

MISSISSIPPI

Department of Environmental Quality



2020 Annual Report



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STRATEGIC GOALS



Message from the Executive Director

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



Chris Wells
Executive Director
MDEQ

Building a Better Mississippi: The Statewide Strategic Plan for Performance and Budgetary Success contains goals applicable to MDEQ and its mission. This annual report seeks to correlate the following goals of the agency's strategic plan with the results of its work in Fiscal Year 2020.

Air Quality: Ensure that Mississippi air quality is protective of the health and welfare of its citizens.

Waste Management: Protect Mississippi's soil and water resources through proper nonhazardous solid waste and hazardous solid waste management.

Remediation: Protect human health and the environment through proper mitigation, remediation, reclamation, and restoration of natural resources.

Reclamation: Ensure lands impacted by mining activities are restored to reclamation standards that are protective of human health and the environment.

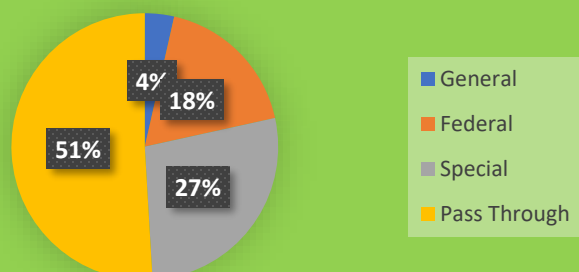
Water Quantity: Maintain sustainable quantities of surface and groundwater in Mississippi.

Water Quality: Protect and restore surface and groundwater quality in Mississippi.

Emergency Preparedness and Response: Prevent, prepare for, and respond to public health, safety, and environmental emergencies.

Environmental Outreach, Research and Education: Encourage and empower citizens, businesses, and communities to engage in behaviors to protect public health and preserve Mississippi's environment.

FY 20 APPROPRIATION



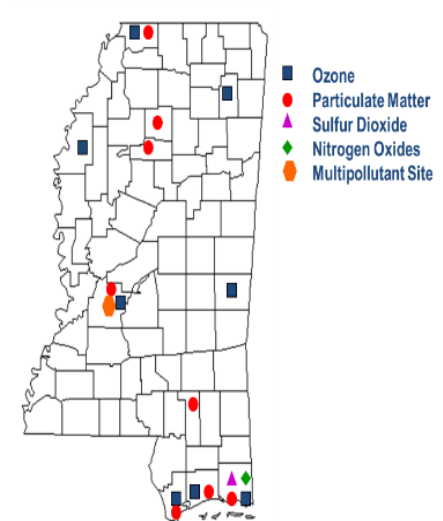
AIR QUALITY

Air Monitoring

MDEQ operates a network of automated continuous air analyzers and 24-hour manual samplers for measuring ambient air quality.

This monitoring network serves many purposes:

- Determines attainment and nonattainment areas for ground-level ozone, particulate matter, sulfur dioxide, nitrogen dioxide, and carbon monoxide
- Generates data to assist in determining methods to reduce visibility impairments
- Supports ozone reduction programs
- Determines general air quality trends



Air Quality Goal: Ensure that Mississippi air quality is protective of the health and welfare of its citizens.

Air Quality Objective: Maintain Compliance with Federal Air Quality Standards

Mississippi Ambient Air Quality Monitoring Sites

MDEQ issues daily air quality forecasts for both ozone and particle pollution for the Mississippi Gulf Coast and the Jackson Metropolitan Area from April through October each year. Additionally, MDEQ, in association with the Memphis-Shelby County Health Department, issues air quality forecasts for DeSoto County.

MDEQ makes these forecasts available through e-mail, the MDEQ website, and Twitter. MDEQ uses the forecasts to keep the public informed about the status of air quality, to issue health advisories, and to notify the members of ozone reduction programs to implement actions.

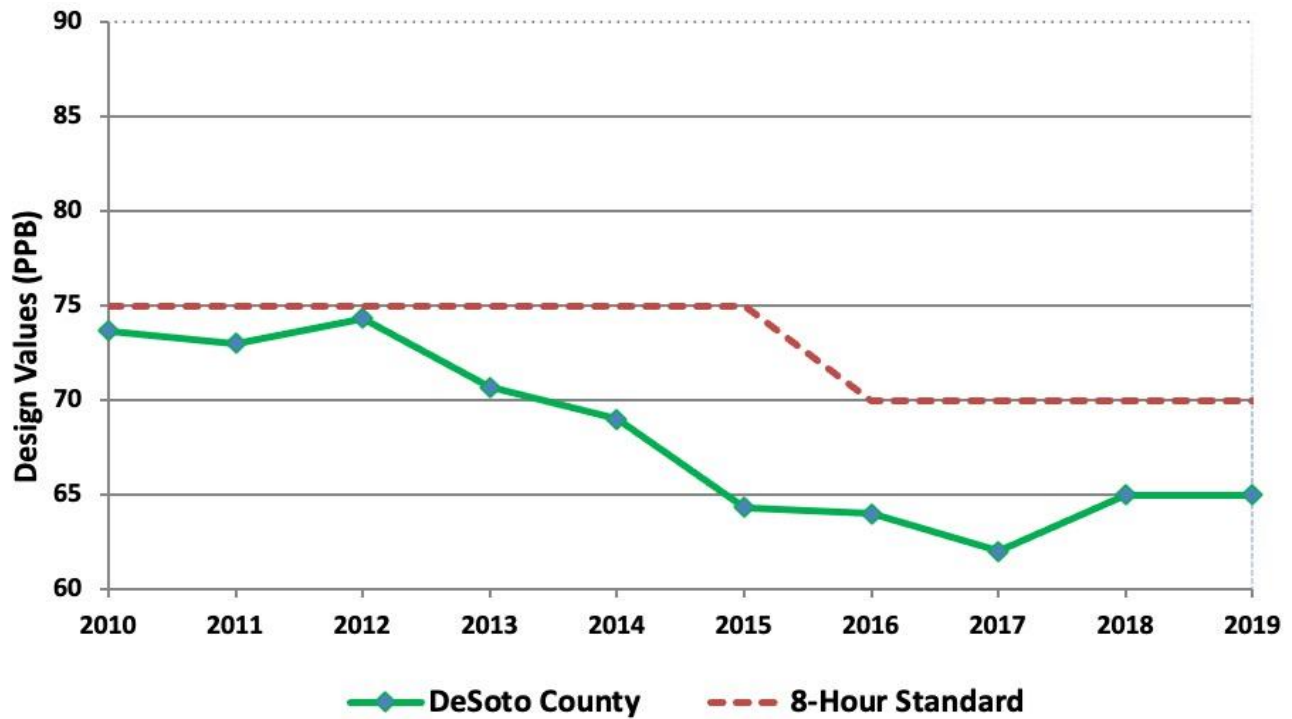
The U.S. Environmental Protection Agency (EPA) designated all Mississippi counties in attainment for the current one - hour nitrogen dioxide standard. EPA also chose to retain other, previously established nitrogen dioxide standards and the carbon monoxide standards, which Mississippi is currently meeting and has been designated as attainment by EPA.

Currently, EPA has both primary and secondary 24-hr and annual standards for fine particulate matter, or PM_{2.5}, and primary and secondary 24-hr standards for PM₁₀. Mississippi is in attainment with these standards and all other, previously established particulate matter standards and has been designated as such by EPA. On April 14, 2020, EPA proposed to retain all existing standards for particulate matter.

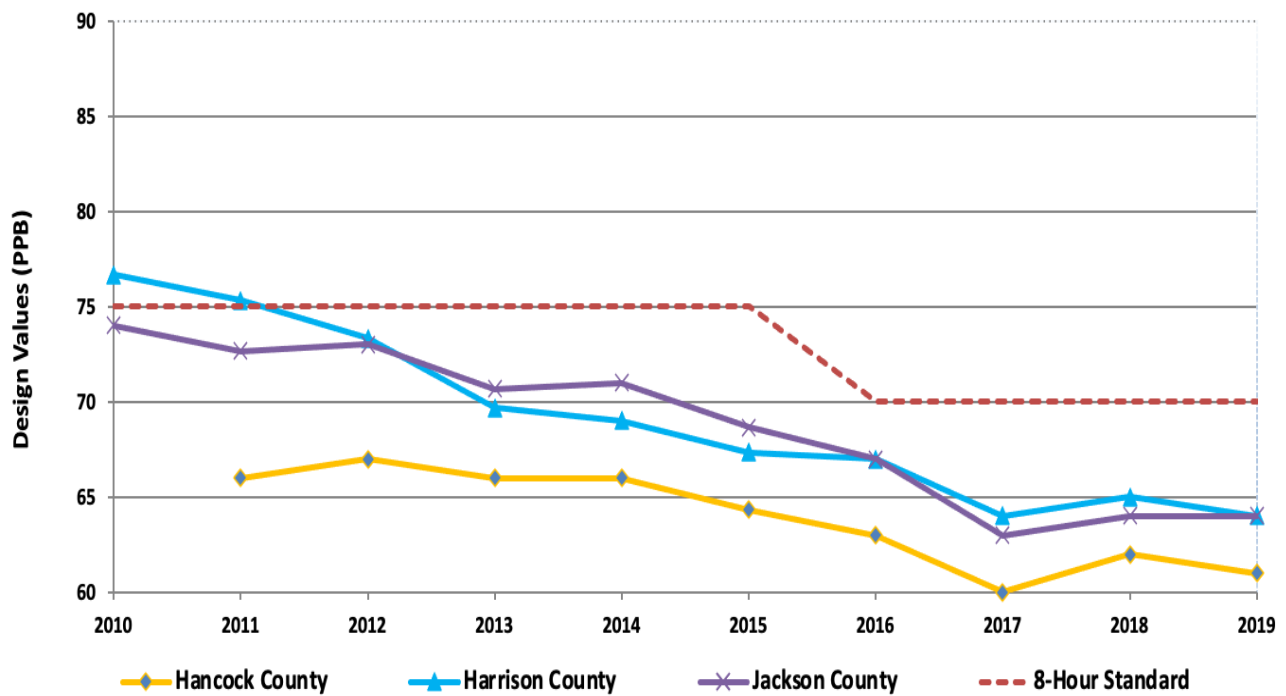
In 2015, EPA lowered the standard for ground level ozone to 70 parts per billion (ppb). Emissions reduction in Mississippi and surrounding states, as well as favorable meteorological conditions, resulted in downward trends in ozone concentrations allowing Mississippi to be designated as attaining the standard by EPA in 2017. On July 13, 2020, EPA proposed to retain the existing ozone. MDEQ participates in a voluntary ozone-precursor reduction program in partnership with local government and business leaders on the Mississippi Gulf Coast and in DeSoto County to prevent or mitigate future nonattainment of ozone standards.

In 2017, EPA completed designations for all counties in Mississippi as attainment/unclassifiable for the 2010 sulfur dioxide (SO₂) standard. MDEQ worked in cooperation with affected facilities to complete the assessments needed to achieve this designation.

DeSoto County Ozone Monitoring Results 2010-2019



Mississippi Gulf Coast Monitoring Results 2010-2019



Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health warnings of emergency conditions. The entire population is more likely to be affected.
Hazardous	301 to 500	Health alert: everyone may experience more serious health effects

Regional Haze Planning

Mississippi is working with nine other southeastern states and tribal associations known as the Visibility Improvement State and Tribal Associations of the Southeast (VISTAS) to address the EPA Regional Haze Rule. MDEQ staff participates with the VISTAS group to analyze air emissions impacts to visibility in Federal Class I areas in the southeast. Mississippi does not have any designated Federal Class 1 Visibility areas; however, the Breton National Wildlife Refuge (Chandeleur Islands) in Louisiana and the Sipsey Wilderness area in northern Alabama are close enough to Mississippi that air emissions from sources in Mississippi must be evaluated for visibility impacts. The Southeastern States Air Resource Managers (SESARM) manages the VISTAS effort using contractors to perform air quality modeling, with the states providing technical support, to measure visibility impacts.

States will use the results of this modeling to support the development of Regional Haze state implementation plans (SIPs). During the past several years the efforts have been on the technical work to identify the impacts of particular sources of emissions within the states. The technical work is near completion and over the next year Mississippi will be using this information to develop the Regional Haze SIP that is due July 31, 2021.

Title V Program

The Clean Air Act amendments of 1990 established the Title V Operating Permit program. The program requires each major source of air pollution 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. Sources subject to the program are required to pay an annual fee to cover the program costs. Mississippi received full approval from EPA in 1995 to administer the Title V Operating Permit program. The MDEQ Environmental Permits Division (EPD) handles all aspects of Title V permitting while the MDEQ Environmental Compliance and Enforcement Division (ECED) handles all compliance certifications and demonstrations. The MDEQ Air Division is responsible for managing the fee portion of the Title V program.

Mississippi law requires the establishment of the Title V Advisory Council (Council) to evaluate the costs of the program, to recommend an equitable fee system, and to conduct an annual program review. The MDEQ staff reports the results of the annual review to the Commission on Environmental Quality (Commission). MDEQ staff meets regularly with the Council to provide updates on Title V program activities. Annually, the Air Division staff develops a work plan for the upcoming year that includes all functional areas of the Title V program. During that time, staff compiles data on projected and actual program revenue, expenditures, and pollutant emission rates. Air Division staff provides this data, along with the work plan, to the Council for their use in recommending an adequate Title V permit fee. The Commission considers the recommendation and sets the Title V fee for the upcoming fee year. For Fiscal Year 2020, the rates were \$47 per ton of regulated air pollutants, which generated \$4.38 million for Mississippi's Title V program. The annual permit fees are due September 1 of each year.

During Fiscal Year 2020, there were 82 Title V permits issued, including initial issuances, renewals, and modifications. There were also 12 new Synthetic Minor Operating Permits issued to facilities that would have otherwise been required to obtain a Title V permit, except that the owner or operator elected to take federally enforceable permit restrictions to limit allowable emissions below Title V major source thresholds. There were 96 Title V inspections conducted.

Air Emission Inventory Branch

The MDEQ Air Division develops an inventory each year that quantifies the air emissions from larger sources. This work involves gathering the emissions data from the emissions sources and submitting it to EPA. The inventory quantifies emissions for over 200 air pollutants and includes emissions-related information such as control devices, exhaust stack parameters, and fuel type. Every third year, EPA requires a complete, much larger inventory. The complete inventory includes emissions from all major Title V sources on a detailed level, estimated emissions from smaller stationary sources, and emissions from mobile sources. The Emission Inventory Branch completed and submitted the 2018 emission inventory in January. In addition, data for 2019 has been requested and the inventory is being compiled to be submitted in January 2021.

Diesel Emission Reduction Project State Grants

MDEQ utilizes Diesel Emissions Reduction ACT (DERA) grant funds from EPA for the replacement of older school buses with newer, cleaner, and more efficient ones. The DERA-funded Mississippi School Bus Replacement program began in 2014 and has since helped replace 86 school buses in 35 school districts, with a total of \$1.31 million in rebates awarded. In 2019, after receiving applications from 21 school districts, MDEQ worked with

12 school districts to replace 20 school buses, with a total of \$296,992 in rebate allocations issued. In 2020, after receiving applications from 30 school districts, MDEQ issued contracts with 13 school districts to replace 13 school buses to issue a total of \$214,214 in rebate allocations. Despite limitations due to the impact of COVID-19, many of these replacement projects have been completed, and others are expected to be completed by the end of 2020. EPA has awarded DERA Grant funds to MDEQ for 2021 to continue the program.

Asbestos

Asbestos is a potential danger when disturbed during the course of a building demolition or renovation. State regulations require affected facilities to inspect for asbestos before work begins. The regulations also specify work practices and procedures to prevent asbestos fiber emissions during building demolition and renovation activities. MDEQ assists project owners and operators in understanding the requirements of the regulations and performs demolition and renovation project inspections to ensure safe and compliant operations. Additionally, MDEQ provides outreach to homeowners, supplying them with information on how to safely manage the possible asbestos hazards of non-regulated demolition or renovation activities.

EPA regulations require that schools inspect all buildings for asbestos-containing materials and monitor the condition of any asbestos-containing material not previously removed. Each Mississippi school district must address regulatory requirements and school activities in an asbestos management plan. MDEQ performs asbestos management plan inspections to ensure that the requirements are being satisfied and that the plan is protective of students, teachers, and school employees.

MDEQ also ensures, through its asbestos abatement activity certification program, that individuals who engage in asbestos abatement activities receive professional training and demonstrate they are competent to perform these services.

During Fiscal Year 2020, MDEQ inspected 214 demolition and renovation projects, investigated 21 complaints, certified 1,467 applicants to perform asbestos activities, and inspected six school districts with asbestos management plans.

Air Toxics

The term “air toxics” refers to air pollutants that EPA has listed as Hazardous Air Pollutants (HAP). These air pollutants may cause acute or chronic health conditions and are primarily controlled or reduced through regulations called Maximum Achievable Control Technology

(MACT) standards. Impacted facilities generally must install additional control equipment or change process equipment and materials in order to reduce HAP emissions. These standards and emission limitations utilize best-demonstrated technology and very high emission control efficiency to achieve reductions.

MACT standards affect 174 different source categories of major HAP emitting facilities and 70 source categories of smaller area HAP emitting facilities. The universe of affected facilities is quite large and varied making it difficult to monitor sources for regulatory compliance. The affected facilities range from large chemical and industrial facilities to small dry-cleaning facilities, gasoline stations, and even small auto painting shops.

MDEQ's air toxic activities include the implementation of accidental release prevention regulations that apply to facilities with chemicals that pose a danger to the public and the environment in the event of a chemical accident or an uncontrolled release. Facilities that have or use these chemicals in amounts above the minimum levels must employ appropriate process safety measures or controls and must be prepared to mitigate the consequences should a release occur. A regulated facility outlines its planning, techniques, and procedures to prevent chemical accidents in a Risk Management Plan (RMP). MDEQ monitors the ever-changing universe of regulated sources and evaluates the RMP as part of compliance inspections. During Fiscal Year 2020, there were 149 active regulated facilities and staff completed 34 compliance inspections.



Greenhouse Gases

On December 7, 2009, the EPA Administrator signed the Endangerment Finding for greenhouse gases from mobile sources. EPA used this finding as the basis to expand its regulatory efforts to regulate large stationary sources of greenhouse gas emissions. Initial regulatory efforts of greenhouse gases included regulations for the power sector, oil and natural gas industries, and landfills. The most significant of these regulations to date was the release of the Clean Power Plan in August of 2015. However, in March of 2017, President Donald Trump issued Executive Order 13783 requiring EPA to review the Clean Power Plan and other rules associated with greenhouse gases. The review was to ensure that the rules do not unduly burden the development of the nation's energy resources beyond what is necessary. Based on this review, on July 8, 2019, EPA repealed the Clean Power Plan and replaced it with the Affordable Clean Energy (ACE) Rule. In Fiscal Year 2020, MDEQ began working with regulated facilities to gather necessary information to begin developing regulations and a state plan to address all affected sources, as required by the ACE Rule. EPA continues to review and revise other rules associated with greenhouse gases in accordance with Executive Order 13783. MDEQ will continue to monitor these efforts and participate in the regulatory process where necessary to support reasonable and effective regulation.

Lead-Based Paint Program

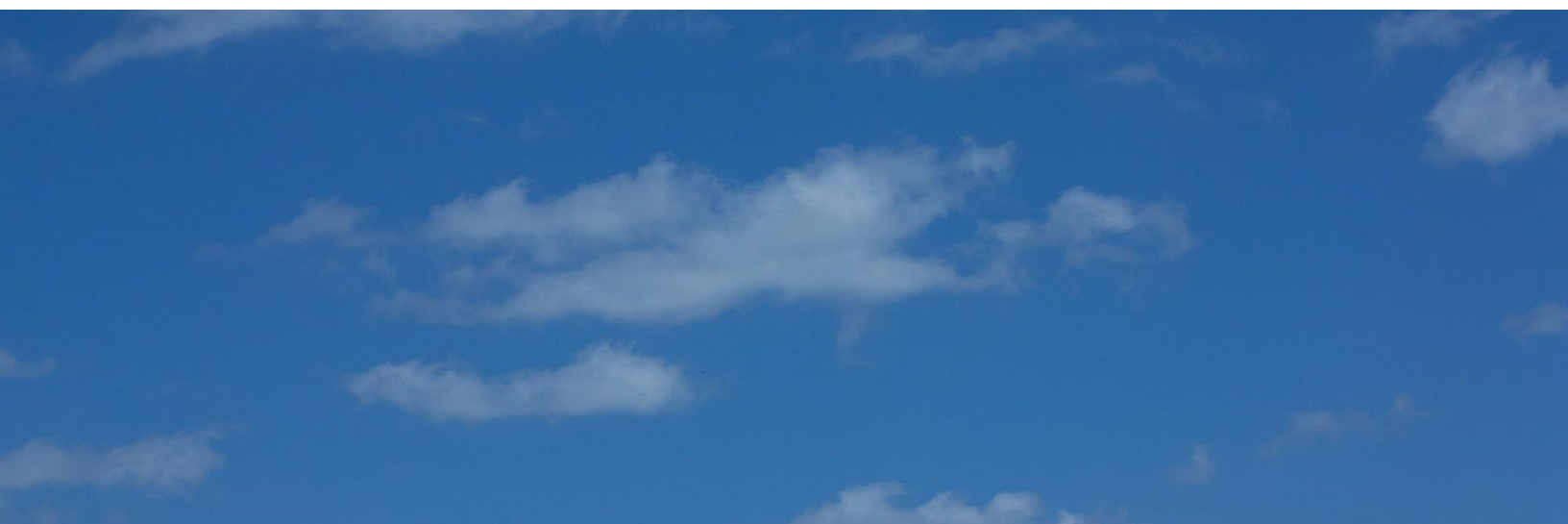
Mississippi's Lead-based Paint Program is an EPA-approved and delegated state certification program that determines the requirements for the certification of persons and firms engaged in lead-based paint activities. It also establishes work practice standards for performing such activities and the procedures and requirements for the accreditation of lead-based paint training programs. The regulations are applicable to all persons engaged in lead-based paint abatement and renovation activities in targeted housing and child-occupied facilities.

In addition to certifying individuals and firms engaged in lead-based paint activities, MDEQ performs audits of training courses, inspections of job sites, desktop reviews of lead abatement reports, and file reviews of companies involved in renovation activities to ensure compliance with the regulations. During Fiscal Year 2020, MDEQ performed seven training course audits, nine desktop reviews of lead abatement reports, 31 paperwork review inspections, 64 site inspections (including investigations at five complaint sites), and certified 631 individuals and firms involved in lead-based paint activities.

Volkswagen Settlement

In 2017, then-Governor Phil Bryant designated MDEQ to administer the state's portion of the funds resulting from the Volkswagen (VW) Diesel Settlement. The state allocation was \$9.87 million out of the \$2.7 billion Environmental Mitigation Trust. The state's allocation was based on the number of offending vehicles registered in the state. VW established the Mitigation Trust Fund (Fund) to settle claims under the Clean Air Act that it sold vehicles with "defeat devices" designed to cheat emissions tests for its diesel vehicles.

Mississippi will use the funds to support mitigation projects to replace older diesel emission sources with cleaner technology to reduce excess nitrogen oxide (NOx) emissions and improve air quality. MDEQ will award funds in accordance with the trust agreement and the state's Beneficiary Mitigation Plan (BMP), which was approved by the Fund's Trustee in Fiscal Year 2020. MDEQ will continue the project development process in Fiscal Year 2021.



WASTE MANAGEMENT

MDEQ is responsible for ensuring that solid waste generated in the state is managed in a manner that is protective of the environment and human health. Solid wastes include all types of garbage, refuse, debris, sludge, or other discarded materials from residential, commercial, industrial and institutional sources. The Mississippi Legislature has declared it to be the policy of the state that the generation of waste should be reduced or eliminated at the source, whenever feasible; waste that is generated should be recycled or reused, whenever feasible; waste that cannot be reduced or recycled should be treated in an environmentally safe manner; and, disposal or other permitted release into the environment should be employed only as a last resort in an environmentally safe manner. MDEQ has been designated as the lead agency in implementing this policy to reduce wastes, to reuse and recycle wastes and to safely dispose of wastes. To do so, MDEQ regulates the management of solid wastes from residences, businesses, industries, and institutions at storage sites, transfer stations, composting operations, recycling facilities, processing facilities, rubbish sites, landfills, and other types of solid waste facilities.

An important part of MDEQ's solid waste regulatory efforts involves regulation of those solid wastes that are considered hazardous. MDEQ has delegation from EPA to oversee and implement most of the federal Hazardous Waste Management program in Mississippi for discarded materials that have characteristics that make the waste potentially more dangerous or harmful to human health or the environment if managed improperly. MDEQ also has delegation from EPA to regulate certain waste disposal activities that are conducted through underground injection control wells. While the following information is intended to report on Fiscal Year 2020, some of the information is collected and summarized on a calendar year basis.

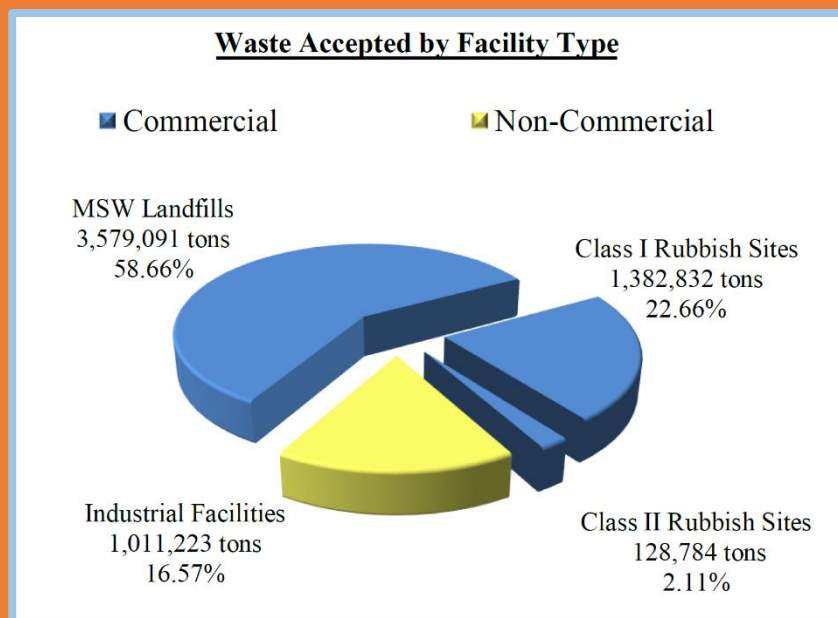


Waste Management Strategic Goal: Protect Mississippi's soil and water resources through proper nonhazardous solid waste and hazardous solid waste management.

Mississippi Solid Waste Management and Disposal

MDEQ's Nonhazardous Solid Waste programs ensure the proper management of solid wastes, to promote the reduction and recycling of solid wastes, and to plan for the future solid waste management needs. To measure the success of the state's waste management efforts, MDEQ collects reports annually from the owners or operators of permitted solid waste management facilities on activities conducted during the preceding calendar year.

In early 2020, MDEQ collected annual reports from facility owners for the solid waste management activities conducted during Calendar Year 2019. These reports indicate that just over 6.1 million tons of wastes were disposed at permitted landfills and rubbish sites in 2019. Approximately 5.09 million tons were disposed at commercial facilities with nearly 3.6 million tons (59 percent) disposed at commercial landfills and approximately 1.5 million tons (25 percent) at commercial rubbish sites. Just over one million tons (or 16 percent) of the total wastes were disposed at non-commercial disposal facilities. Solid waste disposal facilities received just over 975,000 tons of waste from out-of-state sources representing approximately 16 percent of the total.



In addition, a total of approximately 12,000 dry tons of wastes were applied at permitted land application sites, and about 30,000 tons of material were received at solid waste composting facilities. The annual reports also indicated that approximately 113,000 tons of material was received for management at solid waste processing facilities and approximately 958,000 tons of wastes was managed by solid waste transfer stations.

In 2020, MDEQ continued to utilize the Re-TRAC Connect Software platform developed by Emerge Knowledge Design, Inc. to collect solid waste annual reporting information. While electronic reporting was optional for Calendar Year 2018, MDEQ mandated that all solid waste annual reports would be submitted electronically through the Re-TRAC system beginning with Calendar Year 2019 solid waste management activities.

Recycling and Waste Reduction

Mississippi's recycling programs and the recycling industry have experienced multiple challenges this past year due to the global COVID-19 pandemic and the continued unpredictability of international market conditions. Local governments in Mississippi and across the nation have made difficult decisions to cut or reduce services such as recycling. The impact on the recycling industry is evident as well in material recovery facilities (MRFs) in Mississippi and neighboring states. Due to the declining market value of some recyclables, as well as reduced manufacturing activity in some sectors, MRF facilities have experienced difficulty marketing materials. These difficulties have contributed to increases in sorting costs, and for some facilities, the decision to cease sorting residential recyclables. MDEQ has continued to work to promote and grow recycling in the anticipation that the economy will improve.

MDEQ continued the Statewide Recycling Reporting and Measurement Program implemented in early 2019. Mississippi state law sets a waste reduction goal of 25 percent for the state, and mandates that local governments develop and implement a waste reduction strategy as a part of local solid waste plans. Historically, Mississippi has had no formal means of measuring recycling rates; however, with this measurement program, MDEQ is beginning to collect solid waste and recycling data from local governments. As participation in the program grows, this data will be used to measure the state's progress toward reaching the 25 percent waste reduction goal. In addition, these local governments will have information and tools to determine the success of their recycling programs and to build more sustainable and efficient solid waste and recycling services for their citizens.

These recycling data collection efforts continue to be conducted on a voluntary basis with future plans to transition towards more formal reporting of recycling program information. To gather the data needed in an easy and convenient manner for all parties, MDEQ has

partnered with Emerge Knowledge Design, Inc. (Emerge) and The Recycling Partnership to employ the recently developed electronic reporting system, the Municipal Measurement Program (MMP). The MMP is provided through Emerge's Re-TRAC Connect Software platform. The MMP was launched in early 2019 for reporting 2018 Calendar Year data which provided a convenient fit for Mississippi's reporting needs. This year, MDEQ again reached out to those cities and counties which are known to have active recycling programs and about a third of those communities entered 2019 Calendar Year data. MDEQ is in the process of reviewing and verifying the information that has been reported. The information may also be used in evaluating how state recycling grant funds may be distributed for cooperative projects by local governments to collect, transport, process, and market recyclable materials.

Given the global pandemic and challenging market conditions, the state has experienced the loss and scaling back of several local recycling programs as well as the closure of recycling businesses. These reductions in recycling services has contributed to a reduction in the percentage of the population that has access to community recycling programs. The most recent rate has been approximated at around 55 percent of the state's population having access to community recycling programs. Of this 55 percent, approximately half of the residents with recycling access are provided curbside recycling services with the remaining half having access to drop-off recycling services. However, the 40 percent or more of the state's population that does not have access to community-based programs may have some alternate access to recycling through commercial recycling businesses, non-profit recycling programs, or other organizations.

In order to sustain and improve recycling conditions, MDEQ has continued to promote local government recycling programs and encourage cooperative efforts among local governments to collect, process, and market recyclables. During Fiscal Year 2020, the Waste Division has continued to develop a Funding Opportunity Announcement (FOA) for a second round of grant funding under the Regional Recycling Cooperative Grants (RRCG) program. Grant funding in excess of one million was previously awarded in 2014 to local, cooperative recycling efforts led by the Cities of Oxford, McComb, Greenwood, and Natchez. These MDEQ recycling grants helped to develop new and upgrade existing local recycling programs.

MDEQ has continued to encourage public participation in local recycling programs by expanding information available to the public on how, where, and what they can recycle in their community. The Recycling and Waste Reduction Program staff maintains the State Recycling Directory on the MDEQ website, identifies those local governments, businesses, institutions and other organizations that provide recycling services to the public for paper, plastics, metals and glass. The staff updates the directory information for these materials

and other special wastes that may not be collected through traditional recycling programs.

Staff has developed an updated listing of materials recovery facilities (MRFs) in both Mississippi and neighboring states. To provide local governments with information to help determine the best available local and regional options for managing recyclables, MDEQ is developing a new recycling transfer station guidance document. To provide on the development and use of transfer station facilities for managing and improving the collection and transport of recyclables to receiving MRFs and end-users.

MDEQ has also continued to update and expand the agency's Office Recycling Program to make recycling more convenient for agency employees to ensure both increased quantity and quality of recyclables. Recycling guides and signage have been developed for MDEQ facilities providing clear instructions on the materials accepted and not accepted for recycling and on the proper handling and placement of these materials. Recycling staff have also spoken at various employee meetings to answer questions on recycling. In addition, MDEQ recycling staff also work with numerous other state agencies to start, revive, and enhance agency recycling programs and will continue to assist state agencies and institutions to fulfill the statutory responsibility that each agency has to implement a recycling program.

MDEQ's Waste Division worked with various partners to provide education and outreach on the importance of sustaining and growing recycling in Mississippi and also provides training and technical resources to recycling professionals. One of the key partners is the Mississippi Recycling Coalition (MRC), a non-profit consortium of local governments, state agencies, industries, institutions, businesses, trade organizations and non-profit groups working together to promote and grow recycling. MDEQ staff provide assistance to MRC promoting and managing membership, hosting board meetings, managing the organization's website, developing and assisting with conferences, press releases, and programs involving student scholarships and school grants and awards. Other partners include Keep Mississippi Beautiful and its local affiliates, the Mississippi Beverage Association, the Mississippi Municipal League, the Southeast Recycling Development Council, the Mississippi Manufacturers Association and various other local, state, regional and national organizations.

Solid Waste and Waste Tire Grants Programs

The Waste Division manages various solid waste and waste tire assistance grant program funds. MDEQ awarded over \$4.28 million in Fiscal Year 2020 for solid waste management and recycling projects, solid waste planning projects, and waste tire projects. Of that total, almost \$2.93 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 local solid waste enforcement officers, provide household hazardous collection programs, conduct public information efforts on solid waste and recycling programs, and to conduct various other local waste management activities. These grant funds are annually awarded by MDEQ through two different categories of grants: the non-competitive (or allocated) grants to county governments and the competitive grants available to municipalities, counties, solid waste authorities, solid waste districts, and other local government organizations. These grant awards included supplemental solid waste enforcement officer grant funds awarded to communities that have maintained successful illegal dumping prevention and enforcement programs. MDEQ also provides grants to local governments to provide local waste tire collection programs to small quantity waste tire generators in the state and for local waste tire cleanup efforts and provides grants to local governments to develop long range solid waste plans to assist local communities in meeting the obligations and goals for managing solid wastes in the state.

Grant Awards for Fiscal Year 2020

- 61 counties were awarded as total of \$1.15 million through the non-competitive (or allocated) solid waste assistance grants (SWAG) program.
- 40 additional local governments, including municipalities, counties, and solid waste authorities, were awarded a total of \$1.77 million in competitive SWAG grant funds.
- 22 local governments were awarded \$1.29 million in waste tire assistance grant funds to assist with local waste tire collection and clean-up programs.
- Two county governments were awarded a total of \$58,550 to fund efforts to develop updated, local comprehensive solid waste management plans.

Solid Waste Planning

The MDEQ Solid Waste Program works with local governments to develop and implement long-range local solid waste management plans. Each local government is required by state law to develop and implement these comprehensive local, solid waste management plans for a 20-year period. The original local government solid waste plans in Mississippi were adopted in the early 1990s; consequently, many of these plans have reached the end-of-life and have been or are in the process of being updated.

During Fiscal Year 2020, the Commission on Environmental Quality granted approval of the comprehensive update to the Tallahatchie County solid waste management plan. In addition, MDEQ received draft updated comprehensive solid waste plans for the counties of Coahoma and Grenada and continued to review draft plans for the Golden Triangle Solid Waste Authority and the Northeast Mississippi Regional Solid Waste Management Authority as well as the counties of Holmes, Lauderdale, Leflore, Tunica, and Warren with several plans expected to be finalized and granted Commission approval in Fiscal Year 2021. In addition, efforts to comprehensively update solid waste plans were initiated or continued in Fiscal Year 2020 for Neshoba County with several other local governments preparing to initiate their comprehensive plan updates in Fiscal Year 2021.

Often local governments also made decisions in Fiscal Year 2020 to significantly alter or amend their plans to add new facilities or to alter the direction of programs and services. MDEQ reviewed the amendments to these existing local plans to assure adequate disposal services and capacity and consistency with state law. Communities that completed modifications in Fiscal Year 2020 include Neshoba County (expansion of Weyerhaeuser industrial landfill); the Solid Waste Management Authority of Marshall County (approval for Quad County Landfill to accept residential solid waste and expansion of Quad County Class I rubbish site); Lamar County (inclusion of new Circle D waste tire disposal and processing facility); Panola County (inclusion of new GreenServ Sterilization, LLC medical waste processing facility); Rankin County (expansion of Mt. Helm Road Class I Rubbish Site); Northeast Mississippi Regional Solid Waste Management Authority (expansion of Northeast Mississippi Regional Landfill); and, Pearl River County (expansion of service area for Central Landfill). Additionally, MDEQ is continuing review of requests for plan amendments for Hinds County and the Pine Belt Regional Solid Waste Management Authority.

Waste Tire Management Program

The Waste Tire Management Program develops, implements, and promotes the state's strategy to recycle waste tires. The program's success is reflected in the most recent annual program information collected at the end of 2019 indicating an overall waste tire recycling rate of over 95 percent for all tires collected for processing. The recycling rate for waste

tires generated in the state was over 89 percent. It is anticipated that the state's waste tire recycling and reuse rates for waste tires will continue to exceed the current national average of approximately 81 percent. Overall, waste tire processors managed nearly five million waste tire equivalents with approximately 53 percent of the tires being imported from out-of-state sources.

The Waste Tire Program also processes various applications for waste tire management permits and authorizations for the collection, transportation, storage, processing, recycling, and disposal of waste tires. The state's network of waste tire transporters and waste tire management facilities consists of 103 licensed waste tire haulers, 145 local government waste tire collection sites, and nine commercial waste tire processing and collection facilities. Collectively, approximately 6.5 million passenger tires were managed through the state waste tire management program during Fiscal Year 2020.

MDEQ also manages the State's Waste Tire Abatement Program which provides assistance for the clean-up of unauthorized tire dumps and investigates complaints on the mismanagement of waste tires. Since the program was started, MDEQ has removed approximately 2.5 million waste tires from historic and random dumpsites. MDEQ maintains abatement contracts with qualified firms that can assist in removal of the unauthorized tire dumps. MDEQ is in the process of reviewing information regarding several known tire dumpsites containing thousands of tires that may be eligible for abatement under the program.



Electronic Waste Management

Electronic waste (or e-waste) continues to be one of the fastest growing waste streams nationally, often presenting management and disposal problems for residents and businesses. MDEQ assists communities, businesses, and private citizens with the proper methods for recycling and disposing of e-waste through the promotion of resources such as a directory of electronic recycling companies and other options for managing and recycling discarded electronics.

MDEQ also provides information and resources to support the implementation of the provisions of the state's Certified Electronics Recyclers Law which requires all state agencies to use a certified electronics recycler for the end of life management of electronic assets. MDEQ maintains a listing of certified electronics recyclers for the reference and use by state agencies on the MDEQ website.

State law also requires that MDEQ promote the certification of electronics recyclers. In particular, MDEQ has continued to promote certification programs managed by two national organizations, Sustainable Electronics Recycling International (SERI – formerly R2 Solutions) and the Basel Action Network. These two organizations provide certification of recycling businesses that collect and recycle used electronic products in a safe and responsible manner. MDEQ encourages the state's communities, businesses and local and state government agencies to consider the benefits of using an electronics recycling company certified under one of these programs. MDEQ also encourages any recycling business that collects and manages electronics to consider obtaining certification of its processes for managing and recycling the electronic products. At least four businesses in the state, Magnolia Data Solutions of Jackson, Advanced Micro, LLC of Olive Branch, NexTech Operations, LLC of Pearl, and Logista Solutions of Columbus, are all certified to the R2-standard.

MDEQ also assists with or sponsors various community e-waste collection and recycling events and programs for residents and small businesses. MDEQ provides grants to communities to sponsor e-waste collection events or programs for the public, often as part of larger household hazardous waste collection events.

Another e-waste project that MDEQ continued to support in Fiscal Year 2020 is the computer refurbishment program conducted at Jackson State University (through a partnership agreement with Hinds County). MDEQ provides grant support to assist the program in collection and restoration of used computers. The program collects used computers from area businesses and residents and repairs them to be donated to low-

income families, churches, summer programs, nonprofit organizations, or day care centers. In addition, the program provides technical training to young adults on computer repair and restoration that provides them with additional marketable technical skills.

Medical Waste Management

Commercial Medical Waste Management

MDEQ shares regulatory authority with the Mississippi State Department of Health (MSDH) for medical waste management. The MSDH sets minimum standards for management of medical wastes for licensed health care facilities, MDEQ's responsibility includes the oversight of medical wastes collected and transported from health care facilities and veterinary care facilities, emergency and trauma response, by business and institutional clinics, and medical wastes generated in private residences through home healthcare. In addition, MDEQ oversees commercial medical waste management facilities. Two existing commercial autoclave facilities are actively operating for the treatment of infectious medical wastes. Three additional commercial autoclave facilities have been permitted but are not at present operating.

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

Household Medical Sharps

MDEQ oversees a statewide sharps collection program and an associated educational program for the safe disposal of medical syringes, needles, lancets and other devices. MDEQ operates a collection network for these household medical sharps that includes community drop-off locations at pharmacies, fire stations, and other business locations. MDEQ started the fiscal year with 337 drop-off locations and closed the year with 334 drop-off locations and approximately 10,524 pounds of household medical sharps were collected. Mississippi continues to lead the nation in the number of household sharps drop-off locations per capita.

MDEQ conducts public outreach efforts through speaking engagements, local health fair participation, and educational materials to medical offices, and other medical professionals.

Pharmaceutical Wastes

MDEQ encourages the proper management of pharmaceutical wastes and discourages flushing or washing of household medications and other similar products down a toilet or sink. In addition, MDEQ promotes the Mississippi Department of Public Safety's medication collection program which provides drop-off collection sites for prescription drugs and expired pharmaceutical wastes at the agency's Driver's License offices. MDEQ has developed a brochure promoting the program, and the drop-off locations are available on the MDEQ website and distributed at health fairs and public events. Many local law enforcement offices have also developed ongoing medication collection programs.



Organic Wastes

MDEQ promotes the reduction and recycling of organic wastes that originate from plants or animals and are biodegradable such as grass clippings, leaves, limbs and woody debris, food wastes, biosolids and other organic sludges, animal manure, and certain commercial and industrial woody or plant-based wastes. The reuse or recycling of organic wastes involves processes such as composting, mulching, anaerobic digestion, and land application of the wastes for soil amendment purposes.

Composting and Mulching

MDEQ's Waste Division has continued to promote composting and mulching of organic waste by continuing the agency's streamlined approval process for start-up composting and mulching sites. Guidance for this process is available on the MDEQ website for those interested starting businesses that create compost and mulch products from organic wastes. In Calendar Year 2020, reports from composting and mulching facilities indicated that 30,211 tons of wastes were collected and processed as compost or mulch. MDEQ has continued to work towards streamlining and simplifying the state's composting and processing facility regulations and permitting process.



Biosolids Land Application

The Waste Division continues to utilize the statewide Biosolids Land Application General Permit to issue permit coverage for various biosolids projects. The general permit offers a streamlined permitting mechanism for eligible biosolids use projects. The general permit process provides for a more efficient permitting process while at the same time maintain appropriate environmental safeguards on the use of these materials. In calendar year 2019, 11,515 tons of biosolids were land applied as an agricultural soil amendment. In addition, MDEQ's Beneficial Use program allows for the soil amendment use of Exceptional Quality (EQ) biosolids. A number of Beneficial Use Determinations (BUDs) have been approved in the past, and MDEQ received and approved one additional BUD request in Fiscal Year 2020 for use of EQ biosolids.

Landfill Methane Outreach Program

MDEQ has a partnership with EPA through the Landfill Methane Outreach Program (LMOP) to promote the use of landfill gas as an alternative energy source. Landfill gas is a byproduct of the decay of municipal solid wastes in landfills and contains methane--a potent greenhouse gas that can be captured and used to fuel power plants, manufacturing facilities, vehicles, homes, and more. Mississippi currently has six active landfill gas-to-energy projects, including direct industrial use, at Waste Management's Pecan Grove

Landfill (Pass Christian); the landfill gas-to-electricity projects at the Golden Triangle Regional Landfill (West Point), Three Rivers Regional Landfill (Pontotoc), Waste Management's Prairie Bluff Landfill (Houston); the renewable natural gas project operated by Air Liquide Advanced Technologies US using landfill gas from the Northeast Mississippi Regional Landfill (Walnut); and, the landfill gas-powered leachate evaporator also at Prairie Bluff Landfill.

The agency continues to update and maintain an inventory listing of LMOP candidate landfills as well as information on operational projects on the agency's website. MDEQ's goal is to continue to work to connect landfill operators with landfill gas to energy project developers and end users.

Byproduct Beneficial Use Program

The MDEQ Waste Division promotes the beneficial use of nonhazardous byproduct materials that would otherwise be disposed of in landfills or managed under a solid waste management permit. The state's beneficial use regulations allow for industries and other waste generators to request that their non-hazardous industrial byproduct materials be evaluated for use in the place of products or raw materials. If MDEQ's evaluation of a beneficial use request confirms that the material has suitable physical and chemical properties for the proposed use, then the agency issues a Beneficial Use Determination (BUD) that exempts the specific use of the material from solid waste management permitting requirements. One of the conditions of a BUD is that the responsible person must annually report on the uses conducted during the state for the calendar year.

Annual report figures provided to MDEQ indicated that BUD holders distributed 843,539 tons of byproduct materials for beneficial uses in calendar year 2019. Over 90 percent of the byproducts distributed were used for construction purposes while approximately 7.7 percent of materials were used in soil amendment applications and a small fraction used in other types of beneficial uses.

MDEQ works with generators and suppliers of these byproducts throughout the region who provide byproduct materials for uses in construction, agricultural soil amendment and other applications. The agency also works with industries and waste generators to authorize beneficial use "demonstration projects" that allow an industry or company to conduct a short-term pilot project using the material to demonstrate the suitability of the material for longer term use. During Fiscal Year 2020, MDEQ approved four new BUDs for new byproduct materials with proposed uses including soil amendments, mining reclamation materials, and construction materials as well as a one single-event BUD for soil amendment.

MDEQ is currently in the process of evaluating additional requests for beneficial uses including proposals for the use of egg hatchery waste, spent foundry sand, coal combustion ash, and spent sand-blasting media. The agency is evaluating whether the proposed uses of these materials meet the state's minimum criteria for a beneficial use determination.

Solid Waste Training and Certification Programs

MDEQ partners with the state and national chapters of the Solid Waste Association of North America (SWANA) to provide training and certification to commercial solid waste landfill operators. MDEQ works with the state SWANA chapter to sponsor training opportunities at the organization's annual spring and fall conferences that help certified landfill operators to meet the continuing education requirements of the MDEQ certification program. MDEQ issued certificates for eight new landfill operators and seven renewals for existing landfill operators this past year. At the end of Fiscal Year 2020, there were 32 active landfill operator certifications.

MDEQ also offers a state-developed certification program for commercial Class I rubbish site operators. A training course and examination is offered approximately every eight months. MDEQ conducted one rubbish operator training class in state Fiscal Year 2020 in the Jackson area during February 2020. MDEQ also issued certificates for 17 new rubbish operators and 46 renewals for existing rubbish operators this past fiscal year. At the end of state Fiscal Year 2020, there were 138 active Class I rubbish site operator certifications. MDEQ also works with the state SWANA chapter to provide continuing education opportunities for rubbish operators during the chapter's biannual conferences. The training needs and issues are often similar or related for landfill and rubbish site operators; therefore, training opportunities can often be consolidated for both groups.

MDEQ also offers periodic training events for local solid waste enforcement officers. Many local solid waste enforcement officers' salaries are partially funded through the Solid Waste Assistance Grant Program. Therefore, MDEQ provides information and training to these local officers so that they have the knowledge needed to properly address solid waste issues in their local area. Training topics at the classes include state solid waste laws and regulations, open burning laws, disaster debris management, public outreach and education, conducting cleanup events, and electronics waste recycling.

Mississippi Corrective Action Trust Fund

The Waste Division administers the Mississippi Nonhazardous Solid Waste Corrective Action Trust Fund (CATF) to evaluate or address problems at historic landfills. The CATF provides an opportunity for financial assistance to the landfill site owners to conduct preventative or corrective actions at municipal solid waste landfills that closed prior to the effective date of the Federal Subtitle D Regulations (circa 1993). A landfill owner can request assistance from the fund for actions related to either a known release or to evaluate or assess a potential release of contaminants from the landfill. The uses of the funds would include monitoring or abating problem conditions such as onsite or offsite impacts from potential groundwater contamination or landfill gas migration or remediating other forms of contamination at an eligible landfill site.

In Fiscal Year 2020, MDEQ awarded nearly \$400,000 to the City of Laurel to assist with work involved in relocating wastes and correcting landfill cover conditions on a closed landfill at the city's Sportsplex property. The corrective actions that the CATF will help to fund will facilitate placing the old landfill property back into use as a community sports facility.

Hazardous Waste Management Program



MDEQ's Hazardous Waste Management Program ensures that hazardous wastes are managed, treated and disposed of in a manner which protects communities and the environment. MDEQ is authorized by EPA to manage and implement the Hazardous Waste Program, and EPA exercises oversight of the state's program to ensure it is implemented in accordance with federal regulations--the 2020 Resource Conservation and Recovery Act (RCRA) Grant Work Plan and the 2015 Memorandum of Agreement for the RCRA Hazardous Waste

Management Program. Hazardous waste program elements of permitting, compliance and enforcement and regulation adoption are consolidated in the Hazardous Waste Management Program which resides in the Waste Division.

Currently, there are five permitted operating facilities in the state which treat or store hazardous wastes. There are also 17 permitted facilities conducting remediation and post-closure activities for historic hazardous waste units. MDEQ also provides compliance oversight, as well as outreach, for hazardous waste generators. Currently, approximately 138 large quantity generators and 310 small quantity generators are operating in

Mississippi. During the 2020 federal Fiscal Year, the department conducted 67 inspections of hazardous waste management facilities.

As a part of the oversight of permitting and compliance and enforcement for hazardous waste activities, MDEQ is required to maintain authorization status with EPA. In April 2019, EPA approved MDEQ's authorization of all adopted hazardous waste regulations.

Underground Injection Control Program

MDEQ's Waste Division also administers the agency's underground injection control (UIC) program. Overseeing certain nonhazardous and hazardous aqueous industrial wastes are disposed by deep well injection practices. MDEQ is the designated regulatory authority by EPA in Mississippi for the protection of underground sources of drinking water through the regulation of Class I, III, IV, and V Underground Injection Control (UIC) wells. Class II wells are regulated by the Mississippi State Oil and Gas Board as delegated by EPA and state law. The MDEQ UIC program is managed by the Geotechnical Programs Branch in the Waste Division.


The UIC program responsibilities in the protection of underground sources of drinking water in the state include the regulation of 11 permitted Class I UIC wells and over 7,500 class V wells. MDEQ also has regulatory authority over Class III and Class IV wells, but no wells of these classifications exist in the state. The UIC program did not permit any new wells during the year but did handle two modifications to the permits for existing UIC facilities. In addition, the program continued its oversight of the state's first commercial nonhazardous underground injection control well facility operating in Amite County for the disposal of nonhazardous municipal landfill leachate and other wastewaters from oil and gas exploration and production. The UIC program also is in the process of working with the USDA, the U.S. Army Corps of Engineers and other program areas of MDEQ on a water recharge project that involves the employment of two UIC wells in Leflore County to evaluate groundwater recharge opportunities in an area with declining groundwater resources.

REMEDIATION

Brownfields

A “brownfield” is a property which may be complicated by the presence of a hazardous substance, pollutant, or contaminant that affects the expansion, redevelopment, or reuse of the property. MDEQ’s Brownfield Program allows prospective purchasers and developers, along with existing companies, to assess, remediate, and revitalize these sites. Through the program, companies can coordinate with MDEQ and the Mississippi Development Authority (MDA) to participate in a redevelopment incentive program to defray the remediation costs associated with cleaning up contaminated properties. To date, 54 companies have participated in the program. This fiscal year, MDEQ provided technical support to the Cities of Canton, Clarksdale, Crystal Springs, Greenville, Greenwood, Hernando, Jackson, Louisville, Vicksburg, and Yazoo City along with the Golden Triangle Planning and Development District and the Southern Mississippi Planning and Development District to conduct assessments and cleanups for site redevelopment for locations that have potential or perceived environmental issues. These cities and development authorities received EPA grants to conduct brownfield revitalization projects. The agency is working with the recipients to help identify high priority locations for assessments and cleanups with the most potential for redevelopment and beautification of their community. MDEQ also conducts grant writing workshops to aid Mississippi communities in their efforts to receive these national competitive grants that provide the ability to advance property development and re-vitalization opportunities.

In 2020, MDEQ began two Targeted Brownfield Assessments (TBAs) on the behalf of the Mississippi Emergency Management Agency (MEMA) for their future MEMA warehouse and the City of Hernando for redevelopment of the former Buddy’s Antiques. These TBAs reduce costs and promote redevelopment opportunities for fellow government agencies.



Remediation Goal: Protect human health and the environment through proper mitigation, remediation, reclamation, and restoration of natural resources.

Remediation Objective: Ensure contaminated sites are properly assessed, remediated, and redeveloped in a manner protective of human health and the environment.

Uncontrolled Sites and Voluntary Evaluation Program

During Fiscal Year 2020, Groundwater Assessment Remediation Division (GARD) staff actively oversaw 225 assessments and/or cleanups with the total number of sites at 2,166. These 2,166 sites cover all the known and suspected contaminated sites reported to the state since 1967. Also, MDEQ issued “No Further Action” letters for nine of these sites that were evaluated and remediated to levels protective of human health and the environment resulting in an additional 46 acres ready for reuse.

MDEQ issued six Restrictive Use Agreed Order/Environmental Covenants, allowing these sites to be reused with certain activity and use limitations. MDEQ staff continue to respond expeditiously to requests from the Mississippi Department of Transportation (MDOT) and other governmental agencies for the review of environmental assessments and remediation of contaminated sites and those sites with economic development potential. During Fiscal Year 2020, MDEQ provided responses to 16 hazardous site determination requests from local governments and/or development districts to foster economic development and redevelopment and to assist with compliance with National Environmental Policy Act.

The Voluntary Evaluation Program (VEP) offers an opportunity to receive an expedited review of site characterization and remediation plans and reports for parties that are voluntarily cleaning up uncontrolled sites that they have an interest in. The VEP is funded entirely by these participants who pay for MDEQ’s oversight costs. To date, 459 sites have participated in the VEP program, approximately 20 percent of GARD’s total number of sites. Through the VEP, more innovative and advanced remediation technologies are recommended and implemented leading to faster, more effective cleanups.

Superfund and Federal Facilities Cleanup and Redevelopment

Oversight of the assessment and remediation process at five federal Superfund sites, seven Department of Defense Facilities, a NASA Facility (Stennis Space Center) and several Formerly Used Defense Sites (FUDS) continue to be a large portion of the work involving the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Branch of MDEQ. This oversight work is funded through agreements with EPA, the Department of Defense, and NASA. Through these agreements, CERCLA staff perform preliminary assessments, site investigations and site inspections at hazardous waste sites for National Priority List (NPL) consideration, coordinate with EPA on emergency/removal projects, and assist EPA with the oversight of the remediation of seven Superfund sites: American Creosote (Louisville), Kerr-McGee/Tronox (Columbus), Southeastern Wood (Canton), Sonford Products (Flowood), Picayune Wood Treating (Picayune), Mississippi

Phosphates (Pascagoula), and Rockwell International Wheel & Trim/Grenada Manufacturing (Grenada).

At the present time, it is estimated that the remediation costs for three of the five active NPL sites is approximately \$75 million. The state will pay 10 percent of these remediation costs or \$7.5 million. In addition, remedial investigations have been completed at Red Panther Chemical (Clarksdale), Kerr-McGee/Tronox (Columbus), and Southeastern Wood (Canton). The Southeastern Wood site does not have a potentially responsible party and will require a ten percent state match for the remediation costs. An estimate of remedial costs for the Southeastern Wood site is \$14 million with the state's 10 percent being \$1.4 million. The Red Panther Chemical site is a potential responsible party (PRP) site and the responsible party(s) has funded the remediation and assessment activities under the oversight of MDEQ staff. In Fiscal Year 2020, the completion of the Red Panther Site Record of Decision (ROD) has resulted in EPA beginning the NPL removal of the Red Panther Site. The Kerr-McGee/Tronox site was involved in bankruptcy and other legal proceedings. The bankruptcy proceeding resulted in a trust being created that will provide as much as \$68 million toward further assessment and remediation. Once the Superfund sites are remediated, MDEQ assumes the responsibility of long-term monitoring with the CERCLA staff conducting the semi-annual and annual groundwater monitoring and maintenance.

In 2018, two additional sites, Mississippi Phosphates (Pascagoula) and Rockwell International (Grenada), were added to the National Priorities List (NPL). Both sites are early in the assessment process, which could last up to five years. The state will be required to pay ten percent of the remedial costs if a viable potential responsible party is not identified. To date, a viable potential responsible party (PRP) has been identified for Rockwell International.

The Mississippi Phosphates site has no viable PRP identified at this time, and no estimate of future remedial costs has been given to date. EPA is proceeding with ongoing wastewater treatment during cleanup and closure of the East Gypsum Stack with an engineered geosynthetic turf. EPA is projecting completion of their responsibilities in 2024, and estimates the state's remedial costs will begin in 2025.

EPA recognizes MDEQ's collaboration to support and encourage the appropriate reuse of Superfund sites across the state through a variety of approaches, including offering assistance in reuse planning processes and implementing environmental covenants through the Uniform Environmental Covenants Act. Mississippi's efforts to develop a process and template to streamline placing restrictive covenants on Superfund sites ensures that remedial actions remain protective as sites are put back into productive use, playing a key role in revitalizing communities. Coordination among MDEQ, EPA, site owners, and the local community is generating success stories and paving the way for

future reuse.

Underground Storage Tanks

MDEQ manages the state's Underground Storage Tank (UST) Program, which prevents and detects leaks of petroleum products and hazardous substances and protects groundwater from leaking tanks. The UST Program registers all USTs in the state, conducts operator training, certifies contractors, and conducts inspections and compliance assistance at petroleum storage facilities. The program is also responsible for the assessment and remediation of UST facilities and the management of the Mississippi Groundwater Protection Trust Fund if a confirmed release of petroleum product is identified at a facility.

The compliance program inspects UST facilities and are responsible for ensuring 7,985 tanks at 2,974 facilities have the appropriately maintained equipment. In Fiscal Year 2020, there were 1,182 inspections conducted. Due to COVID-19, MDEQ inspectors conducted many of the inspections remotely; however, they resumed in-person inspections and conducted follow-up inspections for all remote inspections resulting in a higher number of total inspections for Fiscal Year 2020.

A UST-certified contractor program ensures proper installation and maintenance of UST systems. This past year 58 new UST certified contractor licenses were issued and 218 renewal licenses were issued through the MDEQ UST Certification Program. There are currently 340 certified individuals that perform tank installations, alterations, testing, and/or permanent closures. Due to regulatory changes in Fiscal Year 2019, the MDEQ UST Certification Program saw a 15 percent increase in the number of UST certified contractors.

In the event of a release, the Mississippi Groundwater Protection fund is used by MDEQ to assess and clean up contamination resulting from leaking USTs with no additional costs for eligible tank owners and operators. The fund began in 1987, and in June 2020 it reached an overall payout of \$209 million s to reimburse eligible tank owners for the assessment and cleanup of sites contaminated from leaking USTs. The average fund commitment per site is \$169,000. At the end of this fiscal year, MDEQ was working on 602 sites that have had a confirmed or non-confirmed release and Trust Fund eligibility may or may not have been determined. During Fiscal Year 2020, \$7.8 million was used to assess and remediate leaking underground storage tanks, an increase of 13 percent of spending due in a large part to staff steadily increasing the number of sites eligible to participate in the Trust Fund.

Revenue to operate the UST Program is derived from federal grants and fees imposed on tank owners. The UST Tank Fee has ranged from \$40 per tank in 1988 to \$80 per tank in

1994 and has remained unchanged at \$100 per tank for the past 21 years. During the 2018 Legislative Session, a bill was passed to increase the cap on the annual tank regulatory fee and created the UST Advisory Council which will allow the five member council to conduct an independent study of the costs related to the UST Program to make recommendations to the Commission on Environmental Quality (Commission)) on an equitable fee system. The newly created Mississippi UST Advisory Council held its first meeting in 2019 and completed the first independent study in December 2019. The recommended tank fee increased to \$150 per available for use tank, was adopted by the Commission in April 2020. This increase in tank fee allowed the UST Program costs to be fully funded by federal grants and fees in Fiscal Year 2020.




RECLAMATION

Surface Mining and Reclamation of Surface-Mined Lands

MDEQ's Office of Geology regulates all non-coal surface mines in the state as provided for in the Mississippi Surface Mining and Reclamation Act of 1977. This includes issuing surface mining permits and notices of exempt operations, inspecting permitted areas and complaints, overseeing the reclamation performed by operators, and enforcing the law as per the promulgated Rules and Regulations and Commission orders. Additionally, 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 Reclamation and Enforcement (OSMRE).

In Fiscal Year 2020, the Mining and Reclamation Division performed 687 inspections (of which 114 were bond release inspections), recommended to the Permit Board the issuance of 26 initial and 12 amended permits, and received 60 Notices of Exempt Operations (operations less than four acres in size). A total of 2,176 exempt operations are on file, covering approximately 8,704 acres. A total of 1,493 bonded acres were completely reclaimed as a result of the division's efforts to oversee reclamation. The state currently has 611 permits covering approximately 34,415 acres. The Office of Geology's Mining and Reclamation Division continues to update the mining database that provides valuable mining information in a GIS format so mining sites can be located and viewed by anyone using the online Mining Viewer.



Reclamation Objective: Ensure lands impacted by mining activities are restored to reclamation standards that are protective of human health and the environment.



The Mining and Reclamation Division provides the required Mine Safety and Health Administration (MSHA) training for mining operations in the state. MSHA regulations require New Miner Training as well as an eight-hour Refresher Training courses be taught to all mine workers. In Fiscal Year 2020, the staff provided 60 New Mining Certifications and 128 Annual Refresher Certifications.

The Mining and Reclamation Division continues to focus on the complexities of coal mine regulation. Mississippi has an industry-estimated five billion tons of surface mineable lignite, a low-grade coal ranked just below sub-bituminous coal. The Mississippi Lignite Mining Company is mining lignite at the Red Hills Mine in Choctaw County to supply fuel for an adjacent 440-megawatt (MW) mine-mouth power plant. The mine produces over 3.5 million tons of lignite per year and has a permitted 6,090 acres. This permit was initially issued in 1998, and was renewed in February 2017 for its fourth five-year return. The Planned life of the mine is 30 years. In January of 2020, a new surface coal mining permit was issued to the Red Hills Mine for an additional 4,190 acres.

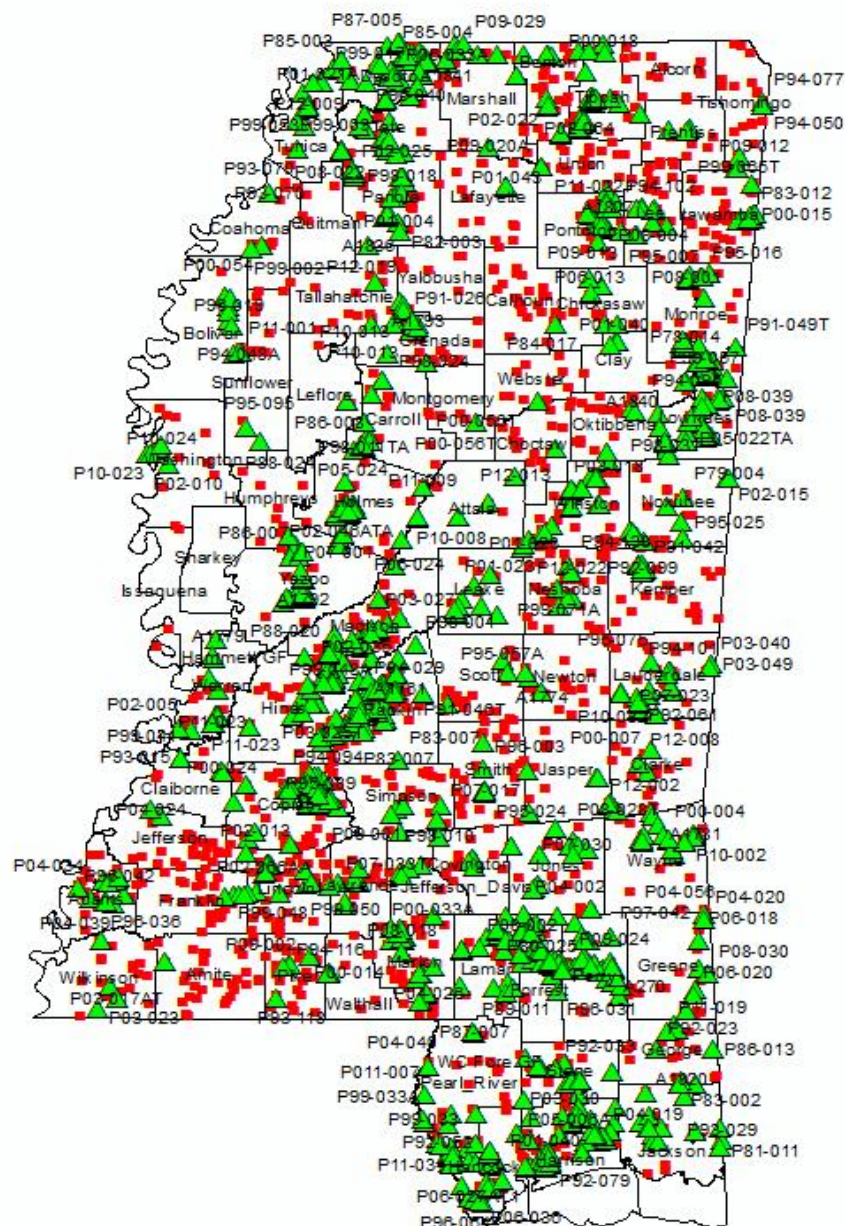
The Liberty Fuels, LLC mine permit in southwestern Kemper County was issued in December 2011 for 2,299 acres. This permit was renewed in 2016. The Liberty Mine was to produce an average of 2.2 million tons of lignite per year for the initial five-year term, and 4.5 million tons per year for the planned 40-year life of mine. In 2017, Mississippi Power Company discontinued the coal gasification process and elected to operate the power plant exclusively on natural gas. The Liberty Mine has ceased all mining activities and has scheduled meetings with Mining Division staff to discuss permanent closure and reclamation of the mine. In 2018, MDEQ approved a modification to the surface coal mining permit, fostering the reclamation of the site. Reclamation activities at the site are ongoing in Fiscal Year 2020 and will continue in Fiscal Year 2021.

Staff site inspections of all three surface coal mining permits are conducted at least monthly. One or more joint inspections of each mine are conducted annually with the Office of Surface Mining, Reclamation and Enforcement. It is anticipated that at least three applications for permit revisions will be submitted and at least two bond release applications are anticipated during Fiscal Year 2021.

Work under Mississippi's Abandoned Mine Land Program to identify and locate abandoned historic coal mines has identified four sites--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 to late 1800s to the late 1920s. Necessary reclamation work at the sites was completed in June 2018. In June 2020, another mine entrance was located in Winston County. This area will be reclaimed in Fiscal Year 2021. In Fiscal Year 2019 the division shifted

focus to the reclamation of “non-coal” sites and a non-coal inventory was established. In Fiscal Year 2021, the program will complete reclamation of AML sites on 16th Section lands in Covington and Simpson Counties.

Surface Mining and Reclamation of Surface-Mined Lands



Water Quantity

The Office of Land and Water Resources (OLWR) is responsible for the management of the water resources and pursues a conjunctive water management approach that coordinates the use of the ground and surface water resources of the state to satisfy desired water needs. The OLWR strives to ensure that the use, storage, allocation, and management of water resources be accomplished to the fullest extent possible, and that water pumped and impounded in Mississippi complies with applicable permit regulations. OLWR has numerous programs that support these requirements. These include the development and implementation of monitoring plans to facilitate the systematic collection, compilation, and management of data related to aquifers, streams, and lakes in the state; water use surveys and meter reporting tools; application of computer models to assist in making water management decisions; the review and processing of applications for issuance and modification; and, enforcement of ground and surface water use permits.

OLWR is also responsible for licensing and regulating water well contractors; regulating the design, construction, and modification of certain dams in accordance with regulatory criteria to ensure that lives and property downstream from dams and reservoirs are protected; and, assessing potential contamination threats to public, domestic and industrial water supplies.

In Fiscal Year 2020, OLWR continued to engage large water use in industry, agriculture, public drinking suppliers, and the energy sector to balance water use and economic development. In the Mississippi Delta, OLWR is developing innovative approaches to studying and addressing water sustainability in the heavily utilized alluvial aquifer. OLWR is also monitoring irrigation use outside of the Delta to mitigate competition with domestic and public supply drinking water resources. Likewise, OLWR continues to plan for, and work with the energy sector as it relates to hydraulic fracturing activities in the southwest portion of the state.



Water Quantity Goal: Maintain sustainable quantities of surface and groundwater in Mississippi.

Water Quantity Objective: Increase the efficiency of water use to improve sustainability of groundwater and surface water in Mississippi.

Water Resource Permitting and Management

The primary objective of the Office of Land and Water Resources is to research and manage the water resources of the state to assure adequate supplies for the future. This is achieved by the coordinated interaction of the water withdrawal permitting process, including the inventorying and assessment of the availability of water from fresh water aquifers and major fresh water streams. As the entity responsible for managing the water withdrawal permits of the state, OLWR issued 4170 groundwater permits and 215 surface water diversion permits in Fiscal Year 2020. Included in each permit is an established maximum withdrawal amount and any necessary special terms and conditions associated with a respective permit. For surface water permits, stream flows and lake levels are routinely monitored, and in the event that these fall below established standards, permittees are required to cease withdrawing water until flows rise above established minimums.

The office's Certification and Compliance Branch handles compliance and enforcement actions associated with water well drillers' licensing, terms and conditions associated with groundwater and surface water withdrawal permits, and any other compliance issues. The branch works with industry, public suppliers, water well drillers, and other members of the regulated community to bring those entities into compliance with state laws and regulations. In addition, the branch continued working with producers in the Mississippi Delta to verify compliance of the appropriate amount of conservation practices on farms, as required by the terms and conditions of their groundwater withdrawal permit.

Assessment and Study of Water Resources

The abundant water supplies in Mississippi constitute one of the most important and valuable natural resources contributing directly to the quality of life and economic prosperity of the state. However, the water resources available in a given area of the state can vary significantly depending on various hydrogeologic conditions that may affect base flow in streams, water quality and quantity, as well as the prolificacy of local aquifers.

The highly variable nature of these resources means that a concerted effort must be maintained to collect related groundwater and surface water data that will allow proper decisions to be made regarding the management and development of the state's water resources. OLWR monitors groundwater levels of the state's major freshwater aquifer systems. Reports and potentiometric maps are created to document changes in water levels associated with these aquifer systems. Additionally, OLWR conducts in-depth regional hydrologic investigations of Mississippi's groundwater resources to gain a better understanding of water supplies in regionally prioritized areas. OLWR staff provides a wide range of information useful for planning economic development projects,

groundwater modeling, and development of groundwater resources for public drinking water supplies.

The water resources of Lauderdale County were studied in Fiscal Year 2020. Water from the Wilcox aquifers is the primary source of water in the county including the City of Meridian. Water levels were measured and compared with historical levels in the three Wilcox aquifers: the lower Wilcox, the middle Wilcox, and the Meridian-upper Wilcox. The current levels were used as part of a larger project to create potentiometric surface maps for each of the three aquifers in Mississippi. Cross-sections were also completed to illustrate the location and depth of the aquifer interval in the area.

MDEQ staff completed a similar project to evaluate the water resources available in Tate County, with the focus being on the Wilcox aquifers. Due to the widespread use of the Sparta aquifer in the county, it was also included in the study. The City of Senatobia pumps solely from the lower Wilcox aquifer and has an abundant supply of water available for use. Aquifer characteristics such as thickness and dip were illustrated with cross-sections running through the county.

Water-level data from wells in the Mississippi River Valley Alluvial (MRVA) aquifer is being collected and evaluated to monitor the effects of pumping and to assist in development of water management practices. OLWR is also working with the United States Geological Survey (USGS) to update, refine, and utilize the Mississippi Delta portion of an existing regional groundwater flow model developed by USGS. This large-scale regional model covers the entire Mississippi embayment and extends through the primary drinking-water aquifers as part of the Mississippi Embayment Regional Aquifer Study. This model will be used to better understand the groundwater flow system, the potential effects of variations in pumping patterns, and to evaluate various water resources management scenarios. New data continue to be collected for integration into the existing groundwater flow model.

In Fiscal Year 2020, staff also completed projects to evaluate the water resources available in the Wilcox aquifers in Grenada County and in Neshoba County where the Meridian-upper Wilcox aquifer and lower Wilcox aquifer are the primary sources of water, respectively. Water levels in public supply and industrial wells were measured and used in the creation of three regional potentiometric surface maps of the Wilcox aquifers. Current maps were then compared with historical maps to track changes in head in the aquifers.

Work began in Fiscal 2020 to map the top of the Glendon Formation and the Moodys Branch Formation in the southern part of Mississippi. Cross-sections running from west to east and from north to south using information from these structure maps will create a framework to build off of into areas with little information. When completed, these maps will allow for the division of the aquifers of Miocene age into individual aquifer intervals.

MDEQ staff completed 24 flow measurements on streams throughout the state in support of the MDEQ Mississippi Benthic Indicator of Stream Quality project. In addition, USGS continuous stream gauging stations were monitored by OLWR to evaluate low flow

conditions in streams, or reaches of streams, to ensure the water bodies did not fall below their respective statistical low flow averages. During such low flow events, on-site streamflow measurements were made where necessary to validate special terms and conditions related to surface water permit requirements. OLWR also assisted the Office of Geology in collection and evaluation of discharge data at the Red Hills Mine Lignite facility, in accordance with the Cumulative Hydrologic Impact Assessment being prepared for their proposed facility expansion.



Water Resources in the Mississippi Delta

The future of the Mississippi Delta's economic and environmental viability depends on abundant, accessible water of sufficient quality. Over 17,500 permitted irrigation wells screened in the shallow MRVA are used for irrigation, aquaculture, and wildlife management purposes. Over time, pumpage demands have continued to exceed recharge to the MRVA, leading to continued overbalances of groundwater withdrawals versus aquifer recharge, disconnected surface and ground water interaction, and notable water-level declines in the aquifer.

To address serious threats to the viability of the Mississippi Delta's MRVA aquifer and Delta-wide stream flows, MDEQ created an executive-level task force to address these water resource challenges in 2011, and an Executive Order issued in 2014 created the Governor's Delta Sustainable Water Resources Task Force. Under the Order, MDEQ is the lead to "promote conservation measures, irrigation management practices, and plans for the implementation of new Delta surface water and groundwater supplies."

The Delta Sustainable Water Resources Task Force and its workgroups consist of various state and federal agencies, stakeholder organizations, and academia all focused on the development and implementation of approaches and strategies to ensure sustainable ground and surface water resources for current and future generations in the Mississippi Delta. In Fiscal Year 2017, OLWR adopted a new general permit (MRVA-002), which updated conservation measures as a way to encourage continued adoption of water conservation practices via the permitting process. In Fiscal Year 2020, 3,818 permits and certificates of coverage under the general permit were issued with conservation requirements as part of the special terms and conditions of the permit/certificate of coverage. An online reporting portal developed by OLWR specifically designed to receive meter reading data from participants continues to yield valuable information that will be critical to improving total pumpage estimates and model accuracy.

Source Water Protection

OLWR Source Water Assessment Branch has the primary responsibility of coordinating groundwater quality protection efforts in Mississippi. The 1996 amendments to the Safe Drinking Water Act mandated states to develop and implement a Source Water Assessment Program. The purpose of this program is to notify public water supplies and customers of the relative susceptibility of their drinking water supplies to contamination. Protecting sources of drinking water is essential for maintaining and improving the quality of human health and the environment.

The program also helps site the proper locations for new drinking water wells. OLWR staff worked closely with 1,356 Public Water Systems, consisting of approximately 2,714 groundwater wells and five surface water intakes, to strengthen protection efforts of

underground sources of public drinking water supply.

Potential sources of contamination are identified for each individual city or town in each water supply protection area to use as support for planning decisions. Information gathering in the assessment process is incorporated into recommendations for actions that can be taken at the local level to protect drinking water sources. The assessments help to focus protection efforts to minimize risks of individuals drinking contaminated water. These efforts may include developing source water protection plans, encouraging the use of Best Management Practices, establishing local protection teams, and using other source protection measures.

Drillers Licensing

OLWR manages and maintains the testing and licensing of water well drillers. Applications for licenses are received along with verification that applicants meet basic requirements through testing in accordance with state law and state regulations. These measures ensure that current license holders are in compliance with regulations. During Fiscal Year 2020, the Drillers Licensing Program issued or renewed 229 licenses for drillers or pump installers and data for all water wells drilled in the state were added to a database management system. MDEQ staff taught a continuing education course regarding Mississippi drilling laws and regulations at three drilling conferences in Mississippi and one in Tennessee.


Mississippi Agricultural Chemical Groundwater Monitoring Program

More than 90 percent of the population in Mississippi relies on groundwater for drinking water supply. Because of this dependence, there have been growing concerns that agricultural chemicals may be impacting and degrading the valuable groundwater resources in the state. The Agricultural Chemical Monitoring Program was established in 1986 to help determine what, if any, impact these practices may be having. For Fiscal Year 2020, OLWR staff sampled 72 water wells in a continuing effort to ascertain if agricultural practices are affecting the quality of groundwater aquifer systems statewide. These data are recorded and reported to well owners who have concerns about their domestic drinking water. As of Fiscal Year 2020, the program has sampled over 2,948 groundwater sources throughout the state, and to date, results indicate that no significant impacts to groundwater quality are directly attributable to agricultural practices.

WATER QUALITY

Water Quality Monitoring

MDEQ monitors the quality of surface water throughout the state using collected data compared to the state's water quality standards with determinations made about the health and safety of Mississippi's surface waters. The results of the determinations can be found in the state's biennial Clean Water Act Section 305(b) Water Quality Inventory report. Waterbodies not meeting their water quality standards are placed on the state's Clean Water Section 303(d) List of Impaired Water Bodies for action. Data collected through water quality program are publicly available on request or through EPA's Water Quality Portal.



Water Quality Strategic Goal:
Protect and restore surface and groundwater quality in Mississippi.

Water Quality Objective: Ensure the improvements funded through the Water Pollution Control Revolving Loan Fund Program are adequate to meet the needs of citizens, the business community, and to foster economic growth.

Ambient Recreational Monitoring Network

MDEQ maintains a monitoring network for fecal coliform for flowing waters in the state that are used for primary contact recreation. Monitoring is done at these locations 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 2019, 348 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. For the latest 305(b) report, approximately 45 percent of the assessed perennial rivers and streams are attaining their use and 55 percent are not. Of the recreational rivers and streams that are not attaining their use, 221 miles of the rivers and streams have completed a Total Maximum Daily Load (TMDL) and only two miles of rivers and streams need a TMDL.

Ambient Lake Monitoring

In 2009, MDEQ began collecting chemical, physical and biological samples from public lakes throughout the state. The lakes selected are greater than 100 acres in size and without nutrient enrichment. Since the program's inception, MDEQ has selected 20 lakes per year so that over a five-year cycle approximately 100 lakes will be sampled. Of the lakes assessed during the latest five-year cycle, 92 percent were attaining their use and eight percent were not attaining. In addition, three percent have a completed TMDL and five percent require a TMDL. The lakes that are in need of a TMDL were primarily impaired due to nutrients along with organic enrichment and low dissolved oxygen.

State of Mississippi Water Quality Assessment 2019 Section 305(b) Report

MDEQ is responsible for generating the Water Quality Assessment Report under Section 305(b) of the Clean Water Act. The report comprehensively describes for EPA, Congress, and the public the status of the quality of the state's surface waters. Along with the water quality assessment information, the report also describes the state's assessment methodology and gives the causes, where known, for those waters identified as impaired. The 305(b) report is an overview of how the waters are assessed and what the overall results of these assessments are. The 2019 305(b) report is based on data collected from January 2012 through December 2016. The report also touches on public health concerns such as fish tissue advisories and beach advisories. At the end of the report is an appendix that lists each site sampled between 2012 to 2016 and whether it is attaining or not attaining its designated use or uses.

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, and for Fiscal Year 2020 MDEQ staff sampled 130 streams.

Fixed Station Ambient Monitoring

MDEQ's network of statewide ambient water quality monitoring 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 the agency's three regional offices.

There are currently 41 stations statewide, and laboratory analyses for the samples are carried out monthly by MDEQ's laboratory. Several stations in the sampling network are historical stations that have monitoring data dating back to the 1970s. Fixed Station Ambient Monitoring data can be obtained by contacting MDEQ staff or online at waterqualitydata.us.



Fish Tissue Monitoring Program

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

for Mercury, DDT, Toxaphene, and PCBs on many state waters. Special fish tissue monitoring for Fiscal Year 2020 focused on sites where advisories for DDT and Toxaphene have been issued to collect additional data to further inform decisions on the advisory in the Mississippi Delta. These data are currently being evaluated for advisory updates. In addition, tissue was collected from fishing rodeos in the Mississippi Sound for Mercury and Selenium levels.

Laboratory biologists investigated many fish kills throughout the state, and these biologists are on-call 24 hours a day to respond to fish kill reports and to assist if needed with water sampling and wildlife damages.

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 Laboratory and the Mississippi Department of Marine Resources to continue a very similar sampling program--the Mississippi Coastal Assessment Program (MCA). This monitoring evaluates 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 examine long-term environmental impacts following the *Deepwater Horizon* oil spill.

MCA monitoring is conducted during the late summer index period (July to September) and includes biological, chemical, and physical sampling. The sites are selected using a probabilistic site selection methodology, and 33 sites were sampled in Fiscal Year 2020. At the end of a five-year cycle, a total of 125 sites will be sampled for the coastal monitoring program.





Beach Monitoring Network

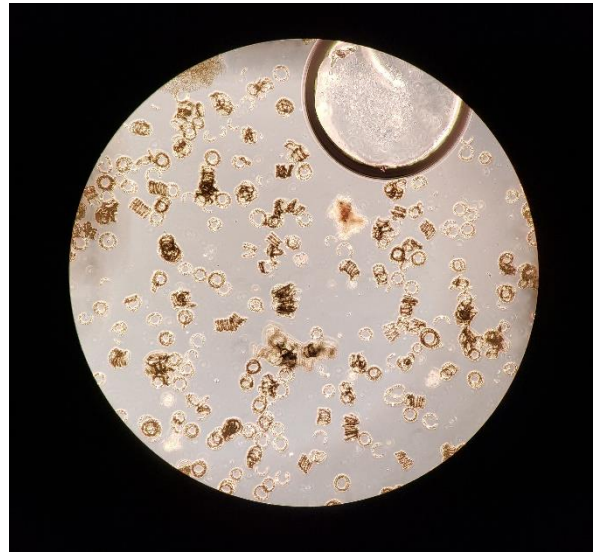
MDEQ conducts routine bacteria and water chemistry sampling at 21 beach stations located along Mississippi's Gulf Coast as part of the Mississippi Beach Monitoring Program. MDEQ is a partner within the multi-agency Beach Monitoring Task Force with the EPA Gulf of Mexico Program, the Mississippi Department of Marine Resources, the Mississippi Secretary of State's Office, the Mississippi State Department of Health, Hancock County, Harrison County, and Jackson County. This Task Force oversees the program and issues beach advisories when needed. MDEQ and the Task Force rely on data collected 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 website, Twitter, by public email and text notification, and press releases to local media.

A harmful algal bloom or HAB (*Dolichospermum* spp. and *Microcystis* spp.) event began for Mississippi beaches on June 22, 2019, with water contact warnings for Hancock County beaches. The opening of the Bonnet Carre Spillway due to historic flooding of the Mississippi River introduced over a trillion gallons of freshwater into the western Mississippi Sound and lowered its salinity. Record rainfall along the Mississippi Gulf Coast and very high temperatures created a "perfect storm" for this HAB event. All beaches in

Mississippi would come under water contact warnings by August and eventually be lifted by October 5, 2019.

During Fiscal Year 2020, a total of 53 advisories were issued for elevated bacteria detected through routine sampling. All 21 beaches were placed under water contact warnings due to the HAB event which accounted for 2,013 beach action days.

The 53 bacteria advisories and 21 HAB warnings covered 2,888 beach days or 38 percent of the 7,665 beach days available in the year.



Triennial Review of Water Quality Standards

The Clean Water Act (CWA) requires that each state review their water quality standards at least every three years in a process called the triennial review. Water quality standards must include three components: the designated uses of the State's waterbodies, the water quality criteria necessary to protect those uses, and antidegradation provisions to protect water quality. During the triennial review, that latest science and information available are considered, and when needed, criteria are updated to protect human health and aquatic life.

The last modifications to Mississippi's Water Quality Standards were completed as part of the 2015 triennial review. These modifications were approved by EPA in January 2017. The current triennial review is underway. Initiated in 2018, MDEQ is reviewing the latest EPA recommendations for water quality criteria to ensure the protection of aquatic life and human health. In addition, MDEQ is developing refinements to the waterbody classification system applied to surface waters across the state. Consistent with the requirements of the CWA and WQS Regulation, States are free to develop and adopt any use classification system they see as appropriate, except that waste transport and assimilation is not an acceptable use in any case. Once States have their use classification system in place, they must have criteria in place to protect these uses. A State can choose to adopt subcategories (and/or seasonal classifications) in its use classification system to further refine designated uses. Mississippi currently has an extremely basic waterbody classification structure outlined in the water quality standards regulations. Initial work was completed by MDEQ in a collaborative effort with EPA to explore the potential to refine the use classifications in Mississippi and develop preliminary concepts for this effort. Stakeholders in Mississippi were supportive of the concept and MDEQ is moving forward with developing a more refined system to appropriately classify our water bodies.

Once draft revisions for the current triennial review of water quality standards have been finalized, a public comment period and public hearing will be held to accept any comments or feedback regarding the revisions to Mississippi's Water Quality Criteria for Intrastate, Interstate, and Coastal Waters. The public comment period and public hearing are expected to occur in early 2021.

Excessive nutrient (phosphorus and nitrogen) loss from watersheds is frequently associated with degraded water quality in streams. To reduce this impact to surface waters, NPS sources originating from cropland farming practices and other watershed activities, are being evaluated for implementation of control measures. Due to concerns about eutrophication in the Nation's water bodies, EPA directed the states to develop and adopt numeric nutrient criteria for surface waters. Since it is thought that much of the Nation's and Mississippi's nutrient impairments are a result of NPS runoff, work is needed to confirm this premise and to develop scientifically defensible numeric nutrient criteria that are appropriate for Mississippi's surface waters.

Highlights of MDEQ's numeric nutrient criteria development efforts in Fiscal Year 2020 include:

- Continued criteria development efforts across all waterbody types.
- Continued to update stakeholders regarding the progress and status of nutrient criteria development. These updates promote open communication between staff and stakeholders. MDEQ will continue to update stakeholders throughout the numeric nutrient criteria derivation process.
- Continued to plan for numeric nutrient criteria implementation. In addition to developing the numeric nutrient criteria themselves, MDEQ will continue to work concurrently on details related to implementation of these criteria in MDEQ's various surface water programs. .
- Continued to collect data and conduct studies to support nutrient criteria development across the state.
- Continued the development waterbody-specific models that provide essential information in order to understand nutrient dynamics within specific rivers. Evaluating information from various modeling scenarios allows MDEQ to explore relationships between instream nutrient concentrations and any potential impacts downstream. The water quality models for these waterbodies also provide improved site-specific information to support decisions regarding future wasteload allocations and/or total maximum daily loads.
- Continued to review the latest technical information, guidance, and criteria development tools released by EPA Headquarters to support the development of numeric nutrient criteria.



Total Maximum Daily Load and Modeling

Total Maximum Daily Loads (TMDLs) are a requirement of the Clean Water Act (CWA) to provide direction for restoring the nation's waters. TMDL reports provide an analysis of the ability of a water body to assimilate pollutants from point sources such as industry and communities and nonpoint sources such as stormwater runoff from urban areas or agriculture.

Water bodies that do not meet water-quality standards are identified as "impaired" for the particular pollutant of concern. Under Section 303(d) of the CWA, states are required to develop a list of waters that are not in compliance with water quality standards and establish a TMDL for each pollutant causing the impairment. MDEQ biennially creates a list of these impaired waters called the 303(d) List of Impaired Waters. This list was updated again in 2019 and is in the approval process. MDEQ has completed work on stressor identification (SI) analysis for five water bodies that have been identified as biologically impaired in the Big Black River Basin. The SI process identifies the stressors to water quality for individual water bodies that have been identified as biologically impaired. TMDLs for those water bodies are currently in progress.



Little Tallahatchie River Nutrient Model Calibration Study

The upper portion of the Little Tallahatchie River was targeted for model development to better inform permitting decisions for facilities that discharge to this portion of the Little Tallahatchie River. A water quality study on the Little Tallahatchie River, located in Northwest Mississippi, was performed in the fall of 2017. The primary objective of this study was to collect water quality samples for the evaluation and development of water quality model inputs to characterize the current conditions of the Little Tallahatchie River. Study efforts included water quality sampling for an array of analytes including long-term biological oxygen demand, nutrients, solids, and algal analyses. The study area included several locations that were selected to provide representative data on the Little Tallahatchie River. The water quality model will be used to establish TMDLs and WLAs for the Little Tallahatchie River. Additionally, as part of MDEQ's nutrient criteria development efforts, this study helps generate data to estimate the total nutrient load allowable in the river and the nutrient input from the point source dischargers.

Development of the Priority Framework

MDEQ has developed a new collaborative framework for implementation of the Clean Water Act known as the Priority Framework. This new framework coordinates and focuses efforts to advance the effectiveness of the water program. Various environmental factors were adjusted based on professional judgment of the importance of each for characterizing watershed value. Once these factors were developed, standardized, and weighted, a relative ranking of every watershed within the state was produced. This ranking was used to screen watershed for activities that will address the water program goals, and a total of 21 watersheds were chosen as targeted watersheds.

This framework does not change regulation, policy, or issue new mandates. It is intended to provide focus for MDEQ water programs to better manage the activities and collaboration to achieve water quality goals for the streams, rivers, lakes and estuaries of Mississippi.

In order to select the priority watersheds, MDEQ used landscape information to calculate metrics on the watershed scale that are used to characterize and rank watersheds by resource value and potential stressors. Resource value is determined using environmental and human welfare data layers. Environmental factors considered include erosion potential, impervious area, wetlands, impaired waters, and concentration and types of discharge permits. Human welfare factors include demographics, fishing advisories, water supply intakes, public water supplies, recreational water bodies, public waterways, national and state parks, and recreational locations. Other factors considered were the presence of existing watershed plans, ongoing restoration or conservation work, and engaged stakeholders all of which greatly increase the chances of success.

MDEQ will review the selection process and screening criteria annually to gauge success and evaluate potential candidate watersheds for a ten-year period. Flexibility will be retained to re-evaluate selections and amend watershed selection in the face of changing state priorities as well as changing EPA national and regional priorities. As part of this review, MDEQ identified an opportunity to leverage the work being done by several water programs. As a result, the Big Black River Basin will be evaluated as a priority area.

The Gulf of Mexico Alliance

The Gulf of Mexico Alliance (GOMA) is a partnership among the states of Alabama, Florida, Louisiana, Mississippi, and Texas whose goal is to address priority issues related to the ecological health of the Gulf of Mexico. During Fiscal Year 2020, MDEQ led the GOMA Water Resources Team encouraging a collaborative approach to address multiple focus areas related to water quality and quantity in the region as well as working to protect aquatic health, human health, and economic health in the Gulf of Mexico.

Mississippi River and Gulf of Mexico Watershed Nutrient Task Force

MDEQ continues to support the efforts of the Mississippi River and Gulf of Mexico Watershed Nutrient Task Force (Task Force). The Task Force was established in 1997 to understand the causes and effects of increased nutrients in the Gulf of Mexico and coordinate activities to reduce the size, severity, and duration, and mitigate the effects of hypoxia. The Task Force is a partnership of 12 states, five federal agencies, and a tribe that work collaboratively to reduce nutrient pollution in the Mississippi/Atchafalaya River Basin (MARB). Activities of the Task Force include coordinating and supporting nutrient management activities from all sources, restoring habitats to trap and assimilate nutrients, and supporting other hypoxia-related activities in the Mississippi River and Gulf of Mexico watersheds.

The Task Force continues its work addressing evolving research needs, better ways to track conservation practices, opportunities for cooperative federalism, and the critical role partnerships play in achieving success.

Nonpoint Source Pollution

Nonpoint Source (NPS) Pollution is rainwater runoff that picks up and carries away a variety of pollutants as it flows over streets, parking lots, construction sites, and agricultural 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.

In 1987, amendments to the Clean Water Act established the Section 319 NPS Management Program. The state's program was approved in August 1989, and funded for implementation in August of 1990. Over the past 30 years, MDEQ, in cooperation with numerous federal, state, and local stakeholders, has been successful in developing a comprehensive statewide program to help protect and restore valuable water resources.

In Fiscal Year 2020, MDEQ received approximately \$3.14 million in Section 319 Grant funds. Of this amount, seven percent is allocated for administrative work, 29.5 percent for program operation and statewide education and public outreach projects, 12.5 percent for NPS watershed planning, 34 percent for NPS watershed project implementation, and 17 percent for support of priority watershed restoration and protection projects. Grants are awarded for a five-year period and progress is reported annually.

MDEQ currently has five active Section 319 grants covering the grant periods of 2016 to 2020. Section 319 grants are awarded annually to MDEQ by EPA, and MDEQ, in turn, utilizes sub-grant agreements to contract with eligible partners for work needed.

Generally, these partners supply matching funds or in-kind services at a rate of 40 percent. During Fiscal Year 2020, the NPS Branch managed a total of 36 projects and activities totaling \$1.3 million in federal funds. These projects may take from one to four years to

complete and include, but are not limited to, education and outreach projects, water-quality monitoring projects, projects that implement Best Management Practices (BMPs) to demonstrate effectiveness of pollution reduction activities, agricultural and chemical waste disposal, and watershed protection and restoration projects.

Basin Management Approach

The goal of Mississippi's Basin Management Approach (BMA) is to restore and protect water resources of the state through collaborative development and implementation of effective management strategies that help improve water quality and quantity while fostering sound economic growth. In an effort to effectively carry out planning and implementation activities, the ten major river basins in Mississippi have been organized into four basin groups. Each basin group has a basin team comprised of the representatives from federal, state, and local government agencies, non-governmental organizations, and other stakeholders. This program implements strategies that target priority watersheds throughout the state. Prioritization of these watersheds is an evolving process identified in coordination with resource agency partners as part of the Basinwide Approach to Water Quality Management.

The Basin Management and NPS Programs are implemented in cooperation with several agencies, organizations, and groups at all levels of government and in the private sector. A great focus is given to activities that promote consensus building and partnering to increase the overall effectiveness. One key partnership to increase this overall effectiveness is with the USDA Natural Resources Conservation Service (NRCS). MDEQ and NRCS work collaboratively using Section 319 funds for assessment and monitoring of National Water Quality Initiative (NWQI) sites where the NRCS has or will implement various conservation practices such as cover crops, filter strips, and terraces. In addition, information from the Mississippi Watershed Characterization and Ranking Tool (MWCRT) is used to help identify priority watersheds for targeted funding under the National Water Quality Initiative as well as other NRCS funding initiatives.

National Water Quality Initiative

The National Water Quality Initiative (NWQI) was introduced by the NRCS in 2012 as a collaborative effort with EPA and state water quality agencies including MDEQ. NWQI strives to reduce nonpoint sources of nutrients, sediment, and pathogens related to agriculture in small priority watersheds within each state. The watersheds within Mississippi that received funding for Best Management Practices (BMP) implementation in Fiscal Year 2020 included North Tippah Creek (Basin Group II), Middle Porter Bayou (Basin Group II), Upper Porter Bayou (Basin Group II), Hudson Creek-Clear Creek (Basin Group II), Tilda Bogue-Bear Creek (Basin Group III), Lynn Creek-Homochitto River (Basin Group III), and Booths Creek-Bayou Pierre (Basin Group III). Upper Porter Bayou and Middle Porter Bayou also are active Section 319 project watersheds. NRCS is now requiring all NWQI watersheds (previously existing and new) to have a watershed assessment completed to be

eligible for funding. Mississippi developed assessments for three existing watersheds in Fiscal Year 2020. Those watersheds were North Tippah Creek, Upper Porter Bayou, and Middle Porter Bayou. Mississippi received \$5.13 million in funding this year for NWQI projects.

Basin Group I

Catalpa Creek

Catalpa Creek has its headwaters on the Mississippi State University campus and the southeastern part of the City of Starkville. This grassroots team has done extensive preparation and planning to get this project underway building important partnerships and developing a water resources management plan for the Hydrologic Unit Code 12 Red Bud—Catalpa Creek watershed. The team has members from many departments, various centers, and institutes at Mississippi State University as well as members from the local agricultural community and the City of Starkville. They have written a watershed plan and proposals continue to be submitted to many agencies to leverage funding. MDEQ has funded Phase I of the project by using a Section 319 grant. Pre-monitoring has been completed and BMP installation is ongoing. MDEQ is currently working with Mississippi State University to fund additional Best Management Practices needed out of the Fiscal Year 2020 Section 319 grant.

Broken Pumpkin Creek

The Broken Pumpkin Creek watershed is located in Noxubee and Lowndes counties covering 24,573 acres. The watershed is comprised predominately of agricultural lands. By implementing BMPs within this watershed, it was determined by MDEQ and other partners that a significant impact could be made on water quality. A nine-key element plan was developed for this watershed and a subsequent watershed-based plan will be developed as part of this project. A landowner meeting was held in Fiscal Year 2020 and potential BMP sites are being visited and designs for the BMPs developed. Due to the COVID-19 pandemic no BMPs have been installed yet.

Carmichael Creek

The Carmichael Creek-Town Creek Watershed is located just south of Tupelo. With most of the 26,002-acre watershed primarily within Lee County in northeast Mississippi and is part of the Tombigbee River Basin. Approximately 36 percent of this watershed is used in agricultural practices. With these activities taking place so close to the stream, MDEQ and other partners felt a great impact could be made to improve the water quality within the watershed. A nine-key element plan was developed for this watershed and a watershed-based plan will be developed as part of this project. Due to the COVID-19 pandemic, no BMPs have been installed, but landowners have been made aware of the opportunity and are signing up at this time.

Basin Group II

Delta Nutrient Reduction Strategy

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

- What nutrient load reductions are achievable?
- What will be the cost for these reductions?
- What will be the associated environmental and economic benefits from these reductions?

Once nutrient load reductions are determined to be achievable, then quantitative reduction targets will be established and future progress will be evaluated in relation to achieving those targets.

Harris Bayou

Harris Bayou, a tributary of the Big Sunflower River, flows through portions of Bolivar and Coahoma counties. The current priority sub-watershed is Overcup Slough which is in the headwaters of the watershed and contains both catchments that have been the focus of the Delta Nutrient Reduction Strategy implementation efforts since 2010. BMPs installed in the Overcup Slough sub-watershed include: 36 water control structures, four low grade weirs, and approximately 9,100 feet of two-stage ditches. Also, 97 acres of cover crops were planted.

Collection of Tier 1 nutrient data for the treatment and control catchments has ceased after five years and is currently under analysis. With Tier 2 monitoring in place at the outflow of the watershed, the current project will continue to incrementally implement BMPs to address prioritized resource concerns.

Porter Bayou

Porter Bayou, also a tributary of the Big Sunflower River, flows through portions of Bolivar and Sunflower counties. The current priority sub-watersheds are Upper Porter Bayou and Middle Porter Bayou which contain the catchments that have been a focus of continued DNRS implementation efforts. BMPs installed in Upper Porter Bayou include: 25 water control structures, eight low grade weirs, approximately 19,695 feet of two-stage ditches, and 300 acres of land leveling activities. In Middle Porter Bayou, 17 water structures, three low grade weirs, and approximately 7,700 feet of two-stage ditches were installed along with 70 acres of land leveling activities. Along with the BMPs mentioned above, 194 acres of cover crops were planted.

Collection of Tier 1 nutrient data has ceased after five years and is currently under analysis. With Tier 2 monitoring in place at the outflow of both sub-watersheds, the current project will continue to incrementally implement BMPs to address prioritized resource concerns.

Mississippi River Basin Healthy Watershed Initiative (MRBI)

This initiative assists landowners and producers to voluntarily implement conservation and management practices that prevent, control, and trap nutrient runoff from agricultural land. MDEQ works collaboratively with NRCS to target watersheds to receive MRBI funding. In 2015, NRCS selected Brook Bayou, Christmas Lake Bayou, Long Lake, Stillwater Bayou, and Tommie Bayou watersheds located in portions of Bolivar, Sunflower and Washington counties. In 2017, Burrell Bayou and Beaver Bayou-Mound Bayou (located in Bolivar and Sunflower counties) were added as new watersheds to receive funding through the MRBI initiative. MRBI watersheds are also being required to develop watershed assessments to remain eligible for funding. MDEQ develop assessments for one new and two existing watersheds in Fiscal Year 2020. Those watersheds include Bear Lake, Christmas Lake Bayou, and Stillwater Bayou. All these watersheds combined received \$6.49 million in funding in Fiscal Year 2020.

Basket Creek-Hickahala Creek

The Basket Creek-Hickahala Creek watershed is located in Tate County and covers approximately 35,085 acres. Agricultural landuses make up over half of the landuse within this watershed. Basket Creek-Hickahala Creek was selected as a priority watershed because MDEQ and its partners believed a great impact on water quality could be made within this watershed. Hickahala Creek, which flows directly through the middle of the watershed, has a long history of being listed on the state's 303(d) list of impaired waters. A TMDL has been developed for this waterbody with the impairments being Organic Enrichment, Low Dissolved Oxygen, and Nutrients. A nine-key element plan has been developed for this watershed and a subsequent Watershed Based Plan will be developed during this project. Recently, a meeting was held to make landowners aware of this project and the cost share available to them to participate in the project. During Fiscal Year 2020, the following BMPs have been installed to address the aforementioned water quality concerns: eleven grade stabilization structures and 2,000 feet of fencing.

Sherman Creek-Panola Quitman Floodway

The Sherman Creek-Panola Quitman Floodway Watershed is located in the northern portion of Tallahatchie County covering approximately 33,139 acres. The predominate landuse within this watershed is cropland. Waterbodies within this watershed have several TMDLs, and they include listings for sediment, Total Nitrogen, Total Phosphorus, Organic Enrichment and Low Dissolved Oxygen. MDEQ and its partners believed a great impact on water quality could be made by implementing a project to install BMPs on the agricultural lands within this watershed. A nine-key element plan has been developed and a subsequent Watershed Based Plan is being developed as a component of this project. During Fiscal Year 2020 the following BMPs eight Grade Stabilization Structures, one pond, two Heavy Use Areas, 60 acres of Nutrient Management, and 700 feet of Streambank and Shoreline Protection. BMP installation continues and additional sites continue to be identified.

Bear Lake

Bear Lake Watershed is located predominately in southwestern Tunica County with a small amount in northwestern Coahoma County. The Bear Lake watershed is a 26,494-acre watershed where cropland is the primary landuse. The Bear Lake Watershed is a sub-watershed of the Phillips Bayou-Yazoo Pass watershed (HUC10) that drains into Moon Lake. The watershed has a TMDL that has been developed for Sediment/Siltation. MDEQ and its partners believed like a great impact could be made on the Bear Lake watershed by implementing Best Management Practices on agricultural lands that address sediment. A nine-key element plan has been developed and a subsequent Watershed Based Plan will be developed as part of this project. A meeting was recently held to make the landowners/operators within the watershed aware of the project and invite them to participate. There were no BMPs installed in Fiscal Year 2020 due to the COVID-19 pandemic. Sites have been identified and BMP installation will begin in the near future.

Basin Group III

Ross Barnett Reservoir

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

Rezonate

In a continuing effort to leverage resources and to promote the message of protecting and restoring the Reservoir and the Pearl River Watershed, MDEQ, through the Ross Barnett Reservoir Initiative (known as *Rezonate*), has sponsored and helped facilitate several events in and around the Ross Barnett Reservoir.

Rezonate is a major sponsor for an event called the Project Rezway Recycle Fashion Show held at the Mississippi Craft Center in Ridgeland. The show features apparel and accessories composed of at least 75 percent recycled materials. Keep the Rez Beautiful hosts this event annually with the aim of raising awareness of the importance of recycling and shows how commonly discarded items can be used again instead of littering the environment.

Basin Group IV

MDEQ continues to support watershed teams which have developed watershed implementation plans and have installed BMPs to mitigate pollution and protect and restore water quality. These watersheds continue to have active stakeholder groups.

Chunky River

MDEQ supports the East Mississippi Foothills Land Trust in an advisory role for the Chunky River watershed. Basin management staff worked with the East Mississippi Foothills Land Trust and other partners to develop a Chunky River Watershed Implementation Plan in 2009 and continues to meet routinely with the watershed team and support ongoing initiatives.

Piney Woods Conservation Group

MDEQ staff have been working with the Piney Woods Committee of the Land Trust for the Mississippi Coastal Plain since 2015. In 2019, the Piney Woods Committee of the Land Trust for the Mississippi Coastal Plain, and their partners, opened the Pinebelt Blueway Leaf River, Phase 1, a 10.8 mile one-way trip from the Church Street launch point to the takeout point at Chain Park in downtown Hattiesburg. Due to a reduction in private funds, the Piney Woods Chapter is now independent of the Land Trust for the Mississippi Coastal Plain. They are now the Piney Woods Conservation Group, and they operate under the umbrella of the Pinebelt Community Foundation. The Piney Woods Conservation Group protects the lands around the Lake Thoreau Environmental Center property, owned by the University of Southern Mississippi, and includes conservation efforts, in the entire Leaf River Watershed. MDEQ's Basin Management has an advisory role on the Piney Woods Conservation Group, regarding basin management approaches and Section 319 grant initiatives.

Turkey Creek

MDEQ's Basin Management Branch works in partnership with other agencies and the Turkey Creek Steering Committee on improving water quality and community engagement in the Turkey Creek watershed. The Coastal Streams Basin Coordinator is a member of the Technical Committee, which was established to assist the Turkey Creek Watershed Implementation Steering Committee in an advisory role. The Turkey Creek Watershed Implementation Steering Committee was founded to address concerns of landowners and citizens in the Turkey Creek Community and help them to connect with local, state, and government officials and professionals to address environmental conditions in and around their community.

Dry Creek

The Dry Creek watershed is located in Covington County and covers 13,224 acres. This watershed contains many landuse types including agricultural land, pastureland, and forest areas; however, the dominant landuses identified in the 2011 National Land Cover Database (NLCD) within the watershed are forest (55.7 percent) and pasture/grass (31.7 percent). The watershed has a TMDL that has been developed for Sediment/Siltation. In 2017, a nine-key element plan was developed, and a subsequent Watershed Based Plan will be developed as part of this project. Partners in the Dry Creek Watershed began working on implementation of the Watershed Based Plan for Dry Creek, in the Pascagoula River Basin, in January 2018. Implementation has continued in Fiscal Year 2020. The following BMPs have been implemented thus far: 30 Watering Facilities, 32 Heavy Use Area Protection, 26,603 feet of Livestock Pipeline, 31,491 feet of Fencing, 13 acres of Critical Area Planting, 1118 acres of Nutrient Management, two Ponds, and 90 acres of Forage and Biomass Planting.

Old Fort Bayou

The Old Fort Bayou watershed is 32,082 acres and includes parts of the City of Ocean Springs and other parts of Jackson County. This watershed contains many land-use types including urban, agricultural land, pastureland, and forest areas; however, the dominant land-uses within the watershed are those related to wetland (46 percent), urban (15 percent), and forest (15 percent) uses. In May 2018, partners in the Old Fort Bayou Watershed formed a Watershed Team to begin the development of a Watershed Implementation Plan for the Old Fort Bayou Watershed. Implementation of the Watershed Implementation Plan began in 2020 and will include both urban and agricultural Best Management Practices (BMP's).



Stormwater Regulations to Improve Water Quality

MDEQ issues permits covering discharges resulting from rainfall events and the associated stormwater runoff from industrial or commercial sites. These permits focus on avoiding pollutants commingling with stormwater, averting excessive erosion, and preventing contaminated stormwater from entering waters of the state. The permits contain best management plans, monitoring conditions, and operational requirements to ensure stormwater discharges will not cause or contribute to violations of water quality standards or impair any beneficial uses of waters of the state.

In Fiscal Year 2020, MDEQ took the following stormwater permitting actions:

- The Environmental Permits Division (EPD) issued general permit coverages for 269 large construction projects (five acres or greater) under the Large Construction Stormwater General Permit.
- EPD issued general permit coverages for 31 regulated industrial facilities under the Baseline Stormwater General Permit.
- EPD received and processed 117 “No Exposure Certifications” from potentially regulated industrial facilities. Facilities that certify “No Exposure” of industrial activity to stormwater are not required to obtain storm water coverage under the Baseline General Permit.
- EPD issued general permit coverages for 93 regulated surface mining sites under the Mining Stormwater General Permit.

Environmental Operator Training

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

The training calendar included 41 days of agency-sponsored training classes. Of these training days, 33 were co-sponsored with the three wastewater-related professional associations (Mississippi Water and Pollution Control Operators’ Association, Mississippi Water Environment Association, and Mississippi Rural Water Association). Attendance

totaled 300 operators, utility managers, and engineers, and certification exams were administered to 193 prospective operators with a total number of 194 new and renewal certificates issued. There were 26 wastewater training requests approved for wastewater continuing education credits in the classroom and online. There are currently 854 certified pollution control operators in the state.

The training program staff participated in energy conservation studies with EPA Region 4 and a wastewater expert in order to save energy costs for facilities while remaining in compliance with their National Pollutant Discharge Elimination System (NPDES) permit. The program looks forward to expanding this idea in the future to more facilities through specific training of operators.

The MDEQ Operators Training program staff have partnered with the Mississippi Rural Water and the Mississippi Water Pollution Control Operators Association to speak at functions for the Mississippi Municipal League with the ultimate goal of increasing communication between operators and municipal officials. The training staff also provide onsite technical assistance to municipal, commercial and industrial wastewater facilities. This assistance program provides “no cost” assistance in returning to or maintaining compliance with their wastewater permit



Water Pollution Control Revolving Fund

The Water Pollution Control Revolving Loan Fund program (WPCRLF) provides low interest loans to public entities in the state for construction, repair, or replacement of wastewater, stormwater, and nonpoint source pollution projects. Funding for these projects comes from federal grants, state match, repayments, and interest on deposits. Additional subsidy funding is also currently available for "Small and Low Income Community" WPCRLF projects. During Federal Fiscal Year 2020, MDEQ funded five new WPCRLF projects totaling \$46.6 million.

Long term goals for the program include maintaining a financially sound State Revolving Fund in perpetuity, meeting a substantial portion of the wastewater needs in the state within a reasonable period of time, while continuing to maintain a program that is attractive to the communities in the state; and, funding fiscally sound projects in order of environmental importance as established by the Commission on Environmental Quality.

Water Pollution Control Emergency Loan Fund

The Water Pollution Control Emergency Loan Fund (WPCELf) program provides loans to communities for the emergency construction, repair, or replacement of wastewater collection and treatment facilities. The WPCELf currently has approximately \$2.5 million available for such emergency projects. MDEQ encourages communities throughout the state to utilize this program whenever funds for emergency wastewater projects are needed. There were no new WPCELf loans awarded in Fiscal Year 2020.

PERMITTING

MDEQ staff develop various types of environmental permits which are then presented to the Mississippi Environmental Quality Permit Board for issuance. The Permit Board issues, reissues, modifies, denies, transfers, and revokes 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 Office of Geology (GEO) manages permitting activities under the Surface Mining Control and Reclamation Act. The Office of Land and Water Resources manages permitting activities under the water resources control laws. The Environmental Permits Division (EPD) is responsible for Air Construction and Air Operating permits, Air Title V Operating permits, Wastewater - State No Discharge permits, Wastewater – NPDES permits, Wastewater – Pretreatment permits, Stormwater Construction and Operating permits, and Wetlands Impacts permits. The Waste Division is responsible for Solid Waste, Hazardous Waste, and Tire Program permits.

In Fiscal Year 2020, GEO issued 26 initial and 12 amended permits; EPD issued and renewed 128 air permits, 271 water discharge permits, 50 pretreatment permits, 85 state operating permits, 65 Water Quality Certifications and 455 statewide general permit coverages; the Waste Division issued 14 formal solid waste management permits, 34 authorizations for emergency debris management sites, one lagoon closure exemption, one waste tire collection site authorization, four Beneficial Use Determinations, two UIC permit modifications and two class I RCRA permit modifications; and, the OWLR issued, 4,170 groundwater permits, and 215 surface water diversion permits.

Currently there are more than 20,000 sites in the agency's permitting database. Many of these sites have permits that, by state and federal regulation, expire every five or ten years and must be reissued. As new companies come into the state and existing companies have changes or modifications, these activities also require permitting actions.

Additional permitting information can be found throughout this report.

COMPLIANCE AND ENFORCEMENT

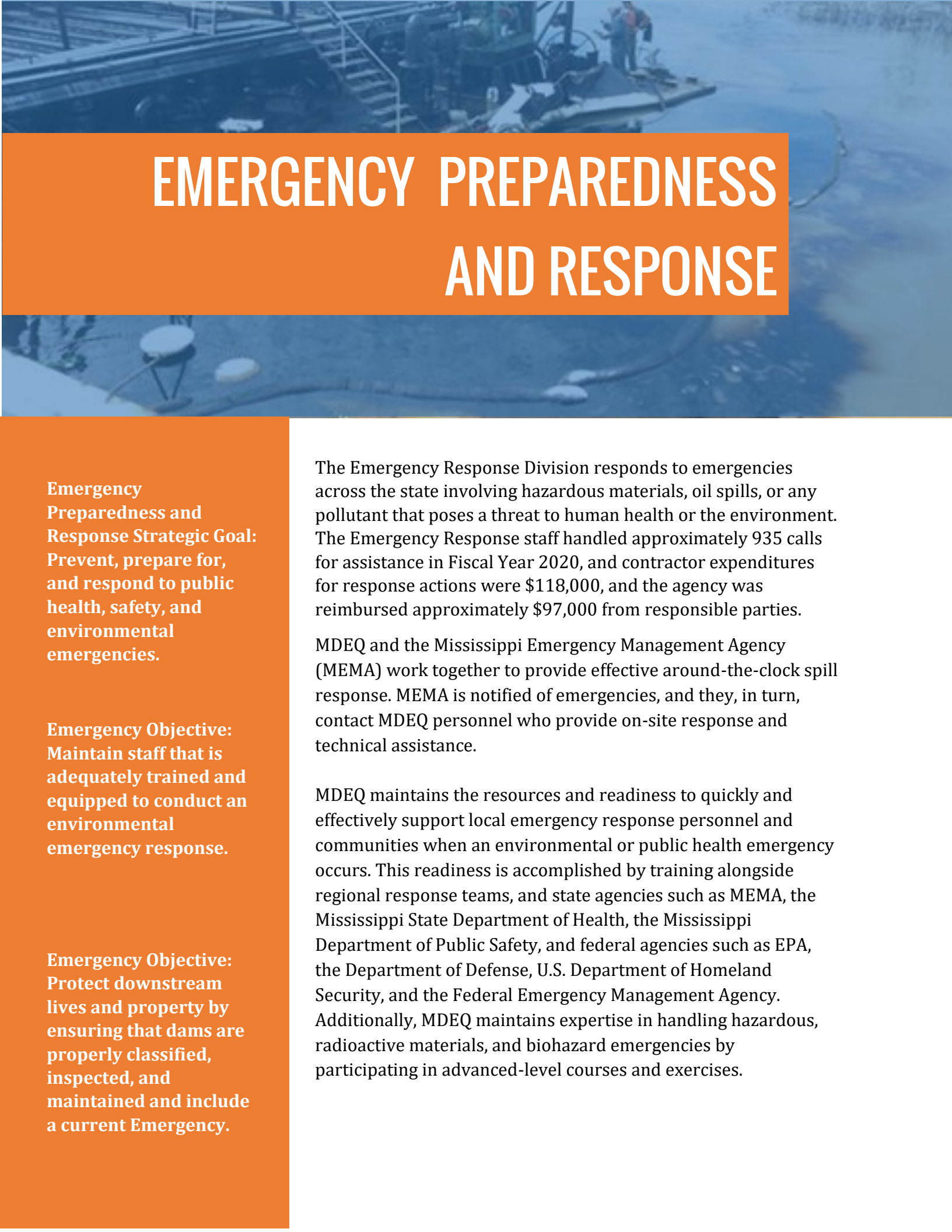
The Environmental Compliance and Enforcement Division (ECED) of the Office of Pollution Control implements and oversees the majority of MDEQ's air and water compliance and enforcement activities and is responsible for the regulation of sites for compliance with applicable air and water permits and regulations. The goal is for continuous compliance with all applicable environmental laws, regulations, and standards for businesses, industries, and farms. When a site fails to comply with its permit(s) or regulations, appropriate enforcement action is taken to promptly return the site to compliance.

During State Fiscal Year 2020, the following number of air and water on-site inspections were performed by ECED and the Field Services Division:

- 137 for compliance with air pollution regulations and permits.
- 791 for compliance with water pollution regulations and permits.

During State Fiscal Year 2020, ECED actions resulted in 41 orders being issued for non-compliance with air and water regulations and permits, and 38 of these orders contained provisions for a penalty with a total assessed amount of \$1.16 million. 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 a cash penalty. There were no orders utilizing a SEP during Fiscal Year 2020.

ECED, in conjunction with the Field Services Division, is also responsible for responding to citizen complaints regarding air and water matters. During Fiscal Year 2020, MDEQ received and investigated 716 complaints related to air and water 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.



EMERGENCY PREPAREDNESS AND RESPONSE

Emergency Preparedness and Response Strategic Goal: Prevent, prepare for, and respond to public health, safety, and environmental emergencies.

Emergency Objective: Maintain staff that is adequately trained and equipped to conduct an environmental emergency response.

Emergency Objective: Protect downstream lives and property by ensuring that dams are properly classified, inspected, and maintained and include a current Emergency.

The Emergency Response Division responds to emergencies across the state involving hazardous materials, oil spills, or any pollutant that poses a threat to human health or the environment. The Emergency Response staff handled approximately 935 calls for assistance in Fiscal Year 2020, and contractor expenditures for response actions were \$118,000, and the agency was reimbursed approximately \$97,000 from responsible parties.

MDEQ and the Mississippi Emergency Management Agency (MEMA) work together to provide effective around-the-clock spill response. MEMA is notified of emergencies, and they, in turn, contact MDEQ personnel who provide on-site response and technical assistance.

MDEQ maintains the resources and readiness to quickly and effectively support local emergency response personnel and communities when an environmental or public health emergency occurs. This readiness is accomplished by training alongside regional response teams, and state agencies such as MEMA, the Mississippi State Department of Health, the Mississippi Department of Public Safety, and federal agencies such as EPA, the Department of Defense, U.S. Department of Homeland Security, and the Federal Emergency Management Agency. Additionally, MDEQ maintains expertise in handling hazardous, radioactive materials, and biohazard emergencies by participating in advanced-level courses and exercises.

Baseline curriculum courses (IS-700 and ICS-100) are required for emergency operation center personnel and field personnel working within the affected area. On-Scene Coordinators are required to have ICS-300 plus baseline curriculum courses. Emergency Coordinating Officers are required to have ICS-400, 300, 100 and IS-700 courses. The number of people assigned and required to work within the Incident Command structure during an expanding incident may include emergency operation center personnel, an emergency coordinating officer, on scene coordinators and field personnel. MDEQ remains committed to training and preparing an adequate number of personnel to respond to an expanding incident where a manmade or natural disaster impacts multiple jurisdictions.



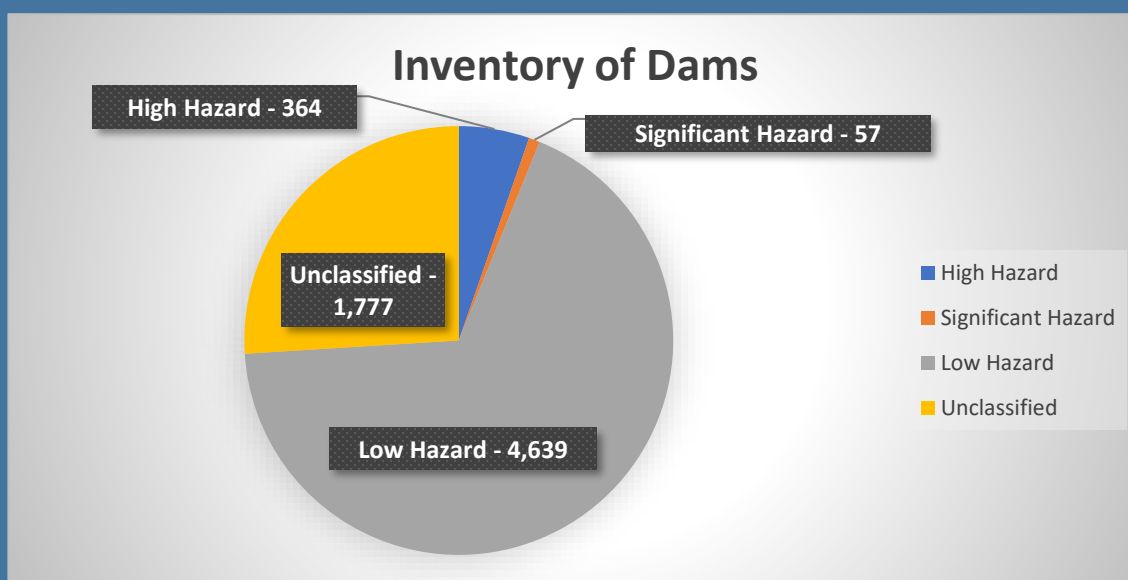
Dam Safety

The state's dam safety regulations were implemented to protect life and property downstream of manmade dams. Dams in the state are classified as either High Hazard, Significant Hazard, or Low Hazard in accordance with the state's Dam Safety Regulations.

The Dam Safety Division in the Office of Land and Water Resources reviews plans for repairs or modifications to existing dams, reviews plans for the construction of new dams, conducts and reviews dam inspections, performs engineering analyses of dams, and reviews and approves Emergency Action Plans (EAPs) for High Hazard dams in addition to other duties. There are currently 364 High Hazard dams, 57 Significant Hazard dams, 4,639 Low Hazard dams, and 1,777 unclassified dams, totaling 6,837 dams on inventory in Mississippi. Unclassified dams are dams upon which preliminary engineering analysis

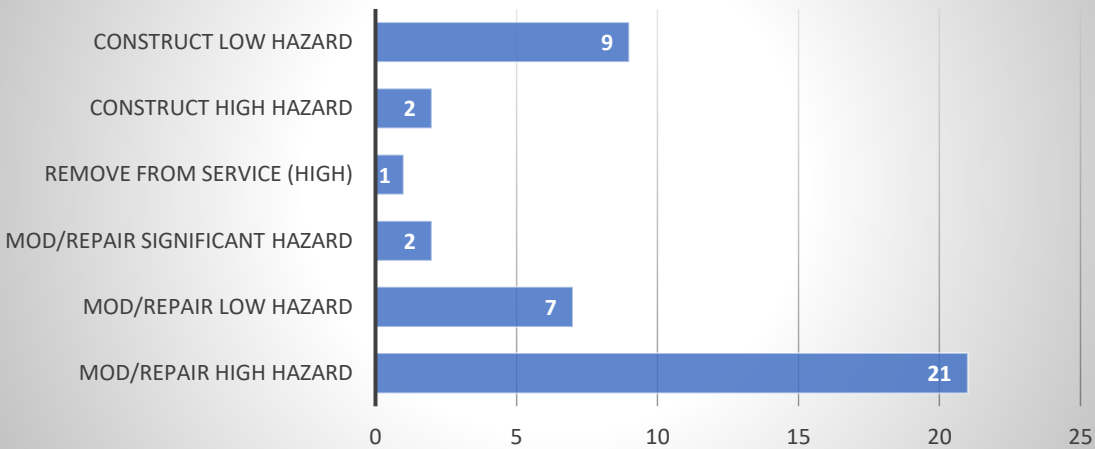
shows that it could potentially be either High or Significant Hazard, but further analysis is needed for proper classification.

Regulations require that dam owners perform annual inspections of their High and Significant Hazard dams and also have periodic inspections performed by a registered professional engineer at least once every five years. Dam owners are required to address any deficiencies noted during inspections resulting in applications to MDEQ for modification and/or rehabilitation. MDEQ also performs random inspections to verify that the conditions of the dams are being accurately reported in submitted inspection reports.



During Fiscal Year 2020, 350 dams were inspected and the information produced by these inspections resulted in dam owners initiating repairs or rehabilitation on 21 High Hazard dams. The Division also reviewed and approved applications to permanently take one High Hazard dam out of service, to modify seven Low Hazard dams, and to construct nine new Low Hazard dams and two new High Hazard dams.

FY 2020 Applications Reviewed



There are currently 272 Emergency Action Plans (EAPs) on file for High Hazard dams, and the Division's goal is to have all owners of High Hazard dams submit EAPs for review and approval. Compliance with this goal presently stands at approximately 75 percent due a number of dams being recently reclassified to High Hazard. The approval process includes review and approval at the county level by the local Emergency Management Agency and all first responders that would be required to implement the plans. This procedure has extended the anticipated schedule for completing the documents, but the involvement of local agencies in the plan development greatly enhances the value of the plans in safeguarding lives and property in the event of a dam failure.

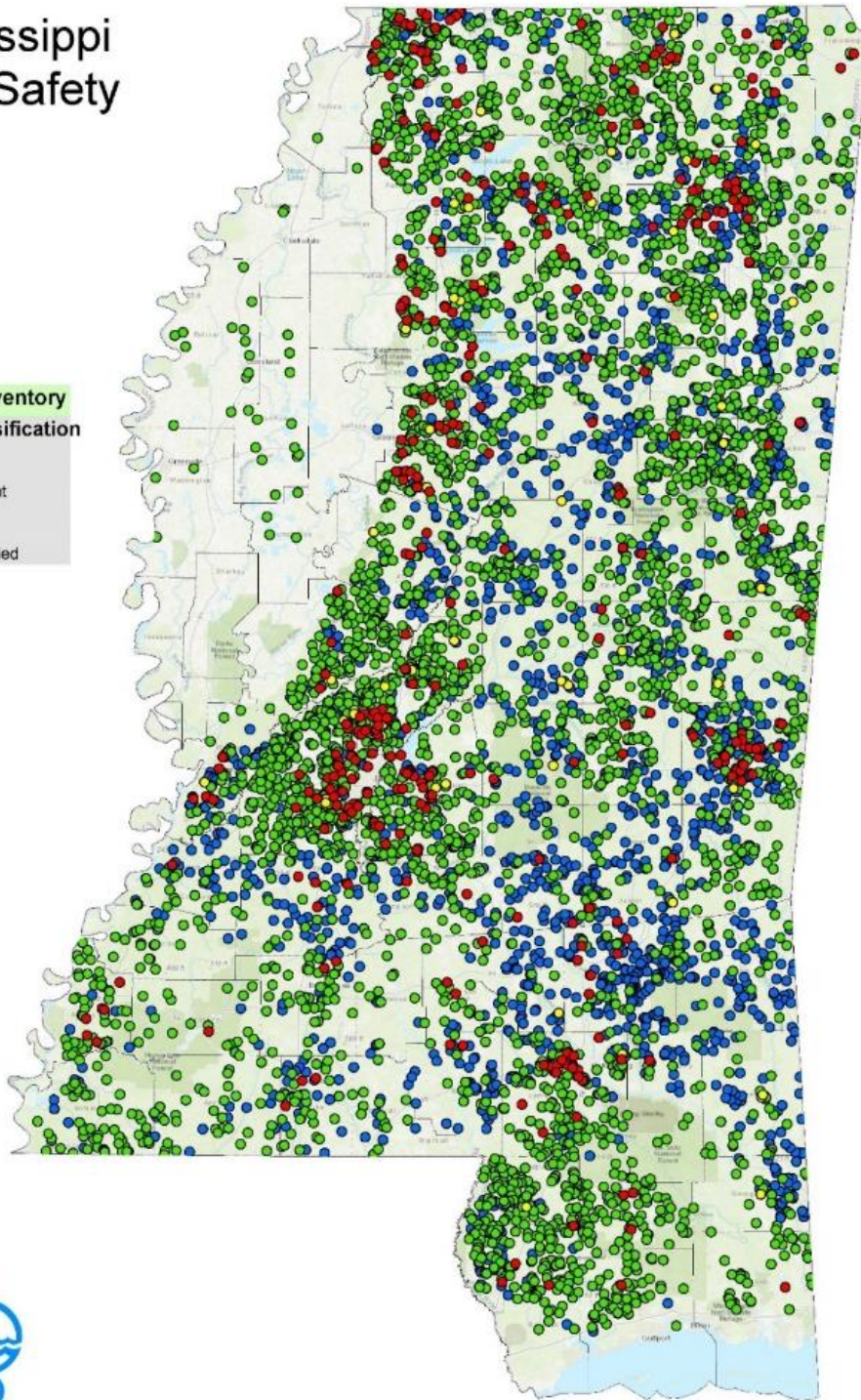
In addition, staff have been working to identify dams that have been constructed in the past 30 years or more that should be included on the state's inventory of dams. To date, the Division has collected basic inventory data and performed hazard class assessments for over 3,500 dams that were not previously on the state's inventory.

One of the other major duties of the Dam Safety Division is to respond to dam incidents and failures. Staff members responded to 14 dam incidents or failures in Fiscal Year 2020, and were able to mitigate each emergency successfully. During emergencies, the Dam Safety Division provides on-site response and technical assistance to county emergency managers and dam owners

Mississippi Dam Safety

Dams on Inventory Hazard Classification

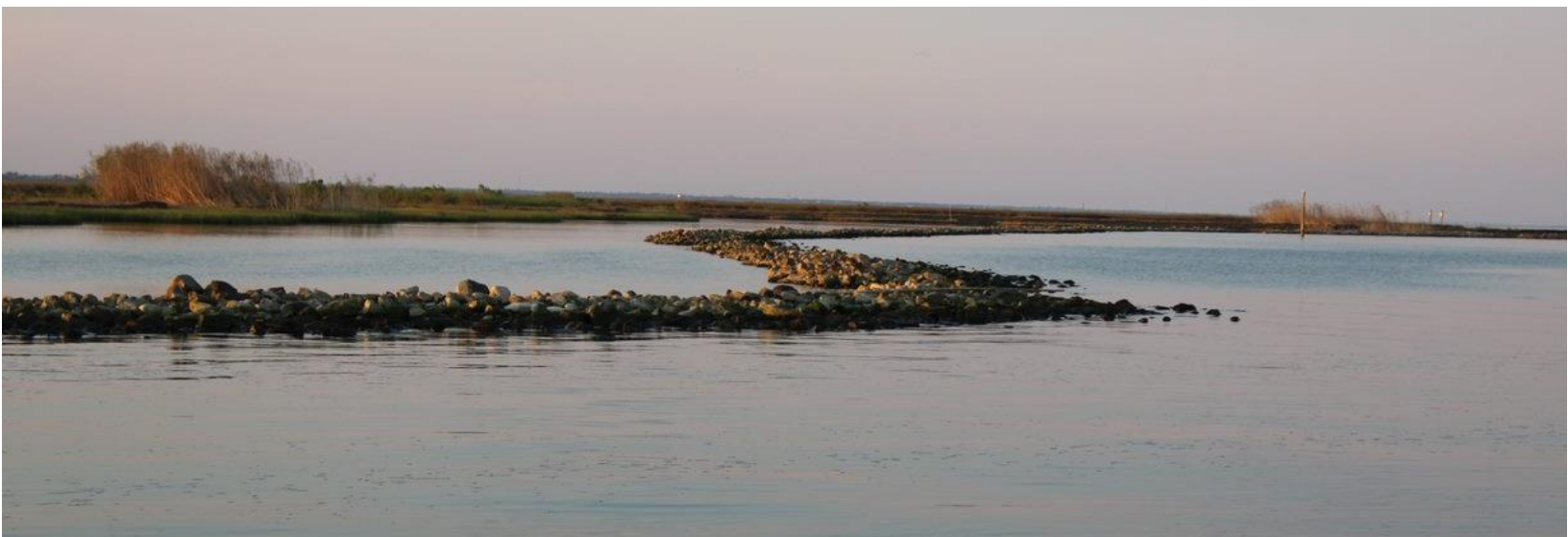
- High
- Significant
- Low
- Unclassified



Map Produced: August 05, 2018

Oil Spill Restoration

MDEQ continues to lead the state's efforts to restore and enhance Mississippi's natural resources following the 2010 *Deepwater Horizon* oil spill. Executive Director Chris Wells serves as Mississippi's Trustee on the Deepwater Horizon Natural Resource Damage Assessment Trustee Council (NRDA Trustee Council), the Governor's designee for The Resources and Ecosystems Sustainability, Tourist Opportunities and Revived Economies of the Gulf States Act (RESTORE Act) which includes being the Mississippi designee on the Gulf Coast Ecosystem Restoration Council (RESTORE Council), and serves as the state's designee for the National Fish and Wildlife Foundation (NFWF) Gulf Environmental Benefit Fund (GEBF). Together these bodies, comprised of federal agencies, the five Gulf states, and a congressionally mandated non-governmental organization are working to implement multiple projects and initiatives to restore the natural resources of the Gulf of Mexico region.



Mississippi Restoration Funds

As a result of the oil spill, and settlement of claims, Mississippi will receive in excess of \$1.35 billion to support the state's recovery and restoration efforts. These funds are allocated to Mississippi from civil and criminal penalties levied against the responsible parties under the Clean Water Act, penalties levied against the responsible parties under the Oil Pollution Act, and from the state's economic losses claim. The economic claims funds are not implemented by MDEQ. The restoration funds that MDEQ manages for implementing restoration projects come from three primary funding sources:

- RESTORE Act - \$702 million
 - Direct Component (Bucket 1) - \$372 million
 - Comprehensive Plan Component (Bucket 2) – TBD (Under the RESTORE Act, approximately \$1.59 billion will be administered under Bucket 2. Each member of the RESTORE Council is eligible to receive funding in a competitive process.)
 - Spill Impact Component (Bucket 3) - \$304 million
 - Centers of Excellence Research Grants Program (Bucket 5) - \$26 million
- NFWF GEBF - \$356 million
- Natural Resource Damage Assessment (NRDA) - \$296 million

Office of Restoration

MDEQ's Office of Restoration oversees and manages the implementation of the state's restoration efforts stemming from the oil spill. The office manages all aspects of restoration funded through the NRDA process, the RESTORE Act, and the NFWF GEBF for the State of Mississippi. Using a team of scientists, engineers, and other subject matter experts, MDEQ works with state and federal agencies, local governments, non-governmental organizations (NGOs), residents, industries, and business owners to develop and implement restoration projects.

MDEQ continues to engage the public throughout the restoration process. Mississippi's citizens have the opportunity to submit restoration project ideas into the state's project idea portal on the agency's website. Since its inception in October 2013, the project idea portal has received more than 1,200 submissions ranging from ecological projects, to economic development, to infrastructure projects. Additionally, MDEQ disseminates information about the agency's upcoming projects, public meetings, and other information concerning restoration work using a direct texting service, email, the agency's website, and Twitter, among other outreach methods, including the annual Mississippi Restoration Summit.

The RESTORE Act

The RESTORE Act makes available 80 percent of Clean Water Act (CWA) civil penalties paid by the responsible parties for the oil spill (i.e. BP and Transocean) for programs, projects, and activities that restore and protect the environment and economy of the Gulf Coast through the Gulf Coast Restoration Trust Fund. Within the RESTORE Act, there are five funding components (commonly referred to as “buckets”), which make funds available to each of the Gulf States in accordance with certain legal parameters:

- Direct Component (Bucket 1)
- Comprehensive Plan Component (Bucket 2)
- Spill Impact Component (Bucket 3)
- National Oceanic and Atmospheric Administration (NOAA) Science Program (Bucket 4)
- Centers of Excellence Research Grants Program (Bucket 5)

The State of Mississippi is only involved in the administration of funds from Buckets 1, 2, 3, and 5. The Direct Component and the Centers of Excellence Research Grants Program Component are administered by the U.S. Department of the Treasury, the Comprehensive Plan Component and the Spill Impact Component are administered by the RESTORE Council, and the NOAA Science Program is administered by NOAA.

The RESTORE Council was established by the RESTORE Act to develop and oversee implementation of a comprehensive plan to help restore the ecosystem and economy of the Gulf Coast Region in the wake of the oil spill. The RESTORE Council is comprised of governors, or their respective designees, from the five affected Gulf States, the Secretaries from the U.S. Departments of the Interior, Commerce, Agriculture, and Homeland Security as well as the Secretary of the Army and the Administrator of the EPA.

RESTORE Act in Mississippi

Direct Component (Bucket 1)

GoCoast 2020

In 2012, then-Governor Phil Bryant created GoCoast 2020 to serve as the official advisory body for the allocation of funds received by the State of Mississippi under Bucket 1 of the RESTORE Act.

The GoCoast Committee Chairs were reconvened in July 2016, April 2017, April 2018, and April 2019 to review projects previously recommended and new portal project submissions to formulate a list of priority projects for the governor for amounts available in the next round of funding. Due to the circumstances surrounding COVID-19, the GoCoast Committee did not convene in 2020.

Multiyear Implementation Plan

In April 2020, the U.S. Department of the Treasury accepted Amendment No. 4 to Mississippi's Multiyear Implementation Plan (MIP). The MIP describes the projects, programs, and activities, announced at the annual Mississippi Restoration Summit, for which Mississippi will spend "Bucket 1" funds available to the state. Mississippi's MIP Amendment No. 4 included the following ten updates totaling approximately \$21.3 million of new or additional project funding:

- Improved Fiber Optic Infrastructure (Removed from the MIP, freeing up \$4.95 million for other projects)
- Mississippi Gulf Coast Water Quality Improvement Program (\$1 million in additional funding)
- University of Southern Mississippi Oyster Hatchery and Research Center (\$4.4 million in additional funding)
- Buccaneer State Park Improvements (\$1.1 million)
- Biloxi Point Cadet Marina Upgrades (\$3.3 million)
- City of Moss Point Interstate 10 Commercial Corridor Improvements (\$3.3 million)
- Mississippi State University Northern Gulf Aquatic Food Research Center (\$3.3 million)
- Mississippi Gulf Coast Community College Center for Security and Emerging Technologies (\$3.3 million)
- University of Southern Mississippi Ocean Enterprise Entrepreneurship Program (\$1.1 million)
- Planning Assistance – MIP Amendment Development (\$500,000 in additional funding)



Council Selected Component (Bucket 2)

In December 2015, the RESTORE Council approved the Funded Priorities List (FPL) totaling approximately \$156.6 million in restoration activities across the Gulf. Mississippi has four projects on the approved FPL. The projects are:

- Strategic Land Protection, Conservation, and Enhancement of Priority Gulf Coast Landscapes (\$15.5 million) - A coordinated multi-state strategy for land protection, conservation and enhancement of priority lands across the Gulf.
- SeaGrant Education and Outreach (\$750,000) – A project to undertake education and outreach activities to describe the values of land protection for habitat, water quality improvement and for securing the future of the Gulf of Mexico.
- The Mississippi Sound Estuarine Program (\$2.27 million) – A project to establish the Mississippi Sound Estuarine Program to bridge critical upland/terrestrial habitats to open blue water, connect research priorities with restoration goals, and engage the community of the Mississippi Sound to tailor Mississippi’s conservation needs with community benefits.
- Enhancing Opportunities for Beneficial Use of Dredge Sediment (\$2.18 million) – A project to provide funding for beneficial use (BU) planning, design, engineering, feasibility, and permitting to get sites construction ready so that a significant amount of habitat can be created when additional funds become available.

Currently, the RESTORE Council is in the process of approving FPL 3b. In FPL 3b, Mississippi has submitted proposals for the inclusion of two programs:

- Coastal Nearshore Habitat Restoration and Development Program (\$34.6 million) – This program is a 10-year program that will support the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands of the Gulf Coast Region by creating, restoring, and enhancing coastal habitat through the dedicated sourcing of materials.
- Water Quality Improvement Program (WQIP) for Coastal Mississippi Waters (\$34.25 million) – The Bucket 2 WQIP will dovetail into the existing Bucket 1 and Bucket 3 WQIPs and will support the overall water quality improvement mission of the Office of Restoration. This program would include planning, engineering and design, septic-to-sewer conversion, implementation of new stormwater and wastewater systems, and repairing/upgrading existing stormwater and wastewater systems.

Spill Impact Component (Bucket 3)

In April 2020, the RESTORE Council, approved Mississippi’s State Expenditure Plan (SEP) Amendment. The SEP describes the project, programs and activities for which Mississippi will spend “Bucket 3” funds available to the state. The SEP Amendment includes three updates totaling approximately \$19 million:

- Mississippi Gulf Coast Water Quality Improvement Program (\$7 million in additional funding) - This program includes planning, engineering and design, septic-to-sewer conversion, implementation of new stormwater and wastewater systems, and repairing/upgrading existing stormwater and wastewater systems.
- Beneficial Use of Dredge Material for Marsh Creation and Restoration in Mississippi (\$7 million) - This project will maximize and accelerate marsh creation and restoration by pairing the use of BU materials with local dredging needs in each of the three coastal counties.
- Mississippi Beachfront Resilience (\$5 million) - This program will support the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region through the restoration and development of sand dunes, and protection of beaches with additional boardwalk on Mississippi Gulf Coast beaches.

Centers of Excellence Component (Bucket 5)

Mississippi's Center of Excellence was selected in July 2015: the Mississippi Based Restore Act Center of Excellence (MBRACE), a partnership among Jackson State University, Mississippi State University, the University of Mississippi, and the University of Southern Mississippi focusing on science, technology, and monitoring in the Gulf Coast Region. In May 2017, MDEQ executed a sub-award agreement with the University of Southern Mississippi, as the lead university for the MBRACE consortium for implementation of the Center of Excellence program. In the past year, MBRACE began wrapping up the research activities occurring under its initial Core Research Program (Core 1), and is now in the process of beginning its second Core Research Program (Core 2) which will act as a continuation of the activities which occurred under Core 1. Additionally, in the past year, MBRACE competitively selected several research projects which have been awarded funding under the Competitive Research Program.

National Fish and Wildlife Foundation

Mississippi will benefit from \$356 million in restoration as a result of the criminal settlements resulting from the oil spill. The National Fish and Wildlife Foundation (NFWF) administers these funds through the Gulf Environmental Benefit Fund (GEBF) has awarded grants for 25 projects in Mississippi thus far under this program with a total current value of nearly \$157 million.

NFWF GEBF projects during Fiscal Year:

- Enhancement of St. Louis Bay Oyster Reef (\$2.8 million)
 - This project was awarded directly to The Nature Conservancy (TNC) for implementation. The project will expand an existing oyster reef in St. Louis Bay by 20 acres. Restoration will be accomplished through the deployment of clutch material at an existing ten-acre oyster reef site to add acreage and increase

vertical relief. The vertical relief will ensure greater resilience to occasional incidents of low dissolved oxygen as well as enhance fisheries habitat.

- Mississippi Offshore Artificial Reef and Habitat Enhancement (\$2.6 million)
 - This project was awarded directly to MDMR for implementation. This project will create seven to twelve artificial reefs in Mississippi waters to provide ecological benefits to marine fishes in offshore areas. Artificial reefs will be constructed utilizing decommissioned materials from the Ingalls dry dock facility in Pascagoula and deployed to optimize ecological benefit to fishes and other reef organisms. Reef sites will be managed and maintained by the Mississippi Gulf Fishing Banks in coordination with MDMR's Artificial Reef Program. MDMR will also collect high resolution benthic mapping of the project area and document colonization of reefs by juvenile fishes.
- Invasive Species Management on Coastal State Lands – Phase II (\$800,000)
 - This project will develop invasive species management activities to control and/or eradicate the invasive Amazonian Apple Snail in the lower Pascagoula River estuary. Eradication efforts would include removing egg masses from structures and removing live snails opportunistically or through trapping. Progress in controlling the non-native snail will be assessed after two years to determine if the control strategy is having a positive impact.
- Reef Fish Assessment, Phase IV (\$3.6 million)
 - This project funds continuing assessments of reef fish in coastal Mississippi and nearshore Gulf waters. Collection of biological, environmental, and fishery-dependent data will help to reduce the scientific uncertainty around several key factors influencing red snapper and other reef fish population structures and stock assessments. Prior to implementing an earlier phase of this project with funding from the GEBF, Mississippi did not utilize a standardized reef fish sampling protocol to obtain vital fishery data on abundance, distribution and life-history characteristics of red snapper and other reef fish in coastal Mississippi. As such, the state's ability to assess its reef fish populations and thereby contribute to regional management decisions was limited. This proposal represents Phase IV (year five of sampling and analysis) of the effort to address the GEBF funding priorities associated with improving red snapper and reef fish data collection to promote sustainable fisheries management. Phase IV is the final phase and will include a cumulative programmatic report for the five-year sampling effort.



Natural Resource Damage Assessment (NRDA)

The Deepwater Horizon Natural Resource Damage Assessment (NRDA) is the legal process for developing the public's claim for natural resource damages against the party or parties responsible for the oil spill and to seek compensation for the harm done to natural resources and those services they provide. It also provides for the development of a restoration plan or a series of plans to restore or replace those resources as well as the structure by which Mississippi and others will plan and implement restoration of the Gulf of Mexico and/or compensation for damages. The NRDA Settlement for Mississippi is approximately \$296 million.

Early Restoration

In 2011, BP agreed to provide up to \$1 billion toward Early Restoration projects to address injuries to natural resources caused by the oil spill. This Early Restoration agreement, "Framework for Early Restoration Addressing Injuries Resulting from the Deepwater Horizon oil spill" (Framework Agreement), represented a preliminary step toward the restoration of injured natural resources. The Framework Agreement was intended to expedite the start of restoration in the Gulf in advance of the completion of the injury assessment process. Under the Framework Agreement, DOI, NOAA, and the five spill-affected Gulf states each received \$100 million to implement early restoration projects. The remaining \$300 million was allocated by NOAA and DOI for early restoration projects proposed by state trustees.

- Phase I
 - Mississippi's projects from Phase I included the laying of the largest oyster cultch in the history of the Mississippi Sound totaling \$11 million, and also included \$2.6 million on a near shore artificial reef enhancement project. Construction activities for both projects are complete. Monitoring activities are complete for the artificial reef project and monitoring activities will continue for the oyster cultch project through 2020. Completed projects brought jobs to the Mississippi Gulf Coast as local contractors were hired to perform this work.
- Phase II: There were no Phase II projects for Mississippi.
- Phase III: Mississippi has four Phase III projects (\$68.957 million)
 - Hancock County Marsh Living Shoreline (\$50 million)

This project included construction of six miles of breakwaters that will develop, over time, into living reefs. Benefits include reduction of erosion, re-establishment of oyster habitat, and enhanced fisheries resources and marsh habitat. Approximately 46 acres of marsh will be constructed in 2020-2021 to protect and enhance the existing shoreline near Heron Bay. In addition, 46 acres of sub-tidal oyster reef were created in Heron Bay to protect the shallow bay and increase oyster production in the area. The estimated cost of this project is approximately \$50 million of which NOAA is funding a portion. Construction activities began in 2016 and will continue through 2021.

- Restoration Initiative at the INFINITY Science Center (\$10.4 million)
INFINITY is an interactive science research, education, and interpretive center located in Hancock County. Approximately \$10.4 million of early restoration funding was used to develop state of the art exhibits. Completed in 2018, these enhancements are intended to replace lost recreational opportunities through enhanced visitors' access to coastal natural resources. Completed enhancements include the approximate three mile portion of the Possum Walk Heritage Trail and associated electric tram tour, the Biome Boardwalk showcasing natural habitats of native landscaping, construction of a new 3-D Theater, refurbishment of the Xsphere theater, and the construction of 11 new interior science exhibits used for learning about the environment. Monitoring is ongoing.
- Pop's Ferry Causeway Park (\$4.7 million)
This project in Harrison County included construction of an interpretive center, trails, boardwalks, fishing piers, bait shop, ADA kayak launch, and other recreational enhancements. This project replaces lost recreational opportunities by enhancing existing amenities allowing visitors to fish, crab, and observe nature.
- Pascagoula Beachfront Promenade (\$3.8 million)
Early restoration funds for this project were used to help complete a two-mile, ten-foot wide lighted concrete pathway complete with amenities. The purpose is to restore the loss of recreational opportunities by enhancing access to the Mississippi Sound and its natural resources.



- Phase IV Project
 - Restoring Living Shorelines and Reefs in Mississippi Estuaries (\$30 million)
This Phase IV Early Restoration project includes restoration of intertidal and subtidal reefs and the use of living shoreline techniques including breakwaters. Projects will be implemented at locations in Grand Bay and Graveline Bay (Jackson County), Back Bay of Biloxi and vicinity (Harrison County), and St. Louis Bay (Hancock County). The project builds on recent collaborative projects implemented by MDMR, NOAA, and The Nature Conservancy. When completed at all locations, the project will provide for construction of breakwaters, intertidal and subtidal reef habitat across the Mississippi Gulf Coast. Over time, the breakwaters, intertidal and subtidal restoration areas will develop into living reefs that support benthic secondary productivity, including, but not limited to oysters/bivalve mollusks, annelid worms, shrimp, and crabs. Breakwaters will reduce shoreline erosion as well as marsh loss. The components in this project are scheduled for construction in 2020-2021.

Post Settlement Restoration

In 2016, Mississippi and the other NRDA trustees completed the Final Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement and Programmatic Environmental Impact Statement (PDARP/PEIS). It includes an assessment of the injury to natural resources caused by the oil spill and the types of restoration needed to compensate the public. The plan includes \$183 million for projects in Mississippi for the following restoration types:

- Wetlands, Coastal and Nearshore Habitats
- Habitat projects on Federally Managed Lands
- Nutrient Reduction (Nonpoint Source)
- Sea Turtles
- Marine Mammals
- Birds
- Oysters
- Provide and Enhance Recreational Opportunities
- Monitoring and Adaptive Management



The Mississippi Trustee Implementation Group (MS TIG) is responsible for ensuring these funds are used to restore the natural resources and services in Mississippi that were injured by the oil spill. The MS TIG is comprised of MDEQ, NOAA, the U.S. Fish and Wildlife Service, the National Park Service, the Bureau of Land Management, USDA, and EPA.

The MS TIG develops plans, chooses, and implements specific restoration actions that are consistent with the PDARP/PEIS. Each restoration plan will be integrated with the appropriate analysis of tiered environmental impacts. TIG decisions are made by consensus and documented through a public Administrative Record. The Trustees ensure that the public is involved through public notice of proposed restoration plans, opportunities for public comment, and consideration of all comments received.

MS TIG Restoration Plan 1

The first plan developed by the MS TIG was released in June 2017 and fulfilled the restoration plan requirement under the Oil Pollution Act and the implementing regulations, and the environmental assessment requirement for compliance with the National Environmental Policy Act. The plan includes the following three projects, and they are currently in implementation.

- Graveline Bay Land Acquisition and Management Project (\$11.5 million)
The Graveline Bay Land Acquisition and Management project includes acquisition, preservation, and habitat management on parcels of publicly owned lands in the Graveline Bay Coastal Preserve and nearby private and publicly owned lands in Jackson County. Implementing Trustees for the project are MDEQ working with the

Department of the Interior, and the Mississippi Department of Marine Resources (Coastal Preserves) is a project partner. The project will preserve and enhance up to 1,410 acres of habitat. Acquisition and preservation will include the purchase of land from willing sellers and preservation in perpetuity in order to protect natural habitats. Habitat management will include a combination of mechanical, chemical, and prescribed fire treatments as well as debris removal and/or road repair and/or removal and culvert replacement to help restore habitats. Target habitat will include estuarine marsh, shoreline (beach), and other coastal riparian habitats which provide foraging, loafing, and nesting for bird species that were injured in the spill. Restoration measures will serve to decrease habitat fragmentation and increase habitat connectivity to other large conservation parcels in the area. They will also help restore injuries to coastal, wetland, and nearshore habitats in Mississippi, as well as provide benefits to wading birds and other bird species injured by the spill. Acquisition and management will be implemented with available funding for up to ten years. Priority tracts have been identified and landowner conversations are being initiated.

- Grand Bay Land Acquisition and Habitat Management Project (\$16 million)
The Grand Bay Land Acquisition and Habitat Management project will result in a combination of acquisition and habitat management within the Grand Bay National Wildlife Refuge (NWR), Grand Bay National Estuarine Research Reserve (NERR), and Grand Bay Savanna Coastal Preserve boundaries in Jackson County. MDEQ and the Department of the Interior are Implementing Trustees for the project. The Mississippi Department of Marine Resources and the U.S. Fish and Wildlife Service are project partners. The project includes preservation of up to 8,500 acres and enhancement of up to 17,500 acres of habitat. Habitats within the project area include coastal marsh, beach, freshwater marsh, pine savannas and flatwoods, forested freshwater scrub-shrub, and open water including tidal creeks and bayous. Acquisition and preservation will include the purchase of land from willing sellers and preservation in perpetuity in order to protect natural habitats. Habitat management will include a combination of mechanical, chemical, and prescribed fire. These actions will help restore injuries to wetlands, coastal and nearshore habitats in Mississippi injured by the spill, as well as provide benefits to wading birds and other bird species injured by the spill. Acquisition and management will be implemented with available funding for up to 15 years. In December 2018, over 1,500 acres were acquired by the State of Mississippi under the project and will be jointly managed by staff at the Grand Bay National Estuarine Research Reserve/Grand Bay National Wildlife Refuge. In 2020, approximately seven additional acres were acquired. Restoration activities completed include chemical (i.e., herbicide) application of approximately 166 acres, prescribed fire operations on 87 acres, mastication (i.e., mulching) of approximately 110 acres, and the installation and maintenance of approximately nine miles of fire lanes.
- Upper Pascagoula River Water Quality Enhancement Project (\$4 million)
The Upper Pascagoula River Water Quality Enhancement project includes development and implementation of conservation plans to reduce nutrient and sediment contributions in the watershed. The USDA (lead), EPA, and MDEQ are Implementing Trustees for the project. The Natural Resources Conservation Service

is a project partner. The project includes an extensive outreach program to landowners. Conservation practices will be planned and implemented on properties throughout the watershed with emphasis given to properties bordering rivers and streams. Conservation actions for the project will include the following: natural resource inventories; soil, water and nutrient conservation measures; habitat restoration; and erosion control. USDA has targeted the priority watersheds, conducted public meetings, and reached out to potential participating landowners. EPA has initiated in-stream monitoring of the project.

Mississippi TIG Restoration Plan II

The second plan developed by the MS TIG was released for public comment in April 2020 and includes the following proposed projects. Implementation of the projects will begin 2021.

- Oyster Spawning Reefs in Mississippi (\$10 million)
The project will restore or create a minimum of 100 acres and a maximum of 400+ acres of high-relief cultch placements in up to six locations in the Mississippi Sound and areas including St. Louis Bay, Heron Bay, Back Bay/Biloxi Bay, Graveline Bay, Pascagoula Bay, and Grand Bay in Hancock, Harrison and Jackson counties. This project includes the possibility of placement of more than 400 acres where it is feasible, depending on engineering and design, costs, and other considerations. Cultch placement will be prioritized to areas determined to be the most suitable to maximize restoration benefits within the potential cultch placement areas. The siting of reefs will consider substrate suitability, on-going and planned management activities, and other environmental factors that could affect restoration efforts. No more than 35 percent of cultch will be placed in harvestable (tonging only) zones) with the remaining cultch placement in non-harvestable zones (Restricted and Prohibited Areas).
- Mississippi Oyster Gardening Program (\$500,000)
The project will be implemented over a five-year period utilizing volunteers, and is continuation of the current NFWF-GEBCF funded project in which volunteers grow sub-adult oysters from spat on shell stock in gardens that hang from waterfront piers/wharves and docks. Project objectives include the production of approximately 1,000 sub-adult oysters per site per year. Estimates indicate that approximately 210,000 sub-adult oysters could be produced over the five-year life of the project, enough for a density of 20 oyster per square meter across approximately three acres of oyster reef.
- Wolf River Coastal Preserve Habitat Management- Dupont Tract and Bell's Ferry Tract (\$3.13 million) The project will restore ecologically connected coastal habitats adjacent to St. Louis Bay and benefit the habitat continuum from salt marshes to coastal freshwater wetlands and upland buffer communities. Habitat management will occur within 2,500 acres of the Wolf River Coastal Preserve and will include hydrologic restoration, a combination of mechanical, chemical, and prescribed fire treatments, and prescribed grazing.

- Hancock County Coastal Preserve Habitat Management – Wachovia Tract (\$1.76 million) The project will restore ecologically connected coastal habitats by providing habitat management to pine flatwoods as well as freshwater and brackish marsh within the existing 1,203-acre project area. Management activities will include a combination of mechanical, chemical, and prescribed fire treatments.



OUTREACH, RESEARCH AND EDUCATION

Environmental laws, rules, and programs can be complex, and MDEQ's public outreach efforts are aimed at helping citizens, schools, businesses, industries, and others learn about required and recommended actions to protect the environment and public health.

Pollution Prevention Program

The MDEQ Pollution Prevention (P2) Program is coordinated by the Waste Division with the various air, water and waste environmental media programs in the agency. The P2 program coordinates multiple activities focusing on the reduction of wastes at the source that can impact the environment. The Mississippi P2 program efforts are supported in part by a Pollution Prevention Grant from EPA which provides the state with additional resources to assist industries, businesses and government agencies and institutions with pollution prevention and waste minimization efforts such as:

- Providing information and technical assistance to businesses and industries, environmental consultants, local governments, state and federal agencies, and system operators on hazardous and non-hazardous waste management and pollution prevention practices.
- Supporting the Mississippi Economy, Energy, and Environment (ME3) initiative which includes projects, programs and efforts designed to focus on sustainability and the triple bottom line of energy, environment, and the economy.
- Reviewing, managing, and monitoring the waste minimization plans, annual waste minimization certified reports, and the calculation of the annual P2 fees for Toxic Release Inventory Form Filers and Hazardous Waste Generators.
- Providing administration and implementation of the Envision Heightened Awareness Nurturing Conservation and Environmental Excellence (enHance) stewardship program recognizing the companies, businesses, governments and institutions that goes above and beyond standard environmental requirements.

- Coordinating and partnering with state and the federal government agencies and non-governmental entities to promote effective pollution prevention practices.

During Fiscal Year 2020, the MDEQ P2 Program accomplished the following:

- Continued the strong partnership with the Mississippi Manufacturing Association (MMA) through a contract with MMA's Manufacturing Extension Partnership (MMA-MEP) to assist in providing the P2 and E3 technical assistance program for Mississippi manufacturers.
- Reviewed and monitored 198 annual waste minimization certified reports submitted by various industries and facilities around the state.
- Completed all of the conditions and commitments of the 2019-2020 Mississippi/EPA Pollution Prevention grant agreement.
- Reviewed and processed applications for the 2019 class members for the enHance environmental stewardship recognition program.
- Worked with the Manufacturing Extension Partnership (MEP) to update the Energy, Economy, and Environment (E3) Framework to better serve Mississippi manufacturers and branded the new framework as ME3.

The P2 program has been working in the latter part of Fiscal Year 2020 to develop virtual alternatives for many of the assistance and outreach activities. Most of these virtual or online activities will be implemented in Fiscal Year 2021.

enHance Environmental Stewardship Program

The P2 program sponsors the agency's environmental stewardship program, enHance. The enHance program has grown to 37 active members representing top environmental performers throughout the state. enHance is a voluntary stewardship program that recognizes committed environmental leaders who accomplish goals beyond their standard regulatory requirements. enHance is open to facilities, cities, counties, and other entities who are interested in the program, and applicants can choose to apply for membership at three tier levels: Leader, Steward, or Associate. The program recognizes those business, industries, and institutions and governmental organizations for their work to promote energy efficiency efforts, reduce wastes discharges to the environment, reduce the toxicity of wastes being generated, provide networking and training resources for pollution prevention, and encourage the use of environmental management systems for continuous environmental improvement.

MDEQ's accepted three new members and twelve renewing memberships into the enHance program for the 2020 class. The formal recognition of these new and returning members

had been planned for the annual enHance workshop and awards luncheon held in Jackson each April that was cancelled due to the COVID-19 pandemic. The P2 program plans to recognize the members of the 2020 enHance class in articles and newsletter profiles over the coming months and will formally recognize the 2020 Class at the annual workshop in 2021.

This past year marks the twelfth year of the enHance program. Over those years, the enHance members have made some remarkable accomplishments in making environmental and community improvements. In the past year, members' projects have resulted in over 59,000 pounds of solid waste being reduced, 7.4 million gallons of water saved, and the reduction of 308,000 MMBTU in energy use. enHance members also reported more than \$940,000 saved and reductions in total air emissions of more than 200 tons.

enHance program members have achieved the following total reductions to pollution and wastes:

- Eliminated 318,000 pounds of hazardous waste.
- Reduced, reused, or recycled 1.5 million pounds of solid waste.
- Saved more than 290 million gallons of water.
- Reduced annual energy use by more than six billion kilowatt hours for nearly 20 million MMBTUs of total annual energy savings.
- Reported cost savings from waste reduction practices of over \$9 million.

These results have been achieved through changes in operating procedures, redesign of products or packaging, beneficial re-use or recycling of materials, installation of more efficient equipment, and other similar beneficial practices. In Fiscal Year 2020, the enHance program continued to promote these best management practices to encourage more widespread implementation through training sessions, mentoring, and participation.



Office of Community Engagement

The Office of Community Engagement (OCE) continues to play a pivotal role in the programs and initiatives administered by the MDEQ to further the mission to protect human health and the environment. Coordinating engagement with the public, municipalities, industries, and other regulators is fundamental in forging partnerships and allows shared accountability in developing strategies to address environmental concerns. The OCE remains committed to assisting the agency programs in addressing environmental impacts, connecting stakeholders to resources and providing platforms for meaningful involvement.

Environmental Justice Program

The OCE's Environmental Justice (EJ) Program assists agency programs in addressing environmental impacts across Mississippi. During Fiscal Year 2020, the EJ program provided recommendations to Limited English Proficiency populations, designed an environmental justice course for MDEQ's regional office field staff, and developed guidelines for community engagement during COVID-19

2020 Federal Resources Workshop

The OCE staff provided an overview of MDEQ's resources at Congressman Bennie Thompson's 2020 Federal Resources Workshop, on January 23, 2020, at Mississippi Valley State University to introduce newly elected or re-elected county officials to available support and resources.

Deep Delta Works Career Fair

The OCE, and MDEQ's Lab, participated in the Sharkey County Aspire Team Deep Delta Works Career Fair on November 6, 2019. High school students learned about employment, training and further education.

Small Business Environmental Assistance Program

The OCE provided assistance, and increased health and environmental awareness through the Small Business Environmental Assistance Program (SBEAP). The office staff has fielded over 6,200 calls, attended various local, state, and national trainings, workshops, and meetings. The following are highlights of 2019-2020 SBEAP Activities:

- **Sidon Site Assessment**
The Town of Sidon was able to benefit from the collaboration among SBEAP, contractors, local, and county leaders which resulted in the completion of a site assessment as it relates to multimedia environmental, health, and safety concerns. The mayor was able to gather information to prepare grant proposals for funding needed to address various environmental and safety concerns, along with beautification projects.

- **STEM Girls Rock Symposium**

The OCE participated in the STEM Girls Rock Symposium at Hinds Community College. OCE staff coordinated personnel participation, and designed the display used to engage approximately 500 11th and 12th grade girls about the various STEM positions at MDEQ. Over the course of two days, MDEQ staff, provided interactive activities, and written materials.



- **Dental Category Rule Outreach**

The SBEAP continues to assist small businesses who were subject to the Dental Office Category Rule (40 CFR Part 441) under the Clean Water Act, which requires the installation of amalgam separators at most dental offices. Dental offices subject to the rule submitted a completed one-time compliance form prior to the deadline of October 12, 2020. OCE continues efforts to identify dental offices who are unaware of the rule.

- **Training with Delta Municipalities and Facilities**

The OCE's SBEAP coordinated training sessions, in conjunction with the Office of Pollution Control, for over 100 municipalities and facilities in the Delta Region. The training provided general information about MDEQ environmental permits, compliance, and enforcement as it pertains to wastewater treatment facilities. Municipal leaders, wastewater operators, and contractors were in attendance.

Geology Outreach and Education

MDEQ's Office of Geology staff regularly meet with the public and student groups to discuss Mississippi's unique geology and identify fossils, rocks, gems, and minerals.

Mine Safety and Health Training

The Mining and Reclamation Division offers annual Mine Safety and Health Training to the mining community throughout the state. This training is required by the Mine Safety Health Administration and provided by Geology staff.

Arbor Day Activities

The Mining and Reclamation Division annually participates, at the request of the Mississippi Lignite and Mining Company, in the annual Arbor Day activities for the fourth-grade students of Choctaw County and surrounding area.



Mississippi Academy of Sciences

Office of Geology staff presented abstracts and posters at the 84th Annual Meeting of the Mississippi Academy of Sciences (MAS) held in Biloxi. The meeting was a great success with 28 abstracts/presentations and five student awards given in the Geology and Geography Division. Seven papers of those presentations were given by Office of Geology staff, and Paul Parrish served as the Division Vice Chair.

Geoarcheology Native Lithic Material Database

MDEQ staff produced a comparative database, a state geological map depicting outcrop belts of lithic material resources, and information on the identification of the state's geologic natural resources of available lithic materials commonly found on Mississippi's pre-historic sites. This will be used by universities and private researchers, cultural resources managers at both state and federal level, private cultural resource management firms, and private collectors and hobbyists to better help them document the state's unique and valuable cultural resources.

Mississippi Museum of Natural Science Annual Fossil Road Show

The Annual Fossil Road Show was held in March at the Mississippi Museum of Natural Science in Jackson. Office of Geology staff identified fossils for the public, and James Starnes was a guest lecturer for the Fossil Road Show program. Two educational video shorts were produced by Surface Geology staff with Mississippi Public Broadcasting for Mississippi Department of Wildlife Fisheries and Parks entitled "Large Boulder Details Mississippi's Geologic Past" and "Pearl River Historic Canoe at Monticello" highlighting Office of Geology's research collaboration with the Mississippi Museum of Natural Science.



The Mississippi Gem and Mineral Society Annual Rock Show

The Mississippi Gem and Mineral Society Annual Rock Show was held in February 2020 at the Mississippi Trade Mart in Jackson. The Office of Geology operated a booth showing the office's geologic work and exhibited three educational displays: Mississippi's Opal Gemstones, Mississippi Fossils, and Mississippi's Geoarchaeology. Staff also answered questions from the public, identified rocks and fossils, and distributed literature on the state's geology and mineral resources. Small group programs were given for both Boy and Girl Scout troops for Geology Merit Badge requirements.

Mississippi Gem and Mineral Society

Surface geology staff are regular contributors of articles published in the Society's monthly newsletter. Many of these articles end up syndicated and republished in other newsletters of sister organizations of the American Federation of Gem and Mineral Societies throughout the nation.

Mississippi Archaeological Association

Surface Geology staff regularly attends MAA monthly meetings for both the Delta and Madison Chapters to help its members identify and record their collections. Lectures were given by staff at both society's monthly chapter meetings and three professional research papers were presented at the Joint Mississippi Archaeological Association/Louisiana Archaeological Society's annual meeting in Natchez. Educational newsletter articles about the state's geology as it relates to the field of Archaeology are submitted and published quarterly in the Mississippi Archaeology Association Newsletter under the title "Geology for Archaeologists."

Partnering with Universities



Office of Geology staff led a geology class from the University of Southern Mississippi on a collecting trip to the Smith County Lime Pit for Lower Oligocene age fossils and to learn about stratigraphy in Mississippi. A paleontology collecting trip to educate primary school age children about the state's natural history and careers in the earth sciences was organized by the Delta State University Biology Department and led by Surface Geology staff at the Coon Creek

Formation fossil site in Blue Springs. Staff partnered with Mississippi State University to help complete the Natchez Trace Parkway geologic mapping project with the National Park Service. Geology Staff provided mentoring and guidance with University of Mississippi to help graduate students with Geological mapping project efforts under the USGS's EDMAP program.

Individual Social Media Outreach

Geology staff answers numerous questions and requests generated from the “Ask a Geologist” portal on the MDEQ website. Weekly educational posts on the MDEQ social media accounts highlight various aspects of the state’s historical geology and mineralogical resources. Geology staff also maintains a strong online presence with colleagues creating a network with other research institutions on many geological and Paleontological educational sites. This outreach has brought many important finds that help better understand the state’s geology and natural history. Many finds made by the public on their own property have come the office’s attention through this method of outreach with some finds proven to be completely new to science.

Geological Data Collection Activities

Geologic Mapping

Geologic maps of Mississippi created by Office of Geology staff are fundamental to characterizing the environment and have applications in water resources, pollution prevention, mineral resources, and protecting property from geologic hazards such as landslides, swelling clays, and floods.

The geologic mapping program for Fiscal Year 2020 was funded in part by a USGS State Geologic Survey Mapping (STATEMAP) grant. The STATEMAP component establishes the geologic framework of areas that are vital to the welfare of individual states. Each State Geologist determines the state's mapping priorities in consultation with a State Mapping Advisory Committee. These priorities are based on state requirements for geologic map information in areas of multiple issue needs or compelling single-issue needs and in areas where mapping is required to solve critical earth science problems.

Deliverables for the STATEMAP grant included the Fayette, Gin Branch, and Union Church 7.5-minute quadrangles in Jefferson County published in color at a scale of 1:24,000. A "quadrangle" refers to a USGS 7.5-minute quadrangle map, which are typically named after a local physiographic feature. Geologic units mapped and correlated in the subsurface on the maps associated cross sections, include the Miocene age Pascagoula Formation, the Pliocene-age Graham Ferry Formation, Pleistocene-age coastal and river terraces, and Holocene age alluvium.

A county geologic map of Jefferson County is in progress based on a compilation of STATEMAP grant work in Southeast Mississippi in cooperation with MDEQ’s Office of Land and Water Resources.

Flood Mapping

The Office of Geology's Geospatial Resources Division is focused on remote sensing and geographic information systems activities for the State of Mississippi. The division manages the Mississippi Flood Map Modernization Initiative (MFMMI) and the Mississippi Risk Mapping, Assessment and Planning (Risk MAP) Program. The Risk Map program develops and updates digital flood insurance rate maps (DFIRMs) for the 82 counties under funding from FEMA. The program has shifted to Hydrologic Unit Code 8 (HUC_8) sub-basin flood studies, while adding flood risk assessment, flood hazard mitigation, and planning activities and products. As of mid-2020, there are ten HUC_8 Risk MAP projects active in the state and four LAMP (Levee Analysis and Mapping Procedure) projects active in the Mississippi Delta. In Fiscal Year 2020, Preliminary Flood Insurance Rate Maps (FIRMs) covering portions of 23 counties were released to the local communities for review.

A website for the MFMMI is available for the public and local government officials to learn the status of each county's DFIRM mapping project. In addition, 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.

Subsurface Geological and Geophysical Data

The Office of Geology gathers, studies, and archives subsurface geological and geophysical data for ongoing projects and other studies within MDEQ. Focused research is being performed with regard to groundwater and other environmental issues. The Office of Geology also provides support to other state agencies and academia. Geologists respond to requests for information on stratigraphy, groundwater availability, depth of wells, and potential yield of wells from water well contractors, engineering firms, consultants, and private individuals.

Mississippi Digital Earth Model

MDEQ is a member of the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems (Council) that sets policies and standards that 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's Geospatial Resources Division

Resources Division is responsible for MDEM's development. MDEM develops digital geographic information that will serve as the state base map and consists of eight layers of digital information: geodetic control, elevation and bathymetry, orthoimagery, hydrography, transportation, government boundaries, cadastral, and the Gazetteer. MDEQ manages and monitors the MDEM data development contracts and the Quality Assurance of the mapping products that result from this work. Products will be used by state and local governments, engineering firms, and construction companies involved in planning, development, construction, or regulatory work throughout the state.

During Fiscal Year 2020, MDEQ continued monitoring and managing contractors completing work on MDEM data sets. These data included hydrography, elevation / topography LiDAR data, and high-resolution orthoimagery covering different areas of the state. Additionally, work included development of high-resolution local scale hydrography which will be added to the National Hydrography Dataset when completed. All data developed are of MDEM quality and will be made available for distribution through MARIS (Mississippi Automated Resource Information System).

Environmental Geology

Since the 1950s, the Office of Geology has been collecting subsurface geological information by sending scientific instruments down test holes and water wells to record data on rocks and groundwater (i.e. wireline logging). Environmental Geology Division staff logged 42 test holes and water wells during Fiscal Year 2020. The program collected 23,759 feet of data on test holes that otherwise would not have been wireline logged. Division personnel maintained the core and sample library by cataloging and archiving samples from oil and gas tests drilled in the state. Samples and cores were collected and archived from the drilling projects the Environmental Geology Division participated in. Visitors to the sample library during were mostly geoscientists with oil and gas companies, with the balance of guests were from academia and local people interested in soils and gravel resources. Cores and cuttings representing 41 wells were requested. During Fiscal Year 2020, four test holes were drilled and logged for a total of 870 feet to support the Office of Geology's surface geologic mapping program and the Office of Land and Water's Delta research.

Publications

MDEQ's Office of Geology had a record of 47 papers published during Fiscal Year 2020, including eleven articles in *Environmental News* (MDEQ), one article in the *Botanical Society of America*, two articles in the *Gulf Coast Association of Geological Societies*

Transactions, eight abstracts in the *Journal of the Mississippi Academy of Sciences*, seventeen articles in the *Mississippi Geological Society Bulletin*, two open file reports, one article in *Rocky Echoes*, one article in the *Mississippi Archaeological Association Newsletter*, and the second edition (2019) of *Mississippi Environmental Geology* with 396 pages and 772 figures in color. Also published were three 7.5-minute geologic quadrangle maps.

Waste Division Outreach and Engagement

The Waste Division's solid waste, recycling and pollution prevention programs conducted a variety of outreach efforts throughout Fiscal Year 2020 on various aspects of proper solid waste management, waste reduction, and recycling.

- Waste Division staff participated in the "Breakfast with the Regulators" event sponsored by the State Air and Waste Management Association Chapter in July 2019. The event included presentations on the re-organizational efforts of the Office of Pollution Control a regulatory briefing, and a question and answer session with industry attendees.
- The Recycling and Waste Reduction Branch staff participated in a teacher workshop at DeSoto Middle School organized by the DeSoto County Soil and Water Conservation District in July 2019.
- The Waste Division staff attended the Resource Recycling Conference held in New Orleans in August 2019. Staff made a presentation on Mississippi's use of ReTrac's Municipal Measurement Program to measure and report residential recycling in the state.
- The Recycling and Waste Reduction Branch staff presented at the Choctaw County Soil and Water Conservation District student event held at Choctaw Lake in September 2019.
- The State Recycling Coordinator addressed the Jackson Rotary Club on the economic and environmental benefits of recycling and the importance of recycling properly to help grow recycling. The meeting was held in September 2019 at the Mississippi Agriculture and Forestry Museum.

- The Waste Division's Recycling and Waste Reduction Program staff presented information to Elementary Education students at Mississippi College in September 2019 and February 2020 on how to incorporate recycling, reuse, composting and proper waste management lessons in the classroom.
- Solid Waste Policy, Planning and Special Programs Branch staff addressed the Southeast Regional Conference of the Air and Waste Management Association in Pine Mountain, Georgia in September 2019 providing an update on the solid and hazardous waste programs as well as a regulatory update on various state waste management issues.
- Staff from the Recycling and Waste Reduction Branch participated in the Madison County Soil and Water Conservation District's Conservation Day in October 2019 providing presentations and exhibits to help educate students on the importance of recycling in their community.
- Waste Division Solid Waste Program staff assisted the Mississippi Chapter of the Solid Waste Association of North America (SWANA) with their 2019 annual Fall Conference in October 2019 in Natchez, as well as presented and attended the event as participants.
- Waste Division staff assisted the Mississippi Recycling Coalition (MRC) with organizing and holding the 2019 State Fall Recycling Conference held in October 2019 in Oxford. Staff also conducted several presentations at the event.
- The Recycling and Waste Reduction Branch staff addressed employees of the Mississippi State Department of Health in November 2019 with information on the benefits of recycling, how to recycle properly, and the responsibilities of state agencies to provide recycling services at their offices and other properties.
- The Waste Division helped sponsor and staff an e-waste collection event with the Greater Jackson Chamber Partnership, Keep Mississippi Beautiful, Keep Jackson Beautiful, and Magnolia Data Solutions in November 2019 at the Farmers Market in Jackson. Held on America Recycles Day, the event also featured collection of traditional recyclables by FV Recycling as well as glass by Door 2 Door Recycling. The Spring 2020 E-waste collection event was cancelled due to the COVID-19 pandemic.
- The Waste Division's Solid Waste and RCRA program staff participated in a roundtable meeting in December 2019 with the representatives of the Department of Defense facilities in the State of Mississippi to discuss various regulatory and environmental issues for their DOD facilities.

- The Grants Management Program staff participated in a Grants Panel at the Mississippi Municipal League's Mid-Winter Meeting in Jackson in January 2020.
- The Recycling and Waste Reduction Branch staff presented information to the Birds Unlimited community group in January 2020. Topics included the benefits of recycling and composting and how to grow community efforts.
- Waste Division staff attended the Mississippi Recycling Coalition's Board Retreat held in January 2020 at Gray Center in Canton to help develop plans and goals for the upcoming calendar year.
- Waste Division Solid Waste program staff conducted the Rubbish Site Operator Training Class in February 2020 in Ridgeland. The class is a day and a half of training followed by a written examination that provides an opportunity for new operators to receive certification and current operators to receive Continuing Education Units to meet recertification requirements.
- Staff from the Recycling and Waste Reduction Branch participated in the Madison County School "5th Grade Goes Green" event in February 2020. Information was presented to students on the importance of recycling and how to start recycling at their homes and at school.
- In February 2020, Recycling and Waste Reduction Branch staff conducted presentations to elementary school students and teachers on composting, litter prevention, proper waste management and recycling at the "Conservation Carnival" sponsored by the Neshoba County Soil and Water Conservation District.
- Waste Division staff participated in Keep Mississippi Beautiful's Legislative Awareness Day in February 2020 at the Mississippi State Capitol Building to raise awareness to the impacts and problems of litter and illegal dumping.
- Waste Division staff participated in the EPA Region 4 Solid Waste and Recycling State Manager's meeting in Columbia, South Carolina, in March 2020 focusing on various regional and national issues related to solid waste management. This is a key meeting for ideas and information with other states and EPA, and the Waste Division programs use information and ideas gleaned from the meeting to help in the development of outreach goals.

Nonpoint Source Education and Outreach

The Nonpoint Source (NPS) Educational Program increases public awareness of NPS pollution and encourages behavior changes that will reduce pollution impacts.

Environmental Teacher Workshops

Each year, teacher workshops play an integral part of MDEQ's NPS educational program. Teachers learn ways to incorporate conservation into daily lessons and promote stewardship of the state's irreplaceable natural resources. Teachers are given an opportunity to earn continuing education credits (CEUs) for participating.

Adopt-A-Stream

Adopt-A-Stream is an environmental education training program for adults and students focusing on aquatic ecosystems and the effects of NPS pollution on water quality. The coordinator for Adopt-A-Stream, through a sub-grant with the Mississippi Wildlife Federation, educates citizens about water-quality issues within their watersheds, conducts Envirothon team training on aquatic subjects at high schools, presents aquatic-ecology programs in classrooms, leads stream cleanups and storm drain marking projects. In addition, the coordinator also reaches people through large-venue events, teacher-workshop training sessions, summer environmental camps, and displays at conferences.

Make-A-Splash

Make-A-Splash is a water education event hosted annually at the Mississippi Museum of Natural Science. Students across the state get an opportunity to visit multiple water-related interactive booths and guided museum exhibits to learn about polluted runoff, wildlife, water conservation and management, groundwater, surface water, macro-invertebrates, protecting watersheds and endangered species.

Storm Drain Marking

The Storm Drain Marking Program is a cooperative program between MDEQ and the Mississippi Wildlife Federation (MWF). MDEQ provides MWF funding through one of its Section 319 sub-grant agreements to promote awareness of the water quality impacts of polluted runoff in urban communities. Volunteers participating in the Storm Drain Marking Program glue decals onto storm drains inlets with the message "No Dumping, Drains to River." Storm drain markers inform the public that only rain should go down the storm drain, not unwanted paint, grass clippings, or other waste. Volunteers also distribute door hangers to educate the community about their connection to streams and lakes.

Conservation Field Days

Nonpoint Source Conservation Field Days are conducted all over the state where students participate in hands-on activities and learn about exciting topics from natural resource experts. Presentations have ranged from the impacts of NPS pollution on water quality, invasive species, wetlands, and wilderness survival to groundwater, forestry, and energy conservation. These field days are part of the NPS Watershed Demonstration Projects conducted with the USDA Natural Resources Conservation Service, the Mississippi Soil and Water Conservation Commission, and various water-management district staff.

Summer Ecology Day Camps

Ecology Day Camp is an educational and fun annual camp hosted by the University of Mississippi Field Station during the summer months starting from June until late July. There are five sessions offered during the summer to different age groups. Campers were exposed to various aspects of Biology and Environmental Science through hands on interaction and lectures provided from local resources. Past camps have included such activities and topics as: bug collection and identification, water quality, tree identification, fire ants and spiders and various arts & crafts activities.

Waterfest

MDEQ has partnered with the Mississippi Department of Marine Resource's *Celebrate the Gulf*, for the past few years, to bring *Waterfest* to the Mississippi Gulf Coast. This event has been a great marine and environmental education event, which provides an opportunity for outdoor, hands-on education on topics important to clean water, marine-life, wildlife, and conservation to the public about various environmental issues. MDEQ staff conducts presentations on stream table education, EnviroScape Watershed/NPS education, ground water models, recycling, and air quality. This year's 2020 *Celebrate the Gulf/Waterfest* event was cancelled due to the COVID-19 pandemic. Last year, *Celebrate the Gulf* received the Gulf Guardian Award from EPA in the category of partnerships through the Gulf of Mexico Program.

Project Learning Tree

Project Learning Tree (PLT) conducts workshops through a sub-grant with Mississippi Forestry Foundation. Project Learning Tree's workshops emphasize the importance of water conservation and water pollution control to educators. The participants learn the importance of water conservation and how their activities can impact water quality. Participants receive a PLT manual for lessons and resources for future classroom use.

Project Rezway

Project Rezway is a recycle fashion show hosted by Keep the Reservoir Beautiful (KRB) an affiliate of Keep America Beautiful and Keep Mississippi Beautiful. Now in its ninth year, this event allows students and other amateurs to design stylish creations out of 75 percent or more of recyclable materials. MDEQ through the *Rezonate* Initiative, designed to protect and enhance the Ross Barnett Reservoir, is a major sponsor of this event. The event's primary purpose is to educate the public on the importance of putting waste in its proper place and not in rivers, lakes and streams. During the event, Rezzy awards are presented to winners. One Rezzy award known as *Rezonate! Environmental Education Award* is presented to a dedicated Reservoir area teacher who has worked to educate young minds about the Reservoir and to promote the principles of Keep America Beautiful and *Rezonate*.

Mobile Classroom

Mobile Classroom is an educational program with two formats geared for children in grades kindergarten through second grade, and another specifically for grades third through fifth. The K-2 grade program entitled *The River Town Story* introduces children to water quality through audience participation, music, and theater. Programs for grades third through fifth engages children in an interactive water quality unit of study known as *All the Water in the World* and includes discussions of the water cycle, properties of water, and the watershed specific to their community.

Envirothon

The Mississippi Envirothon, a program of the Mississippi Association of Conservation Districts, is sponsored through a sub-grant from an MDEQ Nonpoint Source 319 Grant. Envirothon is a hands-on natural resource competition designed to challenge students in grades ninth through twelfth to explore the natural world around them. Competitors are tested in the categories of aquatics, forestry, soils, wildlife, and current environmental issues. Local soil and water conservation districts, volunteers and resource personnel from state, and federal natural resource agencies and organizations work with educators and students sharing environmental expertise to prepare the teams for this competition. Due to the COVID-19 pandemic, the competitions did not take place this year. Trainings were held prior to the pandemic.

Gator Bait Hatchling Race

The Gator Bait Hatchling Race is a kayak race for kids ages five to thirteen. The race is sponsored by MDEQ through a partnership with the Mississippi Wildlife Federation. The goal of the event is to introduce kids to the sport of kayaking, foster a love for the outdoors, and instill a desire to protect their environment for generations to come.



Waste Pesticide Disposal Program

The primary goal of this project has been to help Mississippi farmers and property owners minimize the environmental risks associated with the disposal of waste pesticide products by helping them dispose of products in a safe and efficient manner. Educational materials were developed on how to safely pack and transport waste pesticides to the disposal event. These waste pesticide disposal events provide an invaluable service to landowners and farmers, and these events help the surrounding environment by preventing non-point source pollution and raising awareness about the proper way to dispose of unwanted or expired farm chemicals.

Pearl River Clean Sweep

The Pearl River Clean Sweep is an annual river cleanup event hosted by the Pearl River Keeper, a citizen-based group that advocates for improved water quality, educating the public and promoting educational opportunities in the Pearl River Watershed. The Pearl River cleanup covers the entire Pearl River Basin across 15 Mississippi counties, two Louisiana parishes, and over 490 miles of river. This event celebrates drinkable, swimmable, and fishable water. MDEQ is a sponsor of the event, and staff also participate. Cleanup teams are deployed along the Pearl River Watershed from its headwaters in Nanih Waiya to Pearlinton on the Gulf Coast.

CHARITABLE CONTRIBUTIONS



Billy Brumfield Shelter (Stewpot)
\$ 3,150

Alzheimer's Association Mississippi
Chapter
\$4,047

Salvation Army's Angel Tree
50 Angels Adopted



THE COMMISSION ON ENVIRONMENTAL QUALITY

The Commission on Environmental Quality is empowered to formulate department policy, enforce rules and regulations, receive funding, conduct studies for using the state's resources, and discharge duties, responsibilities and powers as necessary.



Chairman
John Dane III



Vice Chairman
Brenda Lathan



Jack Winstead



W.J. (Billy) Van Devender



Jamie Martin



Patrick L. Johnson, Jr.



Chat Philips

THE MISSISSIPPI ENVIRONMENTAL QUALITY PERMIT BOARD

The Mississippi Environmental Quality Permit Board takes action on permits administered through MDEQ. 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.



Chairman
Jennifer Wittmann



Vice Chairman
Les Herrington



Jess New



David Dockery



Dennis Riecke



Chris McDonald



Chris Hawkins

EXECUTIVE DIRECTOR



Governor Tate Reeves appointed Chris Wells to serve as Executive Director of the Mississippi Department of Environmental Quality (MDEQ) in October of 2020. Chris began his career with the agency in November 2007, providing legal support for the Environmental Compliance and Enforcement Division until October of 2014, when former Executive Director Gary Rikard appointed him to serve as Chief of Staff. Since June of 2017, he also served as Acting Director of the Office of Restoration.

MDEQ is responsible for protecting the state's environment and administers most of the U. S. EPA programs, including air, water and waste management activities; monitors, models, and regulates water use; and functions as the state geological survey. As Executive Director, he manages a staff of about 400 people and a budget of more than \$250 million. Wells also serves as Mississippi's Trustee for the Natural Resource Damage Assessment under the Oil Pollution Act and represents the state on the Gulf Coast Ecosystem Restoration Council which was formed by the RESTORE Act.



Chris earned a Chemical Engineering degree from Mississippi State University in 1996 and is a registered professional engineer. He graduated from the Mississippi College School of Law in 1999, served as a Law Clerk to U.S. District Court Judge William H. Barbour, Jr., and practiced law with the firm of Scanlon, Sessums, Parker & Dallas from 2000 to 2007. He has also taught as an Adjunct Professor at the Mississippi College School of Law since 2010.

Chris is a native of Brandon and still lives in that area along with his wife Catherine and their children Megan and Nolan.