

# MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY 2011 ANNUAL REPORT



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**STATE OF MISSISSIPPI**  
PHIL BRYANT, GOVERNOR  
**MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY**  
TRUDY D. FISHER, EXECUTIVE DIRECTOR

February 1, 2012

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, 2011, and additional information about the agency for calendar year 2011.

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 in spite of the state's revenue challenges. 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 black ink, appearing to read "Trudy D. Fisher", with a long horizontal flourish extending to the right.

Trudy D. Fisher  
Executive Director

TDF:jb

cc: Lieutenant Governor Tate Reeves

cc: Members of the Mississippi Legislature

## Commission on Environmental Quality

**Chair:** Martha Dalrymple - 2nd District - Term Ends 6-30-2015

**Vice Chair:** Chat Phillips - At Large - Terms Ends 6-30-2013

**R. B. (Dick) Flowers** - 1st District  
Term Ends 6-30-2012

**W. J. (Billy) VanDevender** - At Large  
Term Ends 6-30-2012

**Jack Winstead** - 3rd District - Term Ends 6-30-2016

**Kay Kell** - 5th District - Term Ends 6-30-2018

**Charles Dunagin** - 4th District - Term Ends 6-30-2017



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

## 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 member 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.

# AIR QUALITY

## Air Quality Standards and Planning

Mississippi has historically attained 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 the 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 for the standard will be made in 2012.

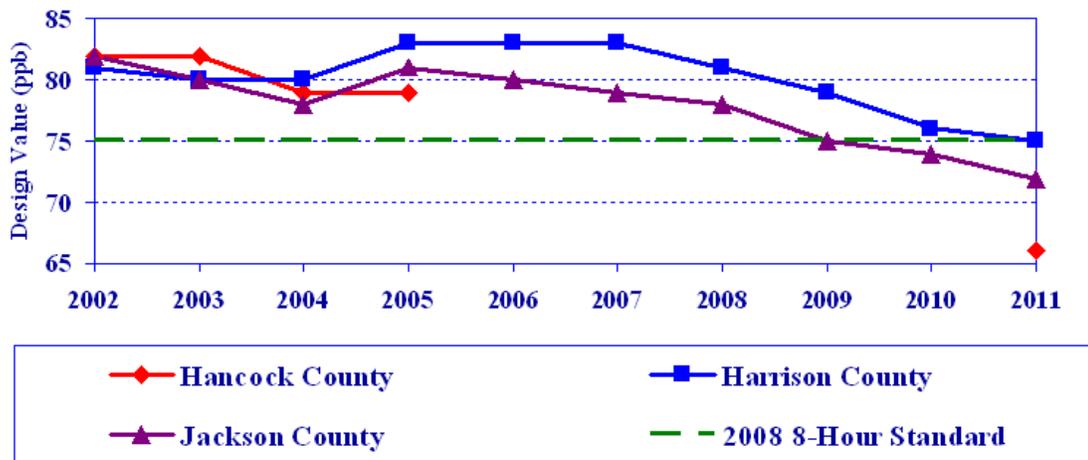
MDEQ is continuing a voluntary ozone precursor air pollution control program in partnership with governmental and business leaders on the Coast and in DeSoto County in efforts to prevent or mitigate future nonattainment.

In 2008, EPA issued new lead standards that will require MDEQ to monitor for lead starting in December 2011 to determine if the state will meet the new standards. In addition, EPA has issued new standards for nitrogen dioxide and sulfur dioxide. Nitrogen dioxide designations will be made by January 2012 and sulfur dioxide designations are due by June 2012. Proposed standards for carbon monoxide were issued in August 2011. Proposed standards for particulate matter will be made in 2012.

**DeSoto County  
Ozone Design Values  
2002-2011**



**Mississippi Gulf Coast  
Ozone Design Values  
2002-2011**



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 as well as the MDEQ web site. 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.

## **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 several MDEQ staff members are part of, 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. In 2011, the base year emission inventories for the work was completed and the group is currently evaluating the next step work due to changes in the timelines for new standards from EPA.



## **Greenhouse Gas Regulation**

Beginning January 2, 2011, Greenhouse Gases (GHG) became a regulated pollutant and thus became subject to the air pollution permitting programs. Mississippi has adopted the "Tailoring Rule" for GHG's which set thresholds for Greenhouse Gas (GHG) emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities. The tailoring rule increases the GHG applicability threshold so that only the larger emitting sources will be subject to regulation. The USEPA has committed to evaluating the need for further GHG regulation and may undertake another rule-making in 2012 for lowering the applicability thresholds of GHGs which could impact more sources.

## **Air Support Branch**

### **Emission Inventories**

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. This work involves gathering the emissions data from the sources, quality assuring it, and submitting it to EPA in a prescribed format. MDEQ has been working on the 2010 inventory this year which will be due December 31, 2011. This date is five months earlier than previous years and EPA is also requiring speciation of particulate matter to a greater degree than past years. MDEQ is on track to submit by the due date. Calendar year 2011 is a year that requires a complete (larger) submittal than most years and will be due December 31, 2012. Besides working on the current inventory submittal, staff is preparing for next years submittal.



## The Mississippi Diesel Emissions Reduction Project

The Air Division began the Mississippi School Bus Retrofit Project in the spring of 2009. Utilizing Diesel Emission Reduction (DERA) State Grant funds from EPA's Clean Diesel Campaign and Supplemental Environmental Projects, MDEQ initially planned to retrofit approximately 225 public school buses. With an additional \$1.7 million from the American Recovery and Reinvestment Act (ARRA), MDEQ expanded the project to over 1,900 buses across Mississippi. MDEQ paid for the installation of diesel oxidation catalysts (DOC) on public school buses built from 1998 to 2003. DOCs are an EPA verified technology, built into a new muffler, which use a chemical process to break down pollutants in the exhaust stream into less harmful components. The addition of DOCs can remove up to 40 percent of the PM, 70 percent of the VOC, and 40 percent of the CO from the tailpipe emissions. Installation of the DOCs began in July of 2009. By December 31, 2011, over 1900 buses will be retrofitted in 107 school districts. This successful project has been particularly beneficial to the school children that ride the buses everyday. In conjunction with this program, the Air Division has been working with the Department of Education to reduce the amount of time that school buses idle unnecessarily which will further reduce exhaust emissions.



## Mississippi Diesel Emissions Reduction Project State Grants

MDEQ used Diesel Emission Reduction (DERA) State Grant funds in 2011 to fund a competitive sub-grant program 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. For this project, MDEQ received 39 applications requesting over \$1.2 million in funding. MDEQ awarded 12 grants for approximately \$240,000. Due to the success of this grant program, MDEQ expects to continue this program with the final year of the DERA State Grants from EPA.

## Air Monitoring

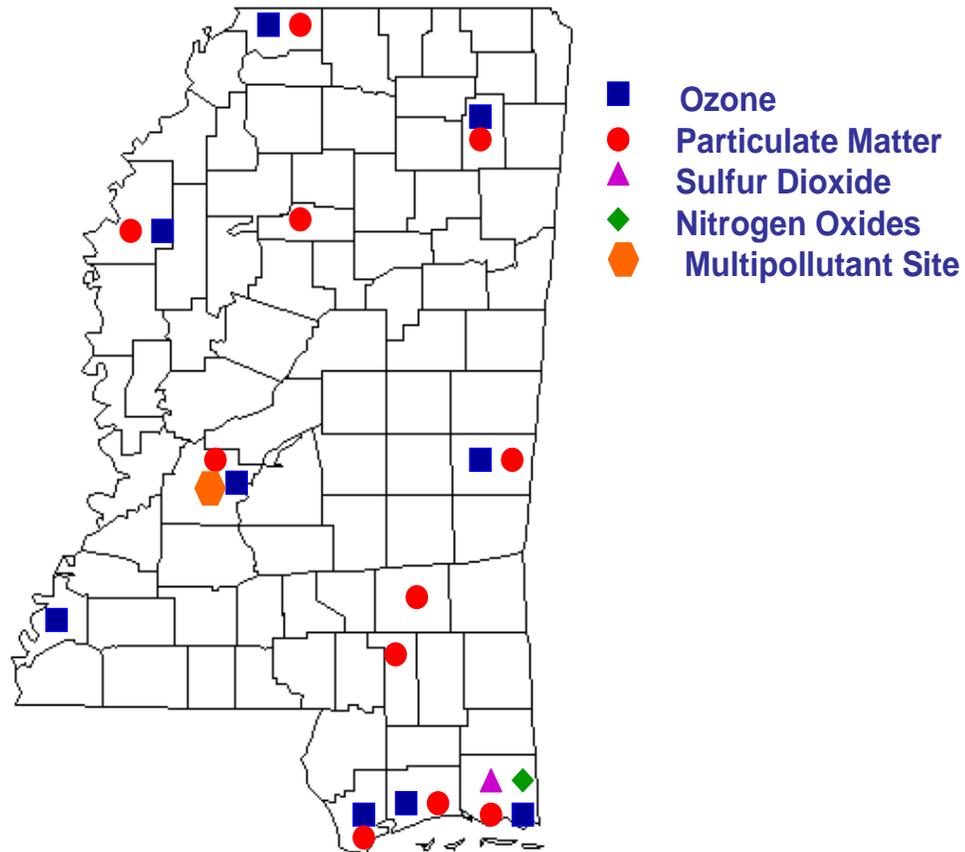
During FY2011, MDEQ operated a network of automated continuous air analyzers and 24-hour manual samplers for the purpose of measuring ambient air levels of ozone, particulate matter, sulfur dioxide, nitrogen dioxide, and carbon monoxide.

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.



# 2011 Mississippi Ambient Air Quality Monitoring Sites



## Asbestos

MDEQ implements regulations to protect against the harmful hazardous air pollutant asbestos, which is a known human carcinogen. The regulations apply to most non-residential building demolition and renovation operations and require work practices designed to prevent air emissions of asbestos. Implementation activities primarily involve communicating the requirements of the regulations, educating home owners for safe activity, and inspection of building demolition and renovation projects to assure safe and regulation compliant operations.

Agency regulations also require accredited training of individuals who perform asbestos abatement activities. Individuals must document their qualifications in an application to MDEQ and receive a certificate to perform asbestos abatement activity. MDEQ also works to protect children and employees in schools from unsafe asbestos conditions by performing inspections to ensure that school asbestos management plans and operations conform to the requirements of federal regulations.

During 2011, MDEQ inspected 332 building demolition and renovation projects and investigated 47 complaints. There were also 1358 applicants who received certification to perform asbestos abatement activity and asbestos management plan inspections were performed in 29 school districts.

## Air Toxics

Many facilities are regulated for air emissions that may cause acute or chronic health conditions. These hazardous air pollutant (HAP) emissions are primarily controlled or reduced under what is known as maximum achievable control technology (MACT) standards. Facilities typically must install additional control equipment and/or change process equipment or materials in order to reduce HAP emissions and comply with the standards. There are approximately 100 such standards affecting facilities in one of 174 source categories of major sources. Also, for the smaller HAP emission rate facilities, there are another 48 area source standards affecting operations at facilities in

one of 70 source categories. MDEQ implements these regulations to approximately 200 major sources and thousands of area sources. 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 and also for 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 call a risk management plan (RMP) for MDEQ review. Inspections are also performed to review and monitor facility compliance with the regulations. During 2011, there were 148 active regulated facilities and 81 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 Environmental Permits Division, while all compliance certifications and demonstrations are handled by the Environmental Compliance and Enforcement Division.

The Air Division meets regularly with the 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**

The Lead-Based Paint Program's scope establishes procedures and requirements for the accreditation of lead-based paint activities training programs, procedures and requirements for certification of inspectors, risk assessors, project designers, supervisors, workers, renovators, dust sampling technicians and firms engaged in lead-based paint activities and work practice standards for performing such activities. These regulations are applicable to all persons engaged in lead-based paint abatement and renovation activities in target housing and child-occupied facilities.

Lead-Based Paint:

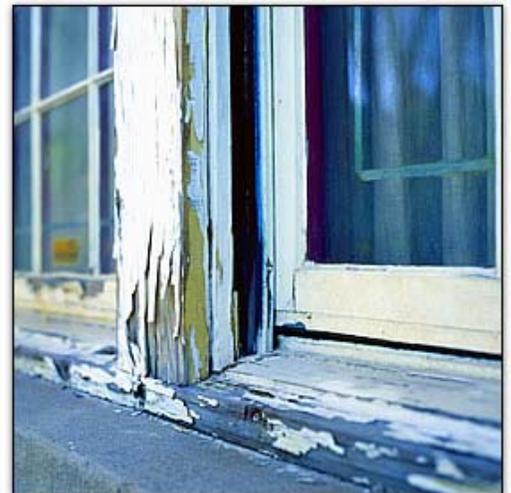
- Lead is a heavy metal which is believed to have been a serious public health problem for centuries. This problem is especially serious for children that are six years of age and under, and for developing fetuses.
- Dust and debris from activities that disturb lead-based paint can be dangerous if not managed properly.
- Even children that seem healthy can have high levels of lead in their bodies.
- Lead poisoning can cause permanent learning, behavior, and medical problems.

## **Certification**

The Lead-Based Paint program operates a certification program that has been delegated from the EPA. The program certifies firms and individuals that are required to be certified in order to perform lead-based paint activities in the state. The Program also accredits training programs that teach lead-based paint training courses in the state. The program performs inspections to ensure the training courses maintain required training standards.

During the FY 2011, the MDEQ Lead-Based Paint Section performed seven inspections and certified 534 individuals and firms (143 abatement, 391 renovation) involved in lead-based activities.

Another important step in the goal to eliminate childhood lead poisoning was taken with the EPA's Renovation, Repair, and Painting (RRP) final rule which went into effect in April of 2010. The rule addresses lead-based paint hazards created by renovation, repair and painting activities that disturb lead-based paint in target housing and child-occupied facilities. MDEQ enforces a State Lead-Based Paint Regulation that also went into effect in April of 2010. The state's regulation is modeled after the EPA's RRP regulation. This regulation, in addition to fulfilling the scope listed above, includes requirements for a pre-renovation education program. Currently the Lead-Based Paint Program is conducting many outreach and education activities in order to inform the public of the dangers of improperly handling lead-based paint and the potential health effects of lead poisoning.



# WATER RESOURCES

## Total Maximum Daily Load



A Total Maximum Daily Load (TMDL) is the determination of the maximum amount of a pollutant that a surface water can assimilate and continue to meet water quality standards protective of human health and aquatic life. The TMDL sets limits on the pollutants that can be discharged into a water body. The TMDL also specifies how much of the pollutants 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 waters that are impaired and establish a TMDL for each pollutant causing the impairment. MDEQ, biennially, creates this 303(d) List of Impaired Waters. MDEQ's 2010 list was approved by EPA on June 23, 2011.

The TMDL staff is currently working on 26 stressor identification reports within the Tombigbee River and Tennessee River Basins. These studies will inform the TMDL development planning for 2012 and 2013. For 2010 and 2011, TMDL staff completed 31 TMDLs for watersheds located throughout the state.

In addition to the TMDL and stressor identification efforts, TMDL staff is actively involved in the ongoing BP Deepwater Horizon Natural Resources Damage Assessment. This includes the review, assessment, development, and implementation of sampling plans to assess the natural services lost as a result of the oil spill.

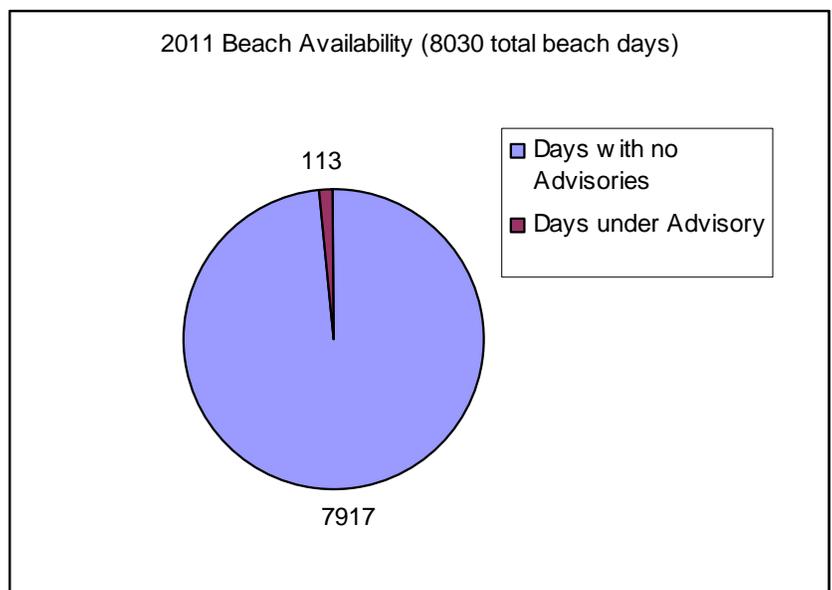
## Fish Tissue Monitoring Program

In addition to water, soil, and waste, MDEQ's Lab also monitors fish tissue for contaminants that could be harmful to people that eat fish from the state's waters. MDEQ's lab provides the fish tissue data that is used by a multi-agency task force to recommend fish tissue consumption warnings or advisories for the state. Presently, there are advisories for Mercury, DDT, Toxaphene, and PCBs.

During 2011, fish tissue monitoring efforts were focused on the waterbodies where existing advisories are in place, primarily for we focused on Mercury, Toxaphene and DDTMercury in freshwater streams and lakes, to determine if these advisories should remain in effect or if they could be lifted due to a reduction in contaminant levels in fish. Existing data on pesticides in the Mississippi Delta fish were evaluated in anticipation of the Fish Advisory Task Force Meeting. More sampling was done as a response to the Mississippi River Flood. These data were evaluated and a recommendation to remove Steele Bayou, Bee Lake, Charlie Capps Lake and Recon Lake from the existing advisory listing was made to the Fish Advisory Task Force . These data will be provided to the Fish Advisory Task Force for use in evaluating the state's advisories in 2011.

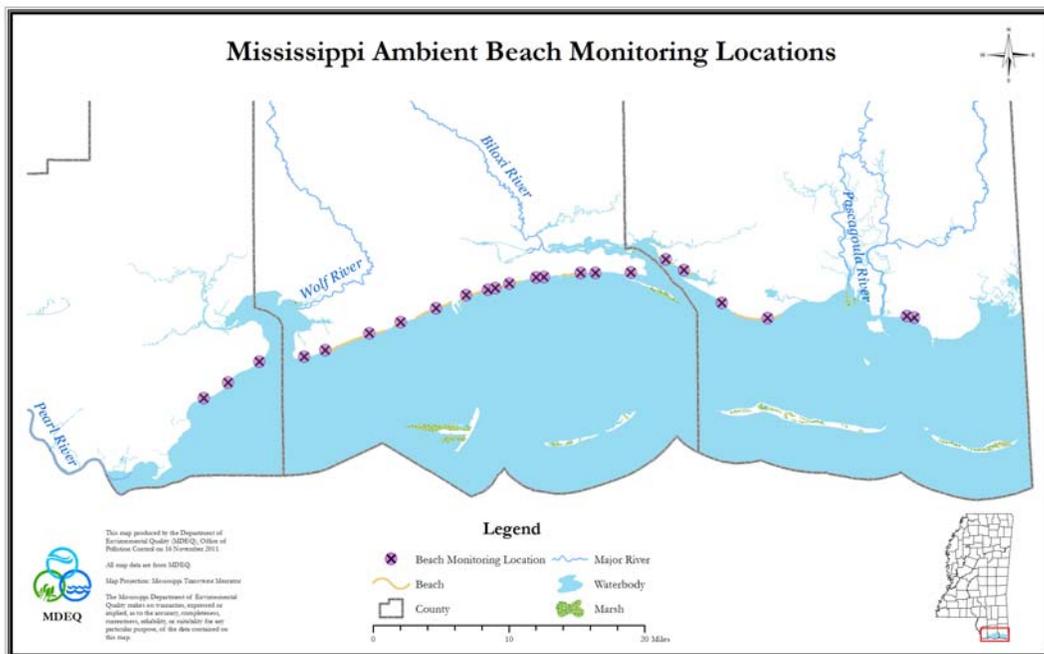
## Coastal Beach Monitoring Network

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, 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 via Facebook, Twitter, or by advisory email notification.

During 2011, a total of 21 advisories were issued for elevated bacteria. Three of the advisories were a result of know sewage bypass events. The 21 bacteria advisories covered 113 beach days or 1.4 percent of the 8030 beach days available in the year. The MC252 oil spill had no impact on beach advisories during the reporting period.



### 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 2011, MDEQ collected biological data at 87 sites. To date MDEQ has completed eleven phases of M-BISQ monitoring for a total 1199 biological samples at 850 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. Approximately 100 sites have been scheduled for M-BISQ monitoring in 2012.

### 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. In addition, 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, a total of 96 sites have been monitored. Over the last year, MDEQ has acquired Light Detection and Ranging (LIDAR) data for the Mississippi Alluvial Plain and has been using that data to establish drainage areas for each of the monitoring locations. Once the drainage areas are established, they will be used to perform land use analyses. These analyses will then be used to refine the preliminary index. The effort to develop an index of biological integrity for the Mississippi Alluvial Plain is an ongoing effort with the USGS.

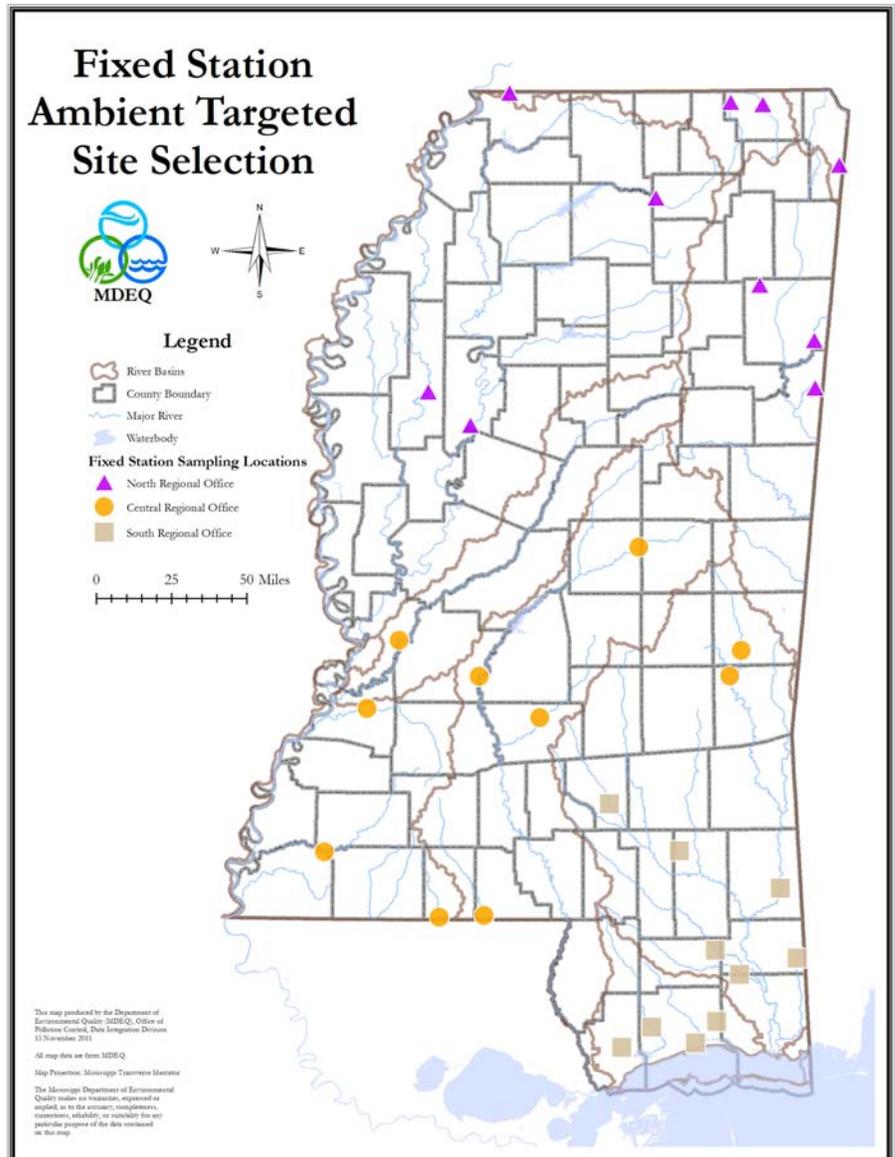
### Ambient Bridge Network

This network of statewide stations provides systematic water quality sampling at regular intervals and uniform parametric coverage to monitor water quality status and trends over a long-term period. Sampling is carried out by MDEQ scientists from each of 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. In 2011, 31 stations were sampled every month. Laboratory analyses for the samples are carried out by MDEQ’s laboratory located in Pearl. Several stations in the sampling network are historical stations that have monitoring dating back to the 1970’s.

### Ambient Recreational Monitoring Network

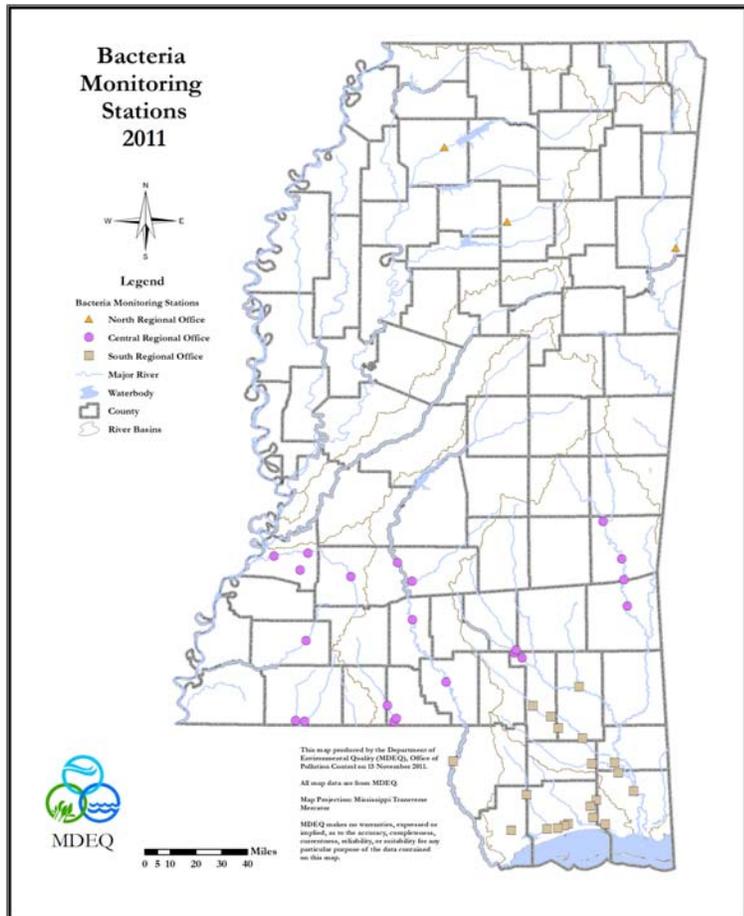
MDEQ maintains a monitoring network for flowing waters in the state that are used for primary contact recreation. These sites are located on the recreational water bodies to monitor fecal coliform for the safety of Mississippi citizens that use these waters for recreational purposes. Monitoring is done 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 2011, 46 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.



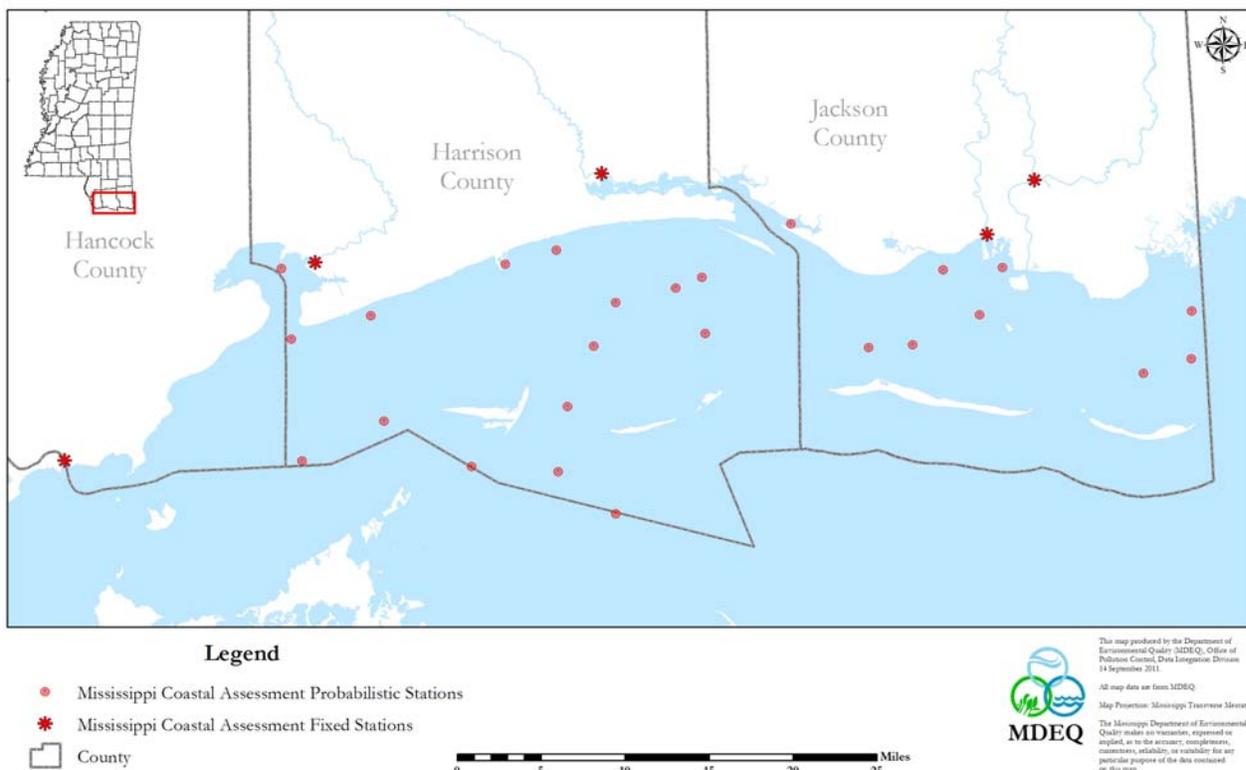
## Coastal Monitoring

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, termed the Mississippi Coastal Assessment (MCA) Program. This monitoring was planned to help 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.



## Mississippi Coastal Assessment 2011



## Triennial Review of Water Quality Standards

The Clean Water Act requires all states to develop, review, revise, and adopt water quality standards. States are required to review their water quality standards every three years in a process known as the triennial review. Efforts have been underway to review and revise Mississippi's water quality standards as part of this triennial review process. In 2011, a public comment period and public hearing were held to receive comments related to the proposed revisions to Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters.

Within the current triennial review of water quality standards, the proposed revisions include:

- Updating human health criteria;
- Establishing site-specific dissolved oxygen criteria for a portion of the Escatawpa River;
- Revising language within the temperature standard for improved clarity;
- Reviewing and, where appropriate, reclassifying water body segments currently within the Ephemeral Streams Classification;
- Upgrading surface water use classifications, where appropriate, to address recreation, drinking water supply, and shellfish harvesting uses; and, noting the addition of the Antidegradation Implementation Methodology to our regulations (WPC-1).

MDEQ is currently working to review and respond to comments received within the public comment period. MDEQ will make any needed modifications to the proposed revisions based on the comments received. Once these modifications have been incorporated, the final proposed revisions will be presented to the Commission on Environmental Quality for adoption in the first quarter of 2011. Once adopted by the Commission, the revisions will be submitted to EPA for approval.

## Mississippi's Numeric Nutrient Criteria Development Activities

In 2011, MDEQ continued development of numeric nutrient criteria for Mississippi's various water body types. MDEQ's mission 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 within 2011 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. The Mississippi Nutrient Technical Advisory Group held three meetings in 2011. Focused on providing continued technical input on developing nutrient criteria for Mississippi's wadeable and non-wadeable streams, Mississippi's lakes and reservoirs, and Mississippi's coastal and estuarine waters. MDEQ continues data analyses efforts based on recommendations from the TAG, and it will continue to meet quarterly throughout the criteria development process to help MDEQ meet the timeline and schedule of Mississippi's Nutrient Criteria Development Plan.
- Mississippi's Nutrient Criteria Development Plan outlines the process and timeline the state intends to follow to numeric nutrient criteria. This plan was mutually agreed upon by the state and EPA in October 2010. Nutrient criteria are being developed based on water body type and are divided into the categories of (1) wadeable streams, (2) non-wadeable streams, (3) Delta waters, (4) lakes and reservoirs, and (5) coastal and estuarine waters. The timeline is mutually agreed upon by EPA and was revised to incorporate results from ongoing efforts within our state. The public comment period will begin by June 30, 2013, for lakes and reservoirs, wadeable

streams, non-wadeable streams, and coastal and estuarine waters. The public comment period will begin on November 30, 2014 for Delta waters. MDEQ is currently on track with the timelines in this plan and continues to make progress successfully implementing the plan. All milestones within the Nutrient Criteria Development Plan for 2011 were met.

- MDEQ continues to collect data and conduct studies to support nutrient criteria development. Ongoing activities include development of a benthic index for coastal waters, a benthic index for Delta waters, a trophic state index for lakes and reservoirs. MDEQ also continues to implement monitoring and modeling efforts within St. Louis Bay through grant funding awarded to MDEQ by the EPA Gulf of Mexico Program Office. The intensive monitoring portion of this grant was completed in 2011. Data analyses and modeling efforts will be completed for this study in 2012.

### **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 between 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. The four focus areas for the Nutrients PIT include (1) characterizing nutrients and nutrient impacts, (2) supporting state efforts to develop numeric nutrient criteria, (3) reducing hypoxia, and (4) reducing nutrient inputs to the Gulf of Mexico.

### **Storm Water Regulations**

Implementation of Mississippi's Storm Water General Permits and regulations continued in Fiscal Year 2011.

- The Environmental Permits Division (EPD) issued general permit coverage for 149 large construction projects (five acres or greater).
- EPD issued permit coverage for 55 regulated industrial facilities.
- EPD issued permit coverage for 83 mining operations.
- EPD reissued the Large Construction Storm Water General Permit for Construction Activities on January 11, 2011, and issued recoverage certificates to 531 projects. These are projects that have on going construction activities when the previous permit expired and therefore must be covered under the current general permit.
- EPD received and processed 56 "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.
- EPD is currently in the process of reissuing the City of Jackson's Storm Water Permit.
- EPD worked with several consulting group and other state agencies, as well as MDEQ's Nonpoint Source Education group, to update the state's Planning and Design Manual for the control of erosion, sediment, and storm water. Which became available to the public in November 2011.



## 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 baseflow 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.

During 2010 and 2011, water levels were measured in several hundred wells that are screened in seven aquifers was completed. These aquifers are primary sources of water supplies in 21 counties of northeastern and northern Mississippi in an area that extends from Kemper County to the Tennessee border. The information collected in this study was utilized to prepare a potentiometric map for each of these aquifers that can be used to assess groundwater availability. It is anticipated that these maps will be made available to the public in 2012 in both paper and electronic formats.

In 2011, work began on a project to evaluate the availability of groundwater resources in Lafayette County. Another project was conducted under a grant from the United States Geological Survey regarding the Tuscaloosa Group in several counties of southern Mississippi with regard to its potential suitability as a reservoir for carbon dioxide sequestration.

In the spring of 2010, the staff of the Office of Land and Water Resources (OLWR) completed work on the development of a numerical groundwater flow model of the Mississippi River valley alluvial aquifer (MRVA) of the Delta of northwestern Mississippi. This aquifer is the primary source of water to support large-scale agricultural activities and aquaculture in that region. The model can be utilized to better understand the groundwater flow system and the potential effects of variations in pumping patterns. MDEQ intends to utilize the model to evaluate the effects of various pumping scenarios and to gain additional insight regarding the groundwater flow system. In order to refine this model, four observation wells were drilled and completed in Leflore and Sunflower counties in 2011 for the purpose of studying the interaction of the MRVA with the underlying drinking water aquifers in the Cockfield and Sparta formations.

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.

## Water Resource Issues in the Mississippi Delta

The economy of the Delta is dependent to a large extent on the availability of suitable water supplies from an estimated 17,000 large-capacity irrigation and aquaculture wells used throughout the region. Most of the water used for these beneficial purposes in the Delta is obtained from the shallow Mississippi River Valley alluvial aquifer (MRVA). With an average withdrawal of approximately 1.5 billion gallons of groundwater pumped per day, the pumpage demand has exceeded the recharge to the MRVA resulting in notable water-level declines in the aquifer. The impacts are much more pronounced in the central portion of the Delta, but the trends indicate that a Delta-wide initiative to conserve water and to balance water use between surface water and groundwater is needed to stabilize the trend. Progress continues to be made on water conservation efforts that began a few years ago, to the point that today, it is widespread throughout the region. To help alleviate extremely low flows in the upper reaches of the Sunflower River, the Yazoo- Mississippi Delta Joint Water Management District maintains a low-flow augmentation project on this stream during dry times of the year.



Several years ago staff from the Office of Land and Water Resources (OLWR) began a drilling project to learn more about the saturated thickness of the alluvial aquifer in the central Delta. This project has certainly been ongoing and will continue for the foreseeable future.

Another continuing effort is being made by OLWR staff to study recharge to the alluvial aquifer. This includes investigations to determine the influence of the Mississippi River on the MRVA, as well as studies to learn about the recharge from the bluff hills to the MRVA. OLWR staff continue to drill stratigraphic holes and at certain locations install observation wells.

## Source Water Protection

The OLWR staff continued its efforts to protect the drinking water supplies of the 1,300 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. Staff worked closely with the Mississippi State Department of Health's Water Supply Division to assist in the implementation of the EPA's new Groundwater Rule. Staff 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.



## 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. Thus far, the sampling of over 1,800 wells throughout the state does not indicate any significant impacts directly attributable to agricultural practices.

During 2011, the AgChem Program collected samples from a total of 41 wells across the state, including 28 private drinking water wells and 13 large-capacity irrigation and fish culture wells located in the Mississippi Delta. The analysis for one of these samples indicated a detection of a compound in excess of federal drinking water standards. However, after resampling the well twice after the initial detection, both analysis indicated no detection of the previously reported compound. As an additional precautionary measure, another sampling of the well is planned during calendar year 2012

In addition to simply monitoring groundwater, the AgChem Program actively participates in other programs involved in protecting groundwater in Mississippi. One of these programs is the Mississippi Pesticide Container Recycle Program. During the calendar year 2011, a total of three days have been spent out of the office in field activities related to this program. Although complete amounts are not yet available, it is estimated that a total of over 550,000 pounds of plastic pesticide containers will be recycled during calendar year 2011.

Another area in which the AgChem Program participates is the Mississippi Waste Pesticide Disposal Program. During the calendar year 2010, three days were spent in field activities related to this program through which a cumulative total of more than 300,000 pounds of waste pesticides have been collected.

## Dam Safety

The number of High Hazard dams in the state inventory currently stands at 255, while the number of Significant Hazard dams currently stands at 67. The number of Low Hazard dams on state inventory is currently 3450. Mississippi is fifth in the nation for number of dams on inventory.

During 2011, 132 dams were inspected across the state by the Dam Safety Division. The information produced by these inspections resulted in dam owners initiating repairs or rehabilitation on five dams. Shifting responsibility for inspections to the owners of dams has permitted staff to devote more time to review designs for new High Hazard and Significant Hazard dams. This programmatic change allows staff more time to review designs for repairs or modifications to existing dams and also to inspect dams during critical stages of construction and to perform critical engineering analyses. In 2011, one new High Hazard dam and one new Significant Hazard dam were authorized for construction as well as eight new Low Hazard dams approved for construction. There are now 178 emergency action plans (EAPs) approved and on file which is an increase of 36 since 2010.



The Dam Safety Division's goal is to have the owners of all High Hazard dams submit EAPs for review and approval. Compliance with this goal presently stands at approximately 70 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 safe-guarding lives and property in the event of a dam failure.

Staff members responded to two dam emergencies in 2011 and were able to successfully handle each emergency and prevent damage to downstream properties by averting catastrophic failure of the dams. The Dam Safety Division provides on-site response and technical assistance to the county emergency manager and to the dam owner. During 2011, the Dam Safety Division assisted in planning and response with the Mississippi River Flood during the months of May through July.

The Dam Safety Division has undergone two independent reviews of its program. In 2010 – 2011 the state chapter of the American Society of Civil Engineers (ASCE) reviewed the program as part of preparing their infrastructure report card and gave MDEQ a grade of "B". The Association of State Dam Safety Officials (ASDSO) also reviewed the program and provided a good report along with very useful observations on how to improve the program.

## **Drillers Licensing**

During 2011 the Drillers Licensing Program amended the Drillers Licensing regulations to create a continuing education program. The Drillers Licensing Program has reviewed and approved seven education providers for the continuing education program. All licensed drillers now have to obtain four hours of continuing education per year as a part of maintaining their license. The program has renewed or issued 245 licenses and investigated two reports of contaminated domestic wells.

The Environmental Training section also conducted special training for the MDEQ Engineering staff, MDEQ Field Services Division and Mississippi Department of Wildlife, Fisheries and Parks personnel.

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. In 2010, the staff conducted 41 compliance assistance facility visits and 72 outreach visits.

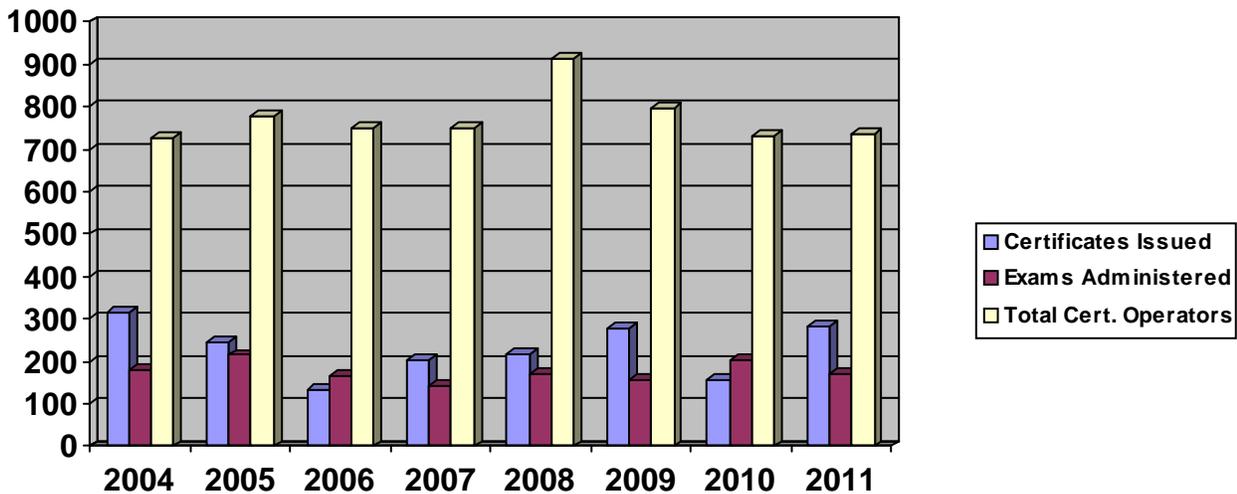
## Environmental Operator Training

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 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.



The 2011 training calendar included 46 days of agency sponsored training classes. Of these training days, 28 were the agency continuing its relationship by co-sponsoring and participating in training activities with the three wastewater related associations in the state (Mississippi Water and Pollution Control Operator's Association, Mississippi Water Environment Association and Mississippi Rural Water Association). Attendance at agency sponsored sessions totaled 815 operators, utility managers and engineers. Certification exams were administered to 172 prospective operators with a total number of 283 new and renewal certificates issued. There are currently 734 certified pollution control operators in the state.

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. In 2011, the staff conducted 50 compliance assistance facility visits and 60 outreach visits.



# 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: (1) issuing surface mining permits and notices of exempt operations, (2) inspecting permitted areas and inspecting complaints, (3) overseeing the reclamation done by operators, and (4) 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.



During Fiscal Year 2011, some 780 inspections were performed, 50 permits were issued, and 68 Notices of Exempt Operations (operations less than four acres in size) were issued. A total of 1,619 exempts are on file, covering approximately 6,476 acres, and 775 acres were completely reclaimed as a result of the Mining and Reclamation Division's efforts to oversee reclamation. The state currently has 705 permits covering 31,172 acres.

The Mining and Reclamation Division continued to update the mining database to provide data to the MDEM program. This database provides valuable mining information in a GIS format so that mining sites can be located and viewed by anyone on the internet. More work will be done during the coming fiscal year to add new data to the database.



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 8-hour refresher training course be taught to all mine workers. In Fiscal Year 2011, division staff provided training to 157 miners and 57 contractors working in the mining industry.

Mississippi joined the ranks of the coal-producing states in 2002. The Coal Mining Division was established during Fiscal Year 2007 to focus on the complexities of coal mine regulation. The Mississippi Lignite Mining Company is mining lignite, a low-grade coal, at their Choctaw County Red Hills Mine 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 5,904 acres. This permit was initially issued in 1998, and was renewed in February 2008 for its third five-year term. The planned life of

the permit is 30 years. Staff inspections of the Red Hills Mine are conducted at least monthly. One or more joint inspections with the federal Office of Surface Mining (OSM) are conducted annually.

Liberty Fuels, LLC submitted an application in January 2011 for Mississippi's second lignite mine, which will be in southwestern Kemper County. The initial application is for 2,299 acres. The mine will produce an average of 2.2 million tons of lignite per year for the initial five-year term, and 4.1 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. When the permit is issued, staff will begin at least monthly inspections. Joint inspections with OSM will be conducted at least annually. The under construction, first-of-its-kind, adjacent power plant is designed to produce 550 MW of electricity and be fueled by gas produced on-site from the lignite. An Environmental Impact Statement has been completed by the U.S. Department of Energy and the U.S. Army Corps of Engineers. The Department of Energy's Record of Decision was issued in August 2010.

Mississippi's Abandoned Mine Land Program was approved by the federal Office of Surface Mining in September 2007, with the initial biennial grant approved in October 2007. Work under this new program to identify and locate abandoned historic coal mines in Mississippi has been completed. All parts of the state have been included in the search for abandoned historic coal mines. Four sites were found, two in Choctaw County and one each in Winston and Lauderdale counties. All of these sites are believed to have been active sometime in the period from the mid-late 1800s to the late 1920s. The landowner of one site in Choctaw County wishes to have no reclamation work done on the site. The landowner of the Lauderdale County site does want all reclamation work done. The two remaining sites have pending re-

quests to the landowners about whether they want reclamation work done. Three of the sites have been determined to be a physical threat to public safety and well-being; none has been determined to have any acid mine drainage or to be an environmental hazard.

### Geological Data Collection Activities

The department's geologic mapping program for Fiscal Year 2011 was funded in part by a federal STATEMAP 2010 grant of \$101,319 and an NCRDS grant of \$15,000. Deliverables for the STATEMAP grant include Four Corners, Plattsburg, Pearl River and Edinburg 7.5-minute geologic quadrangle maps in Attala, Winston, Leake, and Neshoba counties in central Mississippi and the Soso, Moss, Laurel West, and Hebron 7.5-minute quadrangles in Smith, Jasper, and Jones counties in south-central Mississippi. These maps were published in color at a scale of 1:24,000 as Open-File Reports OF 240-247. The 2010 STATEMAP deliverables were due at the end of April 2011. Geologic units mapped in north-central Mississippi in FY2010 and 2011 include the Tuscahoma, Hatchetigbee, Tallahatta, Winona, Zilpha, and Kosciusko formations of Eocene age, Pleistocene loess and Prairie Formation, and Holocene alluvium and alluvial fan deposits. Geologic units mapped in southern Mississippi in FY2010 and 2011 included the Vicksburg Group of Early Oligocene age and the Catahoula and Hattiesburg formations of Miocene age, and Holocene alluvium. Geologic mapping in Fiscal Year 2012 will be funded by the STATEMAP 2011 grant, which was awarded funding of \$88,372. Additional assistance for mapping will come from a federal NCRDS grant of \$15,000. Mapping work for 2012 will include the Deemer, House, Union East, and Post 7.5-minute geologic quadrangle maps in Neshoba, Kemper, Newton, and Lauderdale counties in east-central Mississippi and the Lanham, Strengthford, Overt, and Rhodes 7.5-minute quadrangles in Jones, Wayne, Forrest, and Greene counties in south-central Mississippi.

Five test holes were drilled in FY2011, including the (1) #1 Big Creek in Jones County to a TD of 400 feet, (2) #1 South Baseline in Smith County to a TD of 150 feet, (3) #1 X-Creek in Smith County to a TD of 400 feet, (4) #1 PCL Kemper/House in Kemper County to a TD of 550 feet, and (5) #1 PCL Cushtusia in Neshoba County to a TD of 570 feet. Twenty-two papers were published, including 13 articles in *Environmental News*, one article in *American Antiquity*, one article in the German journal *Palaeontographica*, 4 abstracts in the *Journal of the Mississippi Academy of Sciences*, two articles in the 2011 *Geological Society of America, Abstracts with Programs*, and the first edition of *The Geology of Mississippi*. Eight geologic quadrangles were published, including the Four Corners, Plattsburg, Pearl River, Edinburg, Soso, Moss, Laurel West, and Hebron 7.5-minute quadrangles.

Proposed work for the STATEMAP 2012 grant includes eight geologic quadrangle maps. These are the Duffee, Collinsville, Chunky, and Meehan quadrangles in Newton and Lauderdale counties in east-central Mississippi and the Terry, Whites, Crystal Springs, and Hopewell quadrangles in Hinds, Rankin, Copiah, and Simpson counties in south-central Mississippi.

The Environmental Geology Division gathers, studies, and archives subsurface geological and geophysical data for ongoing projects and other studies within the Mississippi Department of Environmental Quality. Focused research is being done with regard to groundwater and other environmental issues. The division 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.

The Mississippi Office of Geology continues to be involved in the eight CUSEC states work in disaster planning regarding the New Madrid Earthquake Zone (NMEZ). Northwest 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 in contact with and involved in meetings regarding future projects and studies over the next several years.

The Environmental Geology Division's geologist and technicians worked on numerous drilling and sampling programs in the state. Drilling, sampling, and monitor well construction activities were performed for the Surface Geology Division's STATEMAP program and the Office of Land and Water Resources groundwater project centered in the Mississippi Delta. During FY2011 the division's drill



crew drilled a total of five test holes in support of the STATEMAP grant. Two of these holes were drilled in Smith County, and one each in Kemper, Neshoba, and Jones counties. Total footage drilled and sampled amounted to 2,070 feet. These cuttings and samples were preserved and archived in the Office's core and sample library. Seven test holes and two monitor wells were drilled and completed for the Office of Land and Water Resources for their geologists studying groundwater withdrawal from the Mississippi River Alluvium.



Environmental Geology's geologist and technicians wireline logged a total of 52 test holes in 26 counties throughout the state. Total footage logged was 28,296 feet or approximately 5.3 miles of geophysical wireline data. Stakeholders included eight water well contractors, one engineering firm, and three state agencies. The shallowest test hole wireline logged during FY2011 was secured in a hole drilled for the Office of Land and Water Resources to a total depth of 100 feet. This test hole was drilled by the Mississippi Office of Geology's drill crew in Leflore County. Conversely, the deepest test hole wireline logged was secured in a 1,314-foot hole drilled by Mid-South Water and Machine Works (Cleveland, Mississippi) for the Clarkdale Water Association in Lauderdale County. The vast majority of the wells and test holes wireline logged during FY2011 were for utility systems, industrial applications, and poultry supply wells. Only six wells were for private individuals.

The Environmental Geology Division's technicians pulled, shipped and re-filed samples and cores for numerous scientists in other state agencies and oil and gas explorationists. A total of 204 boxes of cores and samples were examined during FY2011. Sample splits were done on four wells and these splits were shipped to consultants and scientists for testing and observation. The division's technicians re-boxed 870 boxes of samples and cores on 32 wells. The division also received 48 boxes of cores recovered from oil and gas test holes drilled in Mississippi.

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 has created new county-wide digital flood insurance rate maps (DFIRMs) for 80 of Mississippi's 82 counties under funding by the Federal Emergency Management Agency (FEMA). These resulting DFIRMs and supporting digital data will be available on the Web. The new digital format, using modern technology including RS and GIS, promises to make a new map that will convey more information in an easy-to-use format.

Another assignment for this division is to act as staff for the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems. The Council exists to set 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 it is the Geospatial Resources Division that handles the assignment. MDEM consists of developing digital geographic information that will serve as the state base map. MDEM consists of seven layers of digital information that will be available on the Web: (1) geodetic control, (2) elevation and bathymetry, (3) orthoimagery, (4) hydrography, (5) transportation, (6) government boundaries, and (7) cadastral. At the November Council meeting, an 8<sup>th</sup> layer was added to MDEM, the Gazetteer, which is a data set containing names and places in Mississippi. 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.



In FY2011 the Geospatial Resources Division dealt with the Mississippi Flood Map Modernization Initiative, the GIS Council, MDEM, and other GIS data development and collection.

Working with FEMA and MEMA, the division continued work on the county-wide flood mapping DFIRM projects. As of February 2011, all 82 Mississippi counties had been delivered new preliminary DFIRMs and by December 2011, 64 of the countywide DFIRMs had become effective for NFIP flood insurance purposes. In 2011, the division continued working on the 8 county mapping projects funded by FEMA in FY2009. By the end of 2011, three of these county DFIRM projects have had preliminary FIRMs delivered to officials for review.



In 2011, the division hosted seven GIS Council meetings and supported the Council’s work in developing an updated strategic / business plan. During the past year the division continued work with the Mississippi Department of Information Technology Services (ITS), supporting the updating and development of the Mississippi GIS Clearinghouse / Portal Project. The Portal houses and distributes all digital MDEM data for the state. The division will continue this work activity into the foreseeable future.

During 2011, the division continued monitoring and managing contractors completing work on different MDEM data sets. These data included road centerlines, hydrography, and elevation / topography 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 2012, the division will continue working on projects that include development of MDEM data, including attributed road centerlines and large-scale hydrography for several HUC 8 river sub-basins in northwest and central Mississippi.

The division maintains three web sites. For an information-rich site for oil and gas related information: [www.library.geology.deq.state.ms.us](http://www.library.geology.deq.state.ms.us). Another has a wealth of coastal data as a result of our twelve years of active research: [www.geology.deq.state.ms.us/coastal](http://www.geology.deq.state.ms.us/coastal). The division continues to maintain a web site for the Mississippi Flood Map Modernization Initiative (MFMMI): [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 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's Environmental Permits Division's (EPD) 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 15,000 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. Other MDEQ offices that work with permitting matters are the Office of Geology and the Office of Land and Water Resources. 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**

## **Performance Improvements**

EPD put in place new procedures to ensure that permit writers coordinated closely with MDEQ's Office of Community Engagement (OCE). The procedures allowed for early communication and the presenting of permitting information to environmental justice communities. During the year, at the request of concerned community members, EPD and the OCE joined to host numerous meetings which provided information to the public on the permitting process, educated stakeholders about the specifics of a particular project, and solicited input to strengthen the permit process. In the coming year EPD will continue to seek new opportunities to foster better community engagement.

EPD continued to partner with the Data Integration Division of MDEQ in the development of new functionality for the agency's enterprise-wide data management system – enSite. enSite has become the agencies 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. MDEQ continues to look for opportunities to make more environmental data available to stakeholders. Last year a webpage was designed for additional notification to the public of upcoming public hearings. Also, enSite also allows supervisors and upper management to be more knowledgeable about sites and more easily track and retrieve information. This is due primarily to effective staff training and e-business improvements.

## **Improving Environmental Information Management**

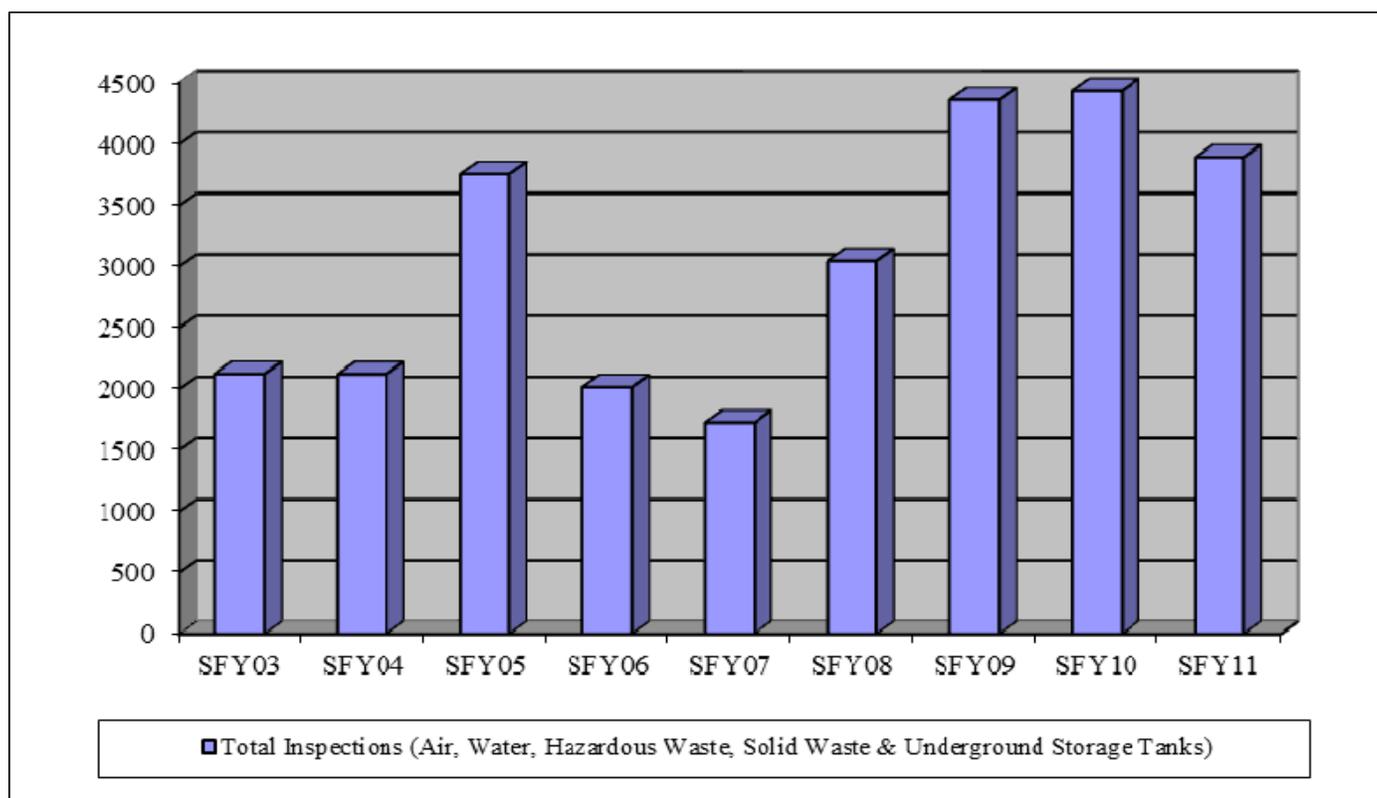
MDEQ began implementation of a new Regulatory Services Portal for electronic submittals. MDEQ will begin development and implementation of RSP services in 2012. MDEQ, in partnership with other states began a modernization effort on their enSite system. The new system will be implemented in 2012. MDEQ also began evaluation of expansion of enSite to incorporate TMDL and Wasteload Allocation tracking. The Data Integration Division and Information Management Systems continued to support MDEQ staff in the Deepwater Horizon Oil Spill incident, and provided support for the 2011 floods.

## Compliance And Enforcement

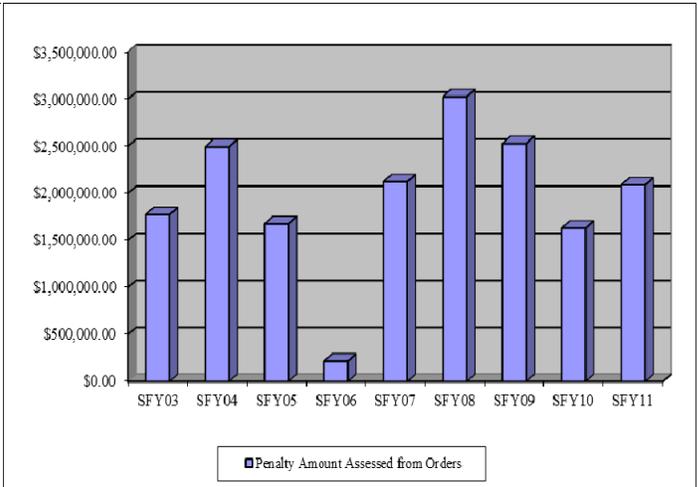
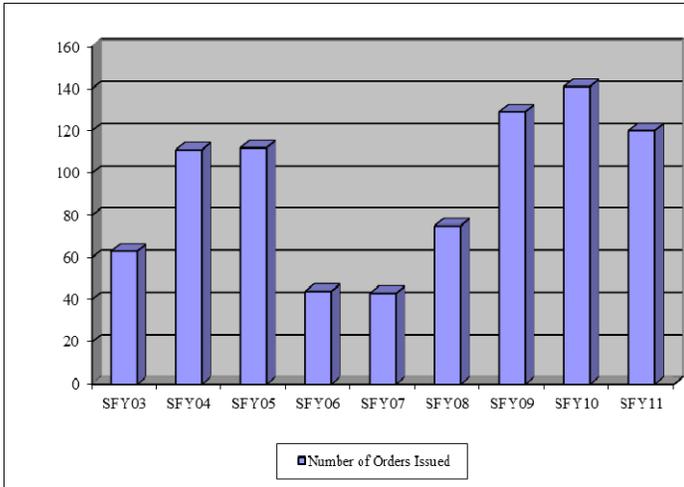
The Environmental Compliance and Enforcement Division (ECED) implements and oversees the majority of the compliance and enforcement programs for MDEQ. ECED is responsible for the regulation of over 15,000 sites for compliance with applicable air, water, hazardous waste, and non-hazardous waste permits and regulations. The goal is for continuous compliance with all the appropriate environmental laws, regulations and standards. Staff assists Mississippi businesses, industries, and farms with this activity. When a site fails to comply with permits or regulations, appropriate enforcement action is taken to promptly return the site to compliance.

During Fiscal Year 2011, the following numbers of on-site inspections were performed by ECED and the Field Services Division:

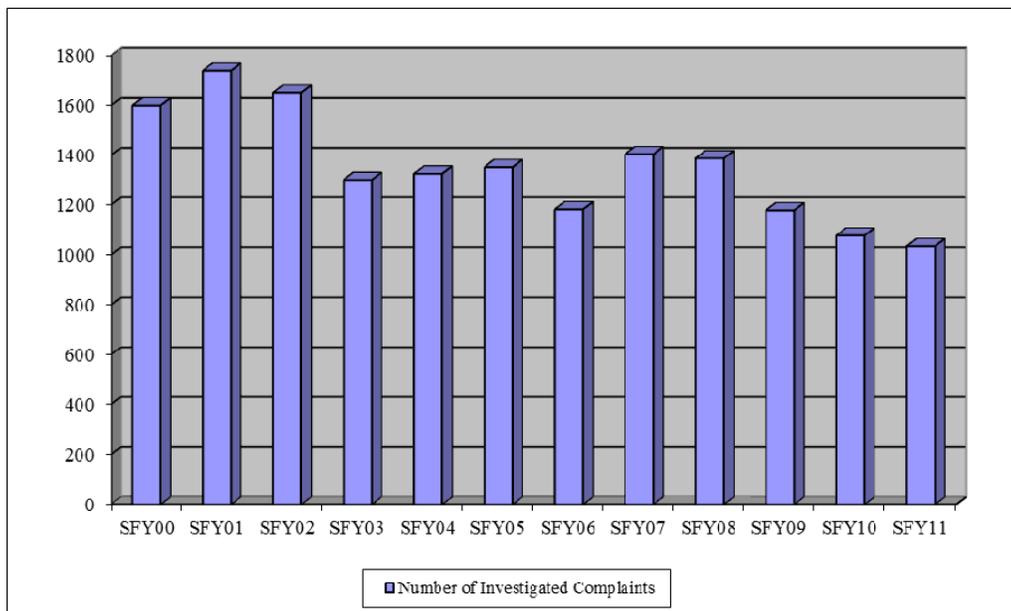
- 202 for compliance with air pollution regulations/permits
- 1697 for compliance with water pollution regulations/permits
- 100 for compliance with hazardous waste regulations/permits
- 805 for compliance with solid waste regulations/permits
- 1089 for compliance with underground storage tank regulations/permits



During Fiscal Year 2011, ECED's actions resulted in 118 Orders being issued for non-compliance with air, water, solid waste, and/or hazardous waste regulations/permits. Ninety-five of these orders contained provisions for a penalty with a total assessed penalty amount of \$2,090,122. 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. Ten 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 2011, the Office of Pollution Control received 1,034 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 complete. OPC staff endeavor to investigate every complaint.



## Clean Up Of Contamination

Accidents, spills, leaks and past improper disposal and handling of hazardous materials and waste have resulted in a number of sites that have contaminated land, water, and air. Through five programs, the Brownfields Program, the Uncontrolled Sites Program, the Voluntary Evaluation Program (VEP), the CERCLA Program, and the Underground Storage Tanks (UST) Program, the staff of the Groundwater Assessment and Remediation Division (GARD) is responsible for the protection of human health and the environment by overseeing the assessment and remediation of contaminated sites in Mississippi.

### Brownfields

Three Brownfield Agreements were reached in 2011, with the redevelopment of the former Amoco/Afta Brownfield site serving as this year's highlight in both total investment and job creation. The Elevance Renewable Sciences Inc., creator of high-performance renewable specialty chemicals for use in personal care products, detergents, plastics, and lubricants, was able to acquire the former Amoco/Afta Brownfield site in Natchez with the assistance of the Mississippi Department of Environmental Quality (MDEQ) and the Mississippi Development Authority (MDA). Through the Mississippi Industry Incentives Financing Revolving Fund, MDA provided assistance for upgrades at the Natchez/Adams County Port, as well as a \$25 million loan to the Elevance. Meanwhile, MDEQ, through the Mississippi Brownfields Program, reached a Brownfield Agreement with Delta Biofuels, Inc. that addressed liability concerns related to legacy environmental conditions at the facility. The company is converting the facility to a biorefinery and derivatives operation that will involve an investment of more than \$225 million and will create 165 full-time jobs over the next five years, in addition to 300 construction jobs. The financial assistance from MDA and the Brownfield Agreement, approved by the Mississippi Commission on Environmental Quality, paved the way for the brownfield redevelopment project to materialize.



Fairpark in Tupelo

### Underground Storage Tanks



The goal of the Underground Storage Tanks Program is to protect groundwater from leaking underground storage tanks. To meet this goal there is a two-pronged approach. 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 8,449 tanks at 3,173 facilities have the appropriately maintained equipment in order to protect the groundwater. Secondly, in the event of a release, there is a fund available for eligible tank owners to help in the assessment and cleanup resulting from leaking USTs. The Mississippi Groundwater Protection fund began in 1987 and has committed \$150 million to eligible tank owners for the assessment and cleanup of sites contaminated from leaking underground storage tanks. The average fund commitment per site has been \$148,900. At the end of 2010, the Mississippi Groundwater Protection Trust Fund had

assessed 1012 sites, completed assessment and/or remediation of 798 sites, and had 214 active sites. This past fiscal year \$6.78 million were reimbursed to eligible tank owners. Also, this year 22 new sites were assessed and 20 sites were closed.

Additionally, using the Leaking Underground Storage Tanks Trust Fund (LUST)/American Recovery and Reinvestment Act (ARRA) funds in 2010 the staff assessed and/or remediated another 29 sites and closed out 5 sites. State fiscal year expenditures were \$1.68 million.

The program also continued to do work utilizing the LUST Katrina Supplemental Funds to continue the assessment and/or remediation of sites directly impacted by Hurricane Katrina. The staff continued work on 11 of these sites and closed out an additional two sites. With the LUST Katrina Supplemental Funds the program has expended \$343,000 in state FY 2011.

### **Uncontrolled Sites**

Over the past 12 months, GARD actively oversaw 169 sites. During that same timeframe, the number of sites brought to GARD's attention was 10, bringing the total number of sites in MDEQ's public record to 1,784 sites. Also, MDEQ issued "State No Further Action" (SNFA) letters for 14 of these sites that were evaluated and remediated to levels protective of human health and the environment. In addition, MDEQ issued Restrictive Use Agreed Orders for one site, thereby allowing the sites to be reused with certain activity and use limitations. 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.

### **Voluntary Evaluation Program**

Courthouse property was remediated to protective levels so the courthouse could be completed this past year. The Voluntary Evaluation Program (VEP) offers participants an opportunity to receive an expedited review of site characterization and remediation plans and reports for uncontrolled sites that they have an interest in. The VEP is funded entirely by these participants who pay for MDEQ's oversight costs. Typically, individuals involved in property transfers find the VEP attractive because of the expedited review process. There were 10 new VEP sites that joined the program this fiscal year.

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

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 CERCLA Program. Oversight is conducted at seven Department of Defense 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 Southern Pine Wood Preserving Site, Wiggins 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 \$76 million. The state will ultimately have to pay 10 percent of these remediation costs. In addition, Red Panther Chemical, Clarksdale; Kerr-McGee (Tronox), Columbus; and Southeastern Wood, Canton, are being considered and evaluated for NPL listing, however, there has been no estimation of remedial costs to date. The Red Panther Chemical, Clarksdale 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), Columbus site went into bankruptcy and further legal proceedings. The initial bankruptcy proceeding resulted in a Trust being set up that will provide some money toward the further assessment and remediation of the site and if ongoing legal proceedings by the U.S. Environmental Protection Agency, U.S. Department of Justice, and many States is successful then a responsible party will pay for all the assessment and remediation of this site and many other sites previously owned by Kerr-McGee in Mississippi and other States. The Southeastern Wood, Canton site does not have a potentially responsible party and if listed will require a 10% state match for the remediation costs.

## Emergency Response

During Fiscal Year 2011, the Emergency Services Branch continued to respond to emergencies all across the state. Expenditures for response actions exceeded \$870,000 and were reimbursed approximately \$473,000 while the response staff dealt with approximately 885 calls for assistance or to reported emergency releases.

Emergency Services staff also provided Hazardous Materials Awareness Training with the Mississippi Bureau of Narcotics, the Law Enforcement Training Academy at Mississippi Delta Community College, and with the State Fire Academy as well as participating in numerous exercises and drills with state, federal and local counter parts and companies such as pipelines and refineries that operate in the state. During Fiscal Year 2011 MDEQ staff responded to the counties affected by tornados and the Mississippi River flooding. MDEQ provided cleanup and disposal of Hazardous Waste which cost approximately \$208,000.



Homeland Security remains a top priority for training and planning. The Emergency Services staff continues to work with numerous agencies including fire, police and emergency management at the local level, other state agencies, EPA, U.S. Coast Guard, F.B.I., and other federal agencies to conduct well coordinated responses, in order to protect Mississippi's citizens and environment.

MDEQ's four-man 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.



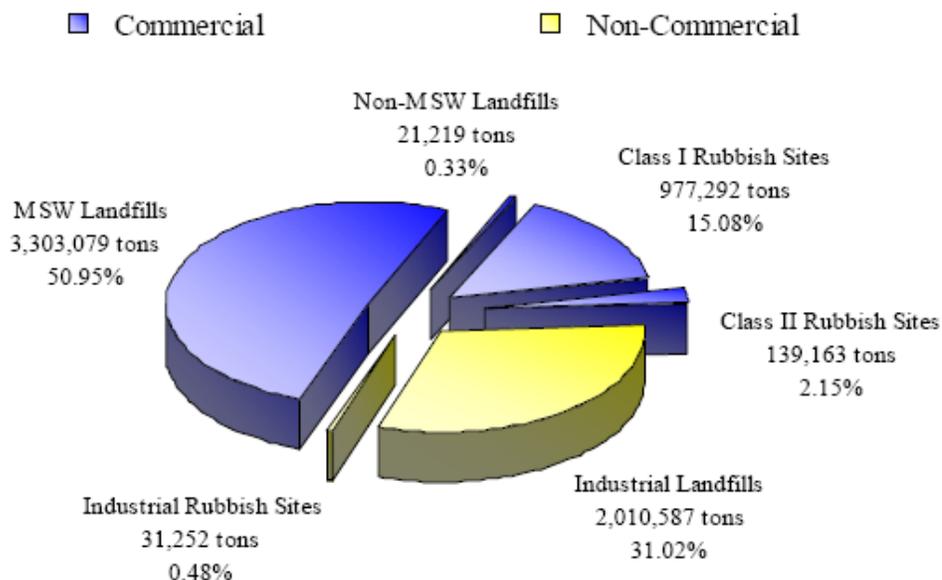
# Solid Waste Management

The Solid Waste Management and Recycling Programs at MDEQ worked on numerous solid waste issues, projects and programs throughout 2011 to ensure the proper management of solid wastes, to promote the reduction and recycling of solid wastes, and to plan for the future solid wastes management needs of the state. The following information represents a summary of the work conducted as well as the solid waste management conditions in the State of Mississippi over the past year.

## Solid Waste Annual Report

MDEQ is charged with collecting information and data to measure the status of solid waste disposal, recycling and waste reduction in the state each year. Each year, MDEQ collects an annual report from the owners of permitted solid waste management facilities on solid waste disposal information for 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, composting facilities, and land application sites.

In 2011, MDEQ developed a report on solid waste disposal activities conducted during Calendar Year 2010. This report indicated that more than 6.4 million tons of wastes were disposed at permitted landfills and rubbish sites in Mississippi. Approximately 51.28% (3,324,298 tons) of the total waste was disposed at commercial landfills, 31.02% (2,010,587 tons) at non-commercial landfills, 17.22% (1,116,455 tons) at commercial rubbish sites, and 0.48% (31,252 tons) at non-commercial rubbish sites (see Figure 1 below).



**FIGURE 1**

About 4.4 million tons of solid wastes were disposed at commercial disposal facilities and the remaining 2.0 million tons of wastes were disposed at noncommercial disposal facilities. Mississippi received a total of 732,780 tons of solid waste from out-of-state sources representing approximately 11.30% of the total solid waste that was disposed during 2010. In addition, a total of approximately 62,141 dry tons of wastes were applied at the permitted land application sites.

## Recycling and Waste Reduction

MDEQ also works to promote and grow recycling in the state of Mississippi. State law indicates that it is the policy of the state of Mississippi to reduce waste at its source, to re-use material rather than discard them and to recycle wastes whenever possible. In 2011, MDEQ continued its efforts to promote and grow recycling in Mississippi. Current indications are that approximately half of the state's population has access to local government sponsored recycling programs for residential recyclables. In addition, about half of those that have access to recycling have curbside recycling services and half have drop-off recycling services.

In order to grow recycling access in the state, MDEQ has developed a new grants program called the Recycling Cooperative Grants program to promote cooperative regional recycling efforts among the states rural communities. MDEQ has focused its initial efforts to promote regional recycling with a number of communities in southwest Mississippi. In 2011, the agency met with numbers of counties and cities from southwest Mississippi to discuss how those communities could work together to cooperate in collecting and marketing their recyclables. MDEQ expects that this effort will continue in 2012 along with efforts in other areas of the state of Mississippi.

In addition to those efforts, MDEQ has attempted to provide education and outreach on the importance of growing recycling in the state. In the spring of 2011, MDEQ worked with Jackson State University to provide recycling workshops for local governments that would focus on helping communities get programs started or on how to grow existing recycling programs. In addition, MDEQ participated in promoting a regional recycling symposium in the Fall of 2011 in Memphis, Tennessee with the Southeast Recycling Development Council that would help communities understand the economic benefits of recycling and how communities in the southeast could work to develop the recycling industry and reap the benefits of growth in this important industry sector. MDEQ also conducted a variety of other outreach efforts on recycling, speaking to community groups, school groups, trade organizations and business and industry groups. The agency also continued its strong support of the Mississippi Recycling Coalition and assists that organization with membership, web site development and maintenance and conferences and workshops.

Another effort that MDEQ conducted to promote recycling in the state was the award of recycling bin grants. MDEQ in partnership with Alcoa Recycling, the Southeast Recycling Development Council and the Mississippi Recycling Coalition awarded over 1200 recycling bins to schools, local and state government buildings and to non-profit organizations to help promote the collection of recyclables in the state. The bins awarded in 2011 were plastic bins where those awarded in 2010 were corrugated recycling bins. MDEQ is investigating opportunities to award recycling bin grants in 2012 as well.

Another waste reduction emphasis for MDEQ in 2011 has been the agency's efforts to promote and grow composting in the State of Mississippi. MDEQ has initiated efforts to streamline our composting regulations. Currently, composting facilities follow the same permitting process that municipal landfills follow. MDEQ believes that this permitting process can be improved and streamlined for composting operations and businesses to increase and expand composting in the state. In addition in 2011, MDEQ developed a process for approving pilot phase composting operations to allow start up businesses and community composting operations to begin under a less formal form of authorization that will allow these operations to develop while MDEQ streamlines our state composting rules.

In addition, MDEQ is working with other organizations in a sustainability planning effort in Mississippi's three Gulf Coast counties. These efforts originated from a planning grant from US Housing and Urban Development to the Gulf Coast Regional Planning Commission. MDEQ has helped develop recommendations for supporting sustainable food systems on the Gulf Coast. In particular, the agency will be working towards reducing the amount of food wastes going to landfills and towards increasing the amount of food that is donated and the amount of food wastes that are composted or converted into other usable products. The planning phase of the sustainable food systems plan has been completed and MDEQ will now take the lead in helping to implement the recommendations on food waste reduction and recycling with a task force of local community leaders. These efforts help to minimize the cost of managing food waste, help to maximize food donations and use and help to create valuable compost products from Mississippi composting businesses.



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

The Solid Waste Programs also continued the management and dispersal of various grant program funds. Through the Solid Waste Policy, Planning and Grants Branch, MDEQ awarded over \$3.1 million in Fiscal Year 2011 for solid waste management and recycling projects, solid waste planning projects and waste tire projects across the state. Of that total,

over \$1.92 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 \$125,000 to communities that have maintained successful local illegal dumping prevention and enforcement programs.

**Solid Waste Assistance Grants – Fiscal Year 2011**

\$829,810 - Total Non-Competitive Grants

73 Counties Received Non Competitive Grants

\$1,088,204 Total Competitive Grants

35 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 in the state. Six planning grants totaling \$153,436 were awarded in the state in FY2011 to the City of Canton, the City of Wiggins and Harrison, Lauderdale, Newton and Warren Counties in Fiscal Year 2011 to develop and update comprehensive solid waste management plans for their communities.

In addition, the Solid Waste Policy, Planning and Grants Branch continued in 2011 to develop and implement the state’s strategy to achieve statewide recycling of waste tires. During Fiscal Year 2011 the recycling rate for waste tires processed in the state was over 94 percent of the tires collected. In addition, 25 new waste tire grants totaling \$1,086,404 were awarded to local governments to fund local waste tire collection and clean up programs during FY 2011. These new waste tire program grants along those tire grants previously awarded assisted local governments across the state in the proper collection and disposal of over 680,000 passenger tire equivalents in calendar year 2010.



**Waste Tire Grants – Fiscal Year 2011**

\$1,086,404 - Total Waste Tire Grants Awarded

680,000 - Waste Tires Collected through local government programs

Counties receiving waste tire grants during FY11 included: Adams, Alcorn, Attala, Bolivar, Carroll, Copiah, Harrison, Lamar, Lauderdale, Lawrence, Leake, Leflore, Marshall, Neshoba, Pearl River, Pike, Scott, Sharkey, Smith, Sunflower, Warren, Yalobusha and Yazoo Counties and the Golden Triangle and Pine Belt Regional Solid Waste Management Authorities.

In addition, during 2011, the MDEQ continued its distribution of materials conservation grants to local governments from funds made available through the Department of Energy to the State of Mississippi through the American Recovery and Reinvestment Act. MDEQ awarded Energy Efficiency and Conservation Block Grant funds in the amount of \$470,637 to several local governments to fund certain costs to start new recycling programs or to expand existing recycling programs. MDEQ has awarded EECBG grants to Calhoun County, Sharkey County, the City of Oxford, the City of Quitman, the City of Pascagoula, the City of Starkville and the City of West Point to either start new recycling programs or to make improvements to their recycling programs that will allow them to increase recycling in their communities. The funding is being administered through a cooperative agreement between the Mississippi Development Authority and the Mississippi Department of Environmental Quality.

Also, MDEQ distributed or expended other assistance funds in Fiscal Year 2011 in our two corrective action funding programs. In our waste tire abatement program, MDEQ cleaned up one illegal tire dump site in FY2011 expending \$22,000 to remove and properly dispose of over 12,610 tires. In addition, MDEQ provided funding assistance to the City of Philadelphia in FY 2011 totally \$79,500 to assist the City in correcting problems at one of the city’s historic closed sanitary landfills.

## Solid Waste Planning

The MDEQ Solid Waste Programs work 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. In 2011, MDEQ worked with numerous communities to complete the development of updated and amended local solid waste plans. The counties and organizations for which updated comprehensive solid waste plans were finalized included: Wilkinson County and the municipalities of Crosby and Woodville; Lawrence County and the municipalities of Monticello, New Hebron, and Silver Creek; Sunflower County and the municipalities of Drew, Doddsville, Inverness, Indianola, Moorhead, Ruleville and Sunflower; Rankin County and the municipalities of Brandon, Florence, Flowood, Pearl, Pelahatchie, Puckett, and Richland; Lamar County and the municipalities of Lumberton, Purvis and Sumrall; Newton County and the municipalities of Chunky, Decatur, Hickory, Newton and Union; and the Pine Belt Solid Waste Authority and the counties of Covington, Jefferson Davis, Jones, Perry and Stone and the municipalities of Bassfield, Beaumont, Collins, Ellisville, Hattiesburg, Laurel, Mount Olive, New Augusta, Petal, Richton, Sandersville, Seminary and Soso.

In addition to these plans that were completed, the development of comprehensive, updated solid waste management plans continued or began in 2011 for the City of Jackson, City of Wiggins, Hancock County, Harrison County, Jefferson County, Kemper County, Lauderdale County, Tallahatchie County, and Warren County.

In addition to the development of comprehensive updated plans, MDEQ also worked 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 2011 include: Marion County (addition of Jones Lumber Co Class II Rubbish Site), Scott County (addition of Terra Renewal land application sites), Franklin County (modified implementation schedule), Pike County (expansion of Magnolia Class I Rubbish site and modified implementation schedule), Marshall County (modified implementation schedule), Three Rivers Solid Waste Authority (expansion of Monroe Co Rubbish Site and addition of City of Oxford land application site), DeSoto County (addition of DeSoto County Utility Authority land application sites), Harrison County (addition of DuPont waste management units), Hinds County (modified implementation schedule), Warren County (addition of new landfill for International Paper Company Mill) and Jackson County (addition of new Mississippi Power Company gypsum management unit). These planning amendments were important to assist local governments with providing needed disposal capacity and services for management of solid wastes.

## Waste Tire Management Program

In 2011, the MDEQ Waste Tire Management Program experienced continued success in achieving significant recycling of waste tires in the state. This success was reflected in the annual program information collected from Calendar Year 2010 indicating that the overall waste tire recycling rate for Mississippi in 2010 was close to 94 percent and the recycling rate for those tires generated in Mississippi was close to 89 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.

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 more than 110 registered waste tire haulers in 2010. Also about 80 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 throughout the State of Mississippi. Through the abatement program, MDEQ has cleaned up approximately 3 million waste tires that had been illegally dumped around the state over the past several years since the program was started. In 2011, approximately 7,000 passenger tire equivalents were removed and recycled through the MDEQ waste tire abatement program. 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. 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 and the development of electronic reporting and record keeping for waste tire processing and collection facilities.



## Electronic Waste Management

Electronic wastes or “e-wastes” is one of the fastest growing waste streams nationally and continues to present management and disposal problems for Mississippians. In 2011, MDEQ continued its work to help communities, businesses and private citizens understand and know proper conditions for recycling and disposing of electronic wastes. MDEQ has developed and maintained comprehensive web resources for persons and organizations seeking to recycle used electronics. In 2011, the options offered from electronic producers and retailers for recycling of used electronics continued to grow in Mississippi and nationally. Sony and Best Buy both initiated changes to their programs this past year to enhance recycling services for consumers across the country. In addition, new electronics recycling businesses began operations in the state to offer additional local solutions for management of discarded electronics. As these changes have occurred, MDEQ has updated its electronics waste web resource page (<http://www.deq.state.ms.us/electronics>) to reflect the new programs to provide information for individuals, companies, and organizations to find electronics recycling options.



e-waste collection day in Jackson Mississippi.

In 2011, MDEQ also continued its efforts to promote the use of certified recycling companies for the management of electronics wastes in the state. In particular, MDEQ promoted certification programs managed by two organizations, R2 Solutions and the Basel Action Network. These two organizations continued to provide certification of those recycling businesses that collect and recycling electronics materials in a safe and responsible manner. Both organizations sought to improve and increase their electronic recycling certification programs in 2011 with updated and expanded policies and certification services. MDEQ has encouraged the state’s recycling businesses and the state’s communities, businesses and local and state government agencies to consider these certification programs in selecting and choosing options for recycling electronics.



MDEQ also continued providing assistance in 2011 to sponsor various e-waste collection and recycling events and programs around the state for residents and small businesses. MDEQ continued to award solid waste assistance grants to fund ongoing e-waste collection programs in the City of Jackson and in various other communities. In addition, the agency continued its support for a computer refurbishment program at Jackson State University (through a grant arrangement with Hinds County). 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 2011. These two events saw more than 48,100 pounds of electronics collected for recycling. Electronics collected at these events included used computers, televisions, cell phones, printers, fax machines and various other e-wastes. Advantage E-Cycling of Pearl, MS

worked with the Chamber and MDEQ in collecting and recycling of the electronics.

MDEQ also continued its efforts to insure that electronics wastes are collected and recycled or disposed of properly in the state. During 2011, MDEQ investigated instances where electronic wastes were illegally dumped and burned. To address some of these instances, MDEQ will continue its work with other state agencies to implement the “Recommendations to the Office of the Governor and the Mississippi Legislature on the Recycling Electronics and Asset Disposition (READ) Services” produced by the READ Study Committee in 2010. These recommendations are available on MDEQ’s electronic waste webpage (<http://www.deq.state.ms.us/electronics>).

## Medical Waste Management

MDEQ’s solid waste management programs are responsible for regulating the commercial management of medical wastes in the state. This responsibility includes medical wastes collected and transported from health care facilities, veterinary care facilities, medical wastes generated in home health care, medical wastes generated by emergency and trauma response, medical wastes generated by business and institutional clinics and medical wastes generated in private residences.



In 2011, MDEQ has continued work on the development of web-based resources that better communicate proper management conditions for various types of medical wastes.

In addition, MDEQ continued its work on the household medical sharps collection program. MDEQ has developed and implemented a statewide educational program to inform the public on 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. In addition, MDEQ has worked to create and expand its collection network in the state. This network includes community drop-off locations at pharmacies, fire stations, and other facilities for household sharps from the public. MDEQ has continued to use services of three of the state's medical waste service providers for collection of the sharps. MDEQ also conducted a number of educational and outreach activities related to promotion of the household sharps program including the development of an educational brochure, development of an instructional card for distribution at drop-off stations, speaking and exhibiting at numerous stakeholder meetings across the state and the development of an informational web site at [www.deq.state.ms.us/medsharps](http://www.deq.state.ms.us/medsharps)

In addition, MDEQ is working to address one of the growing areas of environmental concern in the country and that 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 medications down the toilet or sink. MDEQ worked with the Mississippi Office of the Federal Drug Enforcement Agency to promote collection events for obsolete pharmaceutical wastes in April and October of 2011 sponsored by various law enforcement agencies throughout the state of Mississippi and the country. The primary goal of these programs is to prevent the illegal distribution and/or improper use of prescription and over the counter drugs. In addition, the collection efforts help to avoid discharge of these materials into the environment through wastewater systems around the state.

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

The MDEQ Solid Waste Programs also administers training and certification programs for solid waste professionals in the state of Mississippi and conducts outreach efforts to the public and to stakeholders in the state through partnerships with various organizations.

#### **Training and Certification**

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 in the state. MDEQ worked with SWANA to provide training opportunities at state conferences in May and October. There are currently 33 certified commercial landfill operators in the state. In 2011, MDEQ issued one new certification and seven renewal certifications for operators and provided continuing education training in partnership with the state SWANA Chapter at the chapter's Spring and Fall Conferences.



In addition, MDEQ hosted one training workshop and examination session for Class I rubbish operators in 2011 at the Cabot Lodge in Jackson. There are currently 133 certified Class I rubbish site operators in the state. In 2011, MDEQ issued certificates from those training and testing events for 27 new class I rubbish site operators in the state and issued 71 renewals for existing Class I rubbish site operators. MDEQ also worked with the state SWANA chapter to provide CEU training opportunities through the SWANA organization's spring and fall conferences in Tunica and Natchez.

In the Spring of 2011, MDEQ joined Jackson State University's Department of Urban and Regional Planning to host workshops for local governments and other interested organizations and businesses on starting new recycling programs and on improving existing programs. These workshops were entitled: "Creating Jobs and Economic Growth in Mississippi through Recycling and Waste Reduction." The workshops were held in three different geographic locations in the state in Batesville, Hattiesburg and Jackson. The workshops were funded by a grant to Jackson State from the USDA through their Rural Solid Waste Management Grants. Over 110 persons from local governments, community organizations, educational institutions and private businesses attended the three workshops. MDEQ assisted the University in planning the workshops and also provided speakers and a moderator for the workshops.

### **Education and Outreach Programs**

In addition to these training activities, 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 Association of Supervisors, the Mississippi Manufacturer's Association, the Mississippi Chapter of the Air and Waste Management Association, Keep Mississippi Beautiful, the Jackson Metro Chamber Partnership, the Southeast Recycling Development Council and various other state and local organizations and agencies.

MDEQ also continued its partnership with the U.S. EPA to promote the use of landfill gas as an alternative energy source through the Landfill Methane Outreach Program (LMOP). In 2011, the state saw the first landfill gas to electricity project completed at the Golden Triangle Regional Solid Waste Landfill near West Point. Also, similar landfill gas to electricity projects began to develop at the Three Rivers Regional Landfill near Pontotoc and at Waste Management's Prairie Bluff Landfill near Houston. These projects are in addition to the current landfill gas project at the Waste Management Pecan Grove Landfill located near Pass Christian and an on-site gas to energy use at the Prairie Bluff Landfill.

As indicated, the Golden Triangle Landfill project has the distinction of being Mississippi's first landfill gas to electricity generating facility to support a regional power grid. In this project, gas from the landfill is rerouted through a system of underground piping to an internal combustion engine driven generator set. The power generated was purchased and placed on the local power grid by Tennessee Valley Authority (TVA) as part of their Generation Partners Program. This landfill is publicly owned and operated by the Golden Triangle Regional Solid Waste Management Authority (GTRSWMA) consisting of a number of local government entities in Northeast Mississippi. The GTRSWMA project is unique in that it was supported and conducted solely through public funds and resources. In addition, the project was the result of a successful partnership forged by the Golden Triangle Regional Solid Waste Management Authority with the TVA, local power suppliers and the state agencies of MDEQ, the Mississippi Development Authority, and the Mississippi Public Utilities Staff. In this project approximately 360 scfm of landfill gas is processed in one 1,050 kW Jenbacher genset to produce electricity sold on the power grid. The environmental benefits are significant and offer the equivalent benefits to the following:



Mississippi's first landfill gas to electricity generating facility at the Golden Triangle Landfill

- Reduction in air quality impacts equivalent to over 8,500 passenger vehicles or
- Carbon sequestered by over 9,500 acres of pine or fir forest or
- Reduction in CO<sub>2</sub> emissions from about 104,000 barrels of oil consumed or
- Reduction in CO<sub>2</sub> emissions from over 5,000,000 gallons of gasoline consumed or
- Reduction in CO<sub>2</sub> emissions from burning over 225 railcars worth of coal.

Electricity produced from this project provides enough power for over 600 Golden Triangle area homes.

Through the LMOP program, MDEQ has also identified numerous other landfills in the state that appear to have good potential for future energy project development. MDEQ will continue to work to promote projects at these landfills that can provide both economic and environmental benefits to the host communities for these landfills.

MDEQ has initiated another outreach effort to promote and grow composting in the State of Mississippi. This effort includes work to streamline the state's composting regulations, work to grow and promote Mississippi composting businesses and composting products and work to educate our citizens on the many benefits of composting organic wastes. As a part of the state's educational efforts on composting, MDEQ's solid waste programs participated for the first time in the Fall Flower and Garden Fest in October 2011 sponsored by the Mississippi State University Extension Service in Crystal Springs, Mississippi. MDEQ's participation in the event was focused on efforts to increase and promote the growth of composting and recycling in the State. MDEQ sponsored an educational booth and gave away door prizes to promote composting and the use of recycled content in the state. The promotional efforts at the festival received an overwhelming positive response and consequently, MDEQ is making plans to participate in the upcoming Spring event.

### Byproduct Beneficial Use Program

The Solid Waste Programs at MDEQ continued efforts in 2011 to promote the beneficial use of nonhazardous by-product materials that would otherwise be disposed in landfills. The state's beneficial use regulations allow for industries to request that their nonhazardous industrial by-product materials be evaluated for use in the place of products or raw materials. If the MDEQ evaluation 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 2011, MDEQ collected information on the volume of materials distributed for use in the State of Mississippi in Calendar Year 2010. These reports indicated that BUD holders distributed approximately 1,278,693 tons of by-product materials in the State of Mississippi. This was an increase of more than 670,000 tons of by-products distributed for re-use over the 2009 volumes. Approximately 96 percent of the by-products distributed were used for construction purposes while the remaining four percent was used in soil amendment applications.

In addition, during 2011 the MDEQ approved 5 new Beneficial Use Determinations (BUDs) for new materials and uses. Of these new determinations approved in 2010, four BUD's were approved for construction uses and one new BUD was approved for agricultural land application uses. MDEQ continues to work with the suppliers throughout the region who provide by-products and other material for construction uses and land application uses in the state of Mississippi. One way that MDEQ does this is through demonstration projects. A demonstration project 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. Through the demonstration project the material and use are evaluated for both environmental and physical performance. The results of each demonstration project are submitted to MDEQ for further review and consideration and assist MDEQ in making determinations about the impacts of the long term use of the by-product material.



### Recycling Education

The Recycling and Solid Waste Reduction Program at MDEQ is charged with working with local and state governments, private sector organizations, non-profit organizations, and the general public to increase recycling and solid waste reduction activities across the state. The program provides both educational and technical assistance to all groups in the state to increase the awareness and the importance of recycling and solid waste reduction measures.

The program partners with numerous organizations in the state including the Mississippi Recycling Coalition, Keep Mississippi Beautiful and its local affiliates, and the Beverage Association of Mississippi. In FY 2011 the Recycling and Solid Waste Reduction Program conducted site assistance visits, gave presentations to organizations and schools across the state, and provided recycling and solid waste information via exhibits at various events.

- Five K-12 schools were visited.
- Five college and university programs were visited.
- Eight state agency programs were visited.
- Seven presentations or exhibits were conducted for government organizations.
- Seven presentations or exhibits were conducted for community groups.
- Five presentations were conducted for industry group and associations.
- Seven commercial recyclers were inspected.
- Eight recycling programs for businesses other than recycling were inspected.

The program also utilized a recycling education display that was made available to libraries and other organizations across the state for exhibition to the general public.



## 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 (P2G) Grant.
- Coordinate/partner with both states and the federal government (e.g. DOD) and non-governmental entities to promote effective pollution prevention practices.

During FY 2010-2011, the MDEQ Pollution Prevention Program accomplished the following program elements:

- Nine P2 enHance site visits
- Reviewed and monitored 198 annual waste minimization certified reports, three P2 plans were approved.
- Met all conditions of the 2010-2011 EPA/Mississippi Pollution Prevention (P2G) Grant
- Nine Small Business site visits, three workshops and eight presentations were conducted on environmental issues
- Permitting/reporting compliance assistance activities was provided to four facilities in 4 different SIC Codes



## Key Pollution Prevention Activities

The Pollution Prevention Program coordinates multiple activities focusing on the reduction of waste streams that can impact the environment. Efforts 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. The Mississippi Department of Environmental Quality's environmental stewardship program, enHance, promotes this philosophy and recognizes industries, businesses and cities that implement activities and projects that benefit the environment. Another core area of the P2 program promotes energy efficiency utilizing the EPA's Energy Star tools.

## 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 10 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 submit over 1,000 reports to MDEQ, as required by federal law.



# 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 valuable water resources. The state's 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.



The MDEQ currently has six active grants, two of which (Grant Year 2006 and 2007) will be closed out in 2011. During 2011, 49 projects/activities totaling \$7.4 million were completed with about 23 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; watershed protection and restoration; land-acquisition projects that focus on acquiring sensitive parcels of land for intercepting and/or buffering NPS pollution; five "Nutrient Reduction Watershed Management Plans" for various geographic areas across the state, e.g. Mississippi Delta, uplands, and coastal; and two nutrient-reduction projects in the Delta using various BMPs.



In FY2011, MDEQ received approximately \$3.2 million in Section 319 Grant funds. Of this amount, two percent is allocated for administrative work, 17 percent for assessment and monitoring, 32 percent for program operation and statewide education and public outreach projects, and 50 percent for priority watershed restoration and protection projects primarily focusing on nutrient reduction.

MDEQ sponsors Mississippi Outdoors with these funds.

## 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, storm water, and nonpoint source pollution projects. Funding for these projects comes from federal grants, state match, repayments, and interest on deposits. During 2011 MDEQ funded 22 new projects totaling \$58.6 million from the WPCRLF program. Since Hurricane Katrina, the department has been working with the WPCRLF loan recipients in the coastal counties to provide repayment forbearance periods when requested due to the impacts of the storm.



Pontotoc Wastewater Treatment Plant



## Water Pollution Control Emergency Loan Fund

The Water Pollution Control Emergency Loan Fund (WPCELFF) program provides loans to communities for the emergency construction, repair, or replacement of wastewater collection and treatment facilities. The WPCELFF has approximately \$3,061,000 available for such emergency projects.

MDEQ encourages communities throughout the state to utilize this program whenever emergency wastewater projects are needed. After Hurricane Katrina, the department worked with the WPCELFF loan recipients in the coastal counties to provide repayment forbearance periods when requested due to the impacts of the storm.

# ENVIRONMENTAL RESPONSE

## Disaster Debris Management



MDEQ responded to requests from a total of 23 local governments, the Federal Emergency Management Agency, the U.S. Army Corps of Engineers and other stakeholders in the area to establish a total of 42 emergency sites to manage tornado debris. Most sites were established to manage a tremendous amount of vegetative debris created by the storms. Approximately 30 sites were approved for local governments for volume reduction of the vegetative debris through controlled burning sites. In addition, eight sites were approved by MDEQ for chipping vegetative debris and one site was approved for burial of the vegetative debris. Other sites approved for local governments managing tornado debris included two sites for managing ash from the burning operations and one

In 2011, MDEQ's solid waste programs continued work with federal, state and local agencies and organizations regarding the management of debris from disaster events. The State of Mississippi faced an unprecedented number of severe tornado events during the month of April 2011. According to the National Weather Service a total of 67 tornados occurred with 23 storms being rated above F2 (two were rated F5). These storms caused significant damage to structures and property throughout the state, with the most significant damage occurring in the lower northeast and east central portions of the state.



site for staging structural debris in the Smithville area which experienced the most significant damage in the state.



In addition to the tremendous tornado damage, Mississippi also experienced severe flooding in communities along the Mississippi River in May and June of 2011. MDEQ also worked with numerous local governments and state and federal agencies to prepare for the flooding and to deal with debris from the clean up of the impacted communities. MDEQ distributed information on clean-up precautions in the flood areas for the public and for the local governments, approved various debris staging sites for materials removed from damaged homes and structures, and conducted collection programs for household hazardous wastes generated from the flood and the clean-up in the aftermath.

# Natural Resource Damage Assessment (NRDA)

Natural Resource Damage Assessment (NRDA) is the legal process for identifying and quantifying damage to the state's natural resources resulting from the Deepwater Horizon oil spill. The assessment provides the structure by which Mississippi will plan and implement restoration of the Gulf Coast and/or compensation for damages.

NRDA actions are designed to compensate the public for past injury, interim injury before the oil was contained, and residual harm to natural resources after containment. Natural resources are broadly defined as land, fish, wildlife biota, air, water, ground water, drinking water supplies, and other resources belonging to, managed by, or held in trust by the United States or the local government.

Federal law requires the designation of federal and state officials to act as trustees in protecting public interest in natural resources and the services they provide. MDEQ Executive Director Trudy D. Fisher serves as the state's natural resource trustee and has the regulatory authority to assess damages to natural resources and to collect compensation for those injured natural resources and associated services lost.

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 natural states. It also addresses compensation for the injury or lost use of public resources with the goal of restoration in mind.

Using a team of scientists and other subject experts, MDEQ is working with local governments, residents, industry, business owners, organizations, and responsible parties to develop a comprehensive, data-driven assessment of the type and extent of damage to our natural resources. MDEQ will use this data to assess the damages and to calculate injuries to wildlife, habitat, and lost human use of those resources. MDEQ will also determine the appropriate restoration and/or compensation for damage or lost use and will implement a comprehensive restoration plan.

Establishing a comprehensive restoration plan involves compiling all the data to determine case-specific needs and details. Once all data is compiled, a draft restoration plan will be developed and offered for public review and comment. Upon approval of the plan by MDEQ, 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.



Trudy Fisher addresses a public meeting in Gautier about NRDA early restoration projects.

## Deepwater Horizon [MC-252] Oil Spill

The Mississippi Department of Environmental Quality (MDEQ) and the Mississippi Department of Marine Resources (DMR) led the state response to protect the vital natural resources of Mississippi's Gulf Coast from the Deepwater Horizon [MC- 252] incident.

Exhaustive sampling efforts by state and federal agencies began in May 2010 and continue today through a joint effort with MDEQ and MDMR to ensure seafood safety and reassure the public. Results from hundreds of state samples and thousands of federal samples continue to indicate that seafood is safe for human consumption. This sampling is scheduled to continue for an additional three years through a Memorandum of Understanding between the state and BP.



MDEQ continues to send staff to Gulf Coast Incident Management Team in New Orleans and to the Coast for emergency response efforts, albeit at a reduced level.

During 2011, response activities, associated with the oil spill, continued on shoreline segments across the Area of Response. MDEQ continued to be actively involved.



On November 2, 2011, the Shoreline Cleanup Completion Plan (SCCP) signed by the Federal On-Scene Coordinator (FOSC) for the Deepwater Horizon (DWH) Oil Spill Response. The SCCP was collaboratively written by the U.S. Coast Guard (USCG), the Gulf States (Louisiana, Mississippi, Alabama, and Florida), NOAA, the Department of the Interior (DOI), and BP – collectively known as the Gulf Coast Incident Management Team or GCIMT located at Unified Command in New Orleans. The purpose of this SCCP (Plan) was to define a process to deem that removal actions are complete on each shoreline segment, within the response, in a manner consistent with and documented by the Shoreline Clean-up and Assessment Technique (SCAT) process. The shoreline clean-up processes, as identified within the plan, were developed to ensure that appropriate shoreline clean-up activities have been conducted. The plan provides the mechanisms for ceasing active clean-up operations where Unified Command agrees that segments have been cleaned to the point where removal actions have been completed. The plan provides the processes to deem that removal actions are complete for all segments that were never impacted by MC-252 oil, or where the Federal On-Scene Coordinator (FOSC) determines current conditions are no longer a threat to the environment or where further removal actions may cause more harm than good.

On November 14, 2011, the FOSC issued a public notice indicating that the response was entering the final stages of the shoreline cleanup and that Post Hurricane Season Inspection would be conducted on shoreline segments that have previously been declared operationally inactive. Removal actions for shoreline segments would be considered complete if those shoreline segments met certain pre-determined cleanup criteria.

All shoreline segments that are actively being cleaned will remain in the response until cleanup criteria are met and officially taken out of the response by the FOSC and the State On-Scene Coordinator. The cleanup criteria and processes to be followed are documented in the SCCP. Currently, cleanup activities continue on shoreline segments along the Mississippi Gulf Coast and the Mississippi Barrier Islands.

More than 90 percent of the surveyed shoreline (represents more than 4,300 shoreline miles surveyed for cleanup activities) is currently Operationally Inactive and is being managed through the process defined in the SCCP in order to deem that removal actions have been completed.

Approximately 10 percent of the surveyed shoreline is under active Patrol & Maintenance (P&M) activities continue across approximately 400 miles in the four states. As P&M activities in these shoreline segments are completed, each segment will follow the survey/inspection/monitoring/approval process defined in the SCCP to determine that removal actions are complete.

The post-hurricane season inspections are underway to re-inspect more than 300 miles of shoreline across the Area of Responsibility as part of the process for deeming removal actions complete for the majority of the shoreline that has already met agreed upon endpoints in accordance with the SCCP. By year's end (2011), approximately 80 percent of the inspections had been completed across the Area of Response (the last of the inspections were completed in Mississippi on January 5, 2012).

GCIMT is currently in the process of developing the Final GCIMT Phase III Removal Activities Completion Plan. The purpose of this Phase III Plan is to outline the activities required before the Federal On Scene Coordinator (FOSC) may determine that removal efforts are complete under 40 C.F.R. 300.320(b) for the Deepwater Horizon (DWH) MC-252 Emergency Oil Spill Response.

The FOSC, in consultation with the State On-Scene Coordinators (SOSCs), Federal Trustees, and the Responsible Party (RP), will execute remaining Phase III (containment, cleanup, recovery & disposal) activities and processes in accordance with the Shoreline Clean-Up Completion Plan (SCCP) .

This plan serves to support the current objectives of the Gulf Coast Incident Management Team (GCIMT) as Phase III (containment, cleanup, recovery & disposal) activities are completed and the GCIMT Unified Command functions are discontinued. The Deepwater Horizon Phase IV (Documentation and Cost Recovery) and traditional United States Coast Guard (USCG) response activities will continue under the FOSC authority. On going Phase IV activities and traditional state and federal response activities in accordance with the National Contingency Plan (NCP) and applicable Area Contingency Plans (ACPs) are beyond the scope of the Phase III Plan. The plan provides guidance for the GCIMT as the organization de-centralizes and active response on impacted shoreline segments is minimized. As shoreline segments meet SCCP endpoints and operational requirements decrease, the GCIMT will continue to optimize staffing, as determined appropriate by the Unified Command.

Continuing into 2012, MDEQ staff will to continue to be actively involved in regard to the Deepwater Horizon (DWH) Oil Spill Response Activities until all of Mississippi's shoreline segments have been deemed removal actions complete, by the FOSC, in consultation with the State.

## Hurricane Katrina Response

Five years after Hurricane Katrina devastated the Mississippi Gulf Coast, the Deepwater Horizon 252 oil spill has made evaluating the continued recovery of aquatic resources in the area difficult to judge. However, prior to the spill, the resources were doing well. The recreational beaches had been re-nourished and reopened, oyster reefs had been rebuilt and commercial harvest of oysters had resumed. Following the storm, the Mississippi Department of Environmental Quality, along with its state and federal partners, worked hard to evaluate environmental conditions along the Coast. The results of multiple monitoring studies indicated very limited chemical contamination as a result of the hurricane; however, continued environmental monitoring of coastal Mississippi is still very important as the region rebuilds. MDEQ continues to lead this monitoring effort, and to work with federal, state and local officials to resolve problems as they arise .

- MDEQ has made great strides in rebuilding and improving air monitoring capabilities along the Mississippi Gulf Coast under the \$897,000 Post Hurricane Katrina Supplemental Air Monitoring Grant award from the U.S. Environmental Protection Agency. The air monitoring equipment needs identified in the grant have been addressed with the exception of continuous particulate monitors, and the sites have been strengthened against future storms.
- This Supplemental Air Monitoring Grant has been used to install and operate a rainfall monitoring station at the Grand Bay National Estuarine Research Reserve in Moss Point. Concentrations of mercury, methyl mercury, major nutrients and trace metals are measured weekly in rainwater collected at the station. The site has been accepted into two long established national monitoring networks, and the data will provide important information for understanding the cycling of mercury in the regional watershed.

- Building debris clean-up and reconstruction efforts along the Coast are causing very large numbers of building demolition and renovation operations that pose a concern for asbestos. MDEQ's Asbestos Section continues to be fully engaged with local officials, contractors, and the public so that they may be aware of asbestos control regulations and safety measures to follow. Education and assistance for the requirements of the regulations are a priority, and MDEQ maintains a presence in the area performing compliance assistance and compliance monitoring inspections and other outreach. The No Action Assurances that were negotiated with EPA were implemented through September 2007. The procedures that were set helped expedite the handling of residential property that had to be cleared for rebuilding and assured environmentally safe operations.
- Treatment of municipal wastewater is a vital element in the reconstruction of the Coast and in protection of the environment. Several local communities continue the work to repair and upgrade their wastewater treatment systems.

1. In the City of Waveland has completed Katrina repair projects. The sewer system repairs consisted of two phases of full pipe replacement south of the railroad and one phase north of the railroad, which was completed in 2010. In addition, the city has rebuilt all of its 51 pump stations, the last of which was completed in 2011. These rebuilds have included all new pumps and control panels.

2. Bay St. Louis has rebuild the utility infrastructure in the most devastated areas (Phases I- III) which included replacing all water and sewer lines in the area between the railroad tracks and the beach. Rehabilitation of the last of the city's pump stations will be completed in early 2012.

3. Pass Christian is continuing water, wastewater and storm water infrastructure replacement south of the railroad tracks. Area I on the east end of town is 99 percent complete, Area II 85 percent and the Area III contract will be let soon. This project includes redirecting some of the storm water flows off the beach to Bayou Portage north of town.

4. The City of Long Beach has completed all their Katrina related sewer projects which included three phases of sewer line replacement along Beach Boulevard in 2009 and four phases of line replacement between the beach and the railroad in early 2011.

5. The City of Biloxi began construction on four of their 14 projects for collection system reconstruction in 2011. The remaining ten projects are expected to be bid in early 2012. The projects include replacement of sewer lines, rebuilding of pump stations and mitigation such as raising control panels and converting some force mains to gravity.

6. The Harrison County Utility Authority (HCUA) completed its final project in 2011 by rebuilding a large interceptor pump station located off Highway 90 which serves west Gulfport.

- Federal funding for EPA's National Coastal Assessment (NCA) Program ended in 2006. This water quality monitoring program was the primary tool for evaluating the quality of Mississippi's coastal waters. MDEQ believed it was important to continue monitoring this valuable resource as coastal communities rebuild and grow following Hurricane Katrina, and as the Governor's Gulf Region Water and Wastewater Plan is being implemented. Beginning in 2008, MDEQ partnered with the Gulf Coast Research Laboratory and the Department of Marine Resources to implement a coastal water quality monitoring program, patterned after EPA's NCA program.
- MDEQ has taken an active role in supporting the Gulf of Mexico Alliance and its Governors'Action Plan for Healthy and Resilient Coasts. This plan is aimed at protecting and restoring water quality and habitats in the Gulf of Mexico and its estuaries, and improving public awareness of the Gulf through environmental education. The Alliance is devoted to accomplishing these goals through regional collaboration. Mississippi is the lead state for the Nutrient Reduction Priority Issue Team with the Alliance and is currently in the process of drafting action items that will be included in the next Governors'Action Plan. This plan has a five-year time frame.
- MDEQ has reestablished its ambient monitoring program for the state. A component of this program was to restore monitoring at some long term historical sites and to initiate sampling at new sites at the major freshwater inflows into coastal waters. This monitoring, which was suspended in 2000 due to other agency priorities, will build upon years of historical data to help MDEQ track long term trends in water quality in our coastal streams.

- The Emergency Response Branch continues to recover hazardous materials containers from woods and marshes in the coastal counties.
- MDEQ has also been active in strengthening its response capabilities in preparation for another natural disaster or security event.
- MDEQ has revised its Response Plan to improve the agency's ability to respond and to enhance coordination and communication with MEMA, FEMA, sister agencies, and local governments during emergencies.
- MDEQ has updated staff to be prepared to respond in a time of disaster. This training includes the National Incident Management System so efforts can be better coordinated with other agencies, and proper documentation of expenditures to ensure that state funds expended are eligible for reimbursement by FEMA.
- MDEQ participated in the Hurricane Ulysses Disaster Drill to test preparedness on May 1, 2008.
- MDEQ has prepared FEMA trailers and equipment to serve as temporary housing and office space for staff when responding to incidents or disasters.
- Federal grant funding was used to bolster the agency's ability to communicate and respond during a disaster. Satellite radios have been acquired to improve our ability to communicate within MDEQ and with MEMA, FEMA and other responding agencies.
- An emergency, backup generator system for MDEQ's laboratory was purchased. This will prevent the loss of valuable samples and evidence during a power outage, and allow mission critical laboratory operations to continue in most disaster situations. Installation of the generator was completed in December 2009.
- MDEQ purchased a mobile fuel tank that will be used to provide fuel for MDEQ emergency vehicles, improving our ability to function during times of critical fuel shortages.



## Mississippi Gulf Region Water And Wastewater Plan



Texas Flat Waste Water Treatment Facility  
in Hancock County

During 2006, the Mississippi Department of Environmental Quality developed the Mississippi Gulf Region Water and Wastewater Plan (Plan) as directed by Governor Barbour in response to Hurricane Katrina. This plan recommended over \$600 million to fund water and wastewater projects in Pearl River, Stone, Jackson, Harrison and Hancock Counties to (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 projects. More than 75% of the nearly 4,000 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 projects have been advertised, received construction bids and commenced construction. To date, five projects have been closed out, with another 43 projects reaching substantial completion. The remaining projects are anticipated to be complete during calendar year 2012.

The projects being constructed include 17 wastewater treatment facilities, 32 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 \$530 million in program related expenses through the end of 2011. The County Utility Authorities (CUAs) averaged incurring approximately \$15 million per month on construction related expenditures during 2011.

The coming year will see most if not all grants closed out. The CUAs are hard at work on start-up activities, as well as continuing to ensure the viability of their facilities. MDEQ anticipates that this program will have a very positive lasting impact on the lives of coastal residents.



Stone County Ten Mile Road water project

## Pearl River Fish Kill

On August 13, 2011, MDEQ received reports of a fish kill on the Pearl River in Pearl River County. An investigation by department biologists confirmed an extensive kill covering nearly 40 river miles and involving all sizes and species of fish, including endangered Gulf Sturgeon. With this section of the Pearl River being the border between Louisiana and Mississippi, the investigation / response involved numerous state and federal agencies. From the first day of the response, MDEQ staff coordinated with Louisiana Department of Environmental Quality, Louisiana Wildlife and Fisheries, Mississippi Department of Wildlife, Fisheries and Parks, U.S. Fish and Wildlife Service, EPA Regions IV and VI and the Pearl River County Emergency Management Agency to determine the extent and cause of the event.



To protect public health, the agency immediately issued a water contact and fish consumption advisory for the lower Pearl River. MDEQ also requested assistance from EPA Region IV which sent two On-Scene Coordinators to help with the investigation. It was quickly determined that the kill originated from a discharge of wastewater by the Temple Inland paper mill in Bogalusa, Louisiana. Extensive sampling confirmed that the mill discharge caused a severe depletion of dissolved oxygen in the river which resulted in the fish kill. Water sampling also confirmed that chemical contamination was not an issue, and the advisory was lifted after several weeks.



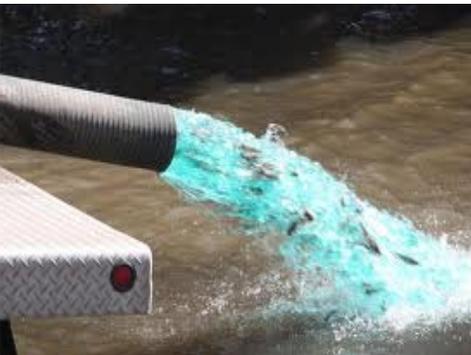
As the response progressed and the responsible party became involved, local fishermen were organized by the county EMA to assist in the clean up and removal of as many dead fish as possible. MDEQ participated in two public meeting in the community to discuss the kill, investigation progress and sample results. With the help of EPA Region IV and VI and U.S. Fish and Wildlife Service, most of the citizens concerns were addressed. One

concern in particular was the safety of well water along the river. MDEQ worked with the county Emergency Management Agency to identify numerous wells adjacent to the river for chemical sampling. Those results indicated no observable contamination from the paper mill or any other source.

Restoration of the fisheries in the Pearl has begun by both Louisiana and Mississippi through restocking programs and extensive river monitoring has continued as the mill resumed operations. At the time of this report, enforcement actions are pending.



### MDEQ And MDWFP Release Fish To Re-Populate Pearl River



Staff from the Mississippi Department of Environmental Quality (MDEQ) and the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) released approximately 3,000 "harvestable-size" channel catfish into the Pearl River December 15. The channel catfish are part of a stocking program to re-populate the Pearl River after a discharge of black liquor from the Temple-Inland paper mill in Bogalusa, Louisiana, resulted in a massive fish kill.

The fish kill stretched through approximately 80 miles of the river, including approximately 40 miles bordering Mississippi. MDEQ, with assistance from MDWFP, estimated that approximately 219,000 fish and mussels were killed in the Mississippi portion of the river.

MDEQ settled with Temple-Inland alleged violations of state laws prohibiting pollution of state waters and improper disposal of waste material. The company has agreed to pay a \$100,000 penalty, approximately \$220,000 for fish stocking, and about \$45,000 to reimburse the agency for response and recovery costs.

As part of MDEQ's settlement agreement with Temple-Inland, the agency is reimbursing MDWFP for several releases of fish from their Meridian Fish Hatchery into the Pearl River.



MDEQ biologist Emily Cotton, one of MDEQ's responders to the fish kill, is interviewed by MPB's "Mississippi Outdoors."



State Representative Herb Frierson (R-Poplarville) was on hand to help with the fish release.

# OUTREACH

## Community Engagement



The Office of Community Engagement works to address the need for timely and accurate information, access and entry into educational opportunities, the need for collaboration, vision building, and connecting the reform to people's hopes and dreams and the issue of unequal power, lack of representative leadership, equitable and authentic participation and accountability.

The Office of Community Engagement also works to address Environmental Justice issues. The MDEQ has adopted a civil and social justice approach to environmental justice by ensuring the same degree of protection from environmental and health hazardous and equal access to the decision-making process to have a healthy environment in which to live, learn, and work, through outreach, education, and public participation in decision making efforts.

MDEQ is committed to engaging citizens and recognizes that an engaged community offers:

- Greater diversity of views expressed.
- Mutual learning among participants.
- Previously unknown special needs may be accommodated.
- Improved relationship with community.
- Mutual respect among stakeholders.

A total of 94 Community Engagement and Community Initiative projects were provided and/or performed for the first quarter of the 2011 calendar year; a total 63 second quarter Community Outreach and Community Initiatives; total number of community engagement and community outreach activities provided in the third quarter is 73.



The total number of OCE activities for the first through third quarter was 230.

## Air Quality Outreach

MDEQ conducted air quality and air pollution awareness outreach efforts throughout Mississippi during FY 2011. However, most of the efforts were concentrated on the Mississippi Gulf Coast and DeSoto County. These areas were chosen because of the probability that EPA may designate these areas as nonattainment with the ground-level ozone standard. Outreach efforts consisted of giving interactive presentations in fun and informative ways about air quality and air pollution to school children at various fairs and festivals in addition to classrooms. Also, public outreach efforts were conducted at these fairs and festivals for adults. In addition, MDEQ participated in meetings with city, county, and state government officials, industry, and business representatives concerning air quality.



## 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. The following is a descriptive list of the state's NPS educational and outreach accomplishments.

### 1. Watershed Harmony Musical Puppet Theater

Watershed Harmony is a 30-minute musical production with seven songs, a multi-level stage, and 10 puppet characters. It is performed throughout Mississippi to teach audiences about responsible environmental stewardship of state waters and how Best Management Practices (BMPs) can reduce the impacts of polluted runoff. The show reached a total of about 8,623 students and adults during 2011.



### 2. Mississippi and Yazoo River Boat Tours for Students

A NPS project to educate students about the Mississippi and Yazoo River watersheds began in the fall of 2008. During 2011, a total of 1,917 students and teachers toured the rivers on a river boat. They viewed land uses on the shore, water uses in the two rivers, and the industrial harbor that might impact water quality in the two watersheds. Pre-test/Post-test scores indicate an increased knowledge and awareness as a result of the tours. Students also gained a new perspective about water quality in their communities.

### 3. Storm Drain Marking

This 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”. During 2011, volunteers glued the markers to 510 storm drains and distributed door hangers to homes. Students and scouts also talked with residents about storm-water runoff and the need to prevent pollutants from entering storm drains.



### 4. Adopt-A-Stream Program

Adopt-A-Stream is a program that promotes environmental stewardship by training volunteer citizens about stream ecology, aquatic life, and water chemistry. Volunteers attend a two-day, water-education workshop or a one-day workshop to learn how to monitor a stream, conduct a stream cleanup, or mark storm drains. In 2011, about 16 people attended the traditional two day workshop and 85 attended seven one day workshops. Over 14,500 people were reached with the Adopt-A-Stream Program statewide through seven Envirothon high school training sessions, scout training, large event venues, conservation field days with schools, and workshops.

## 5. Enviroscape and Groundwater Models

During 2011, MDEQ staff reached over 3,400 students, teachers, and the general public using presentations associated with water quality. Over 110 water models have been distributed throughout Mississippi to county MSU Extension Service Offices, Department of Health offices, Soil /Water Conservation Districts, Environmental Learning Centers, the Choctaw Indian Reservation, and other organizations.



## 6. Environmental Teacher Workshops and Student Environmental Camps

reached a total of 1,280 teachers and 2,758 students during 2011 at MDEQ-sponsored training venues. The breakout on these trainings include: over 900 educators attended 58 CEU-approved workshops conducted statewide during 2011; approximately 2,564 students and their teachers were trained on Longleaf Pine curriculum in the six counties of coastal Mississippi; and, ten student Environmental Day-Camp sessions were conducted at two Mississippi Universities with over 194 students in attendance.

**7. Envirothon Competition for High School Students.** This competition tests student knowledge about water, soils, forestry, wildlife, and current environmental issues. In 2011, there were 391 high-school students (53 teams) and their advisors from 30 Mississippi counties who participated in the contest. MDEQ assists with sponsorship, Envirothon training, the steering committee, and the statewide competition.



**8. Mississippi Environmental Education Alliance (MEEA)-** MEEA featured “Nonpoint Source Pollution, Low Impact Development, Green Infrastructure” and “Climate Change” as themes at the 2011 MEEA Conference where 45 teachers and environmental educators completed the two-day long CEU-approved workshop which was held at the Mississippi Museum of Natural Science in Jackson. MDEQ’s Nonpoint Source Pollution Education Administrator served as president of the statewide MEEA organization in 2010 and 2011. MEEA is currently allied with the State and International Envirothon Competition coordinators. Envirothon is an environmental competition for high-school students and the *Nonpoint Source Pollution, Low Impact Development* theme was selected this year because it is the current event topic for Envirothon in 2012. MEEA is also affiliated with the Mississippi Geographic Alliance, the Mississippi Natural Science Museum, the Mississippi Adopt-A-Stream Program, the Grand Bay NEER, Mississippi State University Extension Service and other environmental learning centers in the State. MEEA is also affiliated with the North American Association of Environmental Educators.

**9. Storm Water Workshops-** In 2011, MDEQ supported 12 storm-water training sessions with a total of 1,478 people attending. Workshop topics included nonpoint source pollution, Best Management Practices (BMPs), land use, “Green Infrastructure” (connecting green hubs by using linear green space such as stream riparian corridors and utility corridors), low impact development (processing roof- and home-lot runoff on-site), and agriculture BMPs field days. These trainings were held in the six coastal counties of Mississippi and in Jackson, Mississippi at the Mississippi Museum of Natural Science. In addition, the Urban Forestry Council conducted a two-day conference with 52 attendees which featured “creating landscaping plans through city ordinances” and a session on the *Scenic Communities of Mississippi* catalog and program at the Mississippi Municipal League in June, 2011.



## 10. Water Events/Festivals/Exhibits/Other



**Old Fort Bayou Blueway Race :** The eruption of Civil War-era cannons sent approximately 188 canoes and kayaks down a 9½-mile path toward The Shed Barbecue Restaurant. Residents gathered at the Fort Bayou bridge on Mississippi Highway 609 and cheered participants as they rounded the corner on Old Fort Bayou, coming from the Gulf Hills Hotel and Convention Center starting line. The first racers reached the restaurant after about 1 hour and 14 minutes.



**11. Secchi Day** was held on Pickwick Lake in Tishomingo County, Mississippi, in September 2011. The Secchi Disk is named for its designer Pietro Angelo Secchi who first used the disk more than 150 years ago. The depth the disk disappears is a measure of the transparency of water which can be impacted by the color of water, particles of silt and clay, or small plants called algae. Four boats carried 20 participants around Pickwick Reservoir to the 30 sites tested the previous two years and took turbidity readings using a Secchi disk. Approximately 75 people attended the event where teams returned to report their readings and to enjoy live music, vendors, and water-quality education displays from national/state conservation organizations including: Tennessee Valley Authority, MDEQ, Tishomingo Soil & Water Conservation District, and others.

**12. The Ross Barnett Reservoir WaterFest 2011** was part of an ongoing environmental education campaign to bring attention to the need to reduce sedimentation in the Pearl River and Ross Barnett Reservoir. Nearly 2,500 people attended *WaterFest's* outdoor festival held in the spring of 2011.





13. The **Make-A-Splash Event** was held during 2011 at the Mississippi Natural Science Museum where 12 schools attended consisting of two from the Pearl River Watershed and nine from the Yazoo River Watershed of the Mississippi Delta region. A total of 752 students and 79 teachers attended this event.



### 14. Mississippi Urban Forestry Council (MUFC)

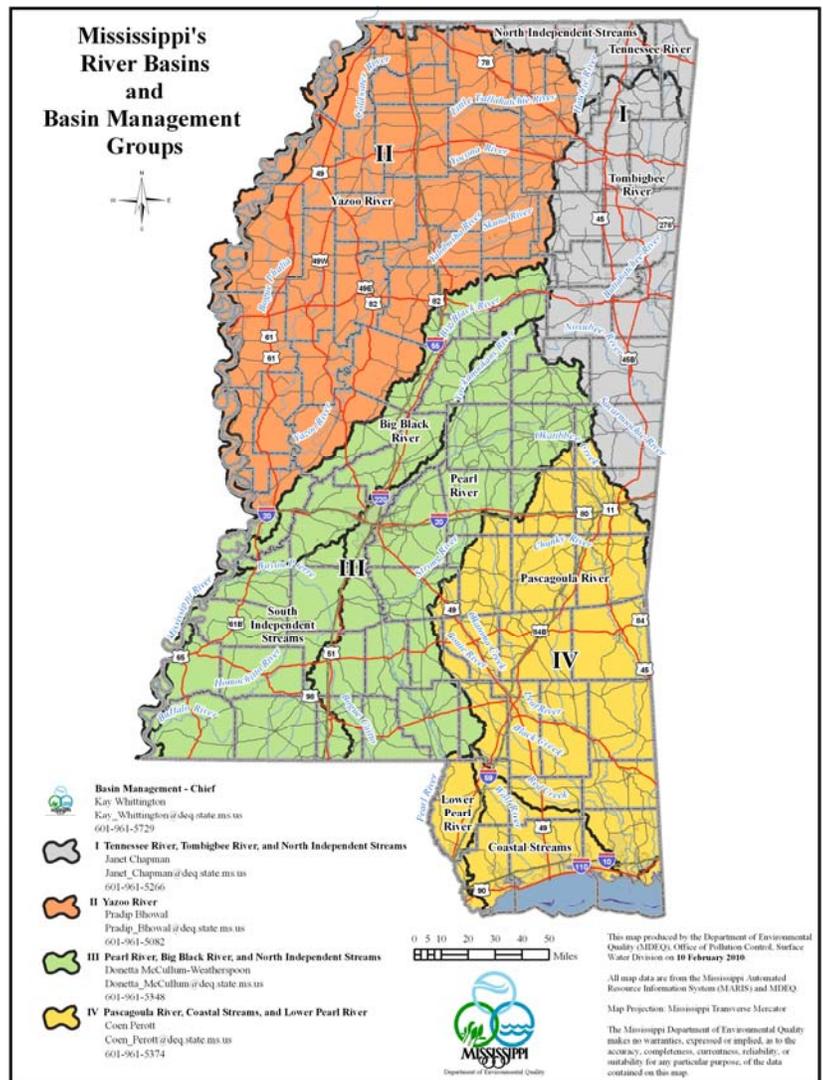
MDEQ received a partnership award from the MUFC in 2011 for their combined work on the *Scenic Communities of Mississippi Catalog* and other publications about Urban Forestry that include: *Introduction to Urban Community Forestry*; *Urban Forestry, Mississippi Urban and Community Forestry Management Manual*; *The Community Forest Booklet* and; *Preserving Trees in Construction Sites*. These are available from the Mississippi Forestry Commission and various web sites.

### Basin Management Approach

The mission of the Basin Management Approach is to foster stewardship of Mississippi's water resources through collaborative watershed planning, education, protection and restoration initiatives. To accomplish this, ten of Mississippi's major river basins have been organized into four basin groups (see map insert). Each basin group has a basin team of state and federal agencies, non-governmental organizations, and other stakeholders.

#### 1. The Pickwick Reservoir Project

This project covering the watershed areas of Yellow, Indian, and Bear creeks was completed in 2011 with the intent of improving water quality by addressing sediment issues arising from erosion from agricultural and silvicultural practices and stream bank failure in the Yellow and Bear Creek watersheds, primarily in Tishomingo County. In addition, a revised Source Water Assessment Plan for the Short Coleman Water Association water intake on the Yellow Creek Embayment of Pickwick Reservoir was developed. The project also provided pollution prevention education and outreach to boaters, farmers, homeowners, timber landowners and others.



Over the course of the project 237 practices were put on the ground that affected over 2000 acres, with a soil savings of nearly 24,000 tons. In addition to these BMPs, other components in this project included presentations to stakeholders, educational displays at local marinas for their Marina Day, a septic system education and pump out voucher program that involved 183 landowners, and monthly chemical monitoring at 15 sites in addition to biological monitoring. Other activities included Secchi Day on Pickwick Lake held annually for three years, newspaper articles, two field days, signage, two demonstration farms, two student poster contests as well as showings of the Watershed Harmony musical puppet play in local schools. Partners include US Fish and Wildlife Service, Natural Resources Conservation Service, Geological Survey of Alabama, Mississippi Forestry Commission, Mississippi Soil and Water Commission, Mississippi Rural Water Association, MSU Extension Service, US Environmental Protection Agency, Short-Coleman Watershed Association, Tishomingo County Soil and Water Conservation District, The Nature Conservancy, Tennessee Valley Association, and local landowners.

## **2. Buttahatchee Streambank Restoration Demonstration Project**

The purpose of this project was to demonstrate techniques to stabilize eroding stream banks, reduce sedimentation on the Buttahatchee River banks and provide 'green' BMP education by creating a demonstration site showing 6 treatments for stream bank stabilization and allowing Mossy Oak to film the work as a documentary. This project was a joint effort of The Nature Conservancy, MDEQ, Lowndes County School District, Wallace Environmental, Mossy Oak, Phillips Contracting, Ellis Construction, Lowndes County Wildlife Federation, US Army Corps of Engineers, National Sedimentation Laboratory, Monroe & Lowndes County NRCS, and Tombigbee River Valley Water Management District.

## **3. Green Infrastructure ARRA Grant**

In 2009, MDEQ received an ARRA Grant from EPA that contained a planning component for Green Infrastructure Training. The objective was to develop outreach and training materials, conduct pilot workshops to hone these materials, and disseminate information that can be incorporated into other programs to increase the number and effectiveness of Green Infrastructure (GI) projects in Mississippi. As a direct result of developing the training materials and testing them, there was an increased awareness of GI concepts in key decision makers that has already led to consideration of numerous projects, notably in DeSoto County and the City of Corinth. One of the products from this grant was a flyer for the State Revolving Fund to use to advertise the availability of funds for GI from their program. At least one project has come out of this SRF work. Partners working together on this grant include North Central Mississippi Resource Conservation and Development Council, Pine Ridge Marketing, LLC, Natural Resources Initiative, MDEQ, and EPA.

## **4. Nutrient Reduction Strategies**

Mississippi's collaborative, leveraged approach to reduce excessive nutrients and their impacts focuses on the development and implementation of appropriate nutrient reduction strategies. The strategies were developed to reduce excessive nutrient loadings to the waters in the Delta (in December 2009), Coastal (March 2011) and Upland (March 2011) areas of the state.

Work continued in 2011 to develop the Upland Nutrient Reduction Strategic Plan. Based on a listening session with stakeholders held in December 2010, the draft was revised and sent out to participants for further review in January 2011. In February a short workshop was held to receive additional stakeholder comments and concerns about related issues. Internal meetings were held to get input from other MDEQ programs. This second revision was then sent out for final review and eventually became the MS Upland Nutrient Reduction Strategic Plan, Implementation Draft 3/30/2011.

Also in 2011, a Coastal Nutrient Reduction Strategy was developed building upon the work which had been done in the Delta and the Gulf of Mexico Alliance (GOMA) Coastal Template. Livestock, forestry, urban stormwater, and atmospheric deposition were added based on a listening session with stakeholders held in December 2010. The draft was revised and sent out to participants for further review in January 2011. In February, a workshop to obtain additional stakeholder input and internal meetings to get MDEQ program input. The second revision was sent out for review. There is now a Coastal Nutrient Reduction Strategy.

The Delta, Coastal, and Uplands strategies were consolidated to establish a comprehensive, state-level, approach to reduce nutrient loadings from nonpoint and point sources, whether in a predominately agricultural environment, areas of higher municipal and industrial uses, or more natural coastal environments. This state-level strategy is being edited.

## 5. Implementing Nutrient Reduction Strategies and TMDLs

Six watersheds have been identified for implementation of the strategies in the Mississippi Delta, which is in Basin Group II. These include two new projects in the Harris Bayou and Porters Bayou watersheds, and the expansion of four existing sediment reduction projects in the Bee Lake, Wolf/Broad Lake, Lake Washington, and Steele Bayou watersheds.

Harris Bayou watershed project is currently ongoing to improve water quality by reducing nutrient and sediment loading. Harris Bayou, a tributary of the Big Sunflower River, flows through portions of Bolivar and Coahoma counties. The Harris Bayou project is comprised of two project areas: Treatment Area (1,700 acres) and Control Area (1,300 acres). Several nutrient reduction BMPs in the treatment area were installed during 2011. No BMPs are installed in the control area in order to maintain it as an area for comparison. Also, collection of nutrient data for this project is currently ongoing.

Porter bayou watershed project is also currently ongoing to improve water quality by reducing nutrient and sediment loading. Porter Bayou, also a tributary of the Big Sunflower River, flows through portions of Bolivar and Sunflower counties. The Porter Bayou project is comprised of: North Project Area (1,000 acres) and South Project Area (2,500 acres). Several nutrient reduction BMPs in the north project area were installed during 2011. BMPs in the south project area will be installed during 2012. Collection of nutrient data for this project is currently ongoing.

In the North Independent Streams Basin of Basin Group I, Muddy Creek (Tippah County) and Tarebreeches Creek (Alcorn County) watersheds will be the sites for initial implementation of the Uplands Nutrient Reduction Strategic Plan. These watersheds were chosen based on projected landowner interest, being part of a stream system with a TMDL, and having accessible monitoring sites. USGS has begun developing the monitoring plan and QAPP. Sampling should start in January 2012. Monitoring will continue for the duration of the 3-year project and until BMPs are well established. Initial watershed team meetings were held in mid-December and landowner meetings are scheduled for early in 2012. The partners are Tippah County (Muddy Creek), Alcorn County (Tarebreeches Creek), MSWCC, NRCS, MDEQ, MSU, and local stakeholders.

The Coastal Streams Basin of Basin Group IV, is implementing a Coastal Nutrient Reduction Plan through a local watershed project in Rotten Bayou, a tributary to St. Louis Bay, with the Mississippi Soil and Water Conservation Commission, the Mississippi Soil and Water Conservation Districts, USGS, and the Natural Resource Conservation Service (NRCS).

Nutrient TMDLs have been developed in each of these watersheds and will be used for the load reduction targets in the watershed implementation plan. Implementation will address both nonpoint and point sources. Key questions that implementation of the strategies will seek to answer are:

- What load reductions are achievable and when?
- What are the costs for these reductions?
- What are the environmental and socioeconomic benefits?
- How do we implement?

Pre- and post-implementation monitoring is being conducted and/or planned for the nutrient reduction watershed projects in an effort to quantify improvements in water quality. Using a tiered approach, attempts will be made to understand the impacts of various established and innovative best management practices (BMPs) and improvements in water quality on a landscape scale, a small watershed scale, and larger watershed scale. Temporal monitoring and assessment issues will also be addressed as resources permit. Costs will be documented and assessments will be made on a unit cost/water quality improvement basis. Additionally, environmental and socioeconomic benefits will be assessed using the concept of ecosystem services as data allows.



## 6. Second Annual Mississippi Nutrient/Hypoxia Summit

One of the biggest challenges for Mississippi's surface waters, the Mississippi River, and the Gulf of Mexico is the presence of excess nutrients in these waters. The Gulf of Mexico contains a hypoxic "dead zone" that is a result of nutrient-laden freshwater from the Mississippi River flowing into the Gulf. Accordingly, protection of these resources is essential to ensure sustainability of the state ecosystems and economies.

MDEQ recently hosted the 2<sup>nd</sup> Annual Mississippi Nutrient/Hypoxia Summit to feature Mississippi's continued efforts in solving water quality problem from excess nutrients. Trudy Fisher, MDEQ Executive Director, opened the summit by highlighting Mississippi's ongoing partnership efforts to reduce nutrient loading to the state waters. A video, titled "Protecting Our Waters – Reducing Nutrients in Mississippi," was shown at the summit to

tell Mississippi's nutrient reduction story. Also, updates on Mississippi's nutrient reduction activities were provided by the partnering agencies and organizations.

Among the activities underway in Mississippi to reduce excessive nutrient loadings are the development and implementation of comprehensive nutrient reduction strategies. Implementation of these strategies is currently underway in Mississippi's Delta, Upland and Coastal areas. Development and implementation of these strategies include significant contributions of resources from various state and federal agencies and nongovernmental organizations in Mississippi.

The partnering agencies and organizations will continue to work together to collaboratively support the development and implementation of nutrient reduction strategies to benefit the quality of in-state waters and the Gulf of Mexico. Additionally, these partners will continue to identify and pursue opportunities for leveraging available resources to implement these strategies, where possible.

The attendees at the summit included representatives from federal and state government agencies, non-government organizations, and other stakeholders.

## 7. Ross Barnett Reservoir

The Ross Barnett Reservoir in Basin Group III is a vital 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. The Environmental Protection Agency has designated this area as a Priority Watershed. The Reservoir welcomes in excess of 2.5 million visitors annually, and many consider it the premier recreational water body in Mississippi. Since its development almost 50 years ago, it has provided immeasurable benefits to the local economy. Local communities are continuing to benefit from increased residential and commercial growth, largely attributable to the reservoir.

The Mississippi Department of Environmental Quality (MDEQ) and the Pearl River Valley Water Supply District (PRVWSD) have been working towards finalizing plans to restore and protect water quality within the Ross Barnett Reservoir. This project, called Rezonate: The Ross Barnett Reservoir Initiative 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 6) Reduce and control pesticides.



As part of this initiative, MDEQ has developed a comprehensive watershed protection and restoration plan. This effort also included the development of a water quality monitoring plan, a source water protection plan (SWPP), a comprehensive education and outreach plan, and a pathogen source assessment and wastewater management plan for the reservoir. The watershed protection and restoration plan uses EPA's Nine Key Elements of Watershed Protection to identify potential pollutant sources in the watershed. The plan also recommends 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 which incorporate workgroups that utilize technical expertise from various state agencies, local agencies, and local stakeholders.

Recently, MDEQ and PRVWSD announced the official founding of two organizations that will benefit the Ross Barnett Reservoir and have a positive impact to the areas surrounding the 33,000 acre lake. The Ross Barnett Reservoir Foundation was created on the concept of having input from citizens whom have an interest in providing support and guidance for future economic development needs. The foundation offers an excellent opportunity for community leaders, stakeholders, and the general public to have a voice on decisions being made by state agencies. The primary purpose of the Ross Barnett Reservoir Foundation will be to: 1) Promote public interest in the Ross Barnett Reservoir 2) Raise funds for projects, studies, designs and equipment 3) Preserve and enhance the water quality 4) Provide a vision for the future and address needs that will improve the quality of life for residents 5) Enhance recreational opportunities for visitors. Secondly, Keep the Reservoir Beautiful has officially become an active affiliate of Keep America Beautiful, the largest nationwide volunteer organization, which will help promote beautification efforts in and around the Ross Barnett Reservoir project area. The unique newly formed group, the only one of its kind that focuses on a water body, will be focusing on beautification and improvement of public places, waste reduction, and recycling in and around the Reservoir area. Training for this group will be provided by Keep America Beautiful and funding is being provided through a grant courtesy of MDEQ. Together, these two new foundation formations will aid in the preservation and restoration of the 33,000 acre reservoir.

### 8. Turkey Creek Watershed Receives Partnership for Sustainable Communities (PSC) Award.

The Environmental Protection Agency (EPA) and the Mississippi Department of Environmental Quality (MDEQ) have identified Turkey Creek and the North Gulfport Community as a priority watershed. EPA identified the Turkey Creek Community and North Gulfport Community as one of its priorities for the Interagency Partnership for Sustainable Communities (PSC). The PSC is a partnership established in 2009 between the U.S. Department of Housing and Urban Development (HUD), the U.S. Department of Transportation (DOT), and the EPA. Its intention is to encourage better coordination of projects and funding among federal agencies to enhance outcomes. As a result, EPA selected Moore, Iacofano, Goltsman, Inc. to be the recipient of a \$25,000 contract to help Turkey Creek and the North Gulfport Community with their community planning activities. The project enables the communities to revisit their vision and priorities from the 2006 community planning process, consider new interests, determine which to pursue first, and to develop plans for those projects.

Accomplishments of the watershed team include: development and implementation of a community plan and watershed plan to address environmental, housing, transportation, and cultural issues; participation in a Brownfield Visioning Process for the revision of the Turkey Creek community plan in 2011, upgrading of the water quality criteria for Turkey Creek to make it more protective of human health; implementation of restoration projects; education and outreach activities; and greenway land acquisitions are ongoing.

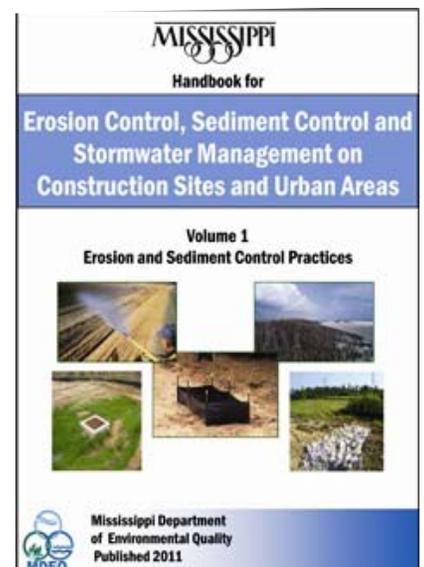
In August, 2011, The Turkey Creek and North Gulfport Community along with the watershed team presented Lisa Jackson; U.S. EPA Administrator, with a copy of the revised Community Plan at the Gulf Restoration Task Force Meeting, in Biloxi.

The Turkey Creek Watershed includes portions of Gulfport and Long Beach and contains wetlands that have been identified by EPA as Aquatic Resources of National Importance. The watershed team is led by local leaders of the historic Turkey Creek and North Gulfport Communities, environmental justice neighborhoods settled in the 1800's by emancipated slaves. The Turkey Creek Watershed Team has repeatedly demonstrated their effectiveness at building coalitions and achieving consensus with partners to the benefit of their natural resources. Partners of the watershed team include representatives from national and local nonprofit organizations, churches, schools, state and federal government agencies, members of the state legislature, county and city elected officials, academia, and environmental consulting firms.



### Updated Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas

Stormwater management at construction sites, in urban areas, and commercial developments often requires innovative application of art and science to help insure people are held safe, property is protected, and the environment is not adversely affected. To help with this management task, MDEQ collaboratively developed a document titled *Planning & Design Manual for the Control of Erosion, Sediment and Stormwater*. The first edition of the "Manual" was implemented in April 1994, and it has served as a guidance document for mitigating stormwater and sediment management issues since that time. However, EPA is expanding the promulgation of stormwater regulations throughout the country. As a result, more municipalities in the state are falling under the requirements for adequate stormwater planning and a greater range of construction and develop activities must be managed under the regulatory authority of MDEQ. There have been substantial advances in the state-of-the-art in runoff management and environmental protection related to erosion mitigation and stormwater pollution. As a result, MDEQ recently elected to initiate a process of review and improvement of the current Manual, with significant input from MDOT and USDA. The Updated Manual is available for public use, please find the link below. [http://deq.state.ms.us/MDEQ.nsf/page/NPS\\_Publications\\_Literature?OpenDocument](http://deq.state.ms.us/MDEQ.nsf/page/NPS_Publications_Literature?OpenDocument)



## enHance Recognition Program



In its third year, enHance currently has twenty-seven members, representing top environmental performers throughout the state. The objective of this program is to recognize those that go beyond compliance, and to promote pollution prevention efforts, provide networking and training resources for P2, and encourage the use of environmental management systems and continuous improvement. Members have implemented projects resulting in reductions of over 17,000 tons of solid

waste, 563 tons of air emissions, 725 million kBtu of energy use, and 60 million gallons of wastewater. 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 "E3- Energy, the Economy and the Environment." Presentations included energy efficiency best practices, a case study on "Lean and Green" implementation, and an overview of the national E3 program, which is a joint effort of EPA and the Departments of Energy, Commerce, and Labor.



Mayor Gene McGee, Ridgeland, Trudy Fisher, Mike McCollum, Director of Public Works Ridgeland



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

The Fossil Road Show was held at the Mississippi Museum of Natural Science. MDEQ staff who helped with this event were David Dockery and James Starnes of the Office of Geology and Robert Seyfarth of the Office of Pollution Control.



### Office of Geology Rocks the Show

Staff from the Office of Geology were present at the Mississippi Rock, Gem, Mineral, and Fossil Show in Jackson. They answered questions from the public and presented the multifaceted work of the Office of Geology.

## The Jackson Public Library Summer Reading Program

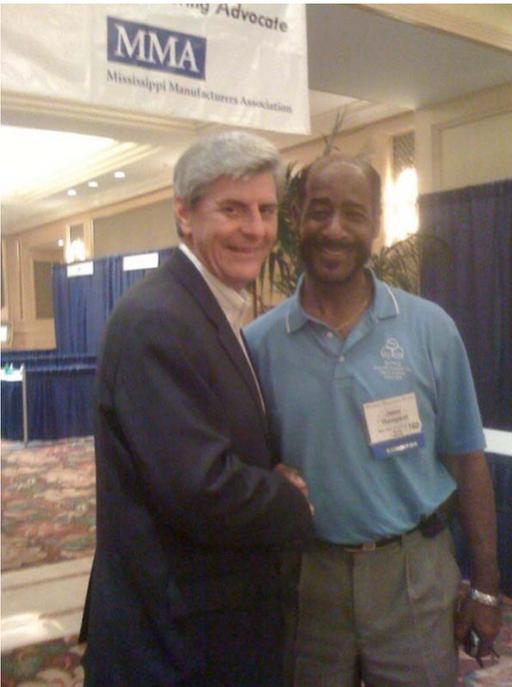
James Starnes, of the Office of Geology, gave a rock and fossil program to about a hundred children, mostly from the Boys and Girls Club of Jackson, at the Eudora Welty Library.

## Madison Middle School Physical Science Class

John Marble and James Starnes, from the Office of Geology, taught five periods of fifth-grade physical science classes on the subject: Geology and Everyday Life.



## Environmental Resource Center



The Mississippi Department of Environmental Quality is dedicated to providing statewide focused, collaborative, and coordinated environmental assistance, as a priority, to increase environmental awareness and compliance, and to protect the environment for all Mississippians. MDEQ's assistance vision and ethic incorporates and implements the theme "Environmental Assistance – A Priority." Assistance in the form of workshops, seminars, training sessions, and on-site technical assistance is provided through the Environmental Resource Center (ERC). MDEQ assistance activities are developed and implemented in an agency-wide perspective incorporating input from all MDEQ offices, divisions, programs, and across environmental media.

Lieutenant Governor Phil Bryant stopped by the Environmental Resource Center booth at the Mississippi Manufacturers conference held June 1 – 3 in Biloxi, Mississippi. The Lieutenant Governor has two appointments on the Small Business Compliance Advisory Panel at MDEQ which advises the ERC Staff on how to better serve the needs of Clean Air Act small businesses in the state. The Lieutenant Governor's two representatives on the panel are Ms. Bess Norville and Mr. Jimmy Rae.

Topics and issues: solid waste planning, solid waste enforcement officer training, surface mining laws and regulations, high hazard dam regulations, dam safety, solid and hazardous waste recycling, small business technical assistance, dry cleaner assistance, toxic release inventory training, storm water regulations, pollution prevention, paint spray operations, compliance assistance, coating operations, city and county seminars and conferences, wastewater compliance, basin management, watershed implementation, and water quality.

The ERC continues to provide one on one assistance activities to a variety of Small and Less than Large Businesses and serves as the central point for receiving citizen complaints.



## MDEQ RECOGNITION



L-R: Richard Harrell, Betty Norman of MDA, and Khairy Abu-Salah.

MDEQ was given a **State Energy Management Program award** from the Mississippi Development Authority for reducing energy consumption in its buildings.

"The Mississippi Department of Environmental Quality (MDEQ) has utilized the EPA Energy Star Program to achieve a 20% reduction in true energy usage from 2010 to 2011 at their two main office buildings located in downtown Jackson. MDEQ benchmarked usage and implemented best management practices including operational changes for climate control, lighting, and office equipment. An energy management team consisting of employees from the two buildings directed efforts and an employee awareness campaign was also conducted.

Through these efforts, MDEQ reduced the annual energy cost of these two buildings by over \$50,000 per year; this was achieved with no capital expenditure."

**Rezonate:** *The Ross Barnett Reservoir Initiative* received a \$2,500 Generation E Grant from Entergy in September. The funds will be used for educational outreach about the Reservoir.

MDEQ's Donetta McCullum (right), Pearl River Basin Coordinator and *Rezonate* Project Manager, accepted the check from Liz Brister (left), Entergy Mississippi's Manager of External Affairs.



Members of the **MDEQ Energy Committee** with the plaque from the Mississippi Development Authority recognizing the agency's efforts in reducing energy use.

**Denise Wilson** accepted an award from the Keep Mississippi Beautiful Organization at their awards banquet on April 28 at the Jackson Country Club on behalf of MDEQ's Solid Waste Assistance Grants Program. The SWAG Program was given First Place in the State Government category. The SWAG program has been active since it was adopted by the Mississippi Legislature in 1997.



**Mark Williams** (left) received an award from EPA on behalf of MDEQ for work on a measurements standardization project that has been hailed nationally as a step towards standardizing the way states measure waste disposal and recycling quantities.

**Earl Etheridge** (right) was presented an award for his actions during the Deepwater Horizon oil spill in 2010. The award was presented by then Lt. Governor Phil Bryant at the First Responders' conference in October.





**Larry Murphree** was awarded a Mississippi Water and Pollution Control Operators Association Lifetime Membership at the association's annual meeting in July. Murphree retired from the Mississippi Department of Environmental Quality in June where he worked for 30 years as an Environmental Training Instructor. Murphree worked closely with the Mississippi Water and Pollution Control Operators Association instructing at short courses over the years.



**Laura Beiser** receives the Envirothon Partnership Award from Sam Newsom, President of the Mississippi Association of Conservation Districts.



**Kyle Sykes, Kayra Johnson, Trudy Fisher, Barb Viskup, Brad Ratcliff, and Michael Slack** represented the agency when it was recognized by the Mississippi House of Representatives for its oil spill response efforts.

