



Mississippi Department  
of Environmental Quality

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# Annual Report for Fiscal Year 2014



December 2014



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**STATE OF MISSISSIPPI**  
PHIL BRYANT, GOVERNOR  
**MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY**  
GARY C. RIKARD, EXECUTIVE DIRECTOR

December 31, 2014

The Honorable Phil Bryant  
Governor, State of Mississippi  
Post Office Box 139  
Jackson, Mississippi 39205

Dear Governor Bryant:

I hereby submit to you the annual report for the Mississippi Department of Environmental Quality for the state fiscal year ending June 30, 2014, and additional information about the agency for calendar year 2014.

The programs and initiatives promulgated by the agency further our mission to protect human health and the environment. The staff at the Mississippi Department of Environmental Quality are committed to conserving and improving our state's abundant natural resources and will continue to work together to achieve our mission. We are proud to be the steward of the state's air, land, and water which provide a multitude of benefits for our citizens.

We appreciate your support and hope you find this report useful and informative.

Sincerely,

A handwritten signature in blue ink that reads "Gary C. Rikard".

Gary C. Rikard  
Executive Director

GCR:jb

cc: Lieutenant Governor Tate Reeves

cc: Members of the Mississippi Legislature

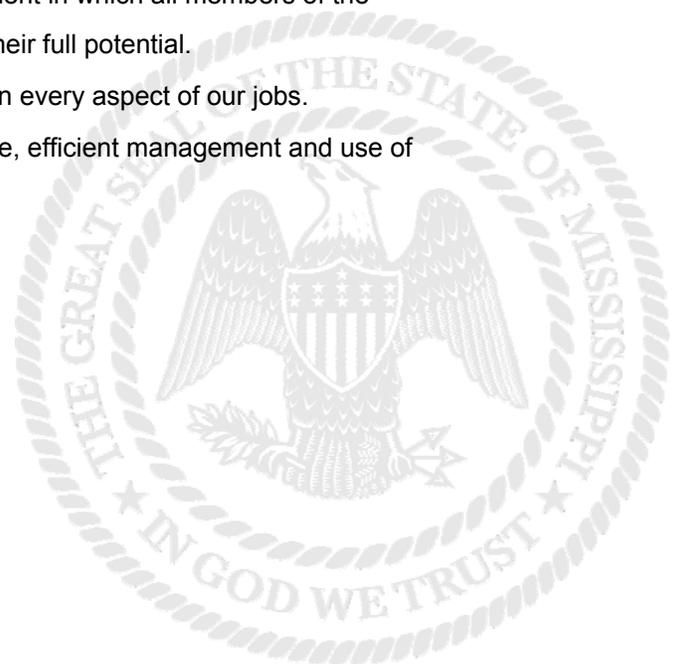


## Mission Statement

The mission of the Mississippi Department of Environmental Quality is to safeguard the health, safety, and welfare of present and future generations of Mississippians by conserving and improving our environment and fostering wise economic growth through focused research and responsible regulation.

## Values

- ◆ Truth is the foundation of everything we do.
- ◆ We vigilantly resist bias and prejudice.
- ◆ We respond promptly, courteously, and as completely as possible to every complaint question, or request for assistance.
- ◆ Inside the agency, we respect the capabilities, responsibilities, and contributions of every member of the MDEQ family. Outside the agency, we respect everyone, regardless of who they are or why we are brought together.
- ◆ We strive for a secure, stimulating, rewarding work environment in which all members of the MDEQ family are empowered and encouraged to reach their full potential.
- ◆ We are committed to the highest standards of performance in every aspect of our jobs.
- ◆ We are accountable, individually and collectively, for effective, efficient management and use of the resources provided to accomplish our mission.



## Gary Rikard



**Gary Rikard**, Executive Director  
of the Mississippi Department of  
Environmental Quality

Gary Rikard assumed the position of Mississippi Department of Environmental Quality (MDEQ) Executive Director beginning September 1, 2014, after being appointed by Governor Phil Bryant in July, 2014.

As MDEQ Executive Director, he manages a staff of more than 400 and a budget of over \$250 million. MDEQ is responsible for protecting the state's environment and administers most of the U. S. EPA programs, including air, water and waste management activities; monitors, models, and regulates water use; and functions as the state geological survey.

In addition to his duties as Executive Director, Rikard serves as Mississippi's Trustee for the Natural Resource Damage Assessment under the Oil Pollution Act and is tasked with leading Mississippi's recovery from the Deepwater Horizon Oil Spill.

Rikard, previously a partner with Butler Snow, LLP, has practiced environmental law since 1996, including serving as senior attorney at MDEQ from 1996-1998. His specialized legal experience included negotiating complex permitting and enforcement issues. Prior to earning his law degree, he worked as an environmental engineer at MDEQ, specializing in permitting and water quality compliance issues.

Rikard is experienced in a wide array of state and federal environmental standards including the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Mississippi Air and Water Pollution Control Law and the Mississippi Solid Waste Act.

He served more than 22 years in the Mississippi National Guard, retiring with the rank of Major. During his service, he served as assistant staff judge advocate, acting as the primary legal officer for environmental matters.

Rikard earned a bachelor's degree in civil engineering from Christian Brothers University, completed graduate studies in environmental engineering at the University of Mississippi School of Engineering, and holds a juris doctor degree from the University of Mississippi School of Law. He is a native of DeSoto County and, along with his wife Karen and their daughter Laura, resides in Madison.

## Commission on Environmental Quality

**Chair: Chat Phillips** - At Large

**Vice Chair: Charles Dunagin** -  
4th District

**R. B. (Dick) Flowers** - 1st District

**Martha Dalrymple** - 2nd District

**Jack Winstead** - 3rd District

**Kay Kell** - 5th District

**W. J. (Billy) VanDevender** - At  
Large



Flowers, VanDevender, Dalrymple, Winstead, Kell, Phillips, Dunagin

## Mississippi Environmental Quality Permit Board



Riecke, Bograd, Hoffmann, Boyd, Snodgrass, Royals, Lipe

**Chair: Leslie Royals**, Mississippi State Department of Health

**Vice Chair: David H. Snodgrass**, Mississippi State Oil & Gas Board

**Dennis Riecke**, Mississippi Department of Wildlife, Fisheries & Parks

**Jan Boyd**, Mississippi Department of Marine Resources

**Michael B.E. Bograd**, Mississippi Department of Environmental Quality

**James Hoffmann**, Mississippi Department of Environmental Quality

**Jim Lipe**, Mississippi Department of Agriculture & Commerce

## DEEPWATER HORIZON [MC-252] OIL SPILL

The Mississippi Department of Environmental Quality (MDEQ) continues to lead the state's efforts to restore and enhance the state's natural resources following the *Deepwater Horizon* Oil Spill in 2010. Executive Director Gary Rikard represents Mississippi as the state's Trustee on the *Deepwater Horizon* Natural Resource Damage Assessment (NRDA) Trustee Council and as the state's representative on the Gulf Coast Ecosystem Restoration Council (RESTORE). These bodies, comprised of federal agencies and the Gulf States, are working to implement multiple projects and initiatives to restore the natural resources of the Gulf of Mexico region.

At the state level, using a team of scientists and other subject matter experts, MDEQ is working with state agencies, local governments, NGO's, residents, industries, and business owners to "make Mississippi whole."

Mississippi is the first, of the Gulf Coast states affected by the BP oil spill, to give the public an online process for submitting restoration project ideas at its website, [www.restore.ms](http://www.restore.ms). MDEQ and Executive Director Rikard are using a texting service, website, and Twitter, among other outreach means, to disseminate information about the agency's upcoming projects, public meetings, and other information concerning restoration work on the coast. Information about the current status of restoration can be found at [www.restore.ms](http://www.restore.ms).

### Office of Oil Spill Restoration

In 2014, Gary Rikard established the Office of Oil Spill Restoration to oversee and manage the implementation of the state's restoration efforts stemming from the Deepwater Horizon Oil Spill. The office manages all aspects of restoration including Natural Resource Damage Assessment, RESTORE Council, and National Fish and Wildlife Foundation programs and projects. The office structure and personnel will evolve to include engineers, scientists, and accountants to ensure Mississippi's restoration is implemented to the highest environmental and financial standards.

MDEQ continues to receive and participate in National Response Center reports and dispatches staff along with the U.S. Coast Guard as appropriate for oil spill response. MDEQ staff conduct periodic inspections of shoreline segments for any presence or accumulation of oil or tar balls, and respond to citizens' concerns. MDEQ is prepared to inspect shoreline segments and respond to other conditions such as landfall in the event of a hurricane.



### GoCoast 2020

In August, 2012, Governor Bryant announced the creation of GoCoast 2020 to serve as the official advisory body for the allocation of funds received by the State of Mississippi under the Resources and Ecosystems Sustainability, Tourist Opportunity, and Revived Economies of the Gulf States Act of 2011 (RESTORE Act). The RESTORE Act directs that 80 percent of certain penalties assessed as a result of the Deepwater Horizon oil spill be directed to the five Gulf Coast states impacted by the spill. GoCoast 2020 was established to set a foundation and road map of priorities for Mississippi so the state will be better prepared as the final federal guidelines and regulations are set forth under RESTORE.

Created by an Executive Order from Governor Bryant, GoCoast 2020 was comprised of more than one hundred twenty business and community leaders, elected officials, and citizens from across the three Mississippi Gulf Coast counties.

As a Coast-driven process with the goal of including a broad representation of input into the Final Report, the GoCoast 2020 Commission relied on involvement from a wide range of people and expertise. Several hundred citizens attended and participated in the three listening sessions that were held in each of the three coastal counties in October, 2012. Through several months of meetings, workshops, public listening sessions, and extensive research, GoCoast 2020 focused on eight key areas related to the activities specified in the RESTORE Act. The purposes of this activity were to chart a vision and to provide a framework of recommendations that will protect the environment as the foundation of the coastal lifeblood, improve the job creation climate to increase economic opportunities, and enhance the unique quality of life for Mississippi's coastal residents in the near term and for generations to come.

GoCoast 2020's eight key areas of focus were:

- Eco-restoration
- Economic development
- Seafood
- Infrastructure
- Tourism
- Workforce development
- Small business
- Research and education



The GoCoast 2020 Commission's eight committees, called GoTeams, all identified several common threads that should be followed as the Mississippi Gulf Coast prepares for the implementation of the RESTORE Act. First and foremost, each GoTeam focused on the need for any project considered in the future under RESTORE to have as positive an impact as possible on the entire Coastal region, not just one single area.

Among the other shared goals of each GoTeam included the need for the long-term sustainability of any projects that are ultimately undertaken as a result of RESTORE. That includes financial stability so that there is a strong foundation in place for the Coast's continued growth in the future.

The GoCoast 2020 Final Report can be viewed in its entirety at [www.GoCoast2020.com](http://www.GoCoast2020.com).

## Natural Resource Damage Assessment (NRDA)

The *Deepwater Horizon* Natural Resource Damage Assessment (NRDA) is the legal process for developing the public's claim for natural resource damages against the party or parties responsible for the oil spill and to seek compensation for the harm done to natural resources and those services they provide. It also provides for the development of a restoration plan or a series of plans to restore or replace those resources as well as the structure by which Mississippi and others will plan and implement restoration of the Gulf of Mexico and/or compensation for damages. The *Deepwater Horizon* NRDA, given its geographic size, three-dimensional nature and ecological complexity, may continue for years.

Mississippi's *Deepwater Horizon* NRDA trustee is MDEQ Executive Director Gary Rikard. Working with trustees from the U.S. Department of Commerce (NOAA), the U.S. Department of the Interior, U.S. Environmental Protection Agency, U.S. Department of Agriculture as well as the four other Gulf States--Florida, Alabama, Louisiana, and Texas--MDEQ is determining how the oil spill affected the Gulf of Mexico's natural resources, ecosystems and the associated human uses.

The NRDA process provides clear guidelines for assessing damages by calculating the value of the restoration required to return the injured resources to their pre-spill conditions and to compensate for interim losses. From the early days of the spill and continuing even now, NRDA teams are collecting data related to a wide range of natural resources. Here in Mississippi, using a team of scientists and other subject experts, MDEQ is conducting a comprehensive, data-driven assessment of the type and extent of damage to ecosystem resources and habitats.

This information is used to assess potential impacts to natural resources. Lost human uses of these resources and habitats such as recreational fishing, boating, hunting, and beach activities also are being assessed.

Typically in a NRDA, the natural resource trustee(s) develops a restoration plan or plans to compensate for the impacts following a damage assessment. Establishing a comprehensive restoration plan involves analyzing data to determine injuries. A draft restoration plan will be developed and offered for public review and comment. Upon approval of the plan, a claim will be made for funds from the responsible parties. These funds will be used to implement projects designed to both restore and compensate for the injured natural resources as well as the human use losses associated with public lands.

Under a NRDA, plans for the implementation of early restoration projects prior to the final quantification of injury may be developed to achieve restoration faster. On April 21, 2011, the Trustees announced the Framework for Early Restoration Addressing Injuries Resulting from the *Deepwater Horizon* Oil Spill (Framework Agreement), in which BP agreed to fund \$1 billion in Early Restoration projects. Under the agreement, DOI, NOAA, and the five spill-affected Gulf states each will receive \$100 million to implement early restoration projects. The remaining \$300 million will be allocated by NOAA and DOI for early restoration projects proposed by state trustees.

The full NRDA process will continue until the trustees have determined the extent of damages caused by the *Deepwater Horizon* oil spill. At the end of the damage assessment process, the trustees will take into account any benefits that were realized from these early restoration projects. In addition to funding early restoration projects, BP will continue to fund the damage assessment and, together with other responsible parties, is obligated to compensate the public for the entire injury.

### Phase I Early Restoration

As of 2014, a total of \$82.5 million has been spent on early restoration projects in Mississippi since 2010. Completed projects include the laying of the largest oyster cultch in the history of the Mississippi Sound totaling \$11 million, and a \$2.6 million near shore artificial reef enhancement project. Completed projects brought jobs to the Mississippi Gulf Coast as local contractors were hired to do the work.



Oyster cultch being deployed in the fall of 2012.

### Phase II Early Restoration

The Trustees announced the Phase II Early Restoration Plan & Environmental Review in December of 2012. The Phase II projects, of which there are two, will help restore nesting habitats for beach-nesting birds and sea turtles impacted as a result of the *Deepwater Horizon* Oil Spill response activities.

### Phase III Early Restoration

In October of 2014 Governor Bryant announced that an additional \$68.9 million will be spent on restoration projects on the Mississippi Gulf Coast as a part of Phase III of early restoration from the *Deepwater Horizon* oil spill. The projects selected for Mississippi were:

#### ●Hancock County Marsh Living Shoreline

The project would provide for construction of up to six miles of living shoreline. Benefits would include reduction of erosion, re-establishment of oyster habitat, and enhanced fisheries resources and marsh habitat. Approximately 46 acres of marsh would be constructed to protect and enhance the existing shoreline near Heron Bay. In addition, 46 acres of sub-tidal oyster reef would be created in Heron Bay to protect the shallow bay and increase oyster production in the area. The estimated cost of this project is approximately \$50 million of which NOAA is funding a portion.

#### ●Restoration Initiatives at the INFINITY Science Center

INFINITY is a state-of-the-art interactive science research, education, and interpretive center located in Hancock County. Early restoration funds would be used to develop interactive exhibits at the INFINITY Science Center. These enhancements would replace lost recreational opportunities through enhanced visitors' access to coastal natural resources. The estimated cost of this project is approximately \$10.4 million.

#### ●Popp's Ferry Causeway Park

The project in Harrison County would provide for construction of an interpretive center, trails, boardwalks, and other recreational enhancements. This project would replace lost recreational opportunities by enhancing existing amenities allowing visitors to fish, crab, and observe nature. The estimated cost of this project is approximately \$4.7 million.

#### ●Pascagoula Beachfront Promenade

Early restoration funds for this project would be used to help complete a two-mile, 10-foot wide lighted concrete pathway. The purpose would be to restore the loss of recreational opportunities by enhancing access to the Mississippi Sound and its natural resources. The estimated cost of this project is approximately \$3.8 million.

## The Gulf Coast Ecosystem Restoration Council

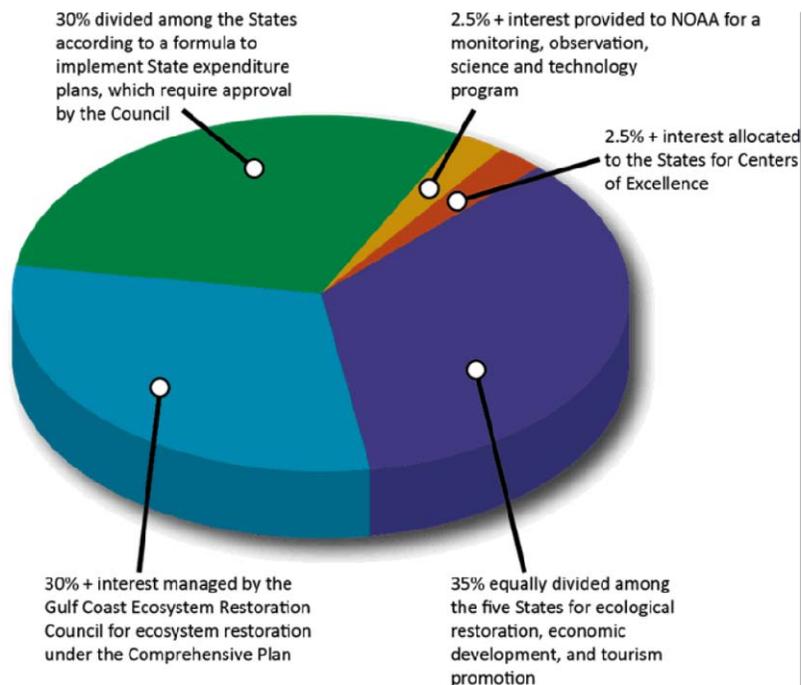
The Gulf Coast Ecosystem Restoration Council was established by the RESTORE Act to develop and oversee implementation of a comprehensive plan to help restore the ecosystem and economy of the Gulf Coast region in the wake of the Deepwater Horizon oil spill.

The Council is comprised of governors from the five affected Gulf States, the Secretaries from the U.S. Departments of Interior, Commerce, Agriculture, and Homeland Security as well as the Secretary of the Army and the Administrator of the U.S. Environmental Protection Agency. The Gulf States selected and President Obama appointed the Secretary of Commerce as the Council's Chair. MDEQ's Gary Rikard serves for Governor Phil Bryant on the Council.

The Council will work with states and local communities to identify projects and programs that will restore the region's natural resources and help benefit local businesses, boost their economies, and create jobs.

The RESTORE Act dedicates 80 percent of Clean Water Act administrative and civil penalties paid by responsible parties in connection with the Deepwater Horizon oil spill to the Gulf Region for ecological and economic recovery efforts. On October 14, 2014, the Interim Final Rule published by the U.S. Department of Treasury (Treasury) that regulates the Gulf Coast Restoration Trust Fund was finalized. Treasury issued regulations concerning the investment and use of amounts deposited in the Gulf Coast Restoration Trust Fund, which was established by the RESTORE Act.

The RESTORE Act sets forth the following framework for the Trust Fund:



## RESTORE Council Events in Mississippi in 2014

- On October 16, 2014, MDEQ hosted two webinars, to discuss Mississippi's strategy for RESTORE Bucket Two proposal submissions.

The publicly available English and Vietnamese webinars described the RESTORE Bucket Two submission process and the proposals that Mississippi intended to submit to the RESTORE Council for inclusion on the Council's first draft funded priorities list.

The projects and programs selected by the Council will be included in a draft Funded Priorities List and published for public comment. Approximately \$150 to \$180 million from the settlement with Transocean Deepwater, Inc., and related entities, will be available to fund projects and programs under the Council-selected Restoration Component. The Council will select and fund projects and programs that restore and protect the natural resources, ecosystems, water quality, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

- On November 17, 2014, MDEQ announced the state's Bucket Two proposals submitted to the RESTORE Council for inclusion on the Council's first "funded priority list."

Mississippi partnered with a number of other Council members to submit three initiatives. If funded, the projects could create thousands of additional acres of conserved lands across the Gulf region, establish the state's first Mississippi Sound Estuarine Program, and streamline environmental program activity in the future through coordinated efforts around the availability of beneficial use materials.

The state's three proposals were:

- Strategic Land Protection, Conservation, and Enhancement of Priority Gulf Coast Landscapes - A coordinated multi-state strategy for land protection, conservation and enhancement of priority lands across the Gulf.
- Creation of a Mississippi Sound Estuarine Program (MSEP) which will provide a structured network of scientists, citizens, and communities to focus on policy matters important to Mississippi's environment.
- Enhancing opportunities for beneficial use of dredge sediments - Coordination of a federal/state joint initiative to fund planning, engineering and design, and permitting of beneficial use materials and sites in an effort to expedite activities around readiness for large scale environmental project work to come in the coming months and years.

## National Fish and Wildlife Foundation

The National Fish and Wildlife Foundation's (NFWF) Gulf Environmental Benefit Fund was created as part of the settlement between the U.S. Department of Justice, BP, and Transocean Deepwater, Inc. to resolve certain criminal charges against both companies in relation to the spill. Under the allocation formula and other provisions contained in the plea agreements, a total of \$356 million will be paid into the Gulf Fund over a five year period for conservation projects in the State of Mississippi.

In March, 2014, MDEQ announced receipt of a \$3.6 million grant from the National Fish and Wildlife Foundation. The money will be used by MDEQ to coordinate the views, visions, values, and plans of the people of the Gulf Coast as Mississippi puts together an integrated, coastal wide, restoration plan.

Over the coming year, Mississippi will conduct robust vision mapping, through innovative upstream stakeholder engagement, soliciting the views, and visions, of the people of the Gulf Coast. The planning process will continue through 2017 as relevant planning documents, current restoration efforts, and stakeholder input are merged with science-based data to help determine the most effective, and comprehensive plan for restoring our Gulf Coast.



In August 2014, as an initial part of Mississippi's Restoration Planning project, and as next steps in Mississippi's continued public engagement strategy, MDEQ held a series of Community Conversations – one in each of the coastal counties. A number of non-governmental organizations, community organizations and state and federal agencies assisted in facilitating small group discussions where community members were able to voice individual values, ideal characteristics, and visions for their communities.

Participants were also able to identify and prioritize restoration targets and activities or actions associated with those targets. There were over 200 participants, representing 125 organizations, across the three coastal county locations. This foundational community information will help to complement the scientific data being collected for the Mississippi Comprehensive Ecosystem Restoration Tool. These priorities will in turn be used to help guide the writing and development of the Mississippi Coastal Restoration Plan.



Within each Community Conversation, small groups tackled various questions that created discussions around individual and organizational values, characteristics, and visions. The full Community Conversation report may be found at [www.restore.ms](http://www.restore.ms).

On, November 17, 2014, Governor Phil Bryant announced that Mississippi had been awarded more than \$28 million dollars from NFWF for three new restoration projects spanning across Harrison, Hancock, and Jackson counties. This brings to date nearly \$39 million in restoration and planning projects awarded to Mississippi through the Gulf Environmental Benefit Fund. More than \$21 million of the money will be used for vital marsh creation and restoration in three priority bay systems along the Gulf Coast including St. Louis Bay, Back Bay of Biloxi, and the Pascagoula/Escatawpa system. Over many decades, these

priority bays have experienced significant impacts due to shoreline erosion, storm damage, and alterations to sediment transport – contributing to the loss of thousands of acres of tidal marsh habitat. This project will advance Mississippi's beneficial use program to facilitate a cost-effective, sustainable approach to restoring and protecting significant coastal marsh and bay shorelines.

Approximately \$4.5 million will bolster Mississippi's fishing industry through the expansion of a Reef Fish Assessment Program. This two year project will gather vital fishery data on abundance, distribution and life-history characteristics of red snapper and other reef fish occurring at the more than 16,000 acres of permitted offshore artificial reef sites.

The third project, totaling more than \$2.6 million, will continue enhancement of habitat value of state lands in coastal Mississippi through improved management of invasive species. This project is an expansion of the 2013 Gulf Environmental Benefit Fund grant awarded to address invasive species management on land within Mississippi's Coastal Preserves Program. Invasive species management work will take place in Buccaneer and Shepard State Parks as well as in the Ward Bayou Wildlife Management Area. An invasive species assessment will take place in the Pascagoula River Wildlife Management Area. Work to control persistent invasive species will include prescribed burning, mechanical and chemical control of invasive vegetation, and feral hog control. This project will focus on improving significant coastal marsh and transitional upland habitat through the control and eradication of non-native and invasive plant species and the improved tidal connectivity of these habitats to the Mississippi Sound.

The three projects were developed in consultation with MDEQ and federal resource agencies, and are designed to remedy harm or reduce the risk of future harm to natural resources that were affected by the 2010 *Deepwater Horizon* oil spill.

# AIR QUALITY

## Air Quality Standards and Planning

Mississippi has historically met all federal ambient air quality standards. However, new, more stringent federal standards for ground-level ozone, nitrogen dioxide, sulfur dioxide, lead, and visibility recently promulgated by the U.S. Environmental Protection Agency (EPA) are jeopardizing this track record. Increased planning and monitoring efforts will continue for several years because of these changes.

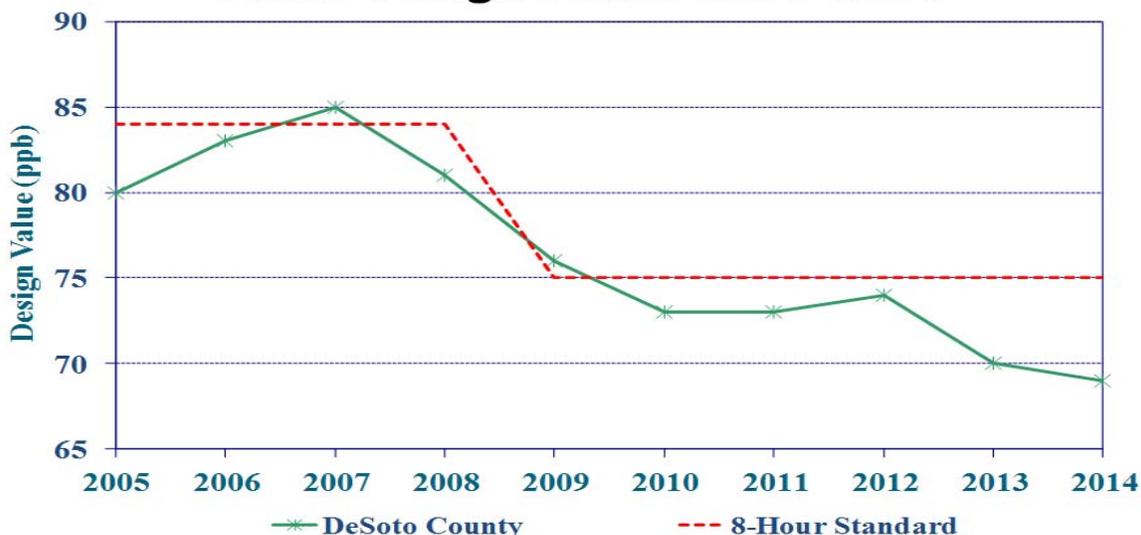
Emissions reductions in Mississippi and adjoining states, as well as favorable meteorological conditions, resulted in a recent downward trend in ozone concentrations culminating with all Mississippi counties being designated by EPA as attainment with the ozone standard of 84 parts per billion (ppb) in 2004. In 2008, EPA issued a new ozone standard of 75 ppb. Final designations of the standard were made in 2012. All Mississippi counties were again designated as attainment with the exception of a portion of DeSoto County. Although DeSoto County met the standard, most of the county was designated as part of the Memphis Nonattainment Area. MDEQ continues to challenge the DeSoto County designation, and is currently awaiting a ruling on the issue from the U.S. Court of Appeals, D.C. Circuit. In addition, because of significant decreases in ozone concentrations in the Memphis area in 2013 and 2014, preliminary data indicates that all of the Memphis Metropolitan Area is now meeting the standard. If the data certification process confirms this finding, MDEQ plans to work with the Shelby County Health Department and the States of Tennessee and Arkansas in 2015 to request that EPA re-designate the area as in attainment based on 2012 to 2014 data.

MDEQ is continuing a voluntary ozone precursor air pollution control program in partnership with governmental and business leaders on the Coast and in DeSoto County in efforts to prevent or mitigate future nonattainment.

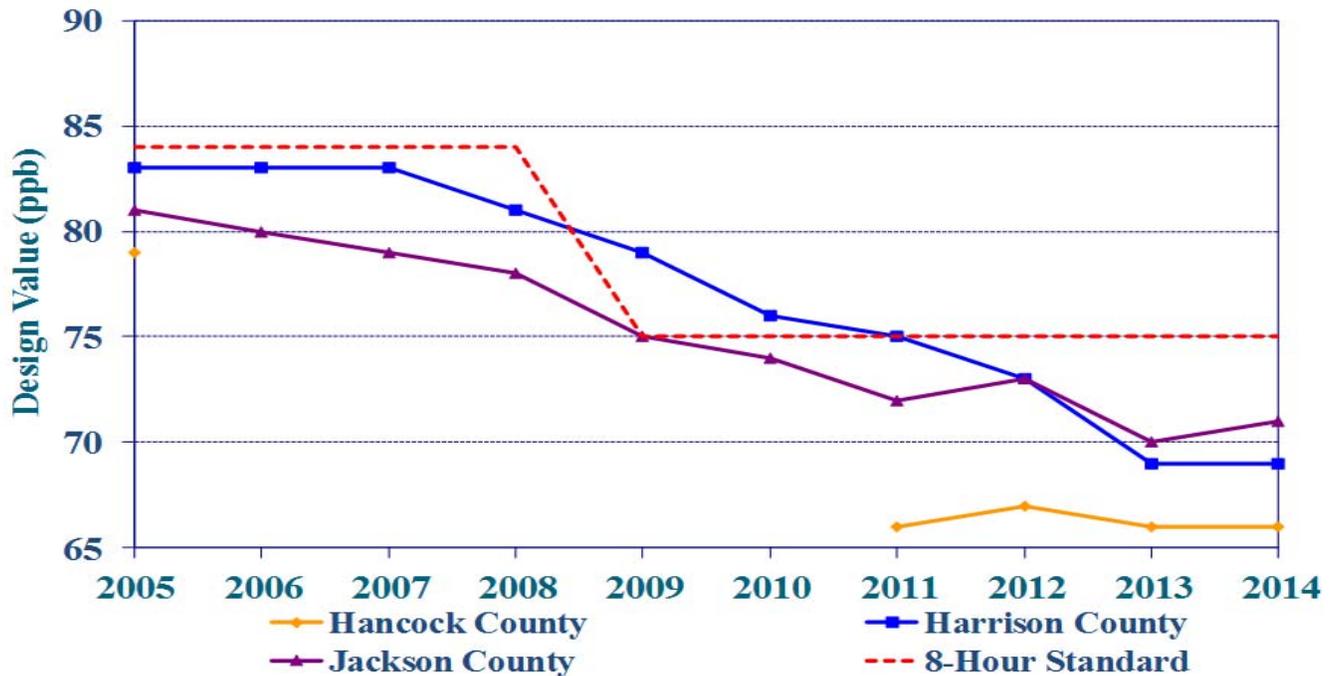
In 2008, EPA issued a new lead standard that required MDEQ to monitor for lead starting in December 2011 to determine if the state will meet the new standards. Mississippi is meeting that standard. In addition, EPA has issued new standards for nitrogen dioxide and sulfur dioxide. In 2012, EPA designated all Mississippi counties as attainment with the nitrogen dioxide standards. Sulfur dioxide designations have not been issued yet to states attaining the standard using monitoring data, including Mississippi. EPA retained the current standards for carbon monoxide. Mississippi is meeting those standards. Proposed standards for annual average particulate matter were made in December 2012. The standard was reduced from 15 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) to  $12 \mu\text{g}/\text{m}^3$ . Final designations of the standard will be made in December 2014 using 2011-2013 data. The 24-hour average standard remained at  $35 \mu\text{g}/\text{m}^3$ . Mississippi is meeting both of those standards.

MDEQ issues daily air quality forecasts for the Mississippi Gulf Coast and the Jackson Metropolitan Area from April through October each year. Also, MDEQ, in association with the Memphis-Shelby County Health Department, issues air quality forecasts for DeSoto County. These forecasts are made available through e-mail, the MDEQ web site and Twitter. The purposes of these forecasts are to keep the public informed about the status of air quality, to issue health advisories when needed, and to notify the members of the respective ozone precursor reduction programs when they should implement their emissions reduction plans.

### DeSoto County Ozone Design Values 2005-2014



# Mississippi Gulf Coast Ozone Design Values 2005-2014



## Southeast Modeling, Analysis, and Planning (SEMAP)

Mississippi is working with nine other southeastern states to address the many new air quality standards that have or will come out in a more efficient and effective way. The SEMAP group, which includes several MDEQ staff members, is addressing the new standards from a regional perspective. This is necessary because air emissions from Mississippi may impact other states' air quality and other states can impact Mississippi's air quality. It is also more efficient and cost effective because the group can hire contractors to help develop inventories and perform air quality modeling and analysis for much less than each state trying to do the work on their own. The modeling effort has been continuing and results will be available to use for the new standards.

## Air Emission Inventory Branch

The Air Division develops an inventory that quantifies the air emissions from various sources each year. Every third year, EPA requires a complete inventory that quantifies emissions from all major Title V sources on a detailed level and estimated emissions from smaller stationary and mobile sources. The inventory quantifies emissions for over 200 air pollutants and also includes emissions related information such as control devices, exhaust stack parameters, and fuel type. This work involves gathering the emissions data from the emissions sources, quality assuring it, and submitting it to EPA in a prescribed format. An Inventory for Calendar year 2012 was due December 31, 2013. MDEQ completed and submitted the 2012 major source inventory on time. Work is currently being done on the calendar year 2013 inventory which is due by December 31, 2014.

## Mississippi Diesel Emissions Reduction Project State Grants

MDEQ used Diesel Emission Reduction (DERA) State Grant funds in 2013 to fund competitive sub-grant projects in which entities applied for funding by submitting an application following a request for proposals. Entities proposed diesel emission reduction strategies and were encouraged to provide matching funds for their projects. Eligible projects included engine repowers, engine upgrades, engine replacement, retrofitting of equipment, cleaner fuels, or idle reduction technologies. Eligible entities for this project included universities, private organizations, non-profit organizations, businesses, and any county, city, and other local governments. In 2013, MDEQ received 20 applications requesting over \$600,000 in funding. MDEQ awarded six grants for approximately \$160,000. In 2014, MDEQ used DERA funding to assist school district in replacing older diesel buses with newer, cleaner, and more efficient 2014 model buses. MDEQ helped in the replacement of ten buses in eight school districts in the state. Due to the success of this grant program, MDEQ expects to continue this program with a new DERA State Grant from EPA.

## Air Monitoring

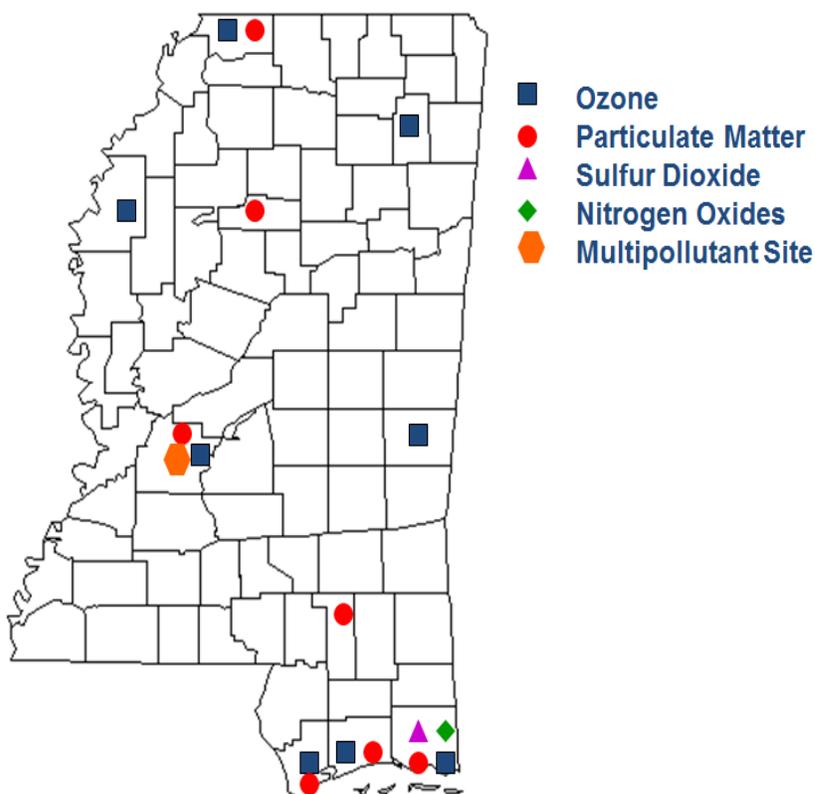
During FY2014, MDEQ operated a network of automated continuous air analyzers and 24-hour manual samplers for the purpose of measuring ambient air levels of ozone, particulate matter, sulfur dioxide, nitrogen dioxide, lead, and carbon monoxide.

This monitoring network serves many purposes including:

- Determine attainment and nonattainment areas for ground-level ozone, particulate matter, sulfur dioxide, nitrogen dioxide, and carbon monoxide.
- Generate data to assist in determining methods to reduce visibility obscuration.
- Support ozone reduction programs and hazardous air pollutant programs.
- Determine general air quality trends.



## 2014 Mississippi Ambient Air Quality Monitoring Sites



## Asbestos

Asbestos is a potential danger with most building demolition and renovation operations. Therefore, the regulations continuing to be implemented by MDEQ require affected facilities to inspect for asbestos before work begins and specify work practices and procedures for asbestos abatement when the material is present and may be disturbed by demolition and/or renovation activity. Implementation activities include communicating the requirements of the regulations to project owners and operators, demolition/renovation project inspections to ensure regulation compliant operations, and providing home owners information and assistance to help them perform activity in a safe manner.

MDEQ also gives close attention to the handling of asbestos in schools for the protection of children. Inspections are performed in schools to review compliance with Asbestos Management Plan requirements and school officials and administrators are provided technical assistance to help them

comply with the regulations. Additionally, individuals who engage in asbestos abatement must have proper training for their work which MDEQ ensures through an asbestos abatement certification program.



## Air Toxics

Many facilities are regulated for air toxics or air emissions that may cause acute or chronic health conditions. These hazardous air pollutant (HAP) emissions are primarily controlled or reduced under regulations that are called maximum achievable control technology (MACT) standards. Facilities typically must install additional control equipment and/or change process equipment or materials in order to significantly reduce HAP emissions. There are 174 different categories of major source HAP emission facilities affected by MACT standards and 70 different categories of smaller HAP emitting facilities, called area sources. MDEQ implements these regulations to approximately 200 major source facilities and thousands of area source facilities. The types of affected facilities range from large chemical plants and petroleum refineries to small dry cleaners, gasoline stations, and auto body shops.

Air toxic activities also include the implementation of accidental release prevention regulations. Certain chemicals used by facilities in communities across Mississippi could become very dangerous should there be an uncontrolled release. The regulated facilities are evaluated for appropriate measures to prevent releases, as well as their preparedness to minimize the consequences of a release, should one accidentally occur. These facilities are required to have an active risk management program and must submit a summary of that program called a Risk Management Plan (RMP) for MDEQ review. Inspections are also performed to review facility compliance with the regulations. During 2014, there were 153 active regulated facilities and 39 facility RMP inspections performed.

## Title V Program

Mississippi received full approval from EPA in January 1995 to administer the Title V Air Operating Permit program. This program originated in the amendments to the Clean Air Act enacted in 1990. Each major source of air pollution is required to obtain a Title V Operating Permit which sets out all air requirements applicable to the source and specifies the methods by which the source must demonstrate compliance. All aspects of Title V permitting are handled by the MDEQ Environmental Permits Division, while all compliance certifications and demonstrations are handled by the MDEQ Environmental Compliance and Enforcement Division. In FY 2014, 75 Title V permits were issued and 145 inspections were conducted.

The Air Division meets regularly with the Air Advisory Council to keep them updated with the Title V work and the level of effort. The Air Division evaluates the annual revenue and expenditures and the Air Advisory Council uses this data to recommend the Title V fee for the next year.

The revenue needs are reported to the Commission on Environmental Quality so that the appropriate fee rate can be adopted prior to the September 1 annual fee payment date. The Air Division also handles the collection of emissions information from fee-subject sources and provides this fee-assessment information to the MDEQ Office of Administrative Services which handles fee billing and collection.

### Lead-Based Paint Program

Exposure to lead-based paint is a serious health concern for children that are six years of age and under and for developing fetuses.

- Lead is a heavy metal which is believed to have been a serious public health problem for centuries.
- Dust and debris from activities that disturb lead-based paint can be dangerous if not managed properly.
- Even children that seem healthy can have high levels of lead in their bodies.
- Lead poisoning can cause permanent learning and behavior problems and have medical consequences throughout a person's life.



Mississippi's Lead-Based Paint Program operates a certification program that has been delegated to the state by EPA. MDEQ establishes requirements for the certification of persons and firms engaged in lead-based paint activities, and it establishes work practice standards for performing such activities. The Program also establishes procedures and requirements for the accreditation of lead-based paint activity training programs. The regulations are applicable to all persons engaged in lead-based paint abatement and renovation activities in target housing and child-occupied facilities.

Another important step in the goal to eliminate childhood lead poisoning was taken with the EPA's Renovation, Repair, and Painting (RRP) rule. The rule addresses hazards created by renovation, repair, and painting activities that disturb lead-based paint in target housing and child-occupied facilities. MDEQ's RRP regulations were modeled after the federal rules and went into effect in April 2010. MDEQ's Lead-Based Paint regulations were amended in 2013 to reflect changes to the EPA's regulation.



In addition to certifying persons and firms engaged in lead-based paint activities, program staff performs audits of training courses and performs inspections of job sites to ensure compliance with the regulations. During FY2014, the MDEQ Lead-Based Paint Section performed nine training course audits, 39 site inspections (including investigations at seven complaint sites) and certified 556 individuals and firms involved in lead-based activities.

# WATER RESOURCES

## Developing and Implementing Conjunctive Water Management Strategies for the Mississippi Delta through the Delta Sustainable Water Resources Task Force

The future of the Mississippi Delta's economic and environmental viability depends on abundant, accessible water of sufficient quality. Water needs in the region are broad and include personal consumption, irrigation, aquaculture, fisheries and aquatic habitat, wetland function, wildlife, and waste water assimilation. Over 17,000 permitted irrigation wells screened in the shallow Mississippi River Valley Alluvial Aquifer (MRVA) are used for irrigation and aquaculture and pump approximately 1.5 billion gallons of groundwater each day. However, this pumpage demand has exceeded the recharge to the MRVA resulting in continuing overbalances of groundwater withdrawals versus aquifer recharge, and notable water level declines in the aquifer. Because of increased yields and profitability that irrigation provides over dry land farming, the level of water withdrawal permit applications continues to increase which further complicates this issue.

Fortunately, these challenges are in a region that experiences historically around 53-55 inches of rainfall each year, is adjacent to the 1-1.5 MM cubic feet/second flow of the Mississippi River, and is downstream from four adjacent major flood control reservoirs. So, although the challenges are significant, opportunities exist for the development of conjunctive water management options and alternative surface water supplies.

Conjunctive water management is the foundation for sustainable Delta water resources. In its simplest context, conjunctive water management is managing the coordinated use of surface and groundwater to satisfy desired water needs such that the total benefits exceed the sum of the benefits that would result from independent management of each water resource.

On August 28, 2014, Governor Phil Bryant issued an executive order establishing the Governor's Delta Sustainable Water Resources Task Force. Under the direction of the MDEQ Executive Director, the task force is charged to work together to ensure that the Delta will have future sustainable water supplies. In 2011, MDEQ formed an executive level multi-agency and multi-organization task force that developed and implemented actions to sustain water resources for agriculture, fisheries, and wildlife in the Delta. The Governor's Executive Order establishing the task force provides affirmation of the importance of this work and charges the members to work in a unified and collaborative manner.

Office of Land and Water Resources (OLWR) staff lead the task force work group designed to develop and implement conjunctive water management strategies in the Delta. Core strategies include identification and evaluation of alternative surface water supplies; advancement of irrigation efficiency and conservation practices; understanding historical trends, current status, water use, and water budgets as a management tool; modeling future scenarios for planning and implementation purposes; monitoring and assessing water resources information; and identifying and developing economic incentives and funding sources. OLWR staff also lead a task force work group that is addressing how to implement a program for producers to measure water used for irrigation and waterfowl management to foster conservation at the farm level. During 2014, an initial five percent meter installation goal was met for the Delta counties and reporting tools and strategies were developed for the collection and analysis of the water use data collected. This activity will provide needed water use information for regional modeling and management uses. OLWR staff also support a third task force work group led by a Delta stakeholder organization that is addressing stakeholder awareness, outreach, education, and training needs. Over the past year, three functional teams and eight alternative water supply teams were created to implement various plans developed to further the goal of conjunctive water management. OLWR staff is lead or co-lead of two of the functional teams and three of the alternative water supply teams.



## Assessment and Study of Water Resources

The abundant water supplies in Mississippi constitute one of the most important and valuable natural resources in the state. These resources attribute directly to the quality of life and economic prosperity of the state. However, the water resources available in areas of the state can vary significantly depending on various hydrogeologic conditions that may affect base flow in streams, water quality and quantity, as well as the prolificacy of local aquifers. The highly variable nature of these resources means that a concerted effort must be maintained to collect related groundwater and surface water data that will allow proper decisions to be made regarding the management and development of the state's water resources.

In 2014, work continued on a project to evaluate the availability of groundwater resources in Lafayette County. Cross sections throughout Lafayette County were completed, as well as a map of the top of the Porter's Creek Formation, illustrating the subsurface geology of the county. Outcrop areas were projected to the surface for part of the Wilcox aquifers, and this work is continuing. Plans are being developed to take water quality samples from water wells in the county to give a more complete understanding of the water resources available in Lafayette County.

In the fall of 2014, the Office of Land and Water Resources entered into a cooperative agreement with the United States Geological Survey (USGS) to update, refine, and utilize the Mississippi Delta portion of an existing regional groundwater flow model developed by the USGS. This large-scale regional model covers the entire Mississippi embayment and extends through the primary drinking-water aquifers as part of the Mississippi Embayment Regional Aquifer Study (MERAS). This model will be used to better understand the groundwater flow system, the potential effects of variations in pumping patterns, and to evaluate various water resources management scenarios. Hydrogeologic data developed over the past five years by OLWR staff, including information on the topstratum and the deeper Tertiary aquifers, as well as data from other agencies, will be used for the purpose of creating an integrated model database. This process will also allow for data gap analysis in order to identify missing data sets and prioritize the collection of these data. Once new data and missing data are identified, these datasets will be prioritized for collection and/or integration into the existing groundwater flow model. The model then will be updated to 2014 conditions.

In the southern third of Mississippi, sand beds of the Catahoula, Hattiesburg, Pascagoula, and Graham Ferry Formations form the main aquifers that are primary sources of water supplies. These formations contain numerous interbedded layers of sand and clay. The complexity of these sediments has made it difficult to map the surface geology and delineate the aquifers in the subsurface. The MDEQ Office of Geology and OLWR continued their work in this area to map the surficial geology and construct geologic cross-sections across the area. The objectives of this effort are to identify and protect the recharge areas of the aquifers that are sources of water in this region and to correlate and determine the extent of the sand intervals that form these aquifers in the subsurface.

In anticipation of an increase in demand for water resources due to recent exploration activities by oil and gas companies, OLWR initiated a study to evaluate groundwater resources in Wilkinson and Amite Counties to determine the availability of groundwater for use in an oil and gas well completion method known as hydraulic fracturing, and to assess the susceptibility of the fresh water sands to contamination. This work was performed in conjunction with the above-mentioned study of the aquifers of southern Mississippi which provided the foundation for the present work. Maps of the structural elevation of the tops of the Glendon and Moody's Branch Formations and geohydrologic cross-sections detailing the fresh water section in the subsurface have been completed. A map depicting the elevation of the base of fresh water relative to Mean Sea Level has also been completed.

### **Water Management Associated with Hydraulic Fracturing**

In addition to the water resources study in Wilkinson and Amite Counties described in the preceding section, additional OLWR staff has been working to support development of the Tuscaloosa Marine Shale in Southwest Mississippi using hydraulic fracturing technology. Because of the significant volumes of water required for this procedure, the agency worked closely with petroleum companies to meet their water supply needs. Balancing the vast economic potential of the shale play with the effective management and protection of the local water resources is a priority of the agency. A long-term water management strategy for the region is under development that will include the use of alternative water supplies.

### **Source Water Protection**

The OLWR staff continued its efforts to protect the drinking water supplies of the 1,200 public water systems operating in the state as part of activities related to the Source Water Assessment/Protection Program. This program focuses on the proper siting of new wells and addressing potential sources of contamination identified in the vicinity of drinking water supplies. MDEQ is also working to identify abandoned public water supply wells so they can be properly plugged by a licensed well driller. Improperly abandoned water wells can serve as potential conduits for the introduction of contaminants into drinking water aquifers. As of November 2014, 76 wells in 31 counties have been properly plugged and abandoned at a total cost of \$1,073,804. This coordinated plugging effort is being funded by the Mississippi State Department of Health.

## Mississippi Agricultural Chemical Groundwater Monitoring Program

The Mississippi Agricultural Chemical Groundwater Monitoring (AgChem) Program was initiated in March 1989, for the purpose of determining if the use of agricultural chemicals is impacting groundwater quality in Mississippi. As of June 30, 2014, the Program has sampled over 1,960 groundwater sources throughout the state. To date, results indicate that no significant impacts to groundwater quality are directly attributable to agricultural practices in the state.

During the state fiscal year 2014, 31 samples were collected for analysis. Included in this total were eighteen drinking water samples, and thirteen irrigation, fish culture or wild-life management samples. The program remains committed to testing wells statewide, including those located in the highly agriculturalized Mississippi Delta. Analysis of the 31 samples performed by the Ag-Chem program showed only one detect of an organic compound exceeding Federal Primary Drinking Water Standards and/or State of Mississippi Groundwater Standards. Upon receiving the results, the site was immediately resampled and revealed no traces of any compounds upon retesting. The offending sample was flagged as a 'false detect'; the site, however, will be resampled as a precautionary measure in subsequent years. For inorganic testing, six samples indicated concentrations of iron above Federal Secondary Drinking Water Standards for FY2014.



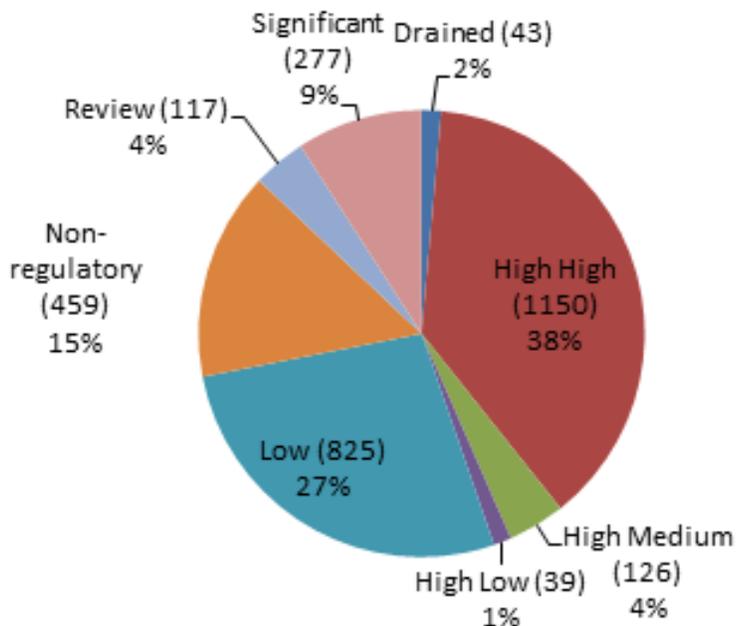
## Dam Safety

The Dam Safety Division reviews plans for repairs/modifications to existing dams, reviews plans for the construction of new dams, conducts and reviews dam inspections, performs engineering analyses of dams, and reviews and approves Emergency Action Plans (EAPs) for high hazard dams in addition to other duties. There are currently 269 high hazard dams, 62 significant hazard dams, and 3,528 low hazard dams on the state's inventory, making Mississippi sixth in the nation for the number of dams on inventory.

During Fiscal Year 2014, 231 dams were inspected and, the information produced by these inspections resulted in dam owners initiating repairs or rehabilitation on nine high hazard dams and one significant hazard dam. The division also reviewed and approved applications to construct 24 new low hazard dams.

There are currently 237 EAPs on file for high hazard dams, which is an increase of 10 since 2013. The goal to have the owners of all high hazard dams submit EAPs for review and approval presently stands at approximately 88 percent. The approval process includes review and approval at the county level by the local Emergency Management Agency and all first responders that would be required to implement the plans. This procedure has extended the anticipated schedule for completing the documents, but the involvement of local agencies in the plan development greatly enhances the value of the plans in safeguarding lives and property in the event of a dam failure.

## Dam Classification Summary





MDEQ has also been working over the last couple years to better manage the state's inventory of dams. Much of the current inventory of 3,528 low hazard dams had not been reevaluated for changes in downstream development in more than 30 years until recently. A recent contractual project to re-evaluate the hazard classification of 3,036 of these low hazard dams resulted in a recommendation to re-classify 1,315 of these dams to high hazard and 277 of these dams to significant hazard.

In addition, Dam Safety staff has been working to identify dams that have been constructed in the past 30 years without authorization that should be on the state's inventory. Preliminary results show that there are more than 7,500 dams (including the current inventory) in the state that meet the threshold to be included on the state's inventory. To date, preliminary data on unauthorized dams has been collected for about a third of the state. In the coming year, the whole state should be completed and hazard classification performed for these dams.

One of the other major duties of the staff is to respond to dam failures and incidents. Staff members responded to six dam incidents/failures in FY2014 and were able to handle each emergency successfully. The staff also assisted

dam owners with performing controlled breaches of four high hazard dams to protect the downstream public from a potential failure of these dams. During emergencies, the Dam Safety Division provides on-site response and technical assistance to the county emergency managers and to the dam owners.

### **Drillers Licensing**

During FY 2014 the Drillers Licensing Program issued or renewed 219 licenses for drillers or pump installers. Program personnel taught a Continuing Education course about Mississippi drilling laws and regulations at both the winter and summer conferences of the Mississippi Water Well Contractors Association and also at a conference on the campus of Southwest Mississippi Community College.



### **Total Maximum Daily Load and Modeling Section**

The Total Maximum Daily Load (TMDL) is a calculation of the maximum amount of any single pollutant that can be present in a water body while that water continues to meet its water quality standards. The TMDL also determines how much of the pollutant come from point sources, such as industry and communities, or nonpoint sources, such as storm-water runoff from urban areas or agriculture.

Water bodies that do not meet water-quality standards are identified as "impaired" for the particular pollutants of concern. Under Section 303(d) of the Clean Water Act (CWA), states are required to develop a list of impaired waters needing TMDLs. MDEQ, biennially, creates this 303(d) List of Impaired Waters. MDEQ's 2014 list was adopted by the Mississippi Commission on Environmental Quality on June 26, 2014. In addition, MDEQ completed seven TMDLs between July 2013 and June 2014.

### **Pearl River TMDL Project**

The 2014 Pearl River TMDL project updated the 2009 Pearl River Nutrient TMDL for the segment of the river from the Ross Barnett Reservoir to the confluence with the Strong River. This segment is the county boundary between Hinds and Rankin Counties and Copiah and Simpson Counties. It includes the several point source discharges. The pollutants of concern are total phosphorus (TP) and total nitrogen (TN).

The 2009 TMDL for the Pearl River utilizes a mass balance approach for TMDL development. This updated 2014 TMDL used dynamic computer model simulations to provide more accurate estimates of the TMDL for this segment of the Pearl River. The modeling allows simulation of the nutrients available in the river and the response variables of dissolved oxygen, dissolved oxygen saturation, and chlorophyll-a. By manipulating the nutrient level reductions, the corresponding responses can be studied to predict expected outcomes. This TMDL provides an estimate of the TN and TP allowable in this river to produce the predicted outcomes.

Mississippi does not have water quality standards for allowable nutrient concentrations. MDEQ is currently working on the development of numeric criteria for nutrients. This TMDL is based on a computer modeling simulation to estimate the total nutrient load allowable in the segment and the nutrient input from the point source dischargers.

The limited nutrient information and estimated existing concentrations indicate reductions of nutrients can be accomplished with implementation of best management practices (BMPs) and discharge limitation of TN and TP from the point sources.

The TMDL project went to public review and MDEQ received several comments on this TMDL project. The TMDL is being revised based on the comments and will be going back to public review this fall. This TMDL project will be an important step in MDEQ's work toward establishing appropriate TN and TP limits for point and nonpoint sources in the future.

### **Modeling for NPDES Permit Limits**

The TMDL section is working with National Pollutant Discharge Elimination System (NPDES) permitted facilities to help with upcoming nutrient criteria, existing nutrient TMDLs, and new oxygen permit limits. These new limits potentially strain the existing capacity for treatment for many small towns in Mississippi. The TMDL section is working with these communities to improve the existing computer models through new survey methods and more intensive monitoring and research. These actions will ensure accuracy in the development of water quality based limits for these facilities.

As an example of this work, in the summer the TMDL section worked in the town of Houston, Mississippi, on Chico Creek. Houston's POTW discharges one million gallons of treated wastewater daily into Chico Creek. The monitoring effort this summer was to gather the needed data and geographical information to improve the accuracy of the computer model of Chico Creek.



A dye study was conducted to measure the average velocity of the stream. In natural waterways, the water will flow quickly through some segments, and will pond and flow slowly through other segments. To measure the average velocity or flow rate, a dye poured in the creek and traced downstream to measure how much time it takes to flow from the beginning station to the subsequent downstream stations. The dye is safe for human and aquatic contact and approved by EPA for this use. The distance is measured in miles between the stations, and also the time it takes to flow between stations. By calculating the time and distance, the average velocity of the stream is determined. At the same time, the elevation of the water above sea level is measured at each station. The slope of the stream is also calculated. The slope and average velocity are important physical characteristics of streams as they help the stream to reaerate itself as it flows downstream. This natural reaeration helps in the natural assimilation of the treated wastewater that is discharged into the stream.

## Fish Tissue Monitoring Program

The MDEQ Laboratory monitors fish tissue for contaminant levels that could be harmful to people that consume fish from the state's waters. When elevated levels of contaminants are found in fish tissue, the data is used by a multi-agency task force to determine if a fish tissue consumption warning or advisory is warranted. Presently, there are advisories for Mercury, DDT, Toxaphene, and PCBs on many state waters.

Ambient fish tissue monitoring for 2014 was focused on sites where advisories for Mercury, DDT, and Toxaphene have been issued. The purpose was to collect additional data to further inform decisions on advisories. In addition, tissue was collected in the Mississippi Sound to monitor King Mackerel for Mercury and Selenium levels, and MDEQ, working with Georgia Pacific, conducted a population/diversity study on the fish community of the lower Leaf River.

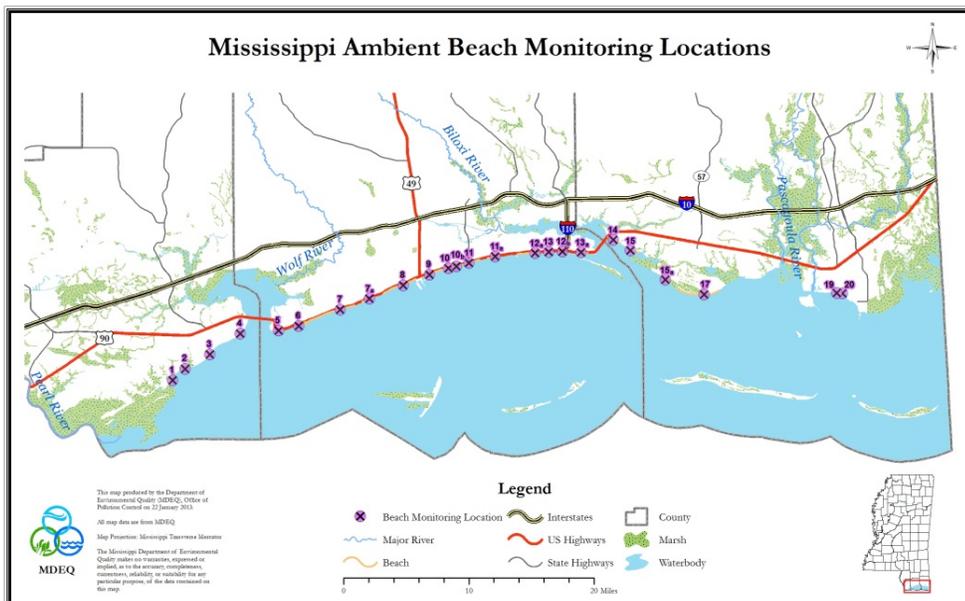


Laboratory biologists also investigated numerous fish kills throughout the state in 2014. At least one of these was caused by a toxic blue-green algae bloom in a small lake. Laboratory biologists are on call during weekends and holidays to respond to fish kill reports and to assist the Emergency Services Branch if needed with water sampling and wildlife damages.

## Coastal Beach Monitoring Network

MDEQ's Coastal Beach Monitoring Program, operated in conjunction with the University of Southern Mississippi's Gulf Coast Research Laboratory (GCRL), conducts routine bacteria and water chemistry sampling at 22 beach stations located along Mississippi's Gulf Coast. MDEQ is a partner within the multi-agency Beach Monitoring Task Force composed of the EPA Gulf of Mexico Program, the Mississippi Department of Marine Resources, GCRL, Mississippi Secretary of State's Office, and the Mississippi State Department of Health. This Beach Monitoring Task Force oversees the program and issues beach advisories when needed. MDEQ and the Beach Monitoring Task Force rely on data collected under this program to assess health and safety issues for users of Mississippi's recreational beaches. When Enterococcus bacteria concentrations reach unsafe levels, beach advisories are issued. In addition, the monitoring data provide information concerning the seasonal water quality conditions of the immediately accessible waters along the public bathing beaches. Beach water quality conditions are made available to the public via a Beach Monitoring webpage developed by GCRL that can be accessed on the MDEQ homepage. Information is also available by Facebook, Twitter, and by advisory email and text notification.

During 2014, a total of 39 advisories were issued for elevated bacteria detected through routine sampling with an average length of seven days. In addition, there were four preemptive beach closures issued due to sewage related issues and one advisory changed to a closure due to consistently high bacteria levels at Pass Christian West Beach. The 39 bacteria advisories and five closures covered 320 beach days or four percent of the 8,030 beach days available in the year.

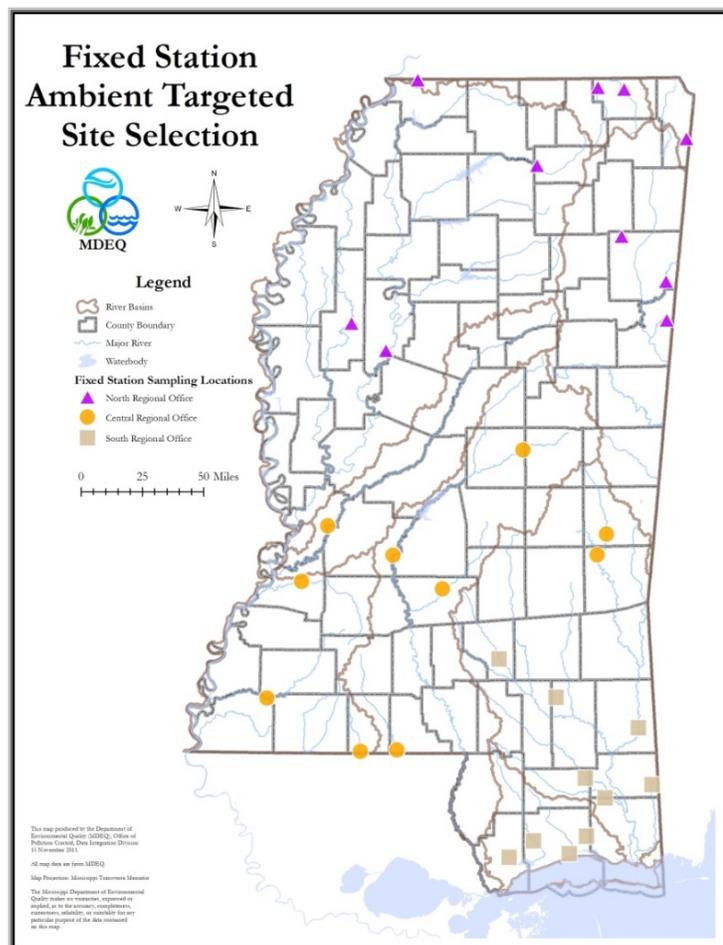


## Mississippi Benthic Index of Stream Quality (M-BISQ)

The Mississippi Benthic Index of Stream Quality (M-BISQ) is an index of biological integrity (IBI) that is used to assess all Wadeable non-tidal streams in Mississippi with the exception of Wadeable streams located in the Mississippi Alluvial Plain. Monitoring efforts completed as part of this effort have greatly increased the number of biological assessments conducted on state waters. The M-BISQ sampling program and the established sampling and analytical methodology contained therein now serves as the foundation for routine biological monitoring in MDEQ's statewide Ambient Monitoring Network. This index was originally developed using biological and environmental data collected from 463 stream locations. In 2014, MDEQ collected biological data at 45 sites. To date MDEQ has completed 14 phases of M-BISQ monitoring for a total 1615 biological samples at 1391 sampling locations. Results from the M-BISQ effort are being used to assess the health of Wadeable streams and to steer future biological monitoring and assessment activities. Much of the basis for Mississippi's §305(b) water quality assessment is from data collected and analyzed from the M-BISQ monitoring project.

## Mississippi Alluvial Plain Monitoring

In 2002, MDEQ began collecting biological community, physical, chemical and habitat data on Wadeable streams in the Mississippi Alluvial Plain, commonly referred to as the Mississippi Delta. These data, along with historical monitoring in the Mississippi Alluvial Plain will be used to develop an index of biological integrity for the Mississippi Delta. The effort to develop an index of biological integrity for the Delta is an ongoing effort with the USGS. The data collected are also being used to evaluate the dissolved oxygen levels in the Delta as well as support nutrient criteria development. With each new set of data collected annually during September to October, the index will be refined, and when finalized, biological monitoring in the Mississippi Delta will be incorporated into MDEQ's Ambient Monitoring Program. Since monitoring was initiated in 2002, approximately 100 sites have been monitored. In 2011, MDEQ has acquired Light Detection and Ranging (LIDAR) data for the Mississippi Alluvial Plain and has used that data to establish drainage areas for each of the monitoring locations. Land use analyses have been completed, and were used to refine the preliminary index. A draft report is currently in the review process, and the final report should be available in 2015.



## Fixed Station Ambient Monitoring

A network of statewide stations provides systematic water quality sampling to monitor water quality status and trends over a long-term period. Sampling is carried out by MDEQ scientists from each of the three regional offices. Each office is responsible for the stations in its region.

There are currently 10 stations in the north and central regions and 11 in the southern region for a total of 31 stations statewide. Laboratory analysis for the samples is done by MDEQ's Laboratory located in Pearl. Several stations in the sampling network are historical stations that have monitoring data dating back to the 1970s.

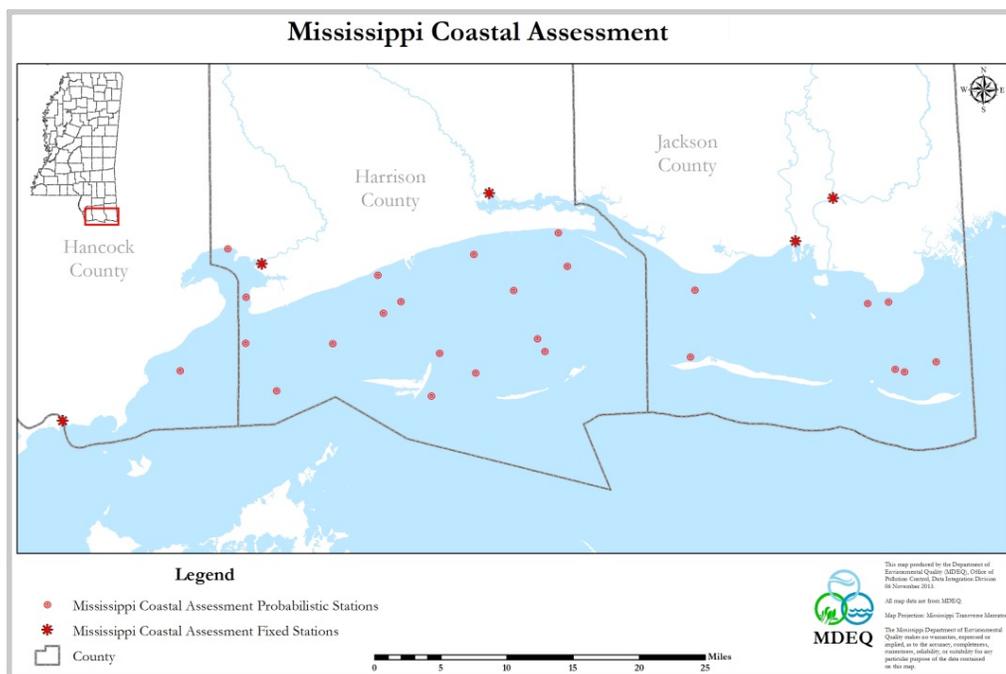
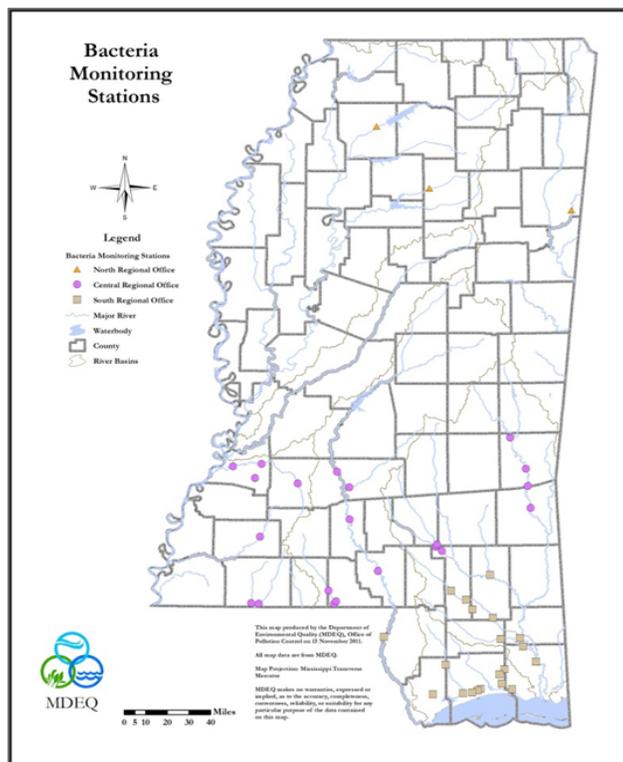
## Ambient Recreational Monitoring Network

MDEQ maintains a monitoring network for flowing waters in the state that are used for primary contact recreation. These sites are located on the recreational water bodies to monitor fecal coliform for the safety of Mississippi citizens that use these waters for recreational purposes. Monitoring is done at these locations in order to collect five samples within a 30-day period. This sample frequency allows for the calculation of a geometric mean for the fecal coliform data. In 2014, 47 stations were monitored for recreational purposes in the state. Each location is monitored in both the contact (May-October) and non-contact (November-April) seasons.

## Coastal Monitoring

MDEQ participated in the EPA National Coastal Assessment (NCA) Program from its inception in 2000 through 2006. When EPA suspended funding for the NCA program, MDEQ partnered with the Gulf Coast Research Lab and the Mississippi Department of Marine Resources to continue a very similar sampling program, the Mississippi Coastal Assessment Program (MCA). This monitoring helps evaluate long term coastal water quality conditions, and was particularly valuable after Hurricane Katrina and during the rebuilding efforts. This data will also be utilized to help examine long term environmental impacts following the *Deepwater Horizon* oil spill.

MCA monitoring is conducted during the late summer index period (July-September) and includes biological, chemical and physical sampling. Sites are selected using a probabilistic site selection methodology. At the end of a five year cycle, a total of 125 sites will be sampled for the coastal monitoring program.



## Ambient Lake Monitoring

In 2009, MDEQ began collecting chemical, physical and biological samples from public lakes throughout the state. Candidate lakes are greater than 100 acres in size and without nutrient enrichment. Since the program's inception, MDEQ has selected 20 lakes per year to sample so that over a five year cycle approximately 100 lakes will be sampled for the ambient lake monitoring program.

## State of Mississippi Water Quality Assessment 2014 Section 305(b) Report

Section 305(b) of the Federal Clean Water Act (CWA) requires each state to describe the quality of their water resources in a report for the United States Environmental Protection Agency (EPA), Congress, and the public on a biennial basis. The Mississippi Department of Environmental Quality (MDEQ), is the state agency responsible for generating this report. The purpose of Mississippi's 2014 Water Quality Assessment §305(b) Report is to comprehensively describe for EPA, Congress, and the public the status of the quality of the state's surface waters. This 2014 §305(b) report fulfills all reporting requirements under §305(b) of the CWA. Along with the water quality assessment information, the report also describes the state's assessment methodology and gives the causes, where known, for those waters identified as impaired.

## Mississippi's Numeric Nutrient Criteria Development Activities

In 2014, MDEQ continued efforts to development numeric nutrient criteria for Mississippi's various water body types. MDEQ's goal is to develop scientifically defensible criteria that are appropriate and protective of Mississippi's waters. The criteria for each water body type will be coordinated with other water body types to ensure consistency across the state and protection from downstream impacts. Highlights of MDEQ's numeric nutrient criteria development efforts include:

- MDEQ established the Mississippi Nutrient Technical Advisory Group (TAG) in 2010. The mission of the TAG is to provide technical expertise and regional knowledge to MDEQ for the development of scientifically defensible numeric nutrient criteria. The TAG consists of over 30 members representing multiple state and federal agencies and four Mississippi universities. In 2014, the Mississippi Nutrient Technical Advisory Group focused on providing continued technical input on developing nutrient criteria for Mississippi's wadeable and non-wadeable streams, lakes and reservoirs, coastal and estuarine waters, and Mississippi Delta waters. MDEQ continues data analyses efforts based on recommendations from the TAG.
- In 2014, MDEQ continued to provide Nutrient Criteria Update Sessions for Mississippi stakeholders. MDEQ held two stakeholder update sessions providing stakeholders with an update regarding the work MDEQ is performing to develop the criteria. These update sessions also promote open communication between MDEQ staff and stakeholders. MDEQ plans to hold update sessions regularly with this group throughout the numeric nutrient criteria derivation process. MDEQ's goal is to promote transparency of the process and provide stakeholders an opportunity to ask questions and provide feedback to MDEQ and the Mississippi TAG.
- In 2014, MDEQ continued to develop the plan for numeric nutrient criteria implementation. While developing the criteria values themselves, MDEQ also focused significant efforts into exploring concerns and questions raised by both internally by MDEQ staff and stakeholders. The plan for how numeric nutrient criteria will be implemented must also be developed and understood by both MDEQ staff and Mississippi stakeholders. MDEQ will continue to work concurrently on both criteria development and implementation planning for Mississippi.
- MDEQ continues to collect data and conduct studies to support nutrient criteria development. In 2014, ongoing activities included development of a benthic index for Mississippi's coastal waters, a benthic index for Delta waters, as well as data collection efforts across the state.



## The Gulf of Mexico Alliance Nutrients Priority Issue Team: Reducing Nutrients and Nutrient Impacts

Mississippi continues to lead the Nutrients Priority Issue Team (PIT) of the Gulf of Mexico Alliance. The Gulf Alliance is a partnership among the states of Alabama, Florida, Louisiana, Mississippi, and Texas working to address the priority issues related to the ecological health of the Gulf of Mexico. The Nutrients PIT is providing a collaborative approach to building and evaluating tools needed to reduce excess nutrients and restore coastal waters that have been negatively impacted by excess nutrients.

### Storm Water Regulations

Implementation of Mississippi's Storm Water General Permits and regulations continued in Fiscal Year 2014.

- The Environmental Permits Division (EPD) issued general permit coverage for 320 large construction projects (five acres or greater).
- EPD issued general permit coverage for 49 regulated industrial facilities under the Baseline Storm Water General Permit for Industrial Activities.
- EPD received and processed 43 "No Exposure Certifications" from potentially regulated industrial facilities. Facilities that certify "no exposure" of industrial activity to storm water are not required to obtain storm water coverage under the Baseline General Permit.



The Mississippi Environmental Quality Permit Board reissued the statewide Multimedia Ready-Mix Concrete Facility General Permit (MSG11) on April 1, 2014. This permit authorizes the discharge of process wastewater and storm water run-off into waters of the state and the construction and operation of air emissions equipment from Ready-Mix concrete facilities in accordance with the provisions of the Mississippi Air and Water Pollution Control Law. This reissuance will allow the continued operation of Ready-Mix Concrete facilities for an additional five-year period. Coverage recipients wishing to be covered under the reissued general permit must submit a re-coverage form within 30-days of the date of the Letter of Instruction.

### Environmental Operator Training

The Operator Training program began in 1969 to provide instruction and technical assistance to municipal and domestic wastewater personnel and facilities. The training, provided at no cost to the operator, was initially associated with a voluntary certification program offered by the Mississippi Water & Pollution Control Operator's Association. Administration of the certification program was transferred to the agency in 1987 when the State Legislature mandated certification of all municipal and domestic wastewater operators. The certification regulations include a requirement for continuing education during each three year certification period.

In 2014, the staff conducted 325 technical assistance and outreach activities. The 2014 training calendar included 43 days of agency-sponsored training classes. Of these training days, 34 were co-sponsored with the three wastewater related professional associations in the state (Mississippi Water and Pollution Control Operators' Association, Mississippi Water Environment Association, and Mississippi Rural Water Association). Attendance at agency-sponsored sessions totaled 675 operators, utility managers and engineers. Certification exams were administered to 153 prospective operators with a total number of 202 new and renewal certificates issued. Currently 723 certified pollution control operators in the state hold a combined 763 certificates. The training staff also provides on-site technical assistance to municipal, commercial and industrial wastewater facilities. This assistance program is aimed at providing no cost assistance in returning to or maintaining compliance with their wastewater permit. Staff also assisted the Mississippi State Department of Health On-Site Wastewater program in conducting training sessions for septic pumpers and installers in 13 locations across the state and conducted a MS4/SSO workshop on the Gulf Coast in conjunction with the Mississippi Public Works Association.

# LAND

## Office Of Geology

### Surface Mining and Reclamation of Surface-Mined Lands

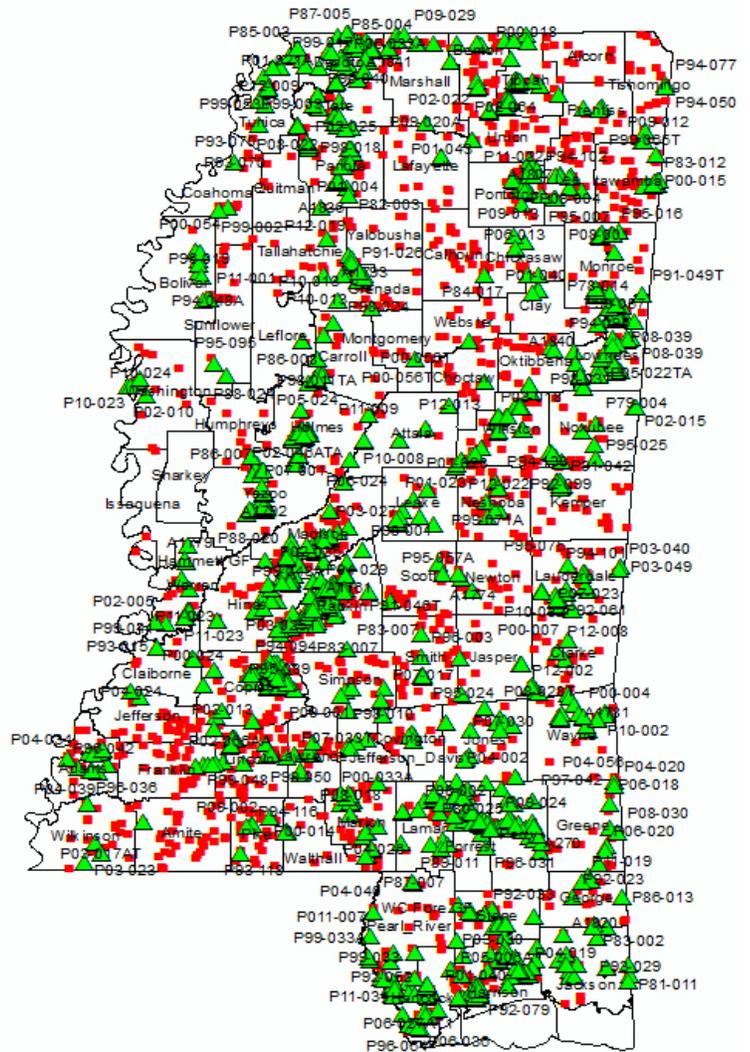
MDEQ continued to regulate all non-coal surface mines in the state as provided for in the Mississippi Surface Mining and Reclamation Act of 1977. This includes issuing surface mining permits and notices of exempt operations, inspecting permitted areas and inspecting complaints, overseeing the reclamation done by operators, and enforcing the law as per the promulgated Rules and Regulations and Commission orders. Coal and lignite mines are regulated under the Mississippi Surface Coal Mining and Reclamation Law of 1979, with oversight of the program by the federal Office of Surface Mining. The coal and non-coal regulations were renumbered recently to meet the style mandated by the Administrative Procedures Act.

In FY2014, the Mining and Reclamation Division performed 862 inspections (of which 60 were bond release inspections), recommended to the Permit Board the issuance of 17 initial and nine amended permits, and received 74 Notices of Exempt Operations (operations less than four acres in size). A total of 1,802 exempts are on file, covering approximately 7,208 acres, and 1,028 acres were completely reclaimed as a result of the division's efforts to oversee reclamation. The state currently has 718 permits covering 34,625 acres. The Mining and Reclamation Division continued to update the mining database. This database provides valuable mining information in a GIS format so that mining sites can be located and viewed by anyone using our online Mining Viewer.

The Mining and Reclamation Division continued to provide the required Mine Safety and Health Administration (MSHA) training for mining operations in the state. MSHA regulations require an eight hour refresher training course be taught to all mine workers. In FY2014, division staff provided training to 80 miners and 79 contractors working in the mining industry.

The Coal Mining Division was established during FY2007 to focus on the complexities of coal mine regulation. Mississippi has an industry-estimated five billion tons of surface mineable lignite, a low-grade coal ranked just below sub-bituminous coal. The Mississippi Lignite Mining Company is mining lignite at the Red Hills Mine in Choctaw County to supply fuel for an adjacent 440 MW mine-mouth power plant. The mine produces over 3.5 million tons of lignite per year and has permitted 6,090 acres. This permit was initially issued in 1998, and was renewed in February 2013 for its fourth five-year term. The planned life of the permit is 30 years.

The Liberty Fuels, LLC mine permit in southwestern Kemper County was issued in December 2011. The initial permit is for 2,299 acres. The Liberty Mine will produce an average of 2.2 million tons of lignite per year for the initial five-year term, and 4.5 million tons per year for the planned forty-year life of mine. The life-of-mine area is planned to be approximately 18,200 acres, in Kemper and Lauderdale counties. The adjacent IGCC power plant under construction is designed to produce 550 MW of electricity and be fueled by gas produced on-site from the lignite; construction is nearing completion.



Staff inspections of both mines are conducted at least monthly with one or more joint inspections of each mine conducted annually with the Office of Surface Mining (OSM). Three permit revisions were finalized during FY2014, and one permit revision was submitted during FY2014 and will be finalized during FY2015. One bond release was processed during the year and will be approved during FY2015. One permit renewal is anticipated in FY2015, which should take approximately one year to review. Additionally, one revision of the Regulations Governing Surface Coal Mining in Mississippi was completed in FY2014.

The Mississippi's Abandoned Mine Land Program has identified four sites, two in Choctaw County and one each in Winston and Lauderdale counties that were active sometime in the period from the mid-late 1800s to the late 1920s. The landowners of the two sites in Choctaw County do not wish to have reclamation work done on the sites. The landowners of the Lauderdale and Winston counties sites do want reclamation work done. These two sites have been determined to be a physical threat to public safety, but there is no acid mine drainage or an environmental hazard. Design of the appropriate reclamation work at each site was completed in FY2014.

### **Geological Data Collection Activities**

The department's geologic mapping program for FY2014 was funded in part by a federal STATEMAP 2013 grant of \$78,967 and an NCRDS grant of \$15,000. Deliverables for the STATEMAP grant include Meridian South, Vimville, and Whynot 7.5-minute geologic quadrangle maps in Lauderdale County in east-central Mississippi and the Star, Harrisville, and Mendenhall East 7.5-minute quadrangles in Rankin and Simpson counties in south-central Mississippi. These maps were published in color at a scale of 1:24,000 as Open-File Reports OF 264-269. Geologic units mapped in east-central Mississippi in FY2013 and 2014 included the Tuscahoma, Hatchetigbee, Tallahatta, Winona, Zilpha, and Kosciusko formations of Eocene age and Holocene alluvium. Geologic units mapped in south-central Mississippi in FY2013 and 2014 included the Vicksburg Group of Early Oligocene age and the Catahoula, Hattiesburg, and Pascagoula formations of Miocene age, the Graham Ferry Formation of Pliocene age, and Holocene alluvium and coastal deposits. Geologic mapping in FY2015 will be funded by the STATEMAP 2014 grant, which was awarded funding of \$75,597. Additional assistance for mapping will come from a federal NCRDS grant of \$15,000. Mapping work for FY2014 includes the Stonewall, Sable, and Snell 7.5-minute geologic quadrangle maps in Lauderdale and Clarke counties in east-central Mississippi and the Easen Hill, Vancleave, and Gautier North 7.5-minute geologic quadrangles in George and Jackson counties in southeastern Mississippi.

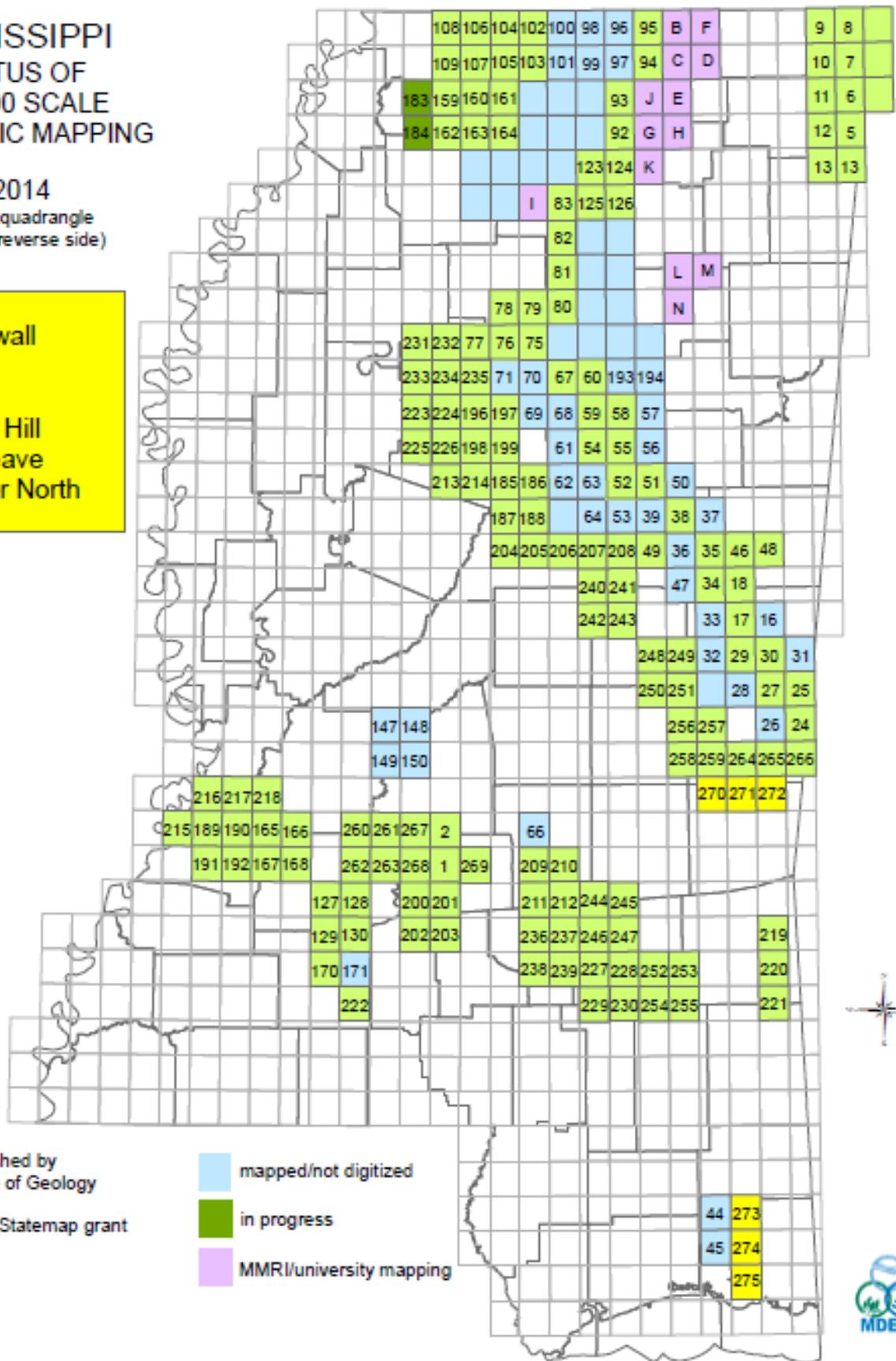
Proposed work for the STATEMAP grant in FY2015 includes six geologic quadrangle maps. These are the Center Hill, Meridian North, and Toomsaba quadrangles in Lauderdale and Kemper counties in east-central Mississippi and the Beatrice, White Plains, and Biloxi quadrangles in Harrison, Stone, and Jackson counties in southeastern Mississippi.

Many of the Office of Geology's historical publications have been scanned and made available for free download on the agency's web site. This makes out-of-print publications available again and digital publications more accessible to customers. The geologic quadrangle maps are available for viewing or download as PDF files.

# MISSISSIPPI STATUS OF 1:24,000 SCALE GEOLOGIC MAPPING

**JULY 2014**  
(see list of quadrangle names on reverse side)

- 270. Stonewall
- 271. Sable
- 272. Snell
- 273. Easen Hill
- 274. Vanleave
- 275. Gautier North



- published by Office of Geology
- mapped/not digitized
- 2014 Statemap grant
- in progress
- MMRI/university mapping



## STATUS OF 1:24,000 SCALE GEOLOGIC MAPPING

(see index map on reverse side)

Geologic quadrangles that have been published by the MDEQ Office of Geology are available for purchase at our Publication Sales office or by mail. The maps are \$8.00 each, plus a postage and handling charge specified below if ordered by mail.

### Mississippi Department of Environmental Quality Office of Geology

Street Address:

Office of Geology  
700 North State Street  
Jackson, MS 39202

Mailing Address for Inquiries:

Office of Geology  
P. O. Box 2279  
Jackson, MS 39225

Mailing Address for Orders:

DEQ - Accounts Receivable  
P. O. Box 2339  
Jackson, MS 39225

Telephone:

Receptionist: (601) 961-5500  
Publication Sales: (601) 961-5523  
Fax: (601) 961-5521

Email: [Publication\\_Sales@deq.state.ms.us](mailto:Publication_Sales@deq.state.ms.us)

Website: <http://www.deq.state.ms.us>

MAKE CHECKS PAYABLE TO: MDEQ. PAYMENT MUST ACCOMPANY ORDER.

POSTAGE AND HANDLING CHARGES:

Geologic quadrangles in the Open-File reports series:

Folded maps: Orders of 1 to 3 maps, add \$2.00

Rolled maps: Orders of 1 to 3 maps, add \$5.00

Orders of 4 to 10 maps, add \$3.50

Orders of 4 to 10 maps, add \$6.00

Add \$.10 for each additional map over 10 maps; orders over 10 maps will be rolled.

**OFFICE OF GEOLOGY  
MAPPING**

- \*1. Mendenhall W
- \*2. Braxton

**OPEN-FILE REPORTS**

- \*5. Belmont
- \*6. Tishomingo
- \*7. Iuka
- \*8. Yellow Creek
- \*9. Doskile
- \*10. Burnsville
- \*11. Paden
- \*12. Paden SE
- \*13. Fulton NE and Red Bay
- 16. Townsend
- \*17. De Kalb
- 18. Gholson
- 19.
- \*24. Kewanee
- \*25. Tamola
- 26. Toomsaba
- \*27. Lauderdale
- 28. Daleville
- \*29. Lauderdale NW
- \*30. Oak Grove
- 31. Porterville
- 32. Moscow
- 33. Lynville
- \*34. Preston
- \*35. Fearnis Springs
- 36. Boon
- 37. Barge Lake
- \*38. Betheden
- 39. Louisville North
- 44. Vestry
- 45. Latimer
- \*46. Mashulaville
- 47. Vernon
- 48. \*Macon
- \*49. Louisville South
- 50. Bradley
- \*51. Sturgis
- \*52. Ackerman

- 53. Highpoint
- \*54. Tomnolen
- \*55. Reform
- 56. Double Springs
- 57. Maben
- \*58. Sapa
- \*59. Eupora
- \*60. Bellefontaine
- 61. Stewart
- 62. French Camp
- 63. Weir
- 64. McCool
- 66. White Oak
- \*67. Cadaretta
- 68. Little Sand Creek
- 69. Lodi
- 70. Sweatman
- 71. Duck Hill
- \*75. Gore Springs
- \*76. Kincald
- \*77. Grenada
- \*78. Coffeerville
- \*79. Benwood
- \*80. Skuna
- \*81. Banner
- \*82. Paris
- \*83. Yocona
- \*92. Hickory Flat
- \*93. Chilli Creek
- \*94. Whitten Town
- \*95. Camp Hill
- 96. Canaan
- 97. Ashland
- 98. Lamar
- 99. Holly Springs SE
- 100. Slayden
- 101. Holly Springs
- \*102. Mt. Pleasant
- \*103. Red Banks
- \*104. Bynalla NW
- \*105. Bynalla
- \*106. Olive Branch
- \*107. Lewisburg
- \*108. Pleasant Hill
- \*109. Hernando

- \*123. Puskus Lake
- \*124. Etta
- \*125. Denmark
- \*126. Thaxton
- \*127. Hazlehurst
- \*128. Shady Grove
- \*129. Wesson
- \*130. Stronghope
- 147. Ridgeland
- 148. Madison
- 149. Jackson
- 150. Jackson SE
- \*159. Coldwater
- \*160. Independence
- \*161. Wyatt
- \*162. Senatobia
- \*163. Looxahoma
- \*164. Tyro
- \*165. Utica W
- \*166. Utica E
- \*167. Dentville NW
- \*168. Dentville
- \*170. Brookhaven
- 171. Fair Oak Springs
- 183. Arkabutla East
- 184. Longtown
- \*185. Valden
- \*186. Poplar Creek
- \*187. Hesterville
- \*188. Kosciusko NE
- \*189. Willows
- \*190. Carlisle
- \*191. Port Gibson
- \*192. Hermanville
- 193. Hohenlinden
- 194. Mantee
- \*196. McCarley
- \*197. Eskridge
- \*198. Bailey Lake
- \*199. Winona
- \*200. Schley
- \*201. Shivers
- \*202. Monticello NE
- \*203. New Hebron
- \*204. McAdams

- \*205. Kosciusko
- \*206. Ethel South
- \*207. Ethel SE
- \*208. Louisville SW
- \*209. Cohay
- \*210. Center Ridge
- \*211. Mize
- \*212. Taylorsville
- \*213. Murdock Lake
- \*214. Peachahala Creek
- \*215. Grand Gulf
- \*216. Yokena
- \*217. Big Black
- \*218. Cayuga
- \*219. Denham
- \*220. Buckatunna
- \*221. Knobtown
- \*222. Ruth
- \*223. Browning
- \*224. North Carrollton
- \*225. Gravel Hill
- \*226. Colla
- \*227. Moselle
- \*228. Ellisville
- \*229. Eastabuchle
- \*230. Barrontown
- \*231. Cascilla
- \*232. Holcomb
- \*233. Avalon
- \*234. Jefferson
- \*235. Tie Plant
- \*236. Collins
- \*237. Hot Coffee
- \*238. Williamsburg
- \*239. Seminary
- \*240. Four Corners
- \*241. Plattsburg
- \*242. Edinburg
- \*243. Pearl River
- \*244. Soso
- \*245. Moss
- \*246. Hebron
- \*247. Laurel West
- \*248. Deemer
- \*249. House

- \*250. Union East
- \*251. Post
- \*252. Lanham
- \*253. Strengthford
- \*254. Overt
- \*255. Rhodes
- \*256. Duffee
- \*257. Collinsville
- \*258. Chunky
- \*259. Meehan
- \*260. Terry
- \*261. Whites
- \*262. Crystal Springs
- \*263. Hopewell
- \*264. Meridian South
- \*265. Vimville
- \*266. Whynot
- \*267. Star
- \*268. Harrisville
- \*269. Mendenhall East
- 270. Stonewall
- 271. Sable
- 272. Snell
- 273. Easen Hill
- 274. Vancleave
- 275. Gautier North

**MMRI/UNIVERSITY  
MAPPING**

- \*A. Eastabuchle (See 229 above)
- \*B. Walnut
- \*C. Falkner
- \*D. Peoples
- \*E. Ripley
- \*F. Chalybeate
- G. Myrtle
- H. Keownville
- I. Oxford S
- J. Blue Mountain
- K. New Albany W
- \*L. Troy
- M. Troy SE
- N. Houston E
- \*PUBLISHED

The Environmental Geology Division gathers, studies, and archives subsurface geological and geophysical data for ongoing projects and other studies within MDEQ. Focused research is being done with regard to groundwater and other environmental issues. Staff also provides support to other state agencies and academia.

The Environmental Geology Division's geologist answers requests for information on groundwater availability, depth of wells, and potential yield of wells. In some cases, quality of groundwater is critical and this information is often available through data searches. These requests come from water well contractors, engineering firms, consultants, and private individuals.

MDEQ staff continue to be involved in the Central U.S. Earthquake Consortium's work in disaster planning regarding the New Madrid Earthquake Zone. Northwestern Mississippi is at risk of significant damage to roads, bridges, utility systems, power grids, and other infrastructure along this active fault zone. Geologists from the Office of Geology are engaged in meetings regarding future projects and studies to be conducted over the next several years.

Environmental Geology's geologist and technicians wireline logged a total of 10 test holes in counties throughout the state. Total footage logged was 3,599 feet. Eight water well contractors accounted for all wireline logging operations. Irrigation Equipment drilled the shallowest test hole in Marshall County. Total depth of this hole was 150 feet, and the well was completed as a high-yield irrigation well. The deepest test hole wireline logged was secured in a 894 foot hole drilled by Donald Smith Company, Inc. for the Carnathan Brothers in Chickasaw County. The majority of the wells and test holes wireline logged during FY2014 were utility systems and industrial applications. Two wells were for private individuals.

The Environmental Geology Division's technicians pulled, shipped and re-filed samples and cores for 16 scientists in other state agencies and oil and gas explorationists. A total of 219 boxes of cores and samples were examined during FY2014. Staff re-boxed 411 boxes of cores amounting to 822 feet.

Drilling and geological sampling activities were performed for the Surface Geology Division's STATEMAP program. During FY2014 the division's drill crew drilled a total of two test holes in support of the STATEMAP grant. Both of these holes were drilled in Jackson County. Total footage drilled and sampled amounted to 610 feet. These cuttings and samples were preserved and archived in the office's core and sample library.

The Geospatial Resources Division focused its emphasis on remote sensing (RS) and geographic information systems (GIS) activities. The division manages the Mississippi Flood Map Modernization Initiative (MFMMI). This program develops and updates digital flood insurance rate maps (DFIRMs) for the 82 counties under funding by the Federal Emergency Management Agency (FEMA). These resulting DFIRMs and supporting digital data are available at <http://geology.deq.ms.gov/floodmaps/Viewer>.

In early 2014, with funding provided by the U.S. Department of Energy, statewide subsurface geothermal information was collected from approximately 10,000 bottom hole temperatures from oil and gas wells drilled throughout the state. This data was organized by the Association of American State Geologists, and this project brings data from all 50 states into the National Geothermal Data System.



MDEQ is involved with the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems Council) that sets policies and standards that will promote the sharing of information, as well as facilitate the cost-sharing potential. The Council is also charged with oversight of the development of the Mississippi Digital Earth Model (MDEM). The Office of Geology is responsible for MDEM's development, and the Geospatial Resources Division handles the assignment. MDEM consists of developing digital geographic information that will serve as the state base map. MDEM consists of eight layers of digital information that will be available online: (1) geodetic control, (2) elevation and bathymetry, (3) orthoimagery, (4) hydrography, (5) transportation, (6) government boundaries, (7) cadastral, and (8) the Gazetteer. The Division is responsible for the management and monitoring of MDEM data development contracts and the QA of the MDEM mapping products that result from this work. Products from this work may be used by state and local governments, engineering firms, and construction companies involved in planning, development, construction or regulatory work throughout the state.

During 2014, MDEQ continued monitoring and managing contractors completing work on MDEM data sets. These data included road centerlines, hydrography, and elevation / topography and Lidar data in different areas of the state. All data developed are of MDEM quality and will be made available for distribution through the Mississippi Geospatial Clearinghouse web site at: [www.gis.ms.gov/Portal](http://www.gis.ms.gov/Portal). During FY2015, projects continue that include development of MDEM data, including attributed road centerlines and large-scale hydrography for several Hydrologic Unit Code 8 (HUC 8) river subbasins in coastal Mississippi, and Lidar development covering the coastal area of the state.

In 2010, FEMA began its new Risk MAP (Risk Assessment, Mapping and Planning) program. The program has shifted to HUC 8 subbasin flood studies and added flood risk assessment and flood hazard mitigation and planning activities and products. As of mid-2014, there are nine HUC 8 Risk MAP projects and one LAMP (Levee Analysis and Mapping Procedure) project on the Tennessee-Tombigbee Waterway in northeast Mississippi. This project is one of 25 Pilot LAMP projects for mapping deaccredited levee systems chosen by FEMA from across the nation.

For an information-rich site for oil and gas related information, access [www.library.geology.deq.state.ms.us](http://www.library.geology.deq.state.ms.us). A wealth of coastal data as a result of twelve years of active research can be found at: [www.geology.deq.state.ms.us/coastal](http://www.geology.deq.state.ms.us/coastal). And, a web site for the Mississippi Flood Map Modernization Initiative (MFMMI) is available at: [www.geology.deq.ms.gov/floodmaps](http://www.geology.deq.ms.gov/floodmaps). By visiting this site the public and local government officials are able to learn the current status of their county's DFIRM mapping project. Also, when a county's new preliminary flood maps are available, the public and local government officials will be able to download and review individual DFIRM map panels.



# Environmental Permitting

The professional staff of MDEQ spends thousands of hours each year developing various types of environmental permits which are then presented to the Mississippi Environmental Quality Permit Board for issuance. The Permit Board issues, reissues, modifies, denies, transfers, and revokes Mississippi permits and certifications administered under the Clean Water Act, the Clean Air Act, the Resource Conservation and Recovery Act, the Surface Mining Control and Reclamation Act, state mining laws, and state water resource control laws.

MDEQ offices that work with permitting matters are the Office of Geology and the Office of Land and Water Resources; however, the Environmental Permit Division (EPD) is responsible for most environmental permitting done for the Office of Pollution Control, including:

- Air Construction and Air Operating
- Air Title V Operating
- Wastewater-State No Discharge
- Wastewater-National Pollutant Discharge Elimination System
- Wastewater – Pretreatment
- Storm Water Construction and Operating
- Solid Waste
- Hazardous Waste
- Tire Programs
- Wetlands Impacts

MDEQ's Environmental Permits Division's functions include reviewing the majority of the permit related issues, including permit applications, meeting with the permit applicants, reviewing permit renewal and modification applications, and making recommendations to the Permit Board. Currently there are over 20,000 sites in the permitting universe. Many of these sites have permits that by state and federal regulation expire every five years and have to be reissued. As new companies come into the state and existing companies have changes or modifications, these activities also require permitting actions.

The Environmental Permits Division works closely with Mississippi Development Authority (MDA) in helping site these new industries to Mississippi. EPD believes that a key element in effectively addressing environmental issues surrounding greenfield projects is early interaction between the proposed company and the MDEQ. EPD offers and encourages pre-application meetings. Time spent in refining the information needed for permit applications at the front end of a project typically reduces the overall time to bring a project and permitting to a decision point. EPD and MDA coordinated a training session in December of this year. Numerous MDA project managers and MDA executive staff met with MDEQ executive staff, EPD Branch managers, and other permitting staff to train each other on processes and to reinforce the commitment to working together effectively.

## Performance Improvements

EPD continued to partner with the Data Integration Division (DID) of MDEQ in the development of new functionality for the agency's enterprise-wide data management system – enSite. Although it has not replaced the agency's official paper files, enSite has become the agency's primary electronic storage database for information. This has made it possible for the department to provide much more information over the internet to the regulated community, other state agencies, EPA, and citizens.

## Improving Environmental Information Management

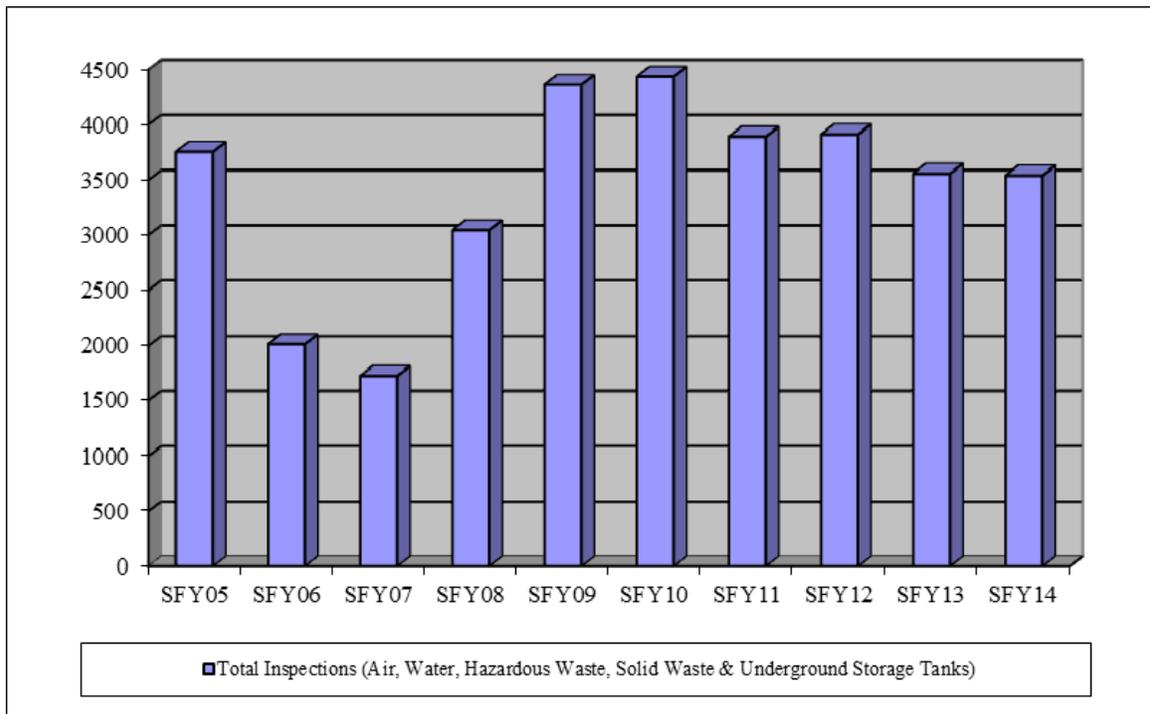
MDEQ strives to provide technologically sound access to environmental data and information. The new Regulatory Services Portal (RSP) for electronic submittal of environmental reports, permits applications, and required notifications is in the final stages of development and should be ready for release in early 2015. MDEQ's Cross-Media Electronic Reporting Regulation (CROMERR) application was approved by EPA in 2013 and enhancements were made to achieve CROMERR compliance. When RSP is released, which will include the minor air permit modifications (502b10s), so will the new requirements for CROMERR. Currently, MDEQ is working on the development and implementation of RSP services for Baseline Storm Water coverage termination and no exposure certifications. These services should be available for public use in 2015. EPD is also working with MDEQ's Environmental Compliance and Enforcement Division and DID to develop an improved system for electronic Discharge Monitoring Report (DMR) submittals using the RSP. Other RSP services under development include General Permit NOI submittals. MDEQ, in partnership with other states, began a modernization effort on their enSite system in 2012. MDEQ has completed acceptance and deployment of Tempo360 (the replacement for enSite) software as of 2014.

## Environmental Compliance And Enforcement

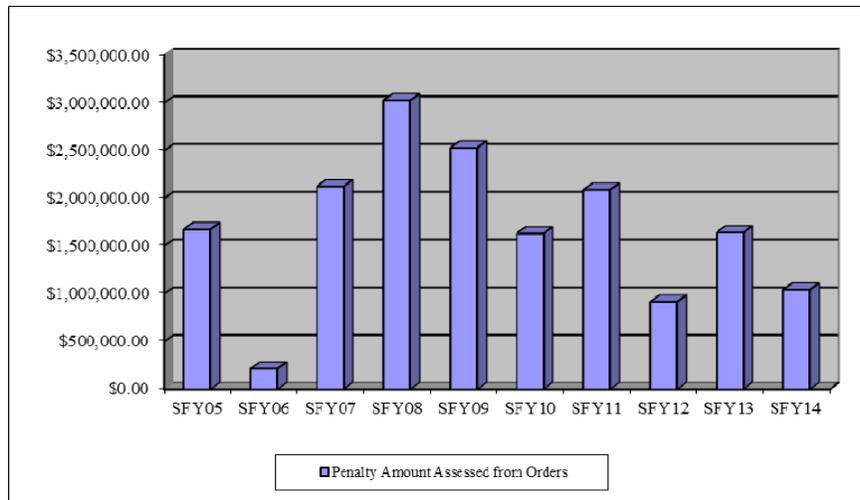
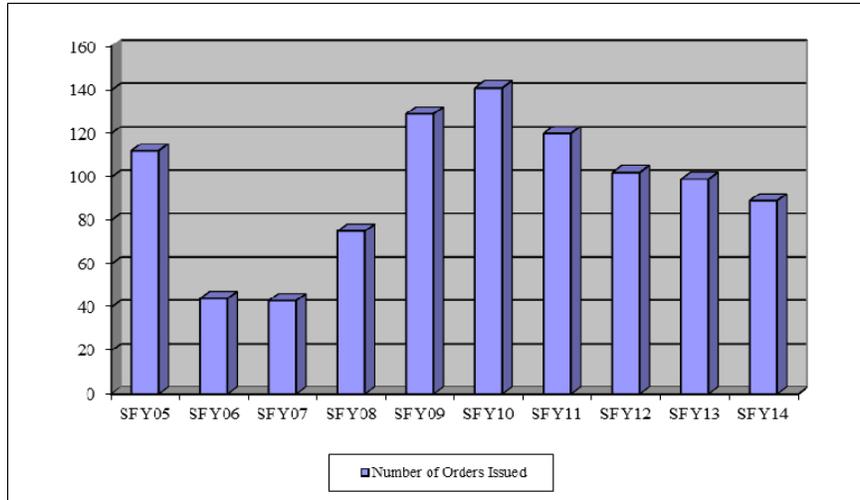
The Environmental Compliance and Enforcement Division (ECED) implements and oversees the majority of the compliance and enforcement programs for MDEQ. ECED is responsible for the regulation of sites for compliance with applicable air, water, hazardous waste, and non-hazardous waste permits and regulations. The goal is for continuous compliance with all applicable environmental laws, regulations and standards. Staff assists Mississippi businesses, industries, and farms with this activity. When a site fails to comply with the permit(s) or regulations, appropriate enforcement action is taken to promptly return the site to compliance.

During Fiscal Year 2014, the following numbers of on-site inspections were performed by ECED and the Field Services Division:

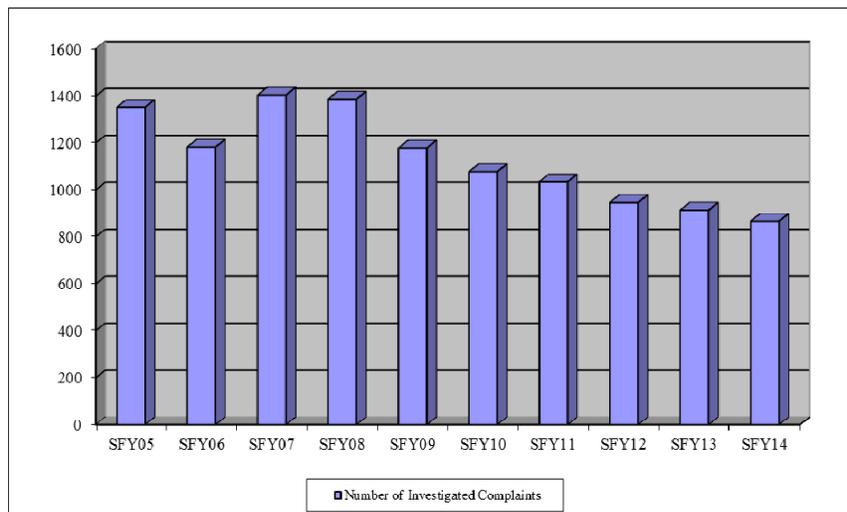
- 213 for compliance with air pollution regulations/permits
- 1602 for compliance with water pollution regulations/permits
- 90 for compliance with hazardous waste regulations/permits
- 683 for compliance with solid waste regulations/permits
- 953 for compliance with underground storage tank regulations/permits



During Fiscal Year 2014, enforcement actions resulted in 89 Orders being issued for non-compliance with air, water, solid waste, and/or hazardous waste regulations/permits. Seventy-six of these Orders contained provisions for a penalty with a total assessed penalty amount of \$1,043,857.08. When appropriate, MDEQ allows the use of Supplemental Environmental Projects (SEP), projects that go beyond what is required to comply, to offset a portion of the cash penalty. Three orders allowed the use of a SEP.



ECED, in conjunction with the Field Services Division, is also responsible for responding to citizen complaints regarding air, water, solid waste, and hazardous waste matters. During Fiscal Year 2014, MDEQ received 866 complaints related to air, water, solid waste, and/or hazardous waste matters. When citizens report an environmental problem, they are asked to explain the nature of the problem and give the location of the problem, including directions to the site. A name is not required; however, if a name and contact information is provided, MDEQ either contacts the complainant during the investigation or provides the results of the investigation after the investigation is completed.



# Clean Up Of Contamination

MDEQ learns about contaminated land or water from facility inspections, site investigations, complaints, or emergency response activities. Contamination can result from a variety of activities such as improper practices at existing facilities, accidental spills, or leaks from UST systems. MDEQ also gathers information about suspected contamination due to old landfills, illegal dumps, and abandoned facilities called uncontrolled sites. MDEQ oversees the investigation and remediation of sites that have been or are suspected to have been contaminated by toxic metals, chemicals, petroleum, or other pollutants or contaminants. MDEQ also maintains a database inventory of identified contaminated sites. MDEQ regulates coal and non-coal surface mining activities so as to minimize injurious effects by requiring proper reclamation of surface-mined lands, while balancing the economic necessities of developing our natural resources with protection of the natural environment.

## Brownfields

### The Mill at MSU Brownfield Project Breaks Ground

In February 2014, the Commission approved a Brownfield Agreement for the redevelopment of the Cooley Center, an old textile mill that sits on the National Register of Historic Places and will serve as the development's centerpiece. The mixed-use development, which sits on the edge of Mississippi State University's campus, will be constructed in phases and includes a hotel, parking garage, infrastructure and the development of outparcels. The brownfield agreement included provisions for addressing asbestos abatement and the removal of several underground storage tanks and solid waste. The parking garage – which will have three bays and four levels – will have a parking capacity of 650 vehicles, and is being paid for by an \$8 million community development block grant issued by the Mississippi Development Authority. The City of Starkville is managing that part of the project.

The design for the Cooley Building received in early January preliminary approval from the Mississippi Department of Archives and History followed by MDEQ's approval of the cleanup in February. It then moved to the National Park Service, which had the final say whether the design meets the standards for historic buildings. The Park Service signing off on the design was crucial, because it makes the project eligible for historic and new market tax credits.

The Cooley Building will be remade into a conference center and office space. To go with the parking garage and the hotel, the developer would ideally like to include two to three restaurants in the final version of the development. The demolition of everything on the site that is not on the Historic Register and the removal of the underground storage tanks and solid waste was part of the first phase which is now complete. Work on the Cooley Building has begun with asbestos removal and makes up the second phase which is currently taking place.

## Underground Storage Tanks

The primary goal of the Underground Storage Tanks (UST) Program is to protect groundwater from leaking underground storage tanks. A two-pronged strategy is used to achieve this goal. First, a compliance program inspects UST facilities in order to ensure the systems do not leak. In Mississippi, the UST compliance personnel are responsible for ensuring approximately 8,300 tanks at nearly 3,100 facilities have the appropriately maintained equipment in order to protect the groundwater. Secondly, in the event of a release, the Mississippi Groundwater Protection fund is used by MDEQ to assess and cleanup any contamination resulting from leaking USTs. The Mississippi Groundwater Protection fund began in 1987 and has committed \$169 million to eligible tank owners for the assessment and cleanup of sites contaminated from leaking underground storage tanks. The average fund commitment per site is nearly \$155,000. At the end of this fiscal year, the Mississippi Groundwater Protection Trust Fund had assessed 1121 sites, completed assessment and/or remediation of 908 sites. During the reporting period, MDEQ UST staff actively oversaw 213 sites. This past fiscal year \$8.0 million were used to assess and remediate leaking underground storage tanks in Mississippi. Also, this year 26 new sites were assessed and 36 sites were closed.



## Uncontrolled Sites & Voluntary Evaluation Program

Over the past 12 months, MDEQ Groundwater Assessment and Remediation (GARD) staff actively oversaw 174 assessments and/or cleanups. During that same timeframe, the number of sites brought to GARD's attention was 20, bringing the total number of sites in MDEQ's public record to 1,869 sites. Also, MDEQ issued "State No Further Action" letters for seven of these sites that were evaluated and remediated to levels protective of human health and the environment. MDEQ issued no Restrictive Use Agreed Orders/Environmental Covenants during their reporting period, thereby allowing these sites to be reused with certain activity and use limitations. Through MDEQ's efforts, 32 acres were put back into productive use in FY 2014. The staff continues to respond expeditiously to requests from MDOT and other governmental agencies for the review of environmental assessments and remediation of contaminated sites and those sites with economic development potential. The Voluntary Evaluation Program (VEP) offers an opportunity to receive an expedited review of site characterization and remediation plans and reports for parties that are voluntarily cleaning up uncontrolled sites that they have an interest in. The VEP is funded entirely by these participants who pay for MDEQ's oversight costs.

## Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Oversight of the site assessment and restoration of hazardous waste sites at federal facilities continues to be a large portion of the work involving the CERCLA Branch of MDEQ. Oversight is conducted at seven Department of Defense (DoD) Sites, a Department of Energy Site (Salmon Test Site), a NASA facility (Stennis Space Center), and several formerly used defense sites. MDEQ is funded for this oversight work through agreements with the Department of Defense, Department of Energy, and NASA.

Through the grants from the Environmental Protection Agency, CERCLA staff performed preliminary assessments, site investigations and site inspections at hazardous waste sites for National Priority List (NPL) consideration, coordinated with EPA on emergency/removal projects at the Copiah County Manufacturing Co.

(Hazlehurst) and the Southeastern Wood Preserving Site (Canton), and assisted the Environmental Protection Agency with the oversight of the assessment and future remediation of four Superfund Sites in the state—Sonford Products (Flowood), Davis Timber (Hattiesburg), American Creosote (Louisville), and Wood Treating (Picayune). At the present time it is estimated that the remediation costs for these four sites is approximately \$80 million. The state will pay 10 percent of these remediation costs or \$7.3 million. In addition, remedial investigations have begun at Red Panther Chemical (Clarksdale), Kerr-McGee (Tronox) (Columbus), and Southeastern Wood (Canton). Estimations of remedial costs for these sites will be developed after the remedial investigations have been completed by EPA.



Southeastern Wood Preserving Site (Canton)

The Red Panther Chemical site is a potential responsible party (PRP) site and the responsible party(s) will be paying for the further assessment and remediation of this site. The Kerr-McGee (Tronox), site went into bankruptcy and further legal proceedings. The bankruptcy proceeding resulted in a trust being set up that will provide as much as \$68 million toward the further assessment and remediation of the site. The Southeastern Wood site does not have a potentially responsible party and will require a 10 percent state match for the remediation costs.

## Emergency Response

During Fiscal Year 2014, the Emergency Services Branch continued to respond as needed to emergencies across the state involving hazardous materials, oil spills or any pollutant that poses a threat to human health or the environment. While contractor expenditures for response actions exceeded \$150,135.71, the agency was reimbursed approximately \$71,186.10 from responsible parties. The Emergency Services staff in total handled approximately 880 calls for assistance or reported emergency releases.

Emergency Services has participated in numerous outreach activities in 2014: Regional Response team meeting Louisville, Kentucky, LEPC meeting in Tupelo, Table top exercise in Jackson, Mississippi Coastal Cleanup, Civil Defense meeting in Philadelphia, Air Monitoring Training in Little Rock, Arkansas, and addressing the Collins Rotary Club.

MDEQ's Emergency Response Team is on-call statewide 24 hours a day, seven days a week. MDEQ and the Mississippi Emergency Management Agency (MEMA) work together to provide effective around-the-clock spill response. MEMA is notified of emergencies by calling 1-800-222-6362. They in turn contact MDEQ personnel who provide on-site response and technical assistance.



Biodiesel plant fire in New Albany

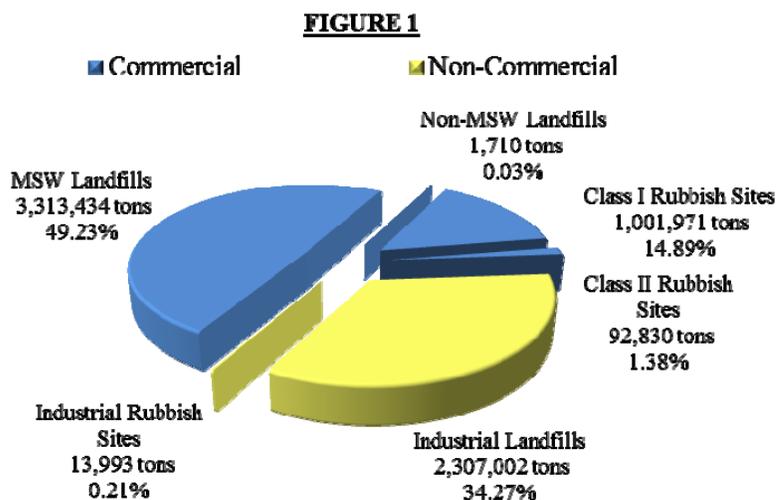
## Solid Waste Management and Recycling

Throughout 2014, the MDEQ Solid Waste Management and Recycling Programs worked on issues, projects and programs to ensure the proper management of solid wastes, to promote the reduction and recycling of solid wastes, and to plan for the future solid waste management needs of the state.

### Mississippi Solid Waste Annual Summary Report

Each year, MDEQ collects an annual report from the owners or operators of permitted solid waste management facilities on solid waste management activities conducted during the preceding calendar year. Solid waste management facilities that report to MDEQ include commercial and non-commercial landfills, commercial and non-commercial rubbish disposal sites, land application sites, composting facilities, solid waste processing facilities, and solid waste transfer stations.

In 2014, MDEQ developed a report on solid waste disposal activities conducted during Calendar Year 2013. This report indicated that 6.7 million tons of wastes were disposed at permitted landfills and rubbish sites in Mississippi. Approximately 3.3 million tons (49.25%) of the total waste was disposed at commercial landfills, 2.3 million tons (34.27%) at non-commercial landfills, 1.1 million tons (16.27%) at commercial rubbish sites, and 14,000 tons (0.21%) at non-commercial rubbish sites.



About 4.4 million tons of solid wastes were disposed at commercial disposal facilities and the remaining 2.3 million tons of wastes were disposed at noncommercial disposal facilities. Mississippi received more than 800,000 tons of solid waste from out-of-state sources representing approximately 12 percent of the total solid waste that was disposed during 2013.

In addition, a total of approximately 58,000 dry tons of wastes were applied at the permitted land application sites, about 22,000 tons of material was received for management at solid waste composting facilities. These annual reports also indicated that approximately 126,000 tons of material was received for management at solid waste processing facilities and just over 700,000 tons of wastes was managed by solid waste transfer stations in the state.

## Recycling and Waste Reduction



A primary task of the MDEQ is to promote and grow recycling and waste reduction in the State of Mississippi. State law declares that it is the policy of the State of Mississippi to reduce waste at its source, to re-use the waste materials rather than discard them, to recycle wastes whenever possible and to safely dispose of wastes as a last resort. In support of this policy, MDEQ has continued its work to promote and grow recycling of solid wastes across the state. Although MDEQ does not currently collect recycling information from local governments or recycling businesses, MDEQ has made an effort to measure the access and availability of recycling services to our citizenry. MDEQ's analysis of recycling access in the state indicates that approximately 59.6 percent of the state's population has access to local government sponsored recycling programs for residential recyclables.

This is a significant increase over the 52 percent of the population with access previously measured. Approximately 30 percent of the state's population has access to curbside recycling services and 29 percent of the population has access to drop-off recycling services. The remaining 40.4 percent of Mississippi's population do not currently have access to local government sponsored programs but may have access to commercial recycling businesses or non-profit recycling programs. The access to recycling for the state's population is continuing to grow as more communities add recycling programs and as communities upgrade and expand existing programs in the state.

In order to grow recycling access in the state, MDEQ has continued its emphasis on cooperative efforts among the state's local governments to collect, process, and market recyclables. These efforts have been focused particularly on rural and underserved communities in various areas of the state. These cooperative efforts give communities greater opportunity to build sustainable recycling programs. In support of this focus, MDEQ issued the agency's first Regional Recycling Cooperative Grants to four communities in the state in 2014 to partner and work with other municipalities and counties on the collection and marketing of recyclables.

In addition, MDEQ works to provide education and outreach throughout the state on the importance of growing recycling in Mississippi. MDEQ spoke to numerous groups and at various events on the benefits of recycling. The agency also continued its strong support of the Mississippi Recycling Coalition and continued to assist that organization with membership, web site development and maintenance, its conferences and workshops, and the organization's various scholarship, grants, and awards programs.

MDEQ also works with local governments, state and federal agencies, school districts, private sector organizations, non-profit organizations, and the general public to increase recycling and solid waste reduction activities. The Solid Waste and Recycling Program provides educational and technical assistance to these groups in the state to increase the awareness and the importance of recycling and solid waste reduction measures. MDEQ partners with numerous organizations in the state to promote recycling including the Mississippi Recycling Coalition, Keep Mississippi Beautiful and its local affiliates, the Mississippi Beverage Association, the Mississippi Municipal League and various other organizations.



MDEQ conducts site assistance visits, gives presentations to organizations and schools across the state, and provides recycling and solid waste information via exhibits at various events. Staff visits K-12 schools, college and university programs, state agency programs, government organizations, community groups, industry group and associations, businesses and commercial recycling companies. Some of the outreach and education activities to promote recycling over the past year have included the following:

- In January, MDEQ spoke at the Mississippi Municipal League’s Winter Meeting to discuss grant opportunities to support recycling and other similar efforts.
- In February, MDEQ provided a booth on recycling at the West Jackson Community Development Exposition in Jackson.
- In March, MDEQ participated in meetings with Jackson State University’s Campus Sustainability committee to discuss opportunities for increasing recycling on JSU campuses. MDEQ also promoted recycling at the annual Kids in the Woods Event on March 25<sup>th</sup>, 26<sup>th</sup>, and 27<sup>th</sup> sponsored at the Mississippi Wildlife Museum by the U.S. Forest Service and the Jackson Public Schools. MDEQ also spoke on the importance of recycling to employees at the Department of Finance and Administration at their Wellness Committee’s Go Green Emphasis for the month of March. MDEQ also spoke in late March to the Solid Waste Management class at Jackson State University on sustainable materials management issues in Mississippi and in the U.S. MDEQ also met with the Gaining Ground community group in Hattiesburg to discuss recycling issues in the city and how to work towards making the city’s recycling program more sustainable.
- In April, MDEQ participated in and supported the Keep the Reservoir Beautiful’s Recycling Fashion Show where participants modelled outfits made from recycled materials. In addition, MDEQ participated in the Earth Day Fair at the University of Southern Mississippi to promote recycling and composting. MDEQ also sponsored a booth at the Earth Day event at Highland Village in Jackson sponsored by Buffalo Peak Outfitters. On April 9<sup>th</sup>, MDEQ also spoke in conjunction with the Southeast Recycling Development Council (SERDC) to industry representatives at the enHance meeting sponsored in part with the Mississippi Manufacturers Association about the economic impacts of a robust recycling industry in the state. During SERDC’s visit to the state, MDEQ also met with SERDC and the Mississippi Development Authority to discuss economic development opportunities in the recycling industry.
- In May, MDEQ awarded the Commission on Environmental Quality’s first Regional Cooperation Recycling Grants to four hub cities that had developed partnerships with surrounding communities to start and/or expand recycling programs. In addition, Mississippi’s recycling conditions were profiled in May in an article in the *Wall Street Journal* that focused on the challenges that rural communities face in developing sustainable recycling programs.
- In June, MDEQ attended the Pike County Cooperative Recycling Program kickoff event in McComb that profiled the new cooperative recycling program efforts between the hub community, the City of McComb, in partnership with the county and other municipalities. In addition, MDEQ sponsored an exhibit at the State Employee’s Day at the Farmers’ Market with information to attendees on recycling opportunities. Also, the Solid Waste and Recycling Programs sponsored two interactive booths at WaterFest an event sponsored in conjunction with the Pearl River Valley Water Supply District at the Ross Barnett Reservoir. The interactive booths sought to promote and educate attendees on the benefits of recycling and composting. The staff also conducted recycling workshops for teachers in the City of Vicksburg and in Holmes County.



Solid Waste booth at WaterFest

- In October 2014, MDEQ participated in the Madison County Soil and Water Conservation District's Conservation Day, providing a presentation and exhibit to students on the importance of recycling in their community. MDEQ also assisted in sponsoring the Mississippi Recycling Coalition's State Recycling Conference held in Jackson at the Trustmark Conference Center at the Mississippi Sports Hall of Fame.
- In November, MDEQ joined the Mississippi Recycling Coalition at the Southeast Recycling Development Council's Regional Recycling Summit in Point Clear, Alabama. The Summit brought together industries, governments, and recycling businesses to discuss policy, collection, and economic development issues facing the recycling industry. At this meeting, MDEQ also participated in roundtable discussions with other states and the U.S. EPA on the development of a focused effort to integrate Sustainable Materials Management into local and state Solid Waste Planning efforts. In addition, MDEQ staff provided a booth at the Public Employees Retirement System's Employee Day to promote recycling and answer questions about recycling and other solid waste issues.

### **Solid Waste and Waste Tire Grants Programs**

The Solid Waste Programs also continued the management and dispersal of various solid waste and recycling grant program funds. Through the Solid Waste Programs, MDEQ awarded over \$4.2 million in Fiscal Year 2014 for solid waste management and recycling projects, solid waste planning projects and waste tire projects across the state. Of that total, over \$2.1 million was awarded in Solid Waste Assistance Grants to local governments. These grants are used by local governments to clean up illegal dumps, establish collection programs for bulky wastes and recyclables, fund the hiring of a local solid waste enforcement officer, for household hazardous collection days/programs, for public information efforts on solid waste and recycling programs, and for other waste management activities at the local level. These funds were awarded through two different categories of grants: Non-competitive (or allocated) grants to counties and competitive grants available to municipalities, counties, solid waste authorities, solid waste districts and other local government organizations. In addition to these grants, supplemental solid waste enforcement officer grant funds were awarded in the amount of \$71,500 to communities that have maintained successful local illegal dumping prevention and enforcement programs.

#### ***Solid Waste Assistance Grants – Fiscal Year 2014***

\$875,640 - Total Non-Competitive Grants

60 Counties Received Non-Competitive Grants

\$1,197,013 - Total Competitive Grants

38 Municipalities and Counties Received Competitive Grants

The MDEQ Solid Waste Programs also provide planning grants to local governments to assist in the development of long-range plans and goals for solid waste management and recycling. One planning grant totaling \$45,000 was awarded to Washington County in Fiscal Year 2014 to develop and update the comprehensive solid waste management plan for the county.

In addition, twenty-one new waste tire grants totaling \$990,325 were awarded to local governments to fund local waste tire collection and clean-up programs during FY2014. These new waste tire program grants along with those tire grants previously awarded assisted local governments across the state in the proper collection and disposal of over 700,000 passenger tire equivalents in calendar year 2013. Local governments receiving waste tire grants during FY2014 included: Amite, Attala, Carroll, Coahoma, Copiah, Hancock, Harrison, Marshall, Neshoba, Panola, Pearl River, Pike, Smith, Sunflower, Tate, Wayne, and Yalobusha counties; the Golden Triangle, Pine Belt, and Three Rivers Solid Waste Management Authorities; and the City of Jackson.

#### ***Waste Tire Assistance Grants – Fiscal Year 2014***

\$990,326 – Total Local Government Waste Tire Assistance Grants

700,000 Waste Tires Collected through local government programs

## **Cooperative Recycling Grants**

MDEQ released the first Funding Opportunity Announcement in June of 2013 for the Regional Recycling Cooperative Grants Program. The cooperative program was developed to encourage local governments to work together on the collection and marketing of municipal recyclables. In April 2014, the Commission on Environmental Quality awarded grants to four “hub” communities to build and enhance regional recycling systems with other partner communities. The four communities and their partners receiving Regional Recycling Cooperative Grants included:

- City of Greenwood — \$399,700 (in partnership with Leflore County, the Cities of Itta Bena and Indianola, and the Town of Sidon);
- City of McComb — \$123,916 (in partnership with Pike County and the Cities of Osyka, Magnolia and Summit);
- City of Natchez — \$317,162 (in partnership with the City of Brookhaven, Wilkinson County and various other institutions and organizations);
- City of Oxford — \$227,160 (in partnership with the Cities of Calhoun City and Batesville, Panola and Lafayette Counties, and the University of Mississippi).

These four cooperative recycling grants totaled \$1,067,938 for these communities. During the 2014 session of the Mississippi Legislature, the Regional Cooperative Recycling Grants Program was extended for an additional three years.

## **Corrective Action Trust Fund Assistance**

In February 2014, MDEQ provided funding assistance to the City of Hattiesburg through the Nonhazardous Corrective Action Trust Fund in the amount of \$78,390.00. The funds awarded were to assist the city in its continued evaluation and assessment of the historic, closed city landfill that borders Gordon’s Creek and the Leaf River. The city has begun a five phase plan to begin clean-up and remediation of the former Gordon’s Creek Landfill Site. This grant award was given to fund Phase I of this project to conduct project planning and design engineering for stream bank stabilization on Gordon’s Creek adjacent to the landfill. The design will also evaluate alternatives in order to economically analyze the most suitable design to stabilize the stream bank and to prevent further erosion and environmental and water quality degradation.

## **Solid Waste Planning**

The MDEQ Solid Waste and Recycling Program works with local governments around the state to develop and implement long range solid waste planning efforts. Each local government in Mississippi is required by state law to develop and implement a comprehensive local, solid waste management plan for a 20 year period. Most of the original local government solid waste plans were adopted in the early 1990’s; so many of these 20-year solid waste plans are reaching the end of life. In 2014, MDEQ continued its work with numerous communities around the state to update and revised local solid waste plans to meet the needs of cities and counties around the state.

Local Solid Waste Plans have been finalized and are under review by MDEQ for Adams County and the City of Natchez and for Jefferson County and the City of Fayette. In addition, local solid waste plans are also being finalized for Lauderdale County and the City of Meridian and Kemper County and the City of DeKalb. Draft plans have also been completed for the City of Canton, Hancock County, Simpson County, Scott County, and Warren County. In addition, a draft revision to the Pine Belt Regional Solid Waste Plan has been developed to incorporate Greene County into that regional solid waste plan. The development of comprehensive, updated solid waste management plans are also in process for Holmes County, Golden Triangle Solid Waste Authority, and Washington County.

In addition to the development of comprehensive updated plans, MDEQ has also continued to work on the review and finalization of certain amendments to existing plans to assure adequate disposal services and capacity for various jurisdictions throughout the state. These amendments were often conducted to add new disposal or recycling facilities locally or to make other changes to local solid waste plans in the manner that solid wastes were being managed. Communities that completed modifications to their local solid waste plans in 2014 include: Three Rivers Regional Solid Waste Authority (Expansion of the TMCO Rubbish Site – Lee County and addition of the North Mississippi Recycling Solutions Class I Rubbish Site – Lafayette County); Lamar County (Fred Martin – Rolloff Recycling Center); Pine Belt Regional Solid Waste Authority (Expansion of Randy -- Danny Rubbish Site in Jones County); Yazoo County (addition of Terra Renewal Waste, LLC Land Application Sites); and Forrest County (addition of 98 Waste Class I Rubbish Site). These planning amendments were important to assist local governments with providing needed disposal capacity and services for management of solid wastes.

MDEQ also continues to work on updating and enhancing the guidance for development of new comprehensive solid waste plans and for amending existing plans. The agency is currently developing guidance on the demonstration of need process for evaluating and adding landfill capacity. In addition, the agency has modified the comprehensive planning guidance to add planning guidance on household medical sharps collection. In addition, the agency is working on additions to the guidance for organics recycling and electronic waste management and recycling.

### **Waste Tire Management Program**

The Waste Tire Management Program continued its efforts in 2014 to develop and implement the state's strategy to achieve statewide recycling of waste tires. The Program has experienced continued success in achieving significant recycling of waste tires in the state. This success is reflected in the most recent annual program information collected from Calendar Year 2013 indicating that the overall waste tire recycling rate was 94 percent and the recycling rate for tires generated in Mississippi was 88 percent. It is anticipated that the state's waste tire recycling and reuse rates for waste tires will continue to approach or exceed the current national average of approximately 90 percent. Overall, waste tire processors in the state managed approximately 5.7 million waste tire equivalents in 2013 with approximately 53 percent of the tires being imported from out-of-state.



MDEQ conducted compliance assurance activities at approximately 150 local government waste tire collection sites, 10 commercial waste tire processing and collection facilities, and numerous tire retail businesses. Additionally, MDEQ managed the permitting and reporting activities of approximately 115 registered waste tire haulers in 2013. Also, nearly 100 complaints involving the mismanagement or unauthorized dumping of waste tires were reported to and investigated by the MDEQ. MDEQ also manages a Waste Tire Abatement Program which provides assistance for the clean-up of unauthorized tire dumps. Through the abatement program, MDEQ has cleaned up approximately 2.5 million waste tires that had been indiscriminately dumped around the state over the past several years since the program was started. In 2013, MDEQ identified four unauthorized dump sites containing an estimated 80,000-90,000 passenger tire equivalents. At the time of this publication, the clean-up of three of these sites had been completed resulting in the proper recycling or disposal of about 55,000 waste tires and work at the fourth site had begun.

In addition, the Waste Tire Management Program reviewed or otherwise handled the processing of various applications for waste tire management permits and authorizations for waste tire processing facilities, collection sites and disposal facilities. MDEQ also conducted a special initiative with the Mississippi State University Extension Service to collect tires from farms and agricultural sources at two agricultural pesticide collection events in Sharkey and Coahoma Counties. Because of the need to assist with agricultural tires, MDEQ also provided waste tire collection services at the events in conjunction with the counties where the events were located. Finally, MDEQ continued work on other waste tire program improvement efforts which include continued work to attract new waste tire recycling businesses to south Mississippi.

### **Electronic Waste Management**

Electronic waste or "e-waste" is one of the fastest growing waste streams nationally and continues to present management and disposal problems for Mississippians. In 2014, MDEQ continued its work to assist communities, businesses and private citizens with understanding the proper methods for recycling and disposing of electronic wastes. MDEQ has developed and maintains comprehensive web resources for interested persons seeking to recycle used electronics at <http://www.deq.state.ms.us/electronics>. These resources include a directory of electronic recycling companies as well as other options for managing and recycling electronics wastes.

MDEQ has been working over the past year to implement the provisions of a recent state law regarding the management of state agency electronics through certified recyclers. On March 18, 2013, Senate Bill 2754 was signed into law by Governor Phil Bryant that requires all state agencies to use a certified electronics recycler for the disposal of agency electronics such as personal computers, computer components, audio players, videocassette players, facsimile machines, cellular telephones, wireless paging devices, or any electronic items containing an intact or broken cathode-ray tube (these include televisions, computer monitors, or other display devices). The provisions of the law took effect for MDEQ and for state agencies on July 1, 2014.

The law requires that MDEQ develop a program to promote the certification of electronics recyclers. MDEQ has continued its promotion of the use of certified recycling companies for the management of electronics wastes. In particular, MDEQ promotes certification programs managed by two organizations, Sustainable Electronics Recycling International (SERI – formerly R2 Solutions) and the Basel Action Network. These two organizations continue to provide certification of those recycling businesses that collect and recycle used electronic products in a safe and responsible manner. MDEQ encourages the state's communities, businesses and local and state government agencies when making decisions on electronics recycling services to consider the benefits of using an electronics recycling company certified under one of these programs. In addition, MDEQ encourages any recycling business that collects and manages electronics to consider obtaining certification of its processes for managing and recycling the electronic products. MDEQ has noted that these certification programs are seeing some changes in 2014. SERI is phasing out R2:2008 certification and all R2:2008 certifications will expire on December 31, 2014. The State of Mississippi does have two certified electronics recycling businesses, Magnolia Data Solutions of Jackson and Logista Solutions of Columbus. Both of these recycling businesses are certified to the R2:2013 standard. There are additional electronics recycling businesses in the state that can be found at the MDEQ web page previously referenced.



The law also requires MDEQ to maintain a listing of certified electronics recyclers for the reference and use of state agencies. State agencies are required under the law to use a recycler from that listing. MDEQ is in the process of evaluating alternative means of updating the listing due to program changes with the two primary certification programs. MDEQ has also worked with the Department of Finance and Administration's Office of Surplus Property to modify their procedures to ensure that everyone purchasing state computer assets demonstrate they are certified to either the R2 or e-Stewards certification. The OSP manages a significant portion of the electronics assets from state agencies and institutions.

MDEQ also continued in 2014 to assist with and sponsor various e-waste collection and recycling events and programs around the state for residents and small businesses. MDEQ provided numbers of grants to communities across the state to sponsor electronics collection events for the public, often as part of a larger household hazardous waste collection event. MDEQ also joined with the Jackson Metro Chamber Partnership and various other partners to host e-waste collection and recycling events for small businesses and residents in the Jackson Metropolitan area in April and October of 2014. These two events collected more than 47,000 pounds of electronics for recycling. These events were serviced by Magnolia Data Solutions of Jackson.

In addition, the agency continued its support for a computer refurbishment program at Jackson State University (through a partnership agreement with Hinds County). MDEQ provides grant support to assist the program in collection and restoration of used computers. The program collects used computers from area businesses and residents and works to "renovate" and repair the computers.

Several thousand refurbished computers have been donated to low-income families, churches, summer programs, non-profit organizations, day care centers and the Jackson Zoo. In addition, the program helps to provide technical training to young adults on computer repair and restoration.

MDEQ also continued its outreach efforts in 2014 to advance the proper management of electronics, promoting MDEQ's information and resources to the regulated community. One program that MDEQ works to promote is the U.S. EPA's State Electronics Challenge (SEC). The SEC is a free program open to local, regional, tribal, and state governments, including public and private K-12 schools, colleges and universities, and non-profit organizations. The Challenge provides access to free technical assistance, tools, resources, and recognition. It also documents the success of participating organizations. Program participants receive annual sustainability reports that detail their reductions in energy use, greenhouse gases, and waste. MDEQ is continuing efforts into 2015 to assist local and state government and the state's business and industry sectors on the proper management of discarded electronics.

## Medical Waste Management

MDEQ's solid waste management programs are responsible for oversight of the commercial management of medical wastes in the state. This responsibility includes the oversight of medical wastes collected and transported from health care facilities, veterinary care facilities, medical wastes generated by emergency and trauma response, medical wastes generated by business and institutional clinics and medical wastes generated in private residences through home healthcare. In addition, MDEQ oversees commercial medical waste management facilities in the state. There are two existing commercial autoclave facilities that are actively operating for the treatment of infectious medical wastes. In addition, there is a third autoclave facility that has been permitted but is not currently operating.

While MDEQ has not developed specific medical waste regulations, the agency has continued to maintain web-based resources to better communicate proper management conditions for various types of medical wastes, particularly those originating from health care facilities. MDEQ has seen an increase in the number of medical waste service providers collecting wastes from health care facilities and other generators over the past several years. A listing of these active service providers is maintained on the agency's website for reference by the health care industry.

In addition to the regulation of medical wastes from healthcare facilities, MDEQ also works with the state's citizens to assist them in managing medical wastes that are generated in the home. MDEQ continued the implementation of the state's household medical sharps collection program in 2014. MDEQ has developed and implemented a statewide educational program to inform the public of the safe disposal of home-generated medical sharps to promote proper management and disposal of such household medical devices as syringes, needles, lancets and other similar items. MDEQ continued to focus its public outreach efforts on placing educational material in medical offices throughout the state and speaking with professional nurses about the program. MDEQ also conducted a number of educational and outreach activities to promote the program including speaking and exhibiting at numerous stakeholder meetings.

MDEQ has worked to create and expand its household sharps collection network that includes community drop-off locations at pharmacies, fire stations, and other business locations. During 2014, MDEQ assisted 18 new businesses in joining the network as collection stations, bringing the total number of public drop-off locations to 214. MDEQ has continued to use services of three of the state's medical waste service providers for collection of the sharps.



The number of people participating in the sharps program and the number of sharps collected continued to increase in 2014. A total of 4,633 pounds of medical sharps was collected during this past fiscal year, representing a 39 percent increase from the previous year. In April 2014, another milestone was reached with the surpassing of two million used syringes collected since the inception of the program.

Another growing area of environmental concern that MDEQ is working to address is the management of pharmaceutical wastes and household personal care products.

MDEQ is developing resources to encourage the proper management of pharmaceutical wastes and is discouraging flushing or washing of medications and other similar products down the toilet or sink. MDEQ also helped promote events sponsored by the U.S. Federal Drug Enforcement Agency to collect obsolete pharmaceutical wastes in April and September of 2014. In sponsoring this program, the DEA has worked with numerous local law enforcement agencies throughout the State of Mississippi and the country to set up a local one-day collection event for prescription drugs and other pharmaceuticals. The primary goal of these program is to prevent the illegal distribution and/or improper use of prescription and over the counter drugs. However, these collection efforts also help to avoid discharge of these materials into the environment through wastewater systems around the state. Another state initiative that MDEQ has been promoting is the current efforts of the Mississippi Department of Public Safety (DPS) to provide drop-off collection sites for prescription drugs and expired pharmaceutical wastes at the agency's drivers' license offices around the state.

## **Organic Wastes**

In 2014, MDEQ continued efforts to promote organics waste reduction and recycling. Organics wastes are wastes that originate from plants or animals that are biodegradable such as grass clippings, leaves, limbs and woody debris, food wastes including fruits, vegetables and other foods, biosolids, animal manures, and certain commercial and industrial woody or plant based wastes. The re-use or recycling of organics wastes usually involves a process such as composting or processing the materials into a form that can be useful. Consequently, MDEQ's efforts to recycle organics have focused on encouraging and promoting activities and facilities that can compost or process the material into re-usable products.

MDEQ continued the promotion and implementation of the Pilot Composting Program, started in 2011, to help ease the authorization process for start-up composting operations. The streamlined approval process in the pilot program helps businesses and community composting operations to begin under a less formal and less rigid form of authorization. This pilot composting program has allowed new composting facilities to develop and build sustainable operations. The program has continued to grow in 2014 as MDEQ authorized six new operations increasing the number of pilot composting facilities in the state to thirteen (five business operations, six community programs, one university program, and one federal facility program). The feedback from pilot composting program participants continues to be overwhelmingly positive, and MDEQ receives frequent inquiries on the pilot program and how to start up new composting operations. MDEQ's 2013 Status Report on Solid Waste Management Facilities and Activities indicated that an estimated 22,258 tons of material was diverted to Mississippi composting facilities in 2013. This figure is an increase over the 13,414 tons of material reported diverted to composting facilities in 2012.

In conjunction with the pilot program, MDEQ has continued to work towards simplifying the state's composting facility regulations. Currently, new composting facilities must submit to a fairly rigid permitting process similar to that of a municipal landfill. MDEQ has been working through 2014 to improve and streamline this permitting process for composting operations and businesses in an effort to increase and expand composting activities and businesses.

In 2014, the agency also continued its efforts to promote mulching operations. Many communities in the state do not conduct traditional composting operations, but do manage chipping and mulching operations for various types of woody debris. MDEQ has developed a guidance document for start-up mulching operations (both public and private) that seek to create useful products from wood wastes and debris. As a result of the new guidance, MDEQ has authorized two new mulching facilities this year. In addition, MDEQ is also working on modifying regulations governing mulching facilities. Mulching facilities have historically operated under an exclusion to the definition of a solid waste processing facility with little to no operating and siting requirements. The lack of minimal operating criteria has resulted in problems at some facilities including fires, odors, harborage of pests, and storm water management issues. Consequently, MDEQ has been working to develop minimum operating criteria for mulch facilities but with a similar streamlined permitting process to that of composting sites.

In 2014, MDEQ staff made significant progress in developing a draft of new revised regulations. These revised regulations include proposed changes that MDEQ believes will improve the manner in which organic wastes are managed and reused and recycled at composting facilities, processing facilities and land application sites in the state. It is anticipated that these regulatory efforts by MDEQ will continue into 2015 with additional review and comment by stakeholders and the public.

MDEQ also conducted several activities as part of the agency's efforts to promote organics waste reduction and recycling in 2014. MDEQ has updated online resources to include lists of new and existing composting facilities, the latest in composting news, and current composting related events and activities. These web resources also provide important information to the public on home composting, to businesses and government on MDEQ's Pilot Composting Program for pilot composting/mulching operations, and to schools and families on composting educational resources for kids. MDEQ's composting web resources also provide information on the benefits and importance of composting and recycling organic materials for our state.

## **Landfill Methane Outreach Program (LMOP)**

MDEQ continued its participation in the partnership with the EPA to promote the use of landfill gas as an alternative energy source through the Landfill Methane Outreach Program (LMOP). Landfill gas is a by-product of the decay of municipal solid wastes in landfills and contains methane, a potent greenhouse gas that can be captured and used to fuel power plants, manufacturing facilities, vehicles, homes, and more. Since joining LMOP, MDEQ has worked towards the development of landfill gas projects in the state.

Currently, Mississippi has six landfill gas to energy projects including the direct use and leachate evaporator projects at Waste Management's Pecan Grove Landfill (Pass Christian); the landfill gas to electricity projects at Golden Triangle Regional Landfill (West Point), Three Rivers Regional Landfill (Pontotoc), and Waste Management's Prairie Bluff Landfill (Houston); and the landfill gas powered leachate evaporator also at Prairie Bluff.

Through the LMOP program, MDEQ has also identified numerous other landfills that appear to be candidates for future energy project development. In 2014, the agency updated and maintained an inventory listing of candidate landfills on MDEQ's LMOP web page for greater access to potential developers and end users.

### **By-product Beneficial Use Program**

The Solid Waste Programs at MDEQ continued efforts in 2014 to promote the beneficial use of non-hazardous byproduct materials that would otherwise be disposed in landfills or managed under a solid waste management permit. The state's beneficial use regulations allow for industries to request that their nonhazardous industrial byproduct materials be evaluated for use in the place of products or raw materials. If the MDEQ evaluation of a beneficial use request confirms that the material has suitable physical and chemical properties for the proposed use, then MDEQ issues a Beneficial Use Determination (BUD) for the material which means that the use of the material can be conducted in the state and will not be regulated as a solid waste. In early 2014, MDEQ collected information on the volume of materials distributed for use in the State of Mississippi in 2013. These reports indicated that BUD holders distributed over 850,000 tons of byproduct materials in the State of Mississippi. Approximately 95 percent of the by-products distributed were used for construction purposes while the remaining 5 percent of materials were used in soil amendment applications.

In addition, during 2014 the MDEQ approved two new BUDs for new materials and uses and reviewed and recognized at least two standing uses at the request of industries. In addition, the agency rescinded one BUD for an industry that is no longer in operation and no longer generating the by-product. One of the new beneficial use determinations was issued for the use of Class A/Exceptional Quality Biosolids. Earlier in 2014, MDEQ solid waste programs made the decision to consider and approve class A/exceptional quality biosolids through the beneficial use program. At the time of this report, there were two additional beneficial use requests under review for biosolids materials and a number of additional soil amendment requests under review.

MDEQ continues to work with the suppliers throughout the region who provide by-products and other material for construction uses and soil amendment uses in the State of Mississippi. One way that MDEQ does this is through "demonstration projects," which is a key part of the beneficial use program that allows an industry or company to conduct a short term pilot project with the material to demonstrate the suitability of the material for a proposed use. MDEQ is in the process of working with several suppliers on demonstration projects involving the use of certain digested poultry processing sludge, foundry sands, processed silica, and also land spreading uses of horizontal directional drilling mud materials. Through these demonstration projects, these materials and associated uses are being evaluated for both environmental and physical performance. The results of each demonstration project will be submitted to MDEQ in the near future for further review and consideration to assist MDEQ in making determinations about the impacts of the long term use of the by-product material.

### **Solid Waste Training and Certification Programs**

The MDEQ Solid Waste Program administers training and certification programs for solid waste professionals. MDEQ partners with the state and national chapters of the Solid Waste Association of North America (SWANA) to provide training and certification to municipal solid waste landfill operators. MDEQ worked with SWANA to help sponsor training opportunities at state conferences in May and October. In 2014, there were 33 active certified commercial landfill operators in the state. Over the past year, MDEQ did not receive any applications for new certifications and processed five renewal certifications for operators and provided continuing education training in partnership with the state SWANA Chapter's Spring and Fall Conferences in Bay St. Louis and Natchez, respectively.



In addition, MDEQ hosted the agency's training class and examination session for Class I rubbish site operators in June 2014 at the Cabot Lodge in Jackson with over 50 attendees. In 2014, there were 170 active certified Class I rubbish site operators in the state. This past year, MDEQ issued certificates from the training and testing events for 19 new class I rubbish site operators in the state and issued 48 renewals for existing Class I rubbish site operators. MDEQ also worked with the state SWANA chapter to provide CEU training opportunities through the state SWANA Chapter's Spring and Fall Conferences in Bay St. Louis and Natchez, respectively.

## Disaster Debris Management

In 2014, MDEQ's solid waste programs worked with federal, state, and local agencies and organizations regarding the management of disaster related debris. The state experienced several storm events during the year that caused damage, but at least two events in April created extraordinary circumstances that MDEQ's solid waste programs worked to assist affected communities in disposal of disaster debris. In early April, a tornado touched down and caused damage in Covington County. MDEQ deployed debris assistance specialists to the area to assist local governments in planning and meeting disaster debris management needs through the county's existing class I rubbish sites. In addition, on April 28<sup>th</sup>, the state experienced another severe storm system. The most significant damage was noted in Winston County and the City of Louisville and in Lee County and the City of Tupelo. Other communities seeing damage included Lowndes County and the



City of Columbus, Itawamba County, Jones County, Leake County, Madison County, Wayne County and the Cities of Pearl and Brandon. MDEQ worked with these local governments to address disaster related debris from the storm event. MDEQ approved ten disaster debris management sites primarily for the management of downed trees and other vegetative debris. Most structural debris was either recycled and recovered or disposed at existing permitted landfills and rubbish sites.

Another effort that MDEQ started in 2013 and continued in 2014 develops resources for disaster debris recovery. MDEQ has worked to phase out the open burning of disaster debris as a primary means of handling and managing such disaster wastes. MDEQ is working to develop best management practices for the recycling and reuse of the debris. In addition, the agency is seeking to develop resources that can assist with chipping and recycling woody debris in the wake of a disaster and to identify potential end users of the processed materials.

Finally, MDEQ has been working with a number of communities in the state to review disaster debris management plans that will help the communities have the opportunity to receive additional Federal assistance in the event of a disaster. While disaster debris plans are already required as part of the state's local solid waste management plans, these new planning efforts are in association with the "Sandy Act." Passed by Congress after Hurricane Sandy hit the Northeast, the act provides that communities that have a pre-event plan approved and in place may qualify for additional federal assistance.



# Mississippi Gulf Region Water And Wastewater Plan



The Mississippi Department of Environmental Quality took seriously Governor Haley Barbour's plea to rebuild the Gulf Coast "better than ever" after Hurricane Katrina and his directive to learn the lessons of Hurricane Camille. Of the \$5 billion received from the federal government for long-term recovery assistance, about \$650 million was devoted to building and upgrading water and wastewater systems in Pearl River, Stone, Jackson, Harrison and Hancock Counties. These projects (1) support existing and future growth patterns, particularly as realized through new housing construction; (2) promote economic development; and (3) emphasize the regional concept for infrastructure management. The funding is provided by the U.S. Department of Housing and Urban Development (HUD) through the Disaster Recovery Community Development Block Grants (CDBG-DR).

Final engineering designs and all clearances for the Environmental Review Records have been completed for all original projects. More than 98 percent of the nearly 4,200 individual parcels, easements, and right of entries required for the projects have been acquired.

Environmental permits necessary for construction have been issued, including: National Pollutant Discharge Elimination System (NPDES), State of Mississippi Water Pollution Control Operating, MDEQ stormwater, the Corps of Engineers' Section 404 wetlands, Section 401 water quality certifications and MDEQ groundwater withdrawal permits. All original projects have been advertised, received construction bids and commenced construction. To date, the subrecipients (county utility authorities) have submitted closeout packages for 29 projects along with 14 more projects that are in the closeout process. The remaining projects are expected to finish during calendar year 2015.

The projects being constructed include 17 wastewater treatment facilities, 33 water wells, 32 elevated storage tanks, 68 sewage pumping stations and more than 600 miles of water and sewer mains (roughly the distance of a round-trip between Biloxi and Memphis). MDEQ has paid out in excess of \$626 million in program-related expenses through the end of 2014.

The county utility authorities are hard at work on start-up activities, as well as continuing to ensure the viability of their facilities, including the construction of ancillary projects that will connect to the CDBG-DR funded facilities. MDEQ anticipates that this program will have a very positive and lasting impact on the lives of coastal residents.



Stone County Ten Mile Road water project

# GRANTS AND LOANS PROGRAMS

## Section 319 Nonpoint Source (NPS) Pollution Control Grants

MDEQ, in cooperation with numerous federal, state, and local stakeholders has been successful in developing a comprehensive statewide NPS pollution-control program to help protect and restore the state's valuable water resources. The NPS Program fulfills the requirements of Section 319 of the Clean Water Act (CWA) and section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA), two federal laws with NPS pollution control provisions.

MDEQ currently has five active grants, one of which (Grant Year 2010) will be closed out in 2014. During 2014, 39 projects/activities totaling \$4,349,073 (combined federal funds and state match) were completed with 29 projects/activities still ongoing. Those that are ongoing may take from one to four years to complete. These include, but are not limited to: educational projects; water-quality monitoring projects; Best Management Practices (BMPs) demonstration projects; agricultural/chemical waste disposal; and watershed protection and restoration projects.

In FY 2014, MDEQ received approximately \$2.9 million in Section 319 Grant funds. Of this amount, seven percent is allocated for administrative work, 26 percent for program operation and statewide education and public outreach projects, eight percent for NPS watershed planning, 39 percent for NPS watershed project implementation, and 21 percent for support of priority watershed restoration and protection projects. Within the NPS FY 2014 budget, 39 and 21 percent of the funds are respectively used for watershed project implementation and support for watershed project implementation. A total of 60 percent of the total funding focuses primarily on nutrient reduction.

## Water Pollution Control Revolving Fund

The Water Pollution Control Revolving Loan Fund (WPCRLF) program provides low interest loans to public entities in the state for construction, repair, or replacement of wastewater, stormwater, and nonpoint source pollution projects. Funding for these projects comes from federal grants, state match, repayments, and interest on deposits. Since 2010, additional subsidy funding, provided through annual Congressional appropriations, has also been made available to "Green" and "Small/Low Income Community" WPCRLF projects. During 2014, MDEQ funded 14 new WPCRLF projects totaling \$34.7 million, which included approximately \$1.1 million of Green or Small/Low Income Community subsidies.



City of West Point Wastewater Treatment Plant Project



City of Corinth Wastewater Treatment Plant

## Water Pollution Control Emergency Loan Fund

The Water Pollution Control Emergency Loan Fund (WPCELFL) program provides loans to communities for the emergency construction, repair, or replacement of wastewater collection and treatment facilities. The WPCELFL has approximately \$3.1 million available for such emergency projects. One project was funded in FY 2014 for wastewater work in Port Gibson. MDEQ encourages communities throughout the state to utilize this program whenever funds for emergency wastewater projects are needed.

# OUTREACH

## Community Engagement



The Office of Community Engagement is charged with ensuring environmental information is provided through a wide range of activities in which stakeholders exchange knowledge and resources. Community engagement is a type of public participation that involves people in problem-solving or decision-making processes. It is a multifaceted, ongoing process that involves interactions between identified groups of people and involves processes that are linked to problem solving or decision making where community input is used to make better decisions. Mississippians, particularly those who have historically been underserved, are empowered with environmental information that directly impact their communities and families through the Office of Community Engagement.

The Small Business Environmental Assistance Program (SBEAP), now housed within the Office of Community Engagement, is the arm of the agency that helps Mississippi's small businesses

achieve and maintain regulatory compliance by providing free and confidential support, education, outreach and advocacy.

For the year 2014, the Office of Community Engagement performed over 250 outreach efforts to both communities and small businesses. Ongoing projects include: Cherokee Concerned Citizens (Pascagoula), Turkey Creek community (Gulfport), Memphis Town Community Advisory Group (Columbus), Bolivar County Board of Supervisors, Shaw, and Mobile Bouie Homeowner Association (Hattiesburg).



## Basin Management Approach

The mission of Mississippi's Basin Management Approach (BMA) is to restore and protect water resources of the state through collaborative development and implementation of effective management strategies that help improve water quality/quantity while fostering sound economic growth. In an effort to effectively carry out the BMA planning and implementation activities, ten of Mississippi's major river basins have been organized into four basin groups (see map insert). Each basin group has a basin team comprised of the representatives from federal, state and local government agencies, non-governmental organizations, and other stakeholders activities to promote Mississippi's BMA:

### 1. Nutrient Reduction Strategies

The strategies were developed to reduce excessive nutrient loadings to the waters in the Delta (2009), Coastal (2011) and Upland (2011) regions of the state. Mississippi's collaborative, leveraged approach to reduce excessive nutrients and their impacts continues to focus on implementation of these regional nutrient reduction strategies. Work continued in 2014 to effectively implement these regional strategies in the state.

### 2. Implementing Nutrient Reduction Strategy in the Mississippi Delta in Basin Group II

Implementation of the Delta Nutrient Reduction Strategy (DNRS) is currently ongoing at multiple priority watersheds to answer the following key questions:

What nutrient load reductions are achievable?

What will be the cost for these reductions?

What will be the associated environmental and economic benefits from these reductions?

With the determination of what nutrient load reductions are achievable, quantitative reduction targets will be established and consequently, future progress will be evaluated in relation to achieving the targets.

- Harris Bayou watershed project: Harris Bayou, a tributary of the Big Sunflower River, flows through portions of Bolivar and Coahoma counties. The Harris Bayou 319 project is comprised of two project areas: Treatment Area (1,700 acres) and Control Area (1,300 acres). Numerous BMPs were installed in the treatment area. Installed BMPs include tail-water recovery system, on-farm storage reservoir, land formed, low grade weirs, water control structures, two-stage ditch, and grass waterway. Control area received no BMPs in order to maintain this as an area for comparison.



On-Farm Storage Reservoir

During 2014, the existing tail-water recovery system in the "treatment area" was modified to capture runoff water from the entire catchment, whereas the previous system covered approximately 50 percent of the drainage area. With suites of structural BMPs in place, 2014 efforts are focusing on the implementation of winter cover crops to improve water quality leaving the field. Planning efforts are underway in preparation for BMP implementation in the "control area". With four years of "pre-BMP" data, this site should serve well to document water quality improvements obtained through conservation measures. Also, collection of nutrient data for this project is currently ongoing.

- Porter Bayou watershed project: Porter Bayou, also a tributary of the Big Sunflower River, flows through portions of Bolivar and Sunflower counties. The Porter Bayou 319 project is comprised of: North Project Area (1,000 acres) and South Project Area (2,500 acres). Numerous BMPs were installed in both north and south project areas. Installed BMPs include tail-water recovery system, on-farm storage reservoir, land formed, low grade weirs, water control structures, and two-stage ditch.

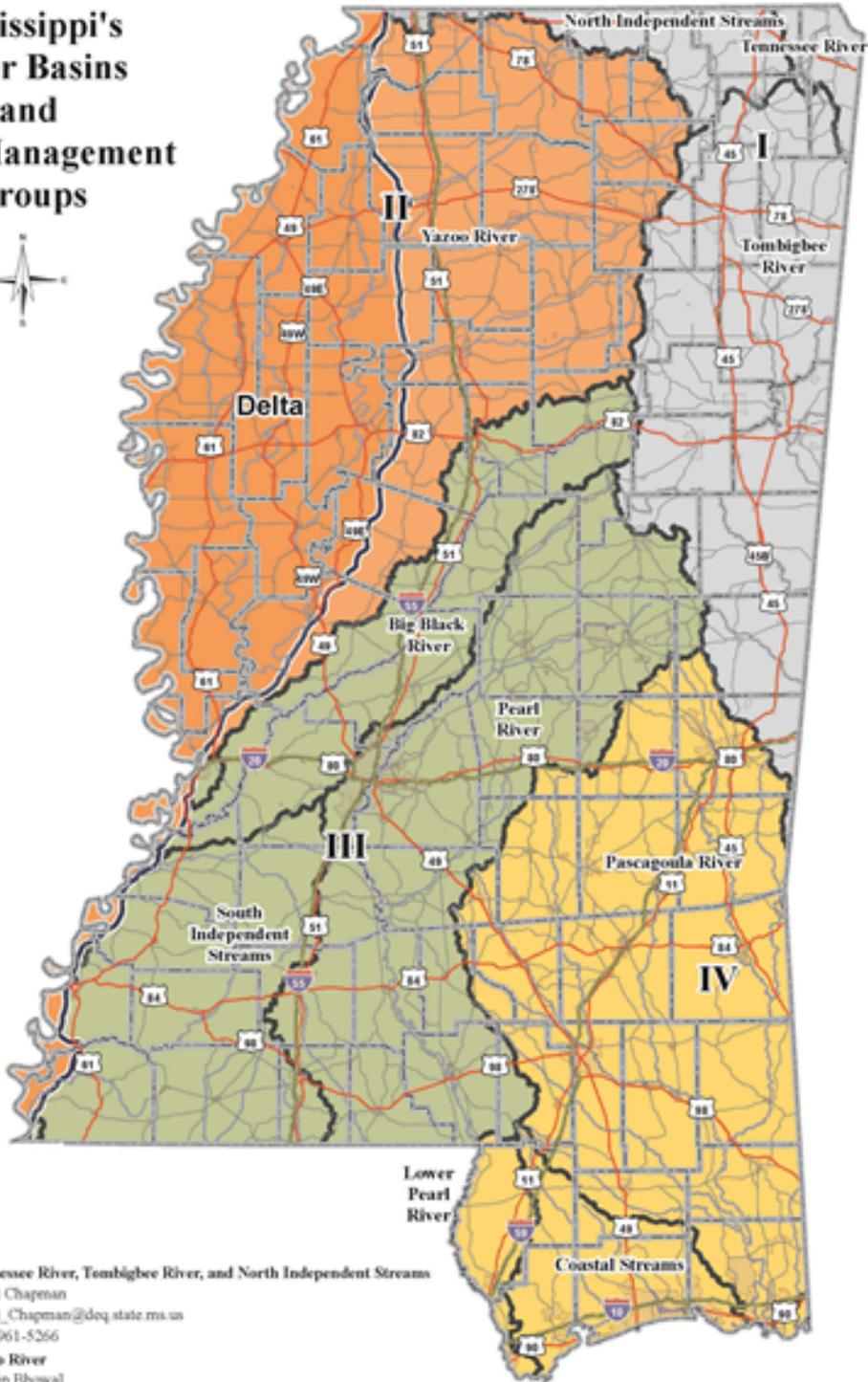
A second phase of BMP implementation for the Upper and Middle Porter Bayou watersheds is currently being planned. Management practices to be implemented will include water control structures, low grade weirs, two-stage ditch, tail-water recover system, and cover crops. In addition, collection of nutrient data for this project is currently ongoing.



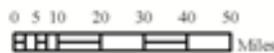
Tail-water Recovery System

- Coldwater River watershed project: Coldwater River, a tributary of the Tallahatchie River, flows for about 220 miles through portions of Coahoma, Desoto, Marshall, Quitman, Tate and Tunica counties in the northwestern Mississippi. The Coldwater River 319 project for implementation of the Delta Strategy is comprised of three sites: Shannon Site (250 acres), Buddy Allen Site (180 acres), and Boyd Site (500 acres).

# Mississippi's River Basins and Basin Management Groups



-  **I Tennessee River, Tombigbee River, and North Independent Streams**  
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-  **IV Pascagoula River, Coastal Streams, and Lower Pearl River**  
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This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division on April 04, 2013.

All map data are from the Mississippi Automated Resource Information System (MARIS) and MDEQ.

Map Projection: Mississippi Transverse Mercator

The Mississippi Department of Environmental Quality makes no warranties, expressed or implied, as to the accuracy, completeness, currentness, reliability, or suitability for any particular purpose, of the data contained on this map.

Installed BMPs include on-farm storage reservoirs/ tail-water recovery systems, land formed, low grade weirs, water control structures, and two-stage ditch.

Approximately 300 acres of cover crops are planned for implementation in 2014. Also, collection of nutrient data for this project has been ongoing since 2012.

- Bee Lake watershed phase II project: Bee Lake is a 1400-acre oxbow lake located in Holmes County. Primary inflow to Bee Lake is through Tchula Lake (a nearby oxbow lake) during high water periods in the spring, and outflow is back through Tchula Lake to the Yazoo River. Implementation of the Delta strategy is currently ongoing to improve water quality by reducing nutrient loading to downstream aquatic ecosystems. The Bee Lake phase II project is comprised of one project area (740 acres). Installed BMPs include low grade weirs, water control structures, and two-stage ditch. No additional BMPs have been planned or installed in 2014. Also, collection of nutrient data for this project is currently ongoing.



- Lake Washington watershed project: Lake Washington is another existing project retrofitted for implementation of the Delta nutrient reduction strategies. Several BMPs were installed by using EPA 319, Natural Resources Conservation Service (NRCS) (through EQIP, CSP and other programs), and other funds. 319 BMPs included grade stabilization structures, outlet protections, pads, and several grassed waterways. NRCS BMPs included nutrient management, grade stabilization structures, land leveling, pads, pipes, and other irrigation systems/management. Collection of pre-BMP storm data was completed by USGS. Post-BMP water quality data collection began in around June 2013 and it is recommended by USGS that one more year of post-BMP data be collected. Currently, USGS is analyzing the collected data to determine the effects of BMP implementation in this watershed.

As mentioned above, the DNRS implementation activities during 2014 have been underway throughout many watersheds in the Yazoo River Basin. Structural BMPs have been the focus of prior implementation activities. For 2014 the focus has shifted towards “management” oriented BMPs related to irrigation water management and soil health. Delta F.A.R.M., in partnership with MDEQ and NRCS, provided demonstration of irrigation water management practices that address water quality and quantity on multiple farms throughout the Delta. NRCS provided \$5 million in financial assistance to local producers for these activities.

Additionally, Delta F.A.R.M., in partnership with MDEQ, NRCS, Jimmy Sanders, CrescoAg, Cover Crop Solutions and Monsanto, has launched a Soil Health and Cover Crop Initiative for the Yazoo River Basin. The first step in this process is the planting of cover crops. Currently, approximately 3,500 acres have been planted with an additional 2,500 acres planned for 2014. Baseline soil sampling is being conducted so that improvements in soil health improvements may be documented. Mississippi State University is preparing for Tier 1 monitoring efforts that will document improvements in water quality.

### **3. Implementing Nutrient Reduction Strategic Plan in the Mississippi Uplands in Basin Group I**

Currently two projects in the upland North Independent Streams Basin are implementing the Upland Nutrient Reduction Strategic Plan.

- Muddy Creek in Tippah County failed to meet minimum water quality standards for aquatic life support, most likely due to organic enrichment/low dissolved oxygen and nutrients (nitrogen and phosphorus). MDEQ is partnering with Mississippi Soil and Water Conservation Commission (MSWCC), NRCS, EPA and the Tippah County Soil & Water Conservation District to install appropriate BMPs on farmland area in the Bell Creek-West Prong Muddy subwatershed of the larger Muddy Creek watershed. Of primary concern are animal waste runoff and animal access to streams from cattle operations in the watershed. To date the BMPs that have been installed are 4929 feet of stream bank and shoreline protection, 1,132 feet fencing, 14.5 acres of critical planting, 106 acres of nutrient management, three tank/troughs, three water and sediment control basins, 25 grade stabilization structures, and 27 acres of pasture and hay land planting. Soil savings from these BMPs amount to reductions of over 1929 tons/yr of sediment flowing into Mississippi waters. USGS is tasked with water quality monitoring for the project.
- MDEQ is conducting a similar project with the Alcorn County Soil & Water Conservation District, MSWCC, NRCS, EPA, and USGS in the Tarebreeches Creek-Tuscumbia River Canal subwatershed. Tarebreeches Creek-Tuscumbia River Canal Watershed is biologically impaired due to pollutant loads and is not meeting the watershed’s designated use.

Practices installed so far include 382 acres in pasture and hayland planting, three heavy use area protection, one tan-trough, 170 acres of nutrient management, 220 feet of streambank and shoreline protection, one check dam, one stream crossing, 1 lined waterway, 1660 feet of fencing, and 12 grade stabilization structures. Resultant soil savings show reductions of over 3340 tons/yr of sediment in Mississippi waters.

#### 4. Implementing Nutrient Reduction Strategy on the Mississippi Coast in Basin Group IV

- The Rotten Bayou watershed project was developed to implement the Mississippi Coastal Nutrient Reduction Strategy. This strategy used the Gulf of Mexico Alliance (GOMA) Coastal Template and leveraged on work done in the Delta with the Delta Nutrient Reduction Strategy. The Coastal Nutrient Reduction Strategy was developed through local workshops with coastal stakeholder input. Various issues related to livestock, forestry, urban stormwater, and atmospheric deposition were included in the strategy.

As part of the federal government's efforts to recover from the Deepwater Horizon oil spill, NRCS introduced the Gulf of Mexico Initiative (GoMI), an innovative water- and wildlife-conservation effort along the Gulf Coast. GoMI was developed in close collaboration with local, state, and federal partners. It is a new approach to better target conservation activities in the Gulf Coast region to improve the health of the Coast's rivers, wetlands, and estuaries that are integral to jobs and the economy in the Gulf. Because MDEQ had already developed and begun implementation of the Coastal Nutrient Reduction Strategy in Rotten Bayou watershed, NRCS targeted it for their GoMI Project.

The Mississippi Soil and Water Conservation Commission, the Soil and Water Conservation District, and NRCS, have been working with local landowners in the Rotten Bayou watershed to install agricultural BMPs. Implemented BMPs in the watershed include: 1) pasture and hay planting; 2) nutrient management; 3) Pond (alternative water source); 4) critical area planting; 5) water and sediment control structures; and 6) fencing. To develop a watershed implementation plan for this project, the Land Trust for the Mississippi Coastal Plain is working with local residents to form three teams: a watershed team, a technical team, and an education team. These teams will provide input to the plan. Also as part of this project, the Department of Landscape Architecture at Mississippi State University is working with the City of Diamondhead to develop Low Impact Development Urban BMPs for reducing NPS pollution.

The Rotten Bayou watershed team has continued to meet and make progress on the project. Meetings conducted in 2014 include: Rotten Bayou watershed steering committee meetings; an Education and Outreach subcommittee meeting; Technical Advisory team meetings; Rotten Bayou watershed partnership meetings; a Rotten Bayou Watershed Storm Water Workshop for golf professionals at Diamondhead Country Club and the Cardinal Golf Course; and a Field Day event for farmers and landowners to showcase some of the BMPs installed in the Rotten Bayou watershed through the Mississippi Nonpoint Source 319 Project.

#### 5. Ross Barnett Reservoir in Basin Group III



Since its construction in the late 1960s, the Ross Barnett Reservoir has been an irreplaceable resource to Central Mississippi. It is the largest source of drinking water in the state supplying over 15 million gallons of water to local residents, businesses, and industries. As it has done for more than 50 years, this plentiful water resource provides outstanding recreational opportunities, supports economic growth as well as scenic beauty and vital wildlife habitats. The EPA has designated this area as a Priority Watershed.

The MDEQ and the Pearl River Valley Water Supply District (PRVWSD) along with other partners have finalized plans to restore and protect water quality within the Ross Barnett Reservoir through an initiative called Rezonate. Rezonate focuses on six priority issues in the watershed: 1) Reduce and control watershed erosion and sedimentation; 2) Reduce and control pathogens; 3) Reduce litter/trash in the reservoir and around the shoreline

4) Reduce and control nutrients/organic enrichment; 5) Manage invasive species; and 6) Reduce and control pesticides. The plans also recommend a set of conservation measures to address the priority pollutant issues and ensure that these measures are implemented. MDEQ and PRVWSD have developed these plans through workgroups that utilized technical expertise from various state agencies, local agencies, and local stakeholders.

The PRVWSD and the Barnett Reservoir Foundation hosted its third Annual Independence Day Celebration in conjunction with the eighth Annual WaterFest event hosted by the Mississippi Department of Environmental Quality on the Reservoir simultaneously at Old Trace and Lakeshore Parks in Madison and Rankin Counties. WaterFest, the signature event for Rezonate, is an annual event that spotlights the importance of protecting, restoring and improving the water quality of the Ross Barnett Reservoir. Event activities included educational exhibits, kid zones, water slides, interactive displays, live music, food vendors, a classic car cruise-in and static military displays. Through the efforts of the Barnett Reservoir Foundation, patrons of both parks viewed the third annual lighted boat parade and a dual grand fireworks display that climaxed the evening's activities. An estimated 10,000 people attended the dual event.



The Rezonate Education and Outreach Plan was developed to meet the educational needs of six specific target audiences that live, work, and recreate in the Ross Barnett Reservoir Watershed. Identification of target audiences will allow MDEQ and co-lead PRVWSD to tailor messages and education materials. Specific goals and objectives for each targeted audience have been designed to reflect each group's interests, and provide opportunities for each audience to take actions to improve water quality. The targeted audiences included in the Education Outreach Plan are:

1. General Public
2. Educators/Students in Area Schools
3. Homeowners Associations
4. Area Civic and Recreational Organizations
5. Decision Makers – (Municipalities and Municipal Staff, Inspectors, Local Leaders, Elected Officials, Public Department Heads, Planners, and Economic Development Officials, and Business Owners)
6. Land Development Professionals (Developers and Contractors)

A three year campaign is in place to promote more general awareness and also personal level outreach to promote the benefits of the Reservoir and also what can be done to maintain and improve it. Throughout 2014, an education and outreach plan has been implemented through the general public, students, educators and area civic and recreational organizations with the assistance of partners such as Keep the Reservoir Beautiful, Adopt-A-Stream, Gator Bait, Barnett Reservoir Foundation, the PRVWSD and City of Ridgeland. Recently, MDEQ has contracted with Allen Engineering and Services, Inc. to coordinate and facilitate education and outreach components of Rezonate and to host various workshops to reach specific audiences.

In an effort to leverage resources and to promote the message of protecting and restoring the Reservoir, Rezoante has sponsored and helped facilitate several events in and around the Ross Barnett Reservoir. Rezonate was a major sponsor for the Project Rezway Recycle Fashion show that took place on April 17, 2014, at the Mississippi Craft Center in Ridgeland. The show featured apparel and accessories composed of at least 75 percent recycled materials. Keep the Rez Beautiful, a nonprofit in the Ross Barnett Reservoir area, hosts this event annually with the aim of raising awareness of the importance of recycling and shows how commonly discarded items can be put to use again. Other major sponsors included MDEQ, Kathryn's Steakhouse, Waste Management, Barnett Reservoir Foundation, Mississippi Department of Transportation, Keep Mississippi Beautiful, and PRVWSD.

The fourth Annual Gator Bait Kayak Race, a 5.5 mile race for competitive and recreational kayakers, canoeists, and SUP paddlers, is another event sponsored through the Rezonate Initiative. The event was held at Pelahatchie Shore Park (September 20, 2014) on the Ross Barnett Reservoir. The course runs through Pelahatchie Bay on the Ross Barnett Reservoir. This successful event raised awareness about the water quality of the Reservoir and its need to protect it through conservation education and litter control.



2014 Gator Bait Kayak Race

This well organized growing event drew 84 race participants from Mississippi, South Carolina, Louisiana, Tennessee, Alabama, Arkansas and Georgia. Other partners that contributed to this event were the Pearl River Valley Water Supply District, Mississippi Wildlife Federation and Keep the Reservoir Beautiful.

Rezonate also partnered with the Summer Library Programs in Hinds, Madison and Rankin counties to teach students about the importance of protecting our drinking water sources especially in the Ross Barnett Reservoir watershed. Over 500 students and parents were reached through this effort.

In 2012 MDEQ entered into a three year Memorandum of Agreement (MOA) with the PRVWSD. The purpose of this MOA is to demonstrate techniques to stabilize eroding stream banks, reduce sedimentation and non-point source (NPS) pollution that drains into the Ross Barnett Reservoir Watershed. Due to NPS pollution from sediment and nutrients, primarily as a result of urbanization and recreation, various BMPs that can reduce sediment and peak storm water flow loadings need to be implemented. In 2014, Allen Engineering and Services was tasked to identify and rank highly visible sites suitable for signage and BMP demonstration areas. To date, meetings have been held with the cities of Flowood, Ridgeland, Madison, Rankin County, the Pearl River Valley Water Supply District, Natural Resources Conservation Service, Mississippi Wildlife Federation and Hinds County Soil and Water Conservation District for input and recommendations for potential sites. The project is still ongoing and it is expected that by the beginning of 2015 BMP demonstrations sites will be under construction and signage will be placed at various sites.

This project is funded partly through EPA FY2011 Nonpoint Source Grant which supplies 60 percent of total program funds with the remaining 40 percent of expenditures to be supplied as a state/local match. The funding for this contract shall support BMPs and other work activities agreed upon by the PRVWSD and the MDEQ.

### **enHance Recognition Program**

In its seventh year, enHance currently has 36 members, representing top environmental performers throughout the state. The objective of this program is to recognize those that go beyond compliance and to promote energy efficiency efforts, provide networking and training resources for pollution prevention (P2), and encourage the use of environmental management systems and continuous improvement.

Members have implemented projects resulting in 1.1 million tons of solid waste being diverted from landfills through recycling, reuse or reduction, 2,730 tons of air emissions eliminated, and 75,800 MMBtu of energy use reduced. This has been done through changes in operating procedures, redesign of products/packaging, beneficial reuse of materials, installation of more efficient equipment, recycling, and other similar alternatives.

The annual training workshop and luncheon was held in April to recognize new members and provide environmental training and networking opportunities. This year's workshop was "Tools & Techniques for enHanced Operations: Energy Efficiency and Waste Reduction Opportunities." Presentations included information on sustainable manufacturing, innovative applications for reducing industrial energy use, savings opportunities with the E3 (Economy, Energy and the Environment) program, and improving recycling markets in Mississippi.



### **Nonpoint Source (NPS) Pollution Education Programs**

Nonpoint Source Pollution (NPS) is rainwater runoff that picks up and carries away a variety of pollutants as it flows over streets, parking lots, construction sites, or farm lands. The pollutants may then flow into rivers, oceans, and underground sources of drinking water. These pollutants include excess fertilizer, sediment, nutrients, pesticides, oil, grease, and bacteria from faulty septic systems. The primary objective of the NPS Educational Program is to increase public awareness of NPS pollution and to induce behavior changes that will reduce NPS pollution impacts, both from individuals and watersheds.

- **Watershed Harmony Musical Puppet Theater**

MDEQ and Bayou Town Productions completed the first performance of the *Watershed Harmony Musical Puppet Theater* in October 2003. Since that time, performances have reached more than 150,000 students, teachers, and others. Pre-test/post-test scores revealed a significant increase in knowledge and awareness of water-pollution problems, solutions, and stewardship. The play focuses on the prevention of polluted runoff by promoting the use of Best Management Practices (BMPs) and individual stewardship to improve water quality. The *Watershed Harmony Puppet Musical* conforms to the 4<sup>th</sup>- and 5<sup>th</sup>-grade *Mississippi Framework Curriculum* and the *National Science Standards*. The performance is frequently used as a school presentation and as a part of environmental field-day student events. In addition to students, the show is enjoyed and seen by all ages and many groups, including civic clubs, special-event groups, summer reading programs, scout troops, and summer camps.



- **Storm Drain Marking**

The Storm Drain Marking Program is a cooperative program between MDEQ and the Mississippi Wildlife Fisheries. MDEQ provides MWF funding for this through one of its Section 319 subgrant agreements. The program promotes awareness of the water quality impacts of polluted runoff in urbanized communities. Small plastic disks are placed by local volunteers on storm drains with the message “No Dumping, Drains to River.” Volunteers glue the markers to storm drains and distribute door hangers to homes. Students and scouts also talk with residents about stormwater runoff and the need to prevent pollutants from entering storm drains.



- **Adopt-A-Stream**



Adopt-A-Stream is an environmental education training program for adults and students that focuses primarily on aquatic ecosystems and the effects of nonpoint source pollution on water quality. Annually, a two day workshop and nine one day workshops are conducted in the major watershed basins of Mississippi. One-day workshops allow MDEQ to expand its outreach efforts in priority watersheds by educating citizens about water-quality issues and solutions in their own local watersheds. In addition, the Adopt-A-Stream coordinator trains high school envirothon teams on aquatics and the special topic each year as well as reaching over 10,000 people through large venue events, teacher-workshop training sessions, classrooms, outdoor events, summer environmental camps, and setting up a display at conferences and events.

- **Enviroscape and Groundwater Models**

The Enviroscape and Groundwater Models continue to enhance NPS educational activities and are widely used by organizations all over the state due to their widespread distribution by MDEQ. Hundreds of presentations are made each year by various environmental organizations, natural resource agencies, and nonprofit organizations that use these models at conservation carnivals, schools, civic clubs, workshops, summer camps, and Earth Day events.



- **Environmental Teacher Workshops and Student Environmental Camps**

Teacher workshops are a major environmental education component of MDEQ’s NPS education grant program each year. The workshops include classroom interactive instruction and field trips with some of the best environmental/natural resource speakers in Mississippi instructing the classroom teachers and informal environmental educators. During 2014, workshops were held in eight regions of Mississippi at 56 workshops with 1,243 educators and students participating. These workshops included sessions on water quality, NPS pollution prevention, green infrastructure, low impact development, water chemistry, macroinvertebrates, and hands-on, water-related activities that teachers can use in their classroom to teach students about natural resource stewardship. The NPS program assists with workshop support for these curricula: *Project Learning Tree*; *Project WET*; *Project WILD*; *Project Aquatic WILD*; *Project Food, Land and People*; *Private Eye*; and others.



- **Envirothon Competition for High School Students**

The Envirothon High School Competition tests student knowledge about water, soils, forestry, wildlife, and current environmental issues each year. The current issue in 2014 was “Sustainable Agriculture”. The competition measures success by student oral presentations made to a panel of judges where each team applies their knowledge and field experiences to a real-life environmental problem/situation as well as by a written test and a field test on each of the five topics. The Mississippi competition is sponsored by MDEQ’s Nonpoint Source Pollution Program and the Mississippi Association of Conservation Districts and is coordinated by the Mississippi Soil and Water Conservation Commission. In 2014, there were 342 high school students (57 teams) and their advisors from 30 Mississippi counties who participated in four area competitions. A



A total of about 132 students participated at the state level competition which was held at Roosevelt State Park on May 2, 2014. Hillcrest Christian School High School Envirothon Team won the state competition and traveled to the Illinois Regional Competition at Loyola University of Chicago where nine states participated.

- **Water Events/Festivals/Exhibits/Other**

The Make-A-Splash, A Water Education event is held each September at the Mississippi Museum of Natural Science in Jackson where students visit water-related interactive booths to learn about polluted runoff, wildlife, water use, groundwater, surface water, macroinvertebrates, etc. At the September 2014 event, 10 schools from nine different counties attended with a total of 789 students participating and 24 teachers receiving Continuing Education Units (CEUs).

- **Student Environmental Day Camps**

During 2014, the NPS program sponsored four, one-week summer-camp sessions at the University of Mississippi Center for Water and Wetland Resources where 90 students were trained. A new summer camp session was held in 2014 in Northwest Mississippi near Hernando where 52 students attended. These camps train students on environmental topics such as water quality, land use, forestry, wildlife, and NPS pollution. A pre-test/post test method is used to measure increased knowledge as an indicator of program success.

- **Desoto Eagle Fest, 2014**

MDEQ’s Basin Management Branch and Air Division joined the U.S. Army Corps of Engineers, Mississippi Wildlife Rehabilitation, Inc., Arkabutla Lake Wildlife Rehabilitation Nature Center, Desoto County Greenways, and a number of other organizations for the Eagle Fest 2014 on September 27<sup>th</sup> at the Dub Patton Area near Arkabutla Dam. The Eagle Fest was held to help raise funds to build a nature center and wildlife rehabilitation facility on a 154-acre park located on the U.S. Army Corps of Engineers land off Highway 304. This conservation event provided opportunities for families to learn more about the environment and wildlife resources. MDEQ exhibits featured educational presentations and information to attendees on the importance of preserving the environment by protecting our air and water resources.



- **Field Days**

Field days were arranged as part of the NPS Watershed Demonstration Projects conducted with the Natural Resources Conservation Service, the Mississippi Soil and Water Conservation Commission and various water management district staff.

- **Workshops**

MDEQ personnel continue to conduct and assist with presentations for teachers, students, resource agencies, etc. These workshops enable instruction on and distribution of existing educational models and materials.

- **Public Service Announcements**

By working with the Foundation for Public Broadcasting in Mississippi, MDEQ sponsored NPS pollution messages on their radio network and on the *Mississippi Outdoors* television program.



## **Energy Efficiency and Energy Star**

Energy Star outlines a seven step continuous improvement process to improve the energy performance of buildings. MDEQ's Pollution Prevention program continues to work with state office buildings, schools, and hospitals to benchmark energy usage and develop a plan to reduce energy consumption.

Energy use in the MDEQ main office buildings has been reduced by 44 percent in less than five years, saving hundreds of thousands of dollars. Additional state office buildings are evaluating opportunities with the Energy Star Portfolio Manager benchmarking tool. Technical assistance tools, geared toward these target groups, are being developed to assist with energy efficiency project implementation. MDEQ's efforts were recognized by the Mississippi Development Authority and Mississippi Department of Finance and Administration.



Twenty-one of twenty-seven Rankin County schools were awarded with the ENERGY STAR Label. Pictured are Khairy Abu-Salah and Dallas Baker of MDEQ; Brett Rasmussen of Nissan; Rusty Ponder, Energy Manager of RCSD.

## **Pollution Prevention**

The purpose of MDEQ's Pollution Prevention Program within the Environmental Permits Division is to:

- Provide pollution prevention information and technical assistance to local government officials, federal officials, industrial officials, consulting engineers, and system operators on hazardous and non-hazardous waste management and pollution prevention practices.
- Review, manage, and monitor the waste minimization plans, annual waste minimization certified reports, and the EPA/Mississippi Pollution Prevention Grant (P2G).
- Coordinate with both states and the federal government and non-governmental entities to promote effective pollution prevention practices.

During FY 2013 to 2014, the MDEQ Pollution Prevention Program accomplished the following program elements:

- Three P2 enHance site visits and three E3 multi-day sustainability audits coordinated with multiple agencies.
- Reviewed and monitored 198 annual waste minimization certified reports; eight P2 plans were approved.
- Met all conditions of the 2013-2014 EPA/Mississippi Pollution Prevention (P2G) Grant.
- One recycling site visit, three workshops and eight presentations were conducted on environmental issues.
- Processed applicants for the new class of members in the enHance Program.

## Key Pollution Prevention Activities

The Pollution Prevention Program (P3) coordinates multiple activities focusing on the reduction of waste streams that can impact the environment. Efforts include leading P3/E3 programs for the automotive supplier industry, and energy and water efficiency in state government buildings. Efforts were designed to support E3 - an initiative designed to focus on sustainability and the triple bottom line of energy, environment and the economy. Central to the program is the concept of continuous improvement.

## Toxic Release Inventory

The Toxic Release Inventory is required under Section 313 of the federal Emergency Planning and Community Right-To-Know Act of 1986. This report is required to be submitted every year by facilities that utilize toxic substances in their manufacturing processes if the facility has in excess of ten full-time employees and falls into certain Standard Industrial Classification codes as designated by the EPA. These facilities report how toxic substances are utilized in their manufacturing processes and how and to what media they are emitted to the environment. Every year, over 250 facilities from across the state submitted over 1,000 reports to MDEQ, as required by federal law.

## Solid Waste and Recycling Education and Outreach Programs

The Solid Waste and Recycling Programs conduct a variety of outreach efforts throughout the year on various aspects of proper solid waste management and waste reduction and recycling.

One important outreach tool developed in 2014 was a comprehensive array of web resources for communities on preventing and dealing with illegal dumping. Illegal dumping and litter are problems that occur in many communities that sap the resources and time of local governments. MDEQ's solid waste programs developed a set of tools and sources of information that can be used by local governments in addressing local illegal dumping problems. The information includes sample local ordinances, resources on funding assistance, lists of local enforcement personnel statewide, training presentations on illegal dumping prevention, and a variety of other documents for local communities dealing with the problem of illegal dumping.

Another outreach initiative in which MDEQ participated in 2014 was an effort with the EPA called Trash Free Waters (TFW). Trash Free Waters is a joint initiative of the solid waste and water programs at the EPA that seeks to draw attention to and to work to resolve the tremendous trash loading of wastes and debris that entered the nation's waterways through litter, illegal dumping or other forms of mismanagement of solid wastes. MDEQ solid waste and water programs developed a stakeholder group of potential concerned persons on the Trash Free Waters initiative and had a preliminary meeting with the EPA staff and the TFW contractor that is working in developing state specific initiatives and projects. Work under the Trash Free Waters initiative has just started so it is anticipated that additional efforts and work will advance on TFW in 2015.



In addition, MDEQ also partnered with various other organizations to provide outreach and education on a variety of solid waste management issues. Throughout the year, MDEQ's solid waste programs helped to organize and host conferences and meetings for the Mississippi Recycling Coalition and the Mississippi Chapter of the Solid Waste Association of North America. In addition, the Solid Waste programs participated in conferences, conventions and training sessions of various organizations including the Mississippi Municipal League, the Mississippi Manufacturer's Association, Keep Mississippi Beautiful, the Jackson Metro Chamber Partnership, the Southeast Recycling Development Council and various other state and local organizations and agencies.

## Geology Outreach and Education

### The Mississippi Gem And Mineral Society Annual Rock Show

The Mississippi Gem and Mineral Society Annual Rock Show was held on February 22-23, 2014, at the Jackson Trade Mart. MDEQ's Office of Geology operated a booth showing the office's geologic work. Staff answered questions from the public.



### The Fossil Road Show, Mississippi Museum of Natural Science

The Fossil Road Show was held on March 1, 2014, at the Mississippi Museum of Natural Science. MDEQ's Office of Geology staff identified fossils for the public.

### 2014 Project Earth Environmental Education Workshop

David Dockery gave a program on Mississippi's rocks and fossils at the Hinds County Soil and Water Conservation Association's 2014 Project Earth Environmental Education Workshop on June 10, 2014.



### The Jackson Public Library Summer Reading Program

James Starnes gave a rock and fossil program for the Jackson Public Library Summer Reading Program at the Eudora Welty Library.

### Mississippi Archaeological Association

James Starnes gave a program on the geology of the state and the geologic formations from which rocks were utilized by the pre-historic Native American cultures that lived in Mississippi.

### Southeastern Association Of Vertebrate Paleontology 7<sup>TH</sup> Annual Meeting

James Starnes operated a booth at the conference with MDEQ's Office of Geology's geological and paleontological publications.

### Mississippi Joins Interstate Mining Compact Commission

After several years of interaction with the Interstate Mining Compact Commission (IMCC) and receiving valuable information from that organization, Mississippi applied for associate membership in the Compact in the fall of 2013 by means of a letter from Governor Phil Bryant. At the urging of Governor Bryant and then MDEQ Executive Director Trudy Fisher, Mississippi sought full membership in the Interstate Mining Compact in 2014. The Mississippi Legislature subsequently passed enabling legislation to bring Mississippi into the Compact as a full member, and Governor Bryant signed the bill into law on March 21, 2014. The Governor serves as Mississippi's representative on the Compact.

Stan Thieling, Director of the Coal Mining Division in the Office of Geology, attended the IMCC annual meeting in Reno, Nevada, in April. He was recognized for his role in Mississippi attaining associate membership and then full membership in the Compact.



L-R: Scott Fowler of the Illinois Department of Natural Resources, who served as chair of the awards committee, MDEQ's Stan Thieling, and Greg Conrad, IMCC Executive Director.