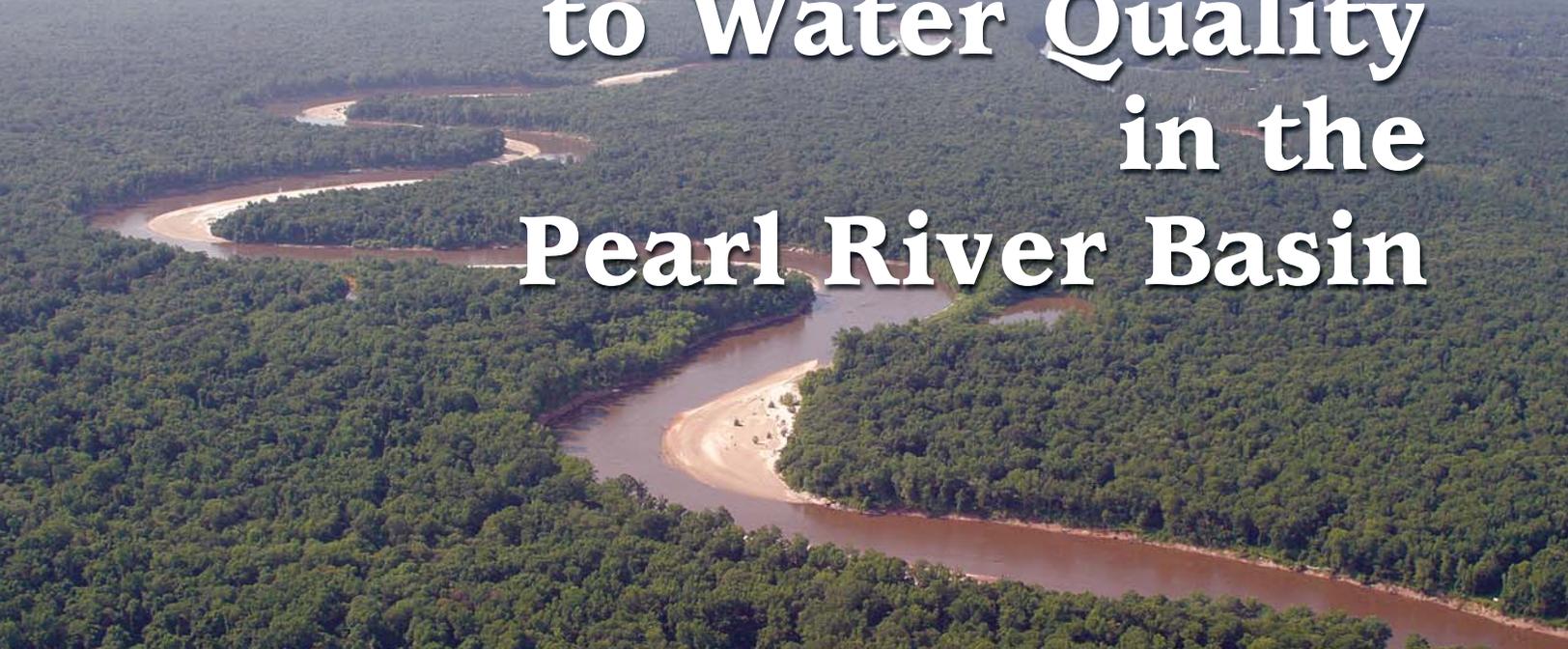




**Citizen's Guide  
to Water Quality  
in the  
Pearl River Basin**



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## About this Guide

Mississippi’s Citizen’s Guides to Water Quality are intended to inform you about the following:

- Mississippi’s abundant water resources
- Natural features, human activities, and water quality in a particular river basin
- The importance of a healthy environment to a strong economy
- Watersheds targeted for water quality restoration and protection activities
- How to participate in protecting or restoring water quality
- Whom to contact for more information

We hope these guides will enhance the dialogue between citizens and key decision makers to help improve our management of Mississippi’s precious water resources. We encourage you to invest in this effort—read this guide and actively restore and protect our water resources for future generations.

## Acknowledgments

This guide is a product of the Pearl River Basin Team, consisting of representatives from 35 state and federal agencies and stakeholder organizations (see page 30 of this document for a complete listing). The lead agency for developing, distributing, and funding this guide is the Mississippi Department of Environmental Quality (MDEQ). This effort was supported by a Clean Water Act Section 319 Nonpoint Source grant, and includes publication services from Tetra Tech, Inc.

Copies of this guide may be obtained by contacting:

Information Center  
**Mississippi Department of Environmental Quality**  
PO Box 10385  
Jackson, MS 39289-0385  
601-961-5171  
[www.deq.state.ms.us](http://www.deq.state.ms.us)

*Cover photos*

*Top: Nanih Waiya Creek ©Janet Chapman*

*Middle: Barnett Reservoir ©Jim Logan*

*Bottom: Lower Pearl River ©Jennifer Coulson*

# Water

## Our Precious Natural Resource

### The Water Cycle and Water Quality

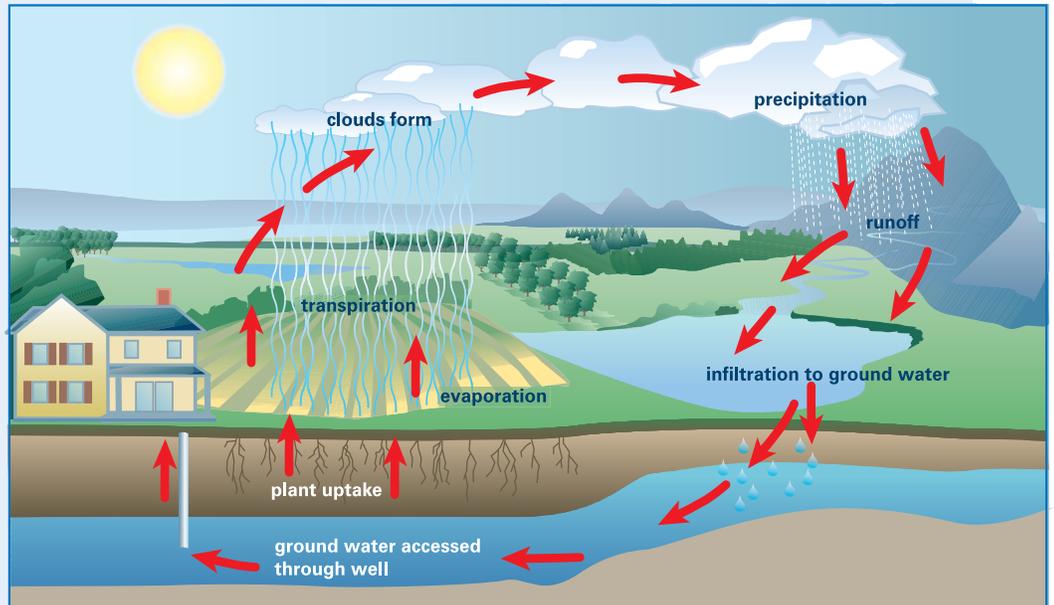
Clouds, rain, runoff, rivers, lakes, marshes, ground water, oceans—what’s the common thread? All have their place in the earth’s water cycle. After rain has fallen to the earth, it either remains in a water body,

goes up into the atmosphere (evaporation and transpiration), goes down into the ground (infiltration) or flows over the land (runoff).

Stormwater runoff is the link in the water cycle most likely to degrade water quality.

Runoff often carries dissolved chemicals,

bacteria, and suspended matter like sediment (sand, silt, and clay soil particles) into our water bodies. In fact, many kinds of pollutants in the path of runoff may be transported to our streams and rivers. The proper care of the land, therefore, is essential for protecting water quality.



### What is a watershed?

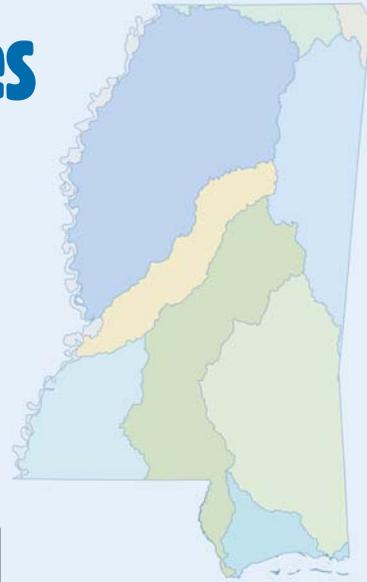
A watershed is the area of land that drains to a common water body, such as a stream, lake, wetland, estuary or large river like the Pearl or Mississippi. Smaller watersheds join to form larger watersheds. For example, the Fannegusha Creek, Magees Creek and Strong River watersheds are smaller watersheds within the Pearl River Basin. Since watershed boundaries are determined by hills and ridges rather than political delineations, a watershed can cross county or state boundaries. In fact, the Pearl River Basin, mostly in Mississippi, also encompasses part of Louisiana.



Center for Watershed Protection

# Mississippi's Water Resources

- Mississippi has 10 major river basins with 86,000 miles of streams.
- Most of our streams (63%) are intermittent (flow only during rainy periods).
- The rest flow year-round, with a base flow (normal level) fed by ground water.
- The state is covered with hundreds of lakes, reservoirs, and ponds that provide wonderful recreation, as well as irrigation for crops and habitat for fish and wildlife.
- Mississippi has over 2,400 miles of man-made ditches and canals used for drainage and transportation, such as the 164-mile Tennessee-Tombigbee Waterway.



*Gulfport Beach sunrise*



*Sailing on Jamie Whitten Lake*

USACE



*Chunky River at Dunns Falls*



*Shrimp boat anchored in Pearl River*



*Polypipe irrigation*



*Aberdeen Lock and Dam on the Tennessee-Tombigbee Waterway*

USACE



USDA NRCS

***Mississippi's economy and quality of life depend on our water resources.***

*Remnant of a cypress/tupelo wetland in an oxbow in central Mississippi*

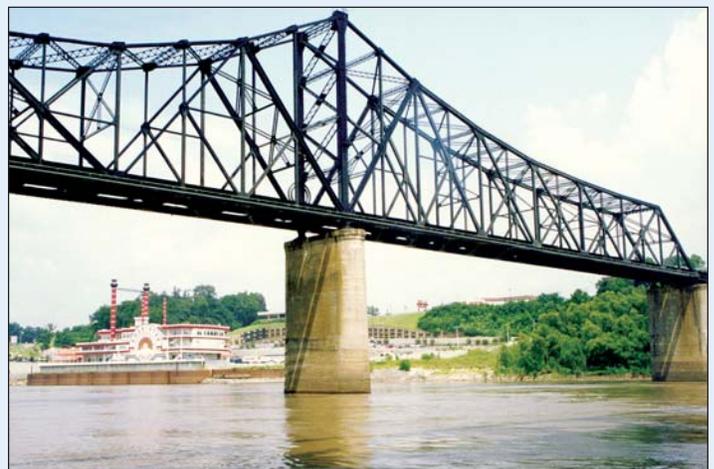


*Cypress swamp in the Tenn-Tom Waterway*

- Wetlands cover about 2.7 million acres throughout the state, providing habitat for wildlife and natural filters for cleaning stormwater runoff on its way downstream.
- Most of our streams and rivers flow to some point along Mississippi's 86-mile coastline. Many flow into estuarine bays (a mix of fresh and salty water)—St. Louis Bay, Back Bay of Biloxi, and Pascagoula Bay—before entering the Mississippi Sound. Those waters then flow past our barrier islands into the Gulf of Mexico. Other waters, like the Yazoo River, flow into the Mississippi River which discharges directly into the Gulf of Mexico south of New Orleans. In all, Mississippi's estuarine waters cover over 750 square miles.
- Barrier islands and coastal estuaries reduce the impacts of hurricane storm surges and provide nursery habitat needed by both commercial and non-commercial fisheries.



*Gulfport Harbor*



*Mississippi River Bridge at Vicksburg*

# Welcome

## to the Pearl River Basin

**The Pearl River Basin** is found in central and southern Mississippi and covers over 8,700 square miles. The basin drains all or parts of 24 counties in Mississippi and three parishes in Louisiana. Nearly one million people live in the basin—more than one-third of the state’s population. Over 16,000 miles of streams and rivers flow through this basin. If laid end to end, they would reach across the United States five times!

From the headwaters in Choctaw and Winston counties to journey’s end at the coast, the Pearl River Basin is a place of contrasts with diverse landscapes and resources. In the northern part of the basin, the shallow streams flow freely through the rolling hills. About a third of the way along their journey, waters in the Pearl River spread out behind the dam at Ridgeland to form Barnett Reservoir. From there, the Pearl River widens through the center part of the basin as it flows south. In the lower portion, there are two outlet channels, the main river channel that forms the state boundary between Mississippi and Louisiana, and the West Pearl River in Louisiana. The West Pearl and Pearl rivers flow through broad floodplains of flat terrain. Here the rivers deepen and meander through lowland forests, marshes, dense cypress-tupelo swamps and estuaries. After crossing oyster beds near its mouth at Lake Borgne, the Pearl River flows into the Mississippi Sound and out into the Gulf of Mexico.



## Pearl Communities

### Mississippi's Capital City— Jackson

In its beginnings, Jackson, Mississippi was a trading post on a high bluff overlooking the Pearl River (LeFleur's Bluff). Three surveyors discovered the site while on a commission to find a new location for the capital city of Mississippi. In 1821, the state legislature chose the site as its permanent seat of government for its attractive scenery, high-quality water supply, abundant timber, navigable waters, and proximity to existing roads, particularly the Natchez Trace.



*A view of Jackson along the Pearl River*

Today, nearly 185,000 people live in Jackson. It is the hub of a greater metropolitan population of over 500,000. Industry in the greater Jackson area includes automobile parts manufacturing, health care, communications, state government and financial services. Jackson is home to Jackson State University, Belhaven College, Millsaps College, Tougaloo College, and the University of Mississippi Medical Center, one of the city's major employers. The city hosts a number of important cultural events such as the International Ballet Competition and houses the Mississippi Symphony Orchestra, the Mississippi Opera, the Mississippi Museum of Art, the Smith Robertson Museum and Cultural Center, the Agricultural and Forestry Museum, the Mississippi Museum of Natural Science, and the Russell C. Davis Planetarium. Trustmark Park in neighboring Pearl hosts the Mississippi Braves, a farm team of the Atlanta Braves.

### LeFleur's Bluff State Park

Located on the banks of the Pearl River in Jackson, LeFleur's Bluff State Park is Mississippi's only urban state park. The park offers both recreational and educational activities including fishing, canoeing, picnic grounds, bottomland hardwood forest nature trails, and RV camping areas.

The park has been designated by Audubon MS/Jackson Audubon as an "Important Bird Area" with over 200 bird species sightings. The 305-acre park is home to the award-winning Mississippi Museum of Natural Science, a nine-hole golf course, two golf chalets, and the Kid Zone—a paradise of swings, play houses, and climbing structures.



*Mayes Lake*



*Mississippi Museum of Natural Science*



Merit Water Park

## Popular Fishing and Recreation Areas

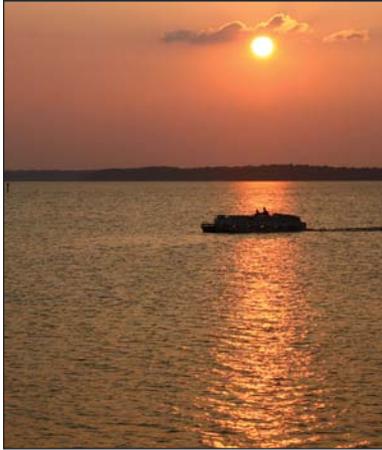
The Pearl River Basin abounds in opportunities for outdoor recreation. State parks, wildlife management areas, and state lakes are found throughout the basin from the headwaters to the coast. In addition, the Pearl River Valley Water Supply District manages five campgrounds near Barnett Reservoir, and the Pearl River Basin Development District maintains eight water parks located mostly from D’Lo to Walkiah Bluff, near Picayune. Lakes are selectively stocked with largemouth bass, bluegill, crappie, redear sunfish and channel catfish. Barnett Reservoir provides year-round fishing, with bass and crappie plentiful in the spring, and catfish available throughout the summer, fall, and even winter. The Pearl River itself supports catfish and bass fisheries.

For horseback riders, the 23-mile Shockaloe Trail in the Bienville National Forest provides two areas for camping and picnicking. Several of the rivers in the basin are excellent for paddling, tubing, and bird watching. The Bogue Chitto River, an important tributary of the Pearl, is one of the premier recreational rivers in the state. For details about camping, swimming, boating, picnicking, fishing and other recreation opportunities, see the map and charts on these pages.

	Trailer Camping	Tent Camping	Concessions	Drinking Water	Toilets	Lodge	Cabins	On Lake	On River or Stream	Swimming	Boating	Picnicking	Fishing	Golfing
<b>State Parks</b>														
Golden Memorial				■	■			■		■	■	■	■	
Lake Lincoln	■	■		■	■			■			■	■	■	
LeFleur’s Bluff	■	■	■	■	■	■		■	■	■		■	■	■
Roosevelt	■	■	■	■	■	■	■	■		■	■	■	■	
For more info contact MS Wildlife, Fisheries & Parks, <a href="http://www.mdwfp/Level1/parks.asp">www.mdwfp/Level1/parks.asp</a> or call <b>1-800-GO PARKS</b> .														
<b>Pearl River Basin Development District</b>														
Bogue Chitto	■	■		■	■				■		■	■	■	
Burnside Lake	■	■		■	■			■			■	■	■	
Columbia		■		■	■			■			■	■		
D’lo	■	■		■	■			■			■	■		
Holmes		■		■	■			■			■	■		
Merit		■		■	■					■		■		
Walker’s Bridge		■		■	■			■			■	■		
Walkiah Bluff	■	■		■	■							■		
For more information visit <a href="http://www.pearlriverbasin.com/parks.php">www.pearlriverbasin.com/parks.php</a> or call <b>601-354-6301</b> .														
<b>Pearl River Valley Water Supply District</b>														
Coal Bluff	■	■	■	■	■			■			■	■	■	
Goshen Springs	■	■	■	■	■			■			■	■	■	
Leake County		■		■	■			■			■	■		
Low Head Dam	■		■	■				■			■	■	■	
Timberlake	■	■	■	■	■	■		■		■	■	■	■	
For more information visit <a href="http://www.therez.ms/camping/">www.therez.ms/camping/</a> or call <b>601-354-3448</b> .														
<b>National Forest Recreation Areas in Bienville National Forest</b>														
Shockaloe (Horse & Hiking Trail)		■		■	■							■		
For more information visit <a href="http://www.fs.fed.us/r8/mississippi/bienville/recreation/shockaloe.shtml">www.fs.fed.us/r8/mississippi/bienville/recreation/shockaloe.shtml</a> or call <b>601-469-3811</b> .														



David L. Waters/Mississippi Outdoors



Barnett Reservoir at Sunset

Deborah Logan



**State of Mississippi Wildlife Management Areas**

Name	Nearest Town	Acres
Bienville	Morton	26,136
Caney Creek	Forest	28,000
Marion County	Columbia	7,200
Nanah Waiya	Philadelphia	7,655
Old River	Poplarville	15,408
Pearl River	Canton	6,000
Wolf River	Poplarville	10,801
Yockanookany	McCool	2,379

For more info contact MS Wildlife, Fisheries & Parks, [www.mdwfp/Level2/Wildlife/wma.asp](http://www.mdwfp/Level2/Wildlife/wma.asp) **601-432-2400**

**State Lakes in Mississippi**

Name	Nearest Town	Acres
Lake Bill Waller	Columbia	200
Lake Columbia	Columbia	90
Lake Jeff Davis	Prentiss	164
Lake Mary Crawford	Monticello	135
Lake Walthall	Tylertown	62
Neshoba County Lake	Philadelphia	138
Simpson County Lake	Magee	94

For more info contact MS Wildlife, Fisheries & Parks, [www.mdwfp/Level2/Fisheries/lakes.asp](http://www.mdwfp/Level2/Fisheries/lakes.asp) **601-432-2400**



Pearl River below Barnett Reservoir dam



Bogue Chitto tubers

David L. Watts/Mississippi Outdoors



## Barnett Reservoir

The 33,000-acre Barnett Reservoir was created in 1965 both for recreation and as a drinking water supply for the city of Jackson. After the Easter flood of 1979, the reservoir has also been used to help with flood control. The Pearl River Valley Water Supply District (PRVWSD, a state agency) manages the reservoir and the surrounding lands. PRVWSD's 48 parks and recreational facilities host 2.5 million visitors each year. Facilities include 22 boat launches, 5 marinas, and 17 miles of

paved trails. Visitors to the reservoir area enjoy swimming, fishing, boating, tennis, soccer, baseball, golf, biking, hiking and other recreational activities. A total of 4,600 homes have been built in lands managed by PRVWSD, and about 25% of these homes are on waterfront property.

## Mississippi Band of Choctaw Indians

The Mississippi Band of Choctaw Indians, with a tribal membership of 9,500, is the only federally recognized Indian tribe in the state. Headquartered in the Pearl River community near Philadelphia, Mississippi, the Tribe has emerged as a leader in economic development. The Tribe is the third largest private employer in the state, providing jobs for more than 9,200 people, 65% of which are non-Choctaw. Their success story dates back to 1979 when the Choctaw Industrial Park was established. Over the next three decades, the Tribe expanded employment opportunities for Choctaws by attracting manufacturing, retail, service, and government industries. Now focusing on high-technology projects, the Tribe is developing the Choctaw TechParc, an important technology campus in the Southeast. In the past 15 years the Tribe has developed a complete resort destination that includes gaming, a water theme park, golf, retail, dining, and much more. While the Choctaws have experienced great success, they still maintain their traditions and respect their heritage. The seven Tribal communities share in their culture through a common language, social dance, tribal arts and crafts, stickball, traditional food, and more. While the Tribe has learned to excel in modern ways, its traditions will always bind them. For the Choctaws, their way of life is straightforward: respect tradition, embrace tomorrow.



Mississippi Band of Choctaw Indians

*Stickball, a Choctaw tradition*



*Geysers Falls Water Theme Park*

# Special Animals of the Pearl

The resilient Pearl River Basin is very much alive. Healthy, undisturbed forested floodplains support a high diversity of wildlife. Coastal marshes contribute to productive fisheries. The river channel, sandbars and wetlands create habitat for mussels, fish, mammals, birds, amphibians and reptiles. Striped bass, Gulf sturgeon, Alabama shad, and American eels regularly migrate from the Gulf up the Pearl as part of their life cycle. The Pearl is home to over 130 species of native fishes—catfish, crappie, sunfish, bass, and more. Many migratory birds making the long journey across the Gulf of Mexico stop to feed and rest in the forests in the lower basin. Since the Pearl River Basin provides such important habitat for so many species, it is truly worth protecting. To date, over 120,000 acres of land are now conserved in 11 protected areas in the lower Pearl River Basin, including over 90,000 acres of contiguous bottomland hardwood forests in the National Wildlife Refuges and Wildlife Management Areas.

Even though thousands of acres remain largely undisturbed in the lower basin, some species with specialized habitat requirements have dwindled in numbers. In most cases, these animals have special needs that compete with our uses of the land. Black bears need large forests, and agriculture and development limit the area where they can live. The river is home to the Gulf sturgeon that swims upstream to historic spawning areas. However, man-made structures in the channels can hinder their annual passage from the Gulf of Mexico. Some species, like the Bald Eagle, are susceptible to toxic chemicals. Others, like the gopher tortoise, reproduce so slowly that populations require protection for a long time to rebound. As we learn what leads to the decline of certain species, we can take the necessary steps to help sustain and restore them.



## Ringed Map Turtle (*Graptemys oculifera*)

Named for the yellow or orange circles on its shell, the ringed map turtle is a small turtle found only in the Pearl River Basin. The Pearl and Bogue Chitto rivers provide the habitat these turtles need—wide channels to let in sunlight for basking, plentiful snags and logs, and sandbars for nesting. Much of its habitat has been altered by channelization of the river, snag removal, gravel mining, and reservoir construction. The ringed map turtle is also a victim of target practice and collection for the pet trade.

## Bald Eagle (*Haliaeetus leucocephalus*)

This majestic creature, our national bird, became threatened by the effects of DDT, a pesticide widely used in the U.S. until it was banned in the 1970s. It is a huge bird, with a wingspan of over six feet. Bald Eagles live near large bodies of water, such as Barnett Reservoir. They also nest in Honey Island Swamp in the lower Pearl. Their incredibly sharp vision and powerful bodies enable them to swoop down and snatch fish out of the water with their piercing talons. They also eat reptiles, small mammals, and waterfowl. Since the Bald Eagle population has recovered, this grand bird is under consideration for delisting as a threatened species.



Bill Scrippling



Jerry L. Litton

## Inflated Heelsplitter Mussel (*Potamilus inflatus*)

The Pearl River Basin supports about 40 species of freshwater mussels, including the threatened inflated heelsplitter. This mussel can grow to be over 5 inches long. Shells are typically brown or black, and they may be streaked with green rays in juveniles. They require good quality water, firm substrate, and are highly sensitive to excessive silt. Declines in mussel populations serve as early warning signs for water quality problems. Historically, the inflated heelsplitter had been found in the Pearl River below Jackson. Currently a small population is located in the West Pearl in Louisiana.

## Gopher Tortoise (*Gopherus polyphemus*)

This land-based turtle inhabits sandy areas in southeastern Mississippi. It is named for the large, deep burrows it digs, which can reach 40 feet long and 10 feet deep! The burrows themselves provide important habitat for over 300 animal species. Gopher tortoises can grow to be over a foot long and can live 60 years or longer. Their numbers are declining for several reasons, including habitat loss, disease, predation of young tortoises by fire ants, and being struck by vehicles. Protection and proper management of existing habitat is essential for recovery of this unique turtle.



David L. Watts/Mississippi Outdoors



Michael A. Kelly/www.wildexposures.net

## Louisiana Black Bear (*Ursus americanus luteolus*)

While the black bear is common throughout much of the U.S., bear sightings are rare in Mississippi. Biologists estimate that only 50 to 60 animals live in the state. The Louisiana black bear is a threatened subspecies found in southern Mississippi, Louisiana, and eastern Texas. Temperatures in Mississippi are warm enough that black bears do not truly hibernate, but they do become dormant during the winter. Mississippi bears den in cavities of large trees such as cypress and overcup oak or in brush piles and logging debris. In the Pearl River Basin, most of the sightings are in the southern and coastal counties where bottomland hardwood forests provide travel corridors and plentiful food. Bears eat a variety of foods such as berries, acorns, grasses, insects, and fish.

## Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)

The Gulf sturgeon is a large fish, attaining an average length of 6-8 feet. It has an elongated head and its body is covered with rows of bony, scale-like plates. Gulf sturgeon are anadromous fish—they live in salt water, but migrate to fresh water, such as the Pearl River, to breed. They eat tiny crustaceans and worms by siphoning them off the bottom of the river with a tube-like mouth.

Heavy fishing reduced their numbers through the early 1900s; few have been seen in Mississippi since that time. Since its listing as a threatened species is based on a low population, fishing for Gulf sturgeon is now prohibited. Current threats include pollution, habitat loss, and barriers to migration routes. The Pearl River was designated by the U.S. Fish and Wildlife Service and National Marine Fisheries Service as critical habitat for the Gulf sturgeon.



Jerry L. Litton

## Other Special Animal Species

### Brown Pelican (*Pelecanus occidentalis*)

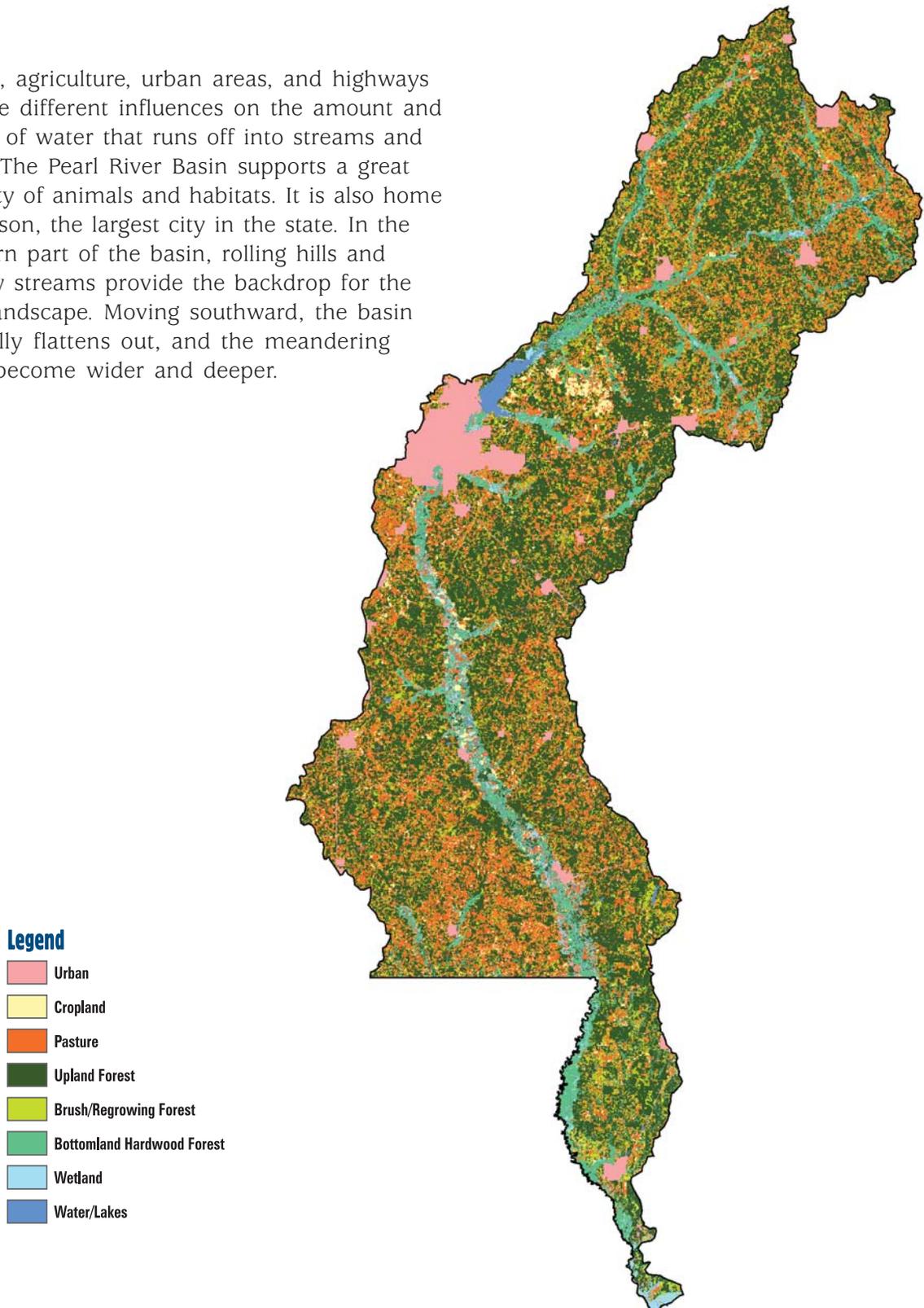
These large, stocky birds found in coastal areas are endangered in Mississippi. They feed primarily on fish, but scavenge food from tourists and fishermen near wharves and pilings. They nest in colonies, mostly on small coastal islands.

### Red-cockaded Woodpecker (*Picoides borealis*)

These birds once thrived throughout the southeastern United States in mature pine forests. They live in colonies and excavate nesting cavities in living trees. They are the only species known to do so exclusively. Their habitat has been greatly diminished, leading to their endangered status.

# Land Use and Its Effects on Water Quality in the Pearl River Basin

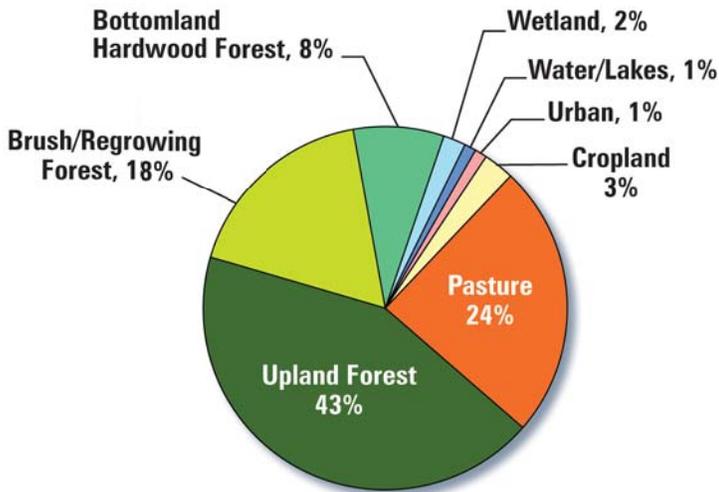
Forests, agriculture, urban areas, and highways all have different influences on the amount and quality of water that runs off into streams and rivers. The Pearl River Basin supports a great diversity of animals and habitats. It is also home to Jackson, the largest city in the state. In the northern part of the basin, rolling hills and shallow streams provide the backdrop for the rural landscape. Moving southward, the basin gradually flattens out, and the meandering rivers become wider and deeper.





*Young stand of loblolly pine typical of many areas of the basin*

## Pearl River Basin



### Forests and Timberlands

Forested lands cover over 50% of the land area in this basin; regrowing forests and brush lands account for another 18%. Together, forests and brush make up over two-thirds of the Pearl River Basin landscape. These forests may be longleaf pine savannas, mixed pine-hardwood forests, dense cypress-tupelo swamps, pine plantations or bottomland hardwood forests (forested, periodically flooded wetlands found along rivers). In the lower Pearl over 120,000 acres of diverse forested habitat are protected.

Historically, longleaf pine savannas were an important feature found in the southern part of the basin. Frequent fires maintained these unique forests by removing competing brush and small trees but not the tall, fire-tolerant longleaf pines. Wiregrass grew under the pines, creating a park-like atmosphere. Over time most of the longleaf pines were cut for timber and not replanted. The northern part of the basin supported a mix of oak, hickory, pine, and other tree species.

Much of the land originally in forests has now been replaced with stands grown for timber in the lower basin where the timber and wood products industries dominate the economy. Frequently, a mix of pines and hardwoods are grown for lumber, wood pulp, and veneer products. The forestry industry that contributes substantially to the economy of the Pearl Basin can affect water quality for good or ill. Many landowners have voluntarily installed practices designed to protect and restore water quality: improved stream crossings, selective cutting, and streamside buffers. Streamside buffers reduce sediment running into the stream and provide shade that keeps the water cooler. Intact streamside forests also protect and hold bank soils in place, and provide excellent wildlife habitat. Erosion and runoff from unprotected clear cuts, on the other hand, add excess sediment to streams, destabilize stream channels, and damage or eliminate aquatic habitat.



*Poultry houses*

## Agriculture

Farming is another important activity, particularly in the upper part of the basin. Much of the state's poultry production is concentrated in the Pearl River Basin, especially in Scott County, the leading poultry-producing county in the state and the fourth largest in the United States. Pasture and rangeland for cattle and livestock are found throughout the basin, accounting for 24% of the land use. Nutrients and bacteria from animal wastes often get into the streams either from pasture runoff or directly from the animals themselves, resulting in low dissolved oxygen levels and other water quality problems. Additionally, when cows graze near streams, the stream banks and channels may become unstable and erode. Bank erosion causes portions of the downstream channels to fill with sediment, affecting habitat for fish and other aquatic life. The basin team and the farming community are already at work on these problem areas, using waste management plans, restricting cattle access to streams, and improving stream crossings. The Priority Watersheds section beginning on page 23 includes details of these activities in the Pearl River Basin.

Row crop production is less prevalent in the basin, but important commodities such as cotton, corn, and soybeans are grown here. In recent years, state and federal agencies have stressed the need for soil conservation and good farming practices, such as no till farming and maintaining vegetated stream buffers. By keeping topsoil in place, these

**Wetlands** are among the river's greatest assets. The Pearl has many floodplain swamps, oxbow lakes, old channels and sloughs that make up about 2% of the land area (95,600 acres). The Pearl's wetlands filter pollutants, replenish ground water and stream flow, and reduce flooding by storing stormwater like sponges. As an enormous water cleaning facility, wetlands remove pollutants using no electricity, and have no filters to maintain. Free of charge, wetlands do the work of treatment plants that would cost tens of millions of dollars to build. American Forests' modeling tool estimates that the current wetland tree canopy in the Jackson area provides rainwater and stormwater treatment services to the city worth 6.8 million dollars annually. In addition to the economic benefits to society, wetlands provide essential habitat for animals, birds, plants and trees.

Through its 404 Permitting Program, the U.S. Army Corps of Engineers protects against the loss of wetlands and mitigates impacts to these systems.



*Cypress swamp, Natchez Trace*

On August 29, 2005, **Hurricane Katrina** ravaged the Gulf Coast delivering a direct hit to the lower Pearl River area. Hancock County lost 40% of its standing timber, while Pearl River County lost 30%. Within the bottomland hardwood forests of the lower Pearl in Louisiana, more than 80% of the hardwoods and pines were blown down or snapped off. Trees in streamside buffers were especially hard hit. In the aftermath, the federal government responded with the following assistance programs:

- Emergency Watershed Protection Program for timber debris removal
- Emergency Conservation Program for replanting assistance
- Emergency Conservation Reserve Program for long-term cost-share conservation

For more information on these programs, contact your county USDA Farm Services Agency office.

practices help keep sediment out of the streams. Many of these same practices also reduce fertilizer and pesticide runoff.



Downtown Columbia

## Cities and Suburbs

Urban areas make up a small portion of the Pearl River Basin. The basin is sparsely populated in most areas, with small towns dotting the countryside. The State's most populous city, Jackson, is also located here, and a large percentage of the basin's population is concentrated in this area. The Jackson metropolitan area (Hinds, Rankin, and Madison counties) has experienced booming growth in recent decades. Rankin County alone added almost 40,000 residents between 1990 and 2004, a 45% increase in population.

Urban centers cover only a small area in the basin, but impact water quality in many

**Sediment** (soil material composed of sand, silt, and clay particles) naturally moves off the land into water bodies. However, excessive sediment from construction sites is filling in lakes and streams in parts of the basin.

Sediment clouds the water reducing the amount of light reaching aquatic plants, covers fish spawning areas and food supplies, and clogs the gills of fish. In addition, other pollutants like phosphorus, pathogens, and heavy metals are often chemically attached to the soil particles and are carried into water bodies with the sediment.



ways. During highway and building construction, disturbed land erodes and runoff carries excessive sediment if the site is not properly managed. Once construction is complete, stormwater runoff from developed areas flows into streams more quickly, and with a higher volume. As a result, urban streams have larger and more frequent floods than undisturbed rural streams. The increased flow and velocity also causes scouring, erosion, and sedimentation in the stream channel. Urban runoff frequently contains higher amounts of pesticides, herbicides, and fertilizers from lawns and other managed landscapes. To help curb these impacts, the State now requires stormwater permits for many communities.

Cities and towns attract industry, and these industries sometimes generate pollutants as by-products such as toxic chemicals and heavy metals. These by-products have the potential to negatively impact our streams and air. Mercury and other pollutants discharged into the air can travel many miles, even across state boundaries, before settling onto the ground and washing into streams and lakes. Regional solutions are necessary to curb these interstate problems. Both air and water discharges are regulated by MDEQ through permits to limit them to acceptable levels.

### Polluted runoff

comes from many scattered sources. As runoff from rainfall moves over and through the ground, it picks up and carries natural and man-made pollutants, and deposits them into streams, lakes, wetlands, coastal waters, and even underground aquifers. Runoff from yards washes excess fertilizer, pesticides, and sediment into storm drains. This untreated water flows directly into streams. Runoff also flushes litter and leaked motor oil from streets and parking lots into streams.

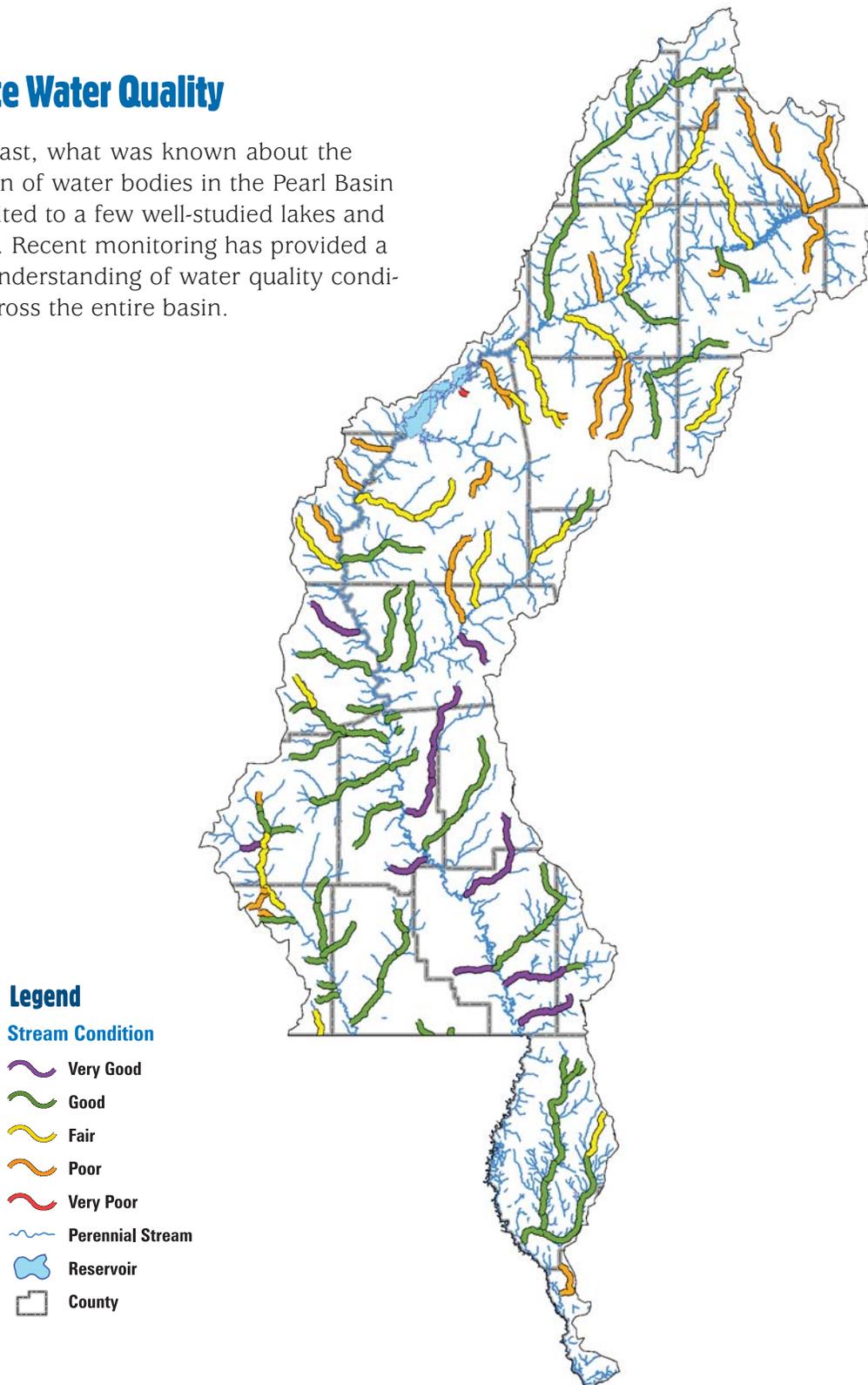


Sediment in Mill Creek from urban runoff

# Water Quality in the Pearl River Basin

## Surface Water Quality

In the past, what was known about the condition of water bodies in the Pearl Basin was limited to a few well-studied lakes and streams. Recent monitoring has provided a better understanding of water quality conditions across the entire basin.



Of streams monitored in the Pearl Basin, 58% (671 stream miles) are rated good or very good and adequately support aquatic life (from aquatic insects to fish). Another 23% (266 stream miles) are rated fair. They have aquatic life that is only somewhat impacted by pollution. Of major concern are the 19% (217 stream miles) of streams in poor or very poor condition, where the aquatic life is significantly impacted by pollution. Major pollutants and their sources include the following:

- Pathogens from animal wastes and failing septic systems
- Pesticides from agricultural and urban runoff
- Eroded sediment from agricultural, timber harvesting, and construction sites
- Organic and nutrient enrichment from animal wastes and failing septic systems

Some streams and lakes in the Pearl Basin are also impacted by mercury and polychlorinated biphenols (PCBs), both of which are

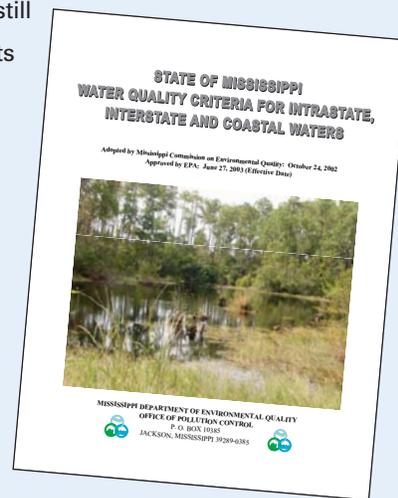


Pearl River study

## Surface Water Quality Standards

Mississippi water quality standards establish the goals for protecting and maintaining the quality of our surface waters (streams, lakes, estuaries, etc.) so that they will support their intended or designated uses. In Mississippi, **designated uses** are fish and wildlife support, public water supply, recreation, and shellfish harvesting. With the exception of fish and wildlife support, not all uses apply to each water body—rather each is assigned specific uses.

**Criteria** are set for a large number of water quality parameters in order to protect each use. Monitoring is then performed to compare conditions in individual streams, lakes or estuaries to the criteria to assess whether the waters are supporting their designated uses. The criteria are also used to set limits on the amount of pollutants that can be put into a water body while still protecting its uses.

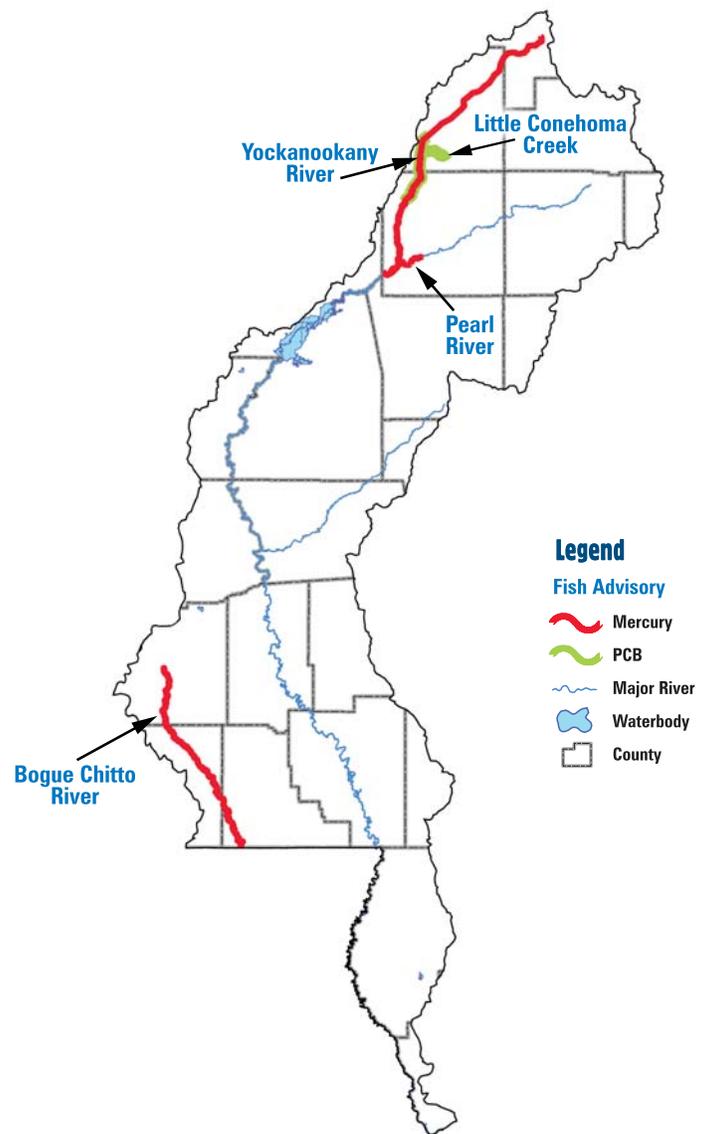


### How can I learn more?

For more information on Mississippi's water quality standards, visit [www.deq.state.ms.us](http://www.deq.state.ms.us) or contact MDEQ, 601-961-5171.

toxic chemicals. Mercury in Pearl Basin waters is thought to originate from widely distributed sources, such as air emissions from incinerators and coal-fired power plants outside the basin. It can travel many miles before settling on the ground and being washed into streams and lakes. PCBs were widely used in transformers and other electrical equipment until they were banned in 1977. In the Pearl Basin, waste PCBs migrated into Conehoma Creek and Yockanookany River from disposal pits used by a pipeline compressor station.

Once in the water, both of these chemicals enter the food chain and may accumulate in fish. Fish tissue studies have led MDEQ to issue fish consumption advisories in portions of five rivers. Only the fish listed in the advisory are subject to the consumption limitations. The advisories do not apply to farm-raised catfish. Fish consumption advisories for the Pearl River Basin are shown on the adjacent map and listed in detail in Table 1.



### How can I learn more?

For more information on water quality in the basin, see the state's latest Water Quality Assessment at [www.deq.state.ms.us](http://www.deq.state.ms.us) or contact MDEQ's Water Quality Assessment Section, 601-961-5150.

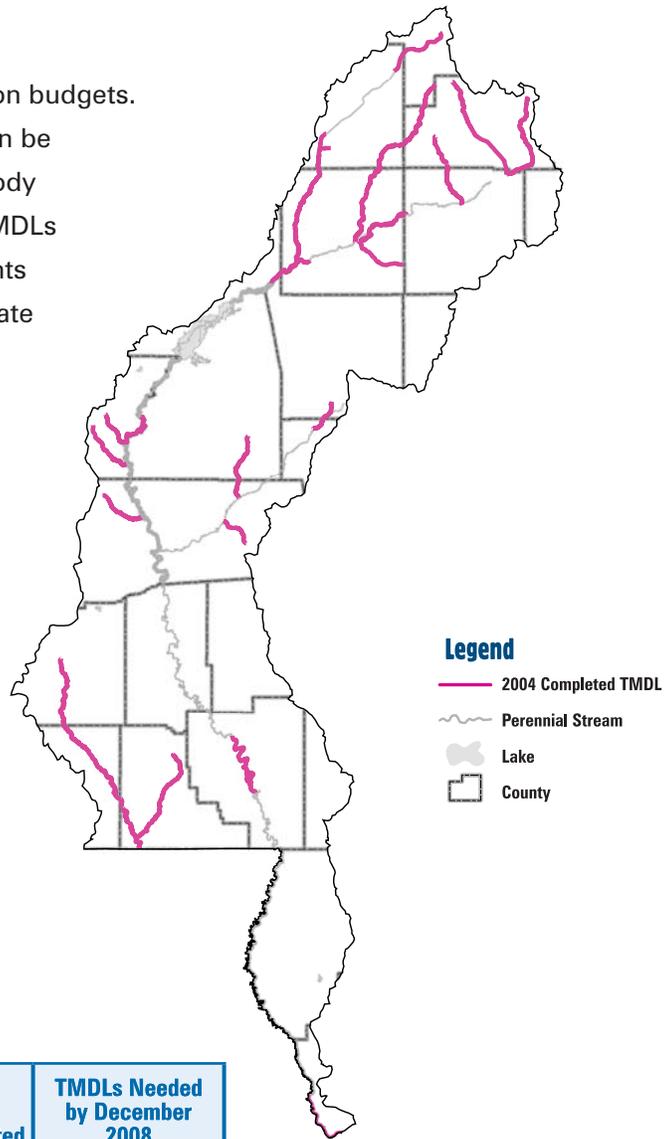
**Table 1. Pearl Basin Fish Consumption Advisories**

Stream Reach	Chemical	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	Do not eat any fish at all. Commercial fishing ban on all fish.
Bogue Chitto River, entire length in Mississippi	Mercury	Limit consumption of largemouth bass and large catfish (greater than 27 inches).*
Yockanookany River, entire length	Mercury	Limit consumption of largemouth bass and large catfish (greater than 27 inches).*
Pearl River from Hwy 25 near Carthage, downstream to the Leake County Water Park	Mercury	Limit consumption of largemouth bass and large catfish (greater than 27 inches).*

\* 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 than one meal of these fish every two weeks.

## TMDLs

Total Maximum Daily Loads (TMDLs) are pollution budgets. A TMDL determines how much of a pollutant can be present in a stream, river, lake, or other water body without affecting aquatic life or public health. TMDLs have been developed for 43 water body segments in the Pearl River Basin. Most of these TMDLs state the estimated amount of bacteria, persistent pesticides or sediments entering the waters and how much these pollutants should be reduced to restore healthy conditions. Rural and urban communities will need to work in partnership with resource management agencies to restore and maintain the water quality necessary to support aquatic life and safe recreation in these waters. An additional 66 TMDLs will be developed by 2008 for the water bodies remaining on the state's impaired waters list. Table 2 provides a summary of completed and needed TMDLs in the Pearl Basin.



### Legend

- 2004 Completed TMDL
- Perennial Stream
- Lake
- County

**Table 2. Pearl River Basin TMDL Summary**

	TMDLs Completed	TMDLs Needed by December 2008
Biological Impairment	3	24
Mercury	8	0
Metals (Aluminum, Copper, and Lead)	0	0
Miscellaneous*	6	0
Nutrients	1	8
Organic Enrichment/Low DO	2	8
Pathogens	19	10
Pesticides (including DDT and Toxaphene)	2	7
Sediment/Siltation	2	8
Toxicity (Total Toxics and Unknown Toxicity)	0	1
<b>Total</b>	<b>43</b>	<b>66</b>

\* Miscellaneous: Cause Unknown, Nonpriority Organics, Oil and Grease, PCBs, pH, Salinity/TDS/Chlorides, and Ammonia

### How can I learn more?

For more information on TMDLs, visit the MDEQ website at [www.deq.state.ms.us](http://www.deq.state.ms.us), or contact the MDEQ Office of Pollution Control, Surface Water Division, 601-961-5098.

## Drinking Water Protection

Ground water supplies most of the drinking water used in the Pearl River Basin. Although private domestic wells are still widely used in rural areas, most inhabitants of the basin have access to one of the public large-capacity wells in the region. However, Jackson uses surface water from the Pearl River and Barnett Reservoir to meet most of its water needs. The city can withdraw a total of 50 million gallons of water per day from the two locations. Increased awareness of vulnerability of surface waters has led to interest in developing source water protection plans for these water bodies.

Drinking water resources are protected by the federal Safe Drinking Water Act (SDWA). The SDWA establishes safe drinking water criteria (referred to as maximum contaminant levels or MCLs) and it requires assessments of the areas around supply sources to evaluate potential threats and level of protection that may be needed.

The 604 public drinking water wells in the Pearl Basin are typically deep and draw from aquifers naturally protected from pollutants by thick layers of clay. Tests conducted by the Mississippi Department of Health have shown that water quality for these public supplies is excellent.

## Fresh Water Discharge

The fresh water the Pearl provides to the Mississippi Sound is essential for the nourishment of coastal marshes in Mississippi and Louisiana. Awareness of the importance of this resource has increased dramatically since Hurricane Katrina damaged many acres of marsh in Hancock and Harrison counties. The Pearl's undiminished fresh water discharge to the estuaries of Lake Borgne and the western sound ensures that these waters have the proper salinity to produce oysters, shrimp, and fish that are economically important. In estuaries, fresh river water mixes with salty sea water, creating the appropriate salinity for these brackish habitat dwellers.



### How can I learn more?

For more information on drinking water assessments, visit [www.deq.state.ms.us](http://www.deq.state.ms.us), or contact the MDEQ Office of Land and Water Resources, 601-961-5395.

As authorized by the federal Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating “point sources” that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their treated wastewater goes into state waters. These permits specify the types, quantity, and concentrations of pollutants that may be discharged by a facility. Since its introduction in the 1970s, the NPDES permit program has led to significant improvements in our nation’s and Mississippi’s water quality.

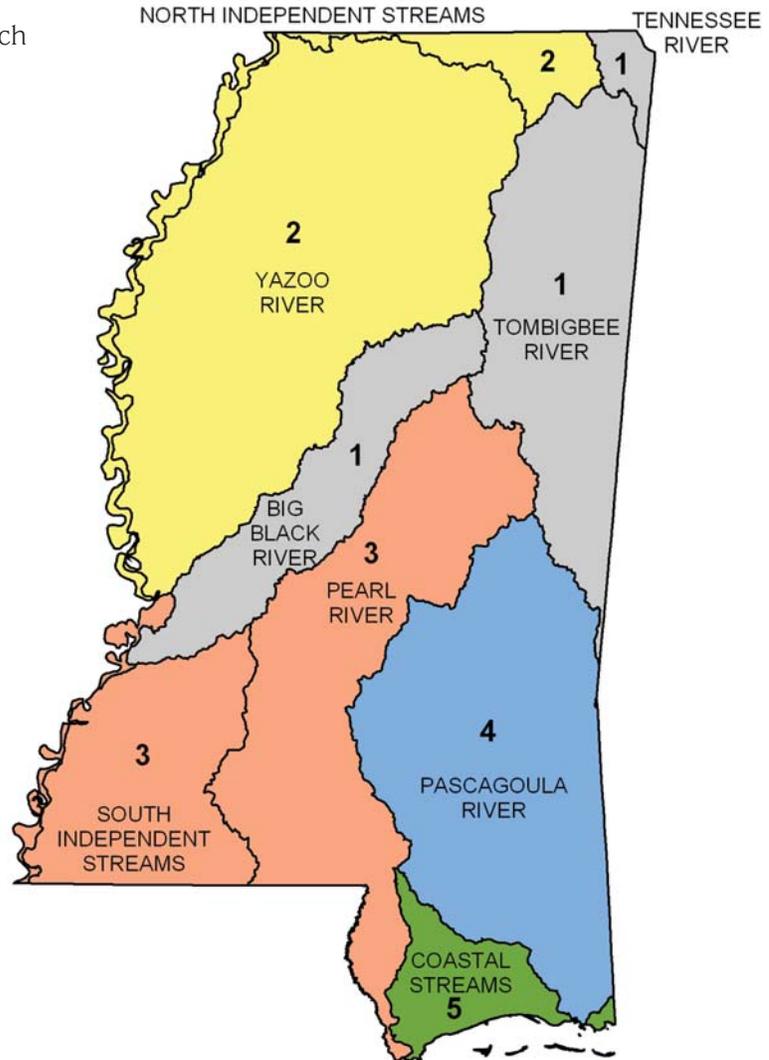
Before beginning work, a developer must obtain permits specifying temporary management practices that must be in place to keep excessive sediment from leaving a construction site. After construction is complete, permanent detention basins or similar measures may be required to treat the increase in stormwater runoff and pollutants as a result of the development.

### How can I learn more?

For more information on NPDES Permitting, visit [www.deq.state.ms.us](http://www.deq.state.ms.us), or contact the MDEQ Office of Pollution Control, Environmental Permits Division, 601-961-5702.

# Mississippi's Basin Management Approach

The mission of the Basin Management Approach is to foster stewardship of Mississippi's water resources through collaborative watershed planning, education, protection, and restoration initiatives. To accomplish this, nine of Mississippi's major river basins have been organized into five basin groups (see map inset). Each basin group has a basin team of state and federal agencies and local organizations. This team provides the opportunity for multiple levels of government and local stakeholders to coordinate their efforts. Together, basin team members help assess water quality, determine causes and sources of problems, and prioritize watersheds for water quality restoration and protection activities. The Basin Management Approach also encourages and provides the opportunity for basin team members to pool both technical and financial resources to address priority watersheds.



## How can I learn more?

Contact your Basin Coordinator:

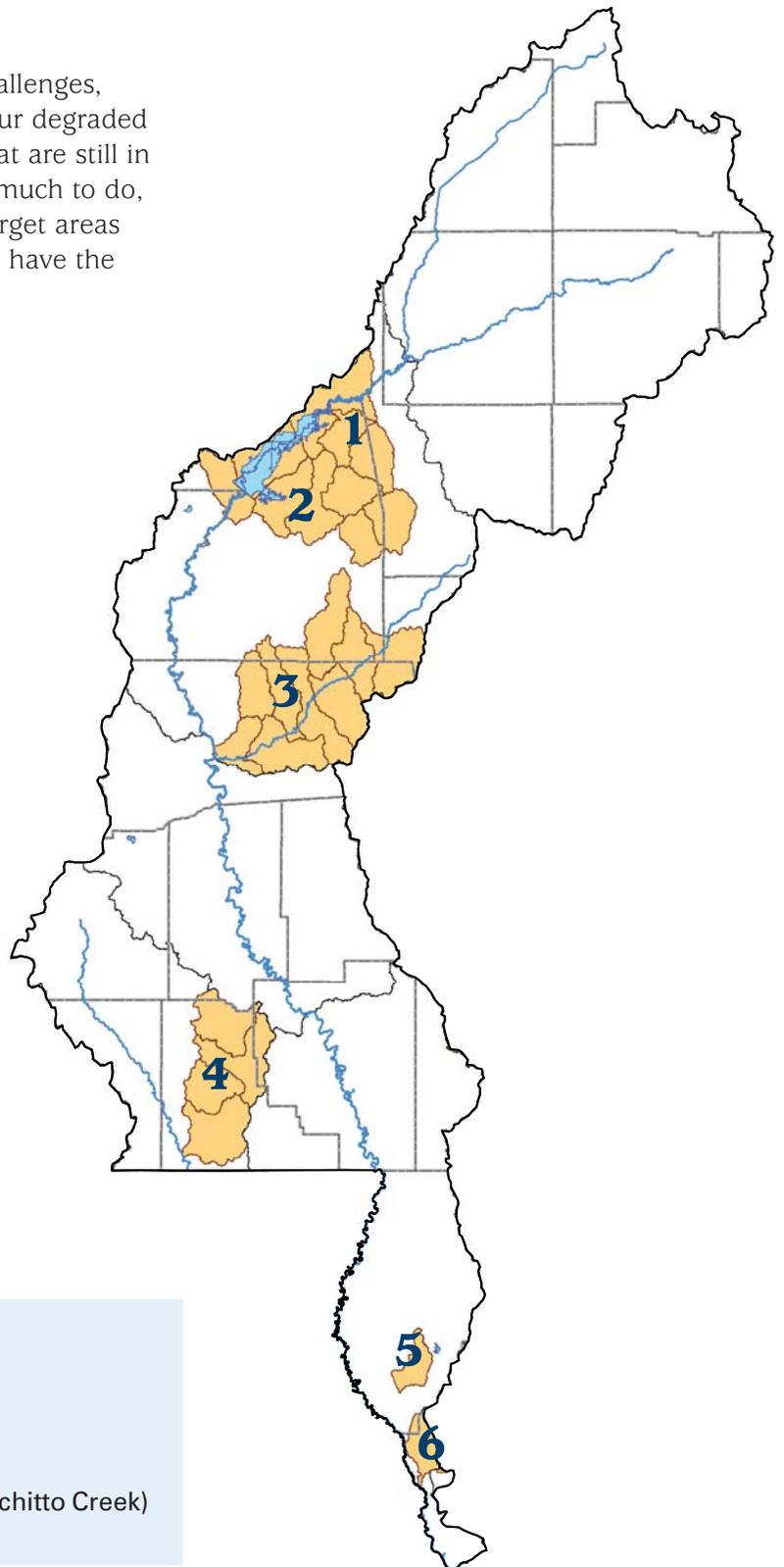
- Group 1** **Big Black River, Tombigbee River, & Tennessee River**  
Mary Katherine Brown (601) 961-5348 ● [mary\\_k\\_brown@deq.state.ms.us](mailto:mary_k_brown@deq.state.ms.us)
- Group 2** **Yazoo River & North Independent Streams**  
Steve Goff (601) 961-5238 ● [steve\\_goff@deq.state.ms.us](mailto:steve_goff@deq.state.ms.us)
- Group 3** **Pearl River & South Independent Streams**  
Janet Chapman (601) 961-5266 ● [janet\\_chapman@deq.state.ms.us](mailto:janet_chapman@deq.state.ms.us)
- Group 4** **Pascagoula River**  
Larry Estes (601) 961-5057 ● [larry\\_estes@deq.state.ms.us](mailto:larry_estes@deq.state.ms.us)
- Group 5** **Coastal Streams**  
Larry Estes (601) 961-5057 ● [larry\\_estes@deq.state.ms.us](mailto:larry_estes@deq.state.ms.us)

# Priority Watersheds

With so many water quality challenges, where do we begin to restore our degraded waters or protect our waters that are still in good condition? Since there is much to do, we need to set priorities and target areas where our collective efforts will have the greatest benefit.

## Legend

-  Priority Subwatershed
-  Watershed
-  Major River
-  Lake or Pond
-  County



Number	Watershed
1.	Fannegusha Creek
2.	Mill Creek
3.	Strong River
4.	Magees Creek
5.	"West Boley" Creek (W. Hobolochitto Creek)
6.	Mikes River



*Strong River*



*Mill Creek Watershed Implementation Team*



*Watershed management training*

The Pearl River Basin Team, composed of local, state, and federal resource agencies, with strong input from the general public and active local stakeholder organizations, has developed a list of priority watersheds for the Pearl River Basin. The team reviewed information on the basin's streams and lakes and ranked the watersheds based on resource value (intrinsic benefit to the citizens of the state), integrity of water quality data, level of support for management measures, and expected benefits. This review and ranking resulted in the targeting of specific watersheds for management planning and implementation activities.

Watershed Implementation Plans (WIPs) are being developed for five priority watersheds: Fannegusha Creek, Magees Creek, Mill Creek,

Strong River, and West Boley Creek. In addition, there are three basinwide management efforts: a Forestry Water Quality Protection Program, Natural Resource Enterprises Program, and a Pearl River Watershed Monitoring Project. In each priority area, watershed teams are being formed to coordinate efforts throughout the watershed. Mississippi Soil & Water Conservation Commission, local Soil and Water Conservation Districts, Natural Resources Conservation Service, U.S. Fish and Wildlife Service and other team members are identifying where to locate the best, cost-effective projects to improve water quality. Implementation plans will specify what each agency, organization, and landowner is willing to do to address water quality problems. Highlights of current priority watershed and basinwide management efforts follow.



Fannegusha Creek



Terraces slow down and hold back rainfall runoff carrying sediment off agriculture fields

## Fannegusha Creek Watershed

The Fannegusha Creek Watershed includes Fannegusha, Red Cane, and Hurricane creeks, all tributaries to Barnett Reservoir, the major drinking water supply for the City of Jackson. These flow through the northern portion of Rankin County and northwestern portion of Scott County. Almost half of the watershed is used for agriculture (mostly row crops dotted with pastureland), and the rest is covered with forest and wetlands. Soils in the watershed are highly erosive. Sediment erosion from crop and pastureland is occurring at a rate of 8 tons per acre per year. This sedimentation has degraded segments of Fannegusha, Red Cane, and Hurricane creeks from the headwaters of the watershed all the way to the Barnett Reservoir.

MDEQ has completed a total maximum daily load (TMDL) for sediment to set goals for pollutant reduction. The following management practices are being considered:

- Critical area plantings
- Grade stabilization structures
- Pasture and hayland planting
- Nutrient management

- Fencing to limit livestock access to streams
- Cross-fencing pasture to limit concentrated grazing near streams
- Grassed waterways
- Stream crossings
- Terraces

### *How* can I learn more and get involved?

Local participation and support are essential for the success of any restoration project. For information about restoration activities for the Fannegusha Creek Watershed, contact Patrick Vowell, MS Soil and Water Conservation Commission (601-354-7645).



Mill Creek



USGS pollutant monitoring station at Mill Creek gathers water quality data

## Mill Creek Watershed

Beginning north of Brandon in Rankin County, Mill Creek flows northwestward into the Pelahatchie Bay of Barnett Reservoir. Development and construction operations have increased the amount of water and sediment flowing into the creek during storms and have caused stream channels and stream banks to become unstable, leading to even more sediment falling in the creek.

The Rankin County Board of Supervisors is leading a watershed implementation effort under the Upper Pearl River Watershed Advisory Group to develop a Mill Creek Watershed Implementation Plan. The objectives of the plan are to stabilize channels and banks along Mill Creek, reduce nonpoint source pollutant loading throughout the watershed, and develop a water quality educational program for citizens of Rankin County. Specific measures that will be undertaken include:

- Low impact development plans and ordinances that manage stormwater through small, cost-effective landscape features located on individual lots

- Strategically placed sedimentation/detention basins to form “calming zones” in the flow pattern and reduce peak flow during significant rainfall events
- Bank and channel stabilization projects (Mill Creek northwest of Hwy 25)

### *How* can I learn more and get involved?

This effort is truly comprehensive. It will take all of us—local stakeholders and resource agencies—working together to improve the quality of the stream and protect Barnett Reservoir. For more information about restoration activities in the Mill Creek Watershed, contact Norman McLeod, Rankin County Administrator (601-824-2429).



*Strong River*

## Strong River Watershed

The Strong River Watershed in Simpson County includes Rials, Campbells, and Dabbs creeks, all of which are impaired and have been targeted for restoration. In these rural watersheds, agriculture (with over 220 poultry houses) dominates the landscape and the economy.

MDEQ has determined that all three creeks are impaired due to nutrients, siltation, and organic enrichment (which can deplete dissolved oxygen in the water). Restoration efforts in these watersheds will focus on reducing pollutants from poultry operations and failing septic systems. Controlling or eliminating sources of nutrients, organic material, and sediment will improve the quality of the waters in the Strong River watershed.

Anticipated management measures include:

- Identifying areas where best management practices (BMPs) for poultry operations will yield reduction in pollutant loadings
- Education of farm landowners and application of BMPs



*Stackhouse for temporary storage of poultry litter, allowing farmer to apply it on fields during dry weather*

- Education and outreach to inform landowners about proper use and maintenance of septic systems
- Education of realtors, septic system installers, and local officials about proper maintenance and operation of septic systems and homeowner wastewater treatment plants

### *How* can I learn more and get involved?

Local participation and support are essential for the success of these restoration efforts. For more information about restoration activities in the Strong River watershed, contact Jimmy Armstrong, Pearl River Basin Development District (601-354-6301).



MSWCC

*Livestock watering ponds provide water to cattle that have been fenced out of nearby streams. This helps reduce pathogen and sediment loads from cattle directly entering the streams.*

## Magees Creek Watershed

Magees Creek lies mostly in Walthall County, but its headwaters reach into Lawrence and Marion Counties. Tylertown is the only town in the watershed—less than 1% of the watershed is developed. Pastureland makes up 60% of the watershed and another 5% is cropland. Forests and wetlands cover the rest of the watershed.

MDEQ has determined that Magees Creek within Walthall County is impaired due to bacteria and sediment from agricultural practices. Presumably, animal wastes from cattle and poultry operations are significant contributors to the high levels of bacteria.

MDEQ has completed a TMDL for fecal coliform bacteria (an indicator of risk of disease from pathogens). Management measures needed to achieve reductions in bacteria loading and soil loss from pastureland include:

- Fencing to limit livestock access to streams
- Livestock watering ponds, watering troughs, and tanks
- Waste treatment lagoons
- Waste storage facilities



David L. Watts/Mississippi Outdoors

*Magees Creek*

- Composting facilities
- Heavy-use area protection
- Prescribed grazing
- Alum treatment of poultry houses
- Sediment control basins
- Critical area planting
- Stabilization structures

### *How* can I learn more and get involved?

A successful restoration effort on Magees Creek will make the creek safer for recreation and will improve water quality for the fish and other aquatic life. For more information about restoration activities in the Magees Creek Watershed, contact Mark Gilbert, MS Soil and Water Conservation Commission (601-354-7645).

# Basinwide Initiatives



Steve Guttledge

Forestry BMP—wheat planting in unused road to reduce erosion

## Forestry Water Quality Protection

The objective of this project is to evaluate the use of voluntary forestry best management practices. It will evaluate practices in the areas of streamside management zones, woodland trails and roads, forest harvesting, site preparation, wetlands, fire lane construction, and replanting vegetation in disturbed sites. The Mississippi Forestry Commission will work with the Mississippi Forestry Association to assist landowners in their efforts to reduce threats to water quality.

## Natural Resource Enterprises

The Natural Resource Enterprises (NRE) Program provides comprehensive training and materials for private landowners interested in developing a natural resource enterprise. NRE relies on various tools such as workshops, demonstration days, demonstration sites, newsletters, web sites, posters, brochures, publications, and radio shows. The NRE program demonstrates how market-driven, non-regulatory incentives can promote fee-access wildlife and fisheries enterprises while encouraging private landowners to embrace sustainable resource management and conservation practices.



NRCS

Bird watching



Steve Hasse

Researchers gather geomorphological data

## Pearl River Watershed Monitoring

One of the biggest threats to the Pearl River is excess sedimentation and turbidity (cloudiness of the water). This project conducted by The Nature Conservancy will assess the condition and shape of the channel, and the sources of excess sedimentation. The information developed will help locate the stretches of the river with the highest sediment loading, and pinpoint the best locations for appropriate management practices.

# Agencies and Organizations Cooperating for Improved Water Quality

Numerous state and federal agencies and stakeholder organizations are working together to protect the quality of the Pearl River Basin waters. These organizations have voluntary management and/or assistance programs that encourage the implementation of best management practices, regulatory programs that focus on permitting and compliance requirements, monitoring and assessment programs, and watershed management efforts. For specific information on water quality activities or how to be involved in watershed protection, contact:

## State of Mississippi Agencies

### Alcorn State University

601-877-6529 [www.alcorn.edu](http://www.alcorn.edu)

### Mississippi Department of Agriculture and Commerce (MDAC)

601-359-1100 [www.mdac.state.ms.us](http://www.mdac.state.ms.us)

### Mississippi Department of Environmental Quality (MDEQ)

601-961-5171 [www.deq.state.ms.us](http://www.deq.state.ms.us)

### Mississippi Department of Health, Bureau of Environmental Health (MSDH/BEH)

601-576-7400 [www.msdh.state.ms.us](http://www.msdh.state.ms.us)

### Mississippi Department of Marine Resources

1-800-374-3449 [www.dmr.state.ms.us](http://www.dmr.state.ms.us)

### Mississippi Department of Transportation (MDOT)

601-359-7920 [www.gomdot.com](http://www.gomdot.com)

### Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP)

601-432-2400 [www.mdwfp.com](http://www.mdwfp.com)

### Mississippi Development Authority (MDA)

601-359-2832 [www.mississippi.org](http://www.mississippi.org)

### Mississippi Emergency Management Agency (MEMA)

601-352-8314 [www.msema.org](http://www.msema.org)

### Mississippi Forestry Commission (MFC)

601-359-1386 [www.mfc.state.ms.us](http://www.mfc.state.ms.us)

### Mississippi Museum of Natural Science (MMNS)

601-354-7303 [www.mdwfp.com/museum/](http://www.mdwfp.com/museum/)

### Mississippi Soil & Water Conservation Commission (MSWCC)

601-354-7645 [www.mswcc.state.ms.us](http://www.mswcc.state.ms.us)

### Mississippi State University Extension Service

662-325-8747 [www.msucares.com](http://www.msucares.com)

### Mississippi Water Resources Research Institute

662-325-8087 [www.wrri.msstate.edu](http://www.wrri.msstate.edu)

### Natural Resource Enterprises

601-857-2284 [www.naturalresources.msstate.edu](http://www.naturalresources.msstate.edu)

### Pearl River Basin Development District (PRBDD)

601-354-6301 [www.pearlriverbasin.com](http://www.pearlriverbasin.com)

### Pearl River Valley Water Supply District (PRVWSD)

601-856-6574 [www.therez.ms](http://www.therez.ms)

## United States Government Agencies

### U.S. Army Corps of Engineers, Vicksburg District (USACE)

601-631-5000 [www.mvk.usace.army.mil](http://www.mvk.usace.army.mil)

### U.S. Department of Agriculture Farm Service Agency (USDA/FSA)

601-965-4300 [www.fsa.usda.gov](http://www.fsa.usda.gov)

### U.S. Department of Agriculture Forest Service (USDA/FS)

601-965-4391 [www.fs.fed.us](http://www.fs.fed.us)

### U.S. Department of Agriculture Natural Resource Conservation Service (USDA/NRCS)

601-965-4940 [www.ms.nrcs.usda.gov](http://www.ms.nrcs.usda.gov)

### U.S. Environmental Protection Agency, Gulf of Mexico Program (EPA GMPO)

228-688-3726 [www.epa.gov/gmpo](http://www.epa.gov/gmpo)

### U.S. Environmental Protection Agency, Region 4 (EPA/R4)

404-562-9900 [www.epa.gov/region4](http://www.epa.gov/region4)

### U.S. Fish and Wildlife Service (USFWS)

601-965-4900 [www.fws.gov](http://www.fws.gov)

### U.S. Geological Survey (USGS)

601-933-2900 [www.usgs.gov](http://www.usgs.gov)

## Stakeholder Organizations

### Gulf Restoration Network

504-525-1528 [www.healthygulf.org](http://www.healthygulf.org)

### Lower Pearl Partnership

504-831-9689 [www.nature.org/wherework/northamerica/states/mississippi](http://www.nature.org/wherework/northamerica/states/mississippi)

### Mississippi Band of Choctaw Indians

601-656-5251 [www.choctaw.org](http://www.choctaw.org)

### Mississippi Farm Bureau Federation

601-977-4238 [www.msfb.com](http://www.msfb.com)

### Mississippi Wildlife Federation

601-206-5703 [www.mswildlife.org](http://www.mswildlife.org)

### Pearl River Basin Coalition

601-957-7555 [www.pearlrbc.org](http://www.pearlrbc.org)

### Southwest Mississippi Streams Association

601-249-2528 [www.cleanstreamsms.org](http://www.cleanstreamsms.org)

### The Land Trust for Mississippi Coastal Plain

228-435-9191 [www.ltmcp.org](http://www.ltmcp.org)

### The Nature Conservancy (TNC) in Mississippi

601-713-3355 [www.nature.org/wherework/northamerica/states/mississippi](http://www.nature.org/wherework/northamerica/states/mississippi)

### Upper Pearl River Watershed Advisory Group

601-977-4248 [www.upperpearl.org](http://www.upperpearl.org)

# Sustaining Our Environmental Resources and Economic Development

Some citizens of Mississippi understand the importance of their natural resources, both for their environmental and economic values. Locally-led teams are working to identify concerns and develop watershed implementation plans. These plans will not only restore, protect, and sustain environmental resources, but also provide opportunities for economic development and community growth. The Mississippi Department of Environmental Quality and its resource agency partners are actively involved with local watershed teams through Mississippi's Basin Management Approach. Watershed planning, education, protection, and restorative initiatives are all critical tools for carrying out this important work. Mississippians are working hard to preserve their abundant natural resources that provide outstanding fishing, hunting, economic development, and quality of life.



*Fishing for generations*

## Citizens Can Help Protect Their Watershed by:

- **Getting involved with a local watershed team.** The success of the team depends upon active involvement of local citizens.
- **Requesting education and outreach materials that will help them become better stewards of their natural resources.** A wide range of materials and resources are available from numerous sources—contact your local NRCS office, Extension Service office or Basin Coordinator at MDEQ.
- **Implementing conservation practices to reduce amount of sediment, fertilizer, and pesticides in stormwater runoff.** Technical and funding resources are available—contact your local NRCS office, Extension Service office, or Basin Coordinator.
- **Properly disposing of pesticide containers and household chemicals.**
- **Inspecting and servicing septic systems at least every two years.**
- **Recycling used motor oil.**
- **Properly disposing of garbage, non-hazardous household wastes, and wild game carcasses.** Report incidents of illegal dumping to the MDEQ hotline, 1-800-725-6112.



*Storm drain marking*



Information Center  
**Mississippi Department of Environmental Quality**

PO Box 10385  
Jackson, MS 39289-0385  
601-961-5171

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