Mississippi Department of Environmental Quality

Environmental News

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

INSIDE THIS ISSUE:

The Geology of Mississippi Available for Ordering

David T. Dockery III, RPG, Office of Geology

The Geology of Mississippi authored by David Dockery (MDEQ Office of Geology) and David Thompson (Plum Creek Timber Company and formerly of MDEQ) is now available for pre-order. The book, a collaborative publication of MDEQ and the University Press of Mississippi (UPM) should be available mid-February.

The Geology of Mississippi is a must-have book for anyone working in, or interested in, the field of earth sciences. The hard-bound book contains a foreword by Governor Phil Bryant and is a comprehensive compilation of the state's geology arranged by subject matter and chronologically from Mississippi's oldest to youngest geologic formations. It provides an updated geologic reference for economic minerals, oil and gas production and exploration, environmental protection and remediation, geological engineering, soil science, groundwater resources, and academic studies. It is the largest book published to date by UPM with 751 pages and 1099 figures, most of which are in color.

Contracting with UPM included the assistance of their professional staff such as science editor Lisa Brousseau of Milwaukie, Oregon, to edit the text, to change the style from scientific to a publishing format, to improve the book's organization, and to diplomatically weed out "rabbit trails." The edit phase took several months of a cooperative effort in locating and fixing errors in the text, and much work was done in MDEQ's library to correct or find reference citations. The book design and layout were done by Alcorn Publication Design in Graeagle, California, and the book was indexed by Edwin Fontanilla of San Diego, California. See the flyer on the following page for ordering and pricing details.

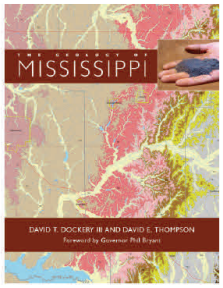
The Geology of Mississippi

David T. Dockery III and David E. Thompson
Foreword by Governor Phil Bryant

The Geology of Mississippi is an encyclopedic work by authors with extensive experience in Mississippi's surface geology mapping program. It brings together published work, unpublished work from agency files, and the authors' experience, both in personal field work and in collaboration with experts from around the word.

With over a thousand images, the voluminous text relates ways in which Mississippi's geology has contributed to the understanding of global events, such as the extinction of the dinosaurs and the first occurrence of tiny primates. Fossil illustrations include Devonian trilobites, Mississippian scale trees, Pennsylvanian brachiopods, Cretaceous dinosaur bones, Paleocene lignite and petrified wood, Eocene seashells and the excavation of fossil whales, Oligocene marine fossils and rare land mammal finds, Miocene plants and animals, Paleozoic marine fossils, and the bones of giant ice-age mammals. The text is arranged by geologic age.

Economic minerals cited in the book include oil and gas (both methane and carbon dioxide), lignite, dimension stone, crushed stone, sand and gravel, various clay deposits, limestone, and potential economic deposits of bauxite, heavy minerals, and iron ore. Groundwater is Mississippi's most valuable natural resource and supplies over 90 percent of the state's public and industrial water supply and most of the state's irrigation supply for agriculture and catfish ponds. Mississippi's surface geology causes the state's fertile and not-so-fertile soil types responsible for foundation and infrastructure substrates that range from stable to failure-prone due to expansive clays. Finally, *The Geology of Mississippi,* coupled with site-specific surface geologic maps, provides information for the wise use of land and the environmental protection of the state's resources.



The first comprehensive treatment of the state's fascinating geological history

David T. Dockery III, Clinton, Mississippi, is a registered professional geologist and the Surface Geology Division Director for the Mississippi Department of Environmental Quality. His work has appeared in *Mississippi Geology*, *Palaios: Nature*, *Paläontologie*, and *Compass*, among others. **David E. Thompson,** Jackson, Mississippi, is a registered professional geologist and supervising geologist in the Surface Geology Division at the Mississippi Department of Environmental Quality. His work has appeared in *Geological Society of America*, *Journal of the Mississippi Academy of Sciences*, and *Mississippi Geology*, among others.

FEBRUARY, 692 pages (approx.), 8½ x 11 inches, 1099 b&w/color illustrations, introduction, foreword, bibliography, index
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MDEQ Program Helps Purchase New School Buses

Keith Head, Air Division

Beginning in 2009, MDEQ's Air Division launched the Mississippi Diesel Emissions Reduction Program to implement cost-effective and innovative projects to reduce diesel emissions in our state. Reducing diesel emissions is currently one of the most important air quality challenges in Mississippi. Although more stringent emission standards are taking effect for new, heavy-duty on-road and off-road engines, the diesel engines currently in use will continue to emit large amounts of nitrogen oxides and particulate matter for years to come. These pollutants affect many areas in our state and our ability to comply with National Ambient Air Quality Standards, especially with ozone, but most importantly they could contribute to public health problems.

Since 2014, MDEQ has focused this program on assisting school districts with early replacements of their school buses for newer, cleaner, and more efficient ones. In 2014, MDEQ helped replace 10 buses in eight districts, and in 2015, seven buses in six districts. A 2016 funding opportunity began January 14, and school districts have until February 29 to submit applications to the MDEQ Air Division. Interested school districts can contact Chuck Rainey, at crainey@mdeq.ms.gov or (601) 961-5536, or John Jordan, at jjordan@mdeq.ms.gov or (601) 961-5678, for additional information and the application package. The application package can also be found by visiting the MDEQ website at http://mdeq.ms.gov/ and searching for the Diesel Emission Reduction Grant Program.

In 2015, MDEQ Air Division staff verified the decommissioning of an old bus and posed with a new one purchased with help from an MDEQ Diesel School Bus Replacement Program Grant for the Hancock County School District. L-R: Superintendent Alan Dedeaux, MDEQ's Jessica Forbus, Chuck Rainey, Gracie Kelker, and School District Transportation Director Michael Ladner.

NONPOINT SOURCE SUCCESS STORY

Mississippi

Implementing Conservation Practices Reduced Polluted Runoff, Restoring the Biological Integrity of Caney Creek

Waterbody Improved

Sedimentation and organic enrichment from silvicultural and agricultural activities impacted water quality in Mississippi's Caney Creek. As a result, the Mississippi Department of Environmental Quality (MDEQ) placed Caney Creek on the state's 2002 Clean Water Act (CWA) section 303(d) list of impaired waters for aquatic life use impairment. Implementing best management practices (BMPs) as part of the Pickwick Reservoir Tributaries Restoration and Protection Project significantly reduced sediment and nutrients entering Caney Creek. As a result, a 4.99-mile segment of Caney Creek was assessed as attaining the aquatic life use in the state's 2014 CWA section 305(b) report.

Problem

Caney Creek is in the Coke Creek–Caney Creek Watershed (HUC 060300051104) in northern Mississippi's Tishomingo County. The watershed spans approximately 22,202 acres, and is comprised primarily of agricultural land, timberland and pastureland (Figure 1). Pollution sources in Caney Creek included sedimentation from silviculture and agricultural practices, organic enrichment from agricultural processes, and habitat alterations.

Biological community data are routinely used by MDEQ to determine if streams are healthy enough to support a balanced aquatic community. Caney Creek (Waterbody ID: MS700312) was monitored in 2001 as part of Mississippi's biological monitoring program. Using MDEQ's index of biological integrity, the Mississippi Benthic Index of Stream Quality (M-BISQ), Caney Creek scored 48.14, less than the assessment threshold of 57.71 required to attain aquatic life use support for this region. Therefore, Caney Creek was placed on the 2002 CWA section 303(d) list for aquatic life use impairment; it was subsequently selected as a priority watershed for restoration activities by MDEQ.

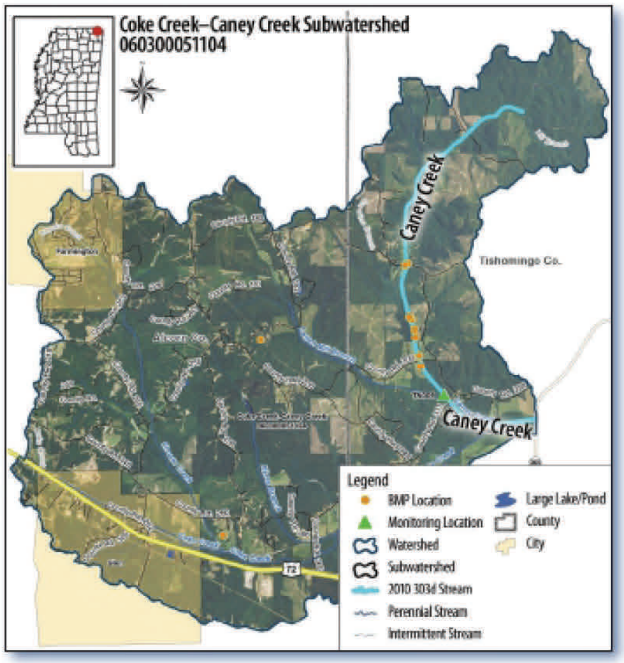


Figure 1. The 22,202-acre Coke Creek–Caney Creek subwatershed is in northern Mississippi.

Project Highlights

In 2007 MDEQ partnered with the Mississippi Soil and Water Conservation Commission, the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) and the Tishomingo County Soil and Water Conservation District to implement the Pickwick Reservoir Tributaries Restoration and Protection Project. BMP installations within the Coke Creek–Caney Creek watershed as part of this project began in 2009 and were com-

Figure 2. Grade stabilization structures in Caney Creek were used to prevent erosion and enhance the environmental quality of the creek.

Figure 3. Critical area planting along Caney Creek was necessary to establish permanent vegetation on sites that had high erosion rates.

pleted by the end of that year. The BMPs supported with CWA section 319 funds included over 40 acres of nutrient management, eight grade stabilization structures (Figure 2), one pond and one critical planting area (Figure 3) within the Caney Creek subwatershed. In addition, conservation practice systems were installed by NRCS in coordination with the watershed project ongoing in the Coke Creek–Caney Creek watershed, including four grade stabilization structures, 128 acres of prescribed grazing, 99 acres of nutrient management, 55 acres of tree/shrub establishment and one animal watering facility.

Results

In 2011 MDEQ returned to the original sampling location in Caney Creek to collect biological community data. The score was 87.92, above the threshold for attainment in this region. Using this 2011 data, a 4.99-mile segment of Caney Creek was assessed as attaining the aquatic life use in the 2014 CWA section 305(b) report.

Partners and Funding

The restoration of Caney Creek was a collective effort between the Mississippi Soil and Water Conservation Commission, MDEQ, U.S. Environmental Protection Agency, NRCS and the Tishomingo County Soil and Water Conservation District. The total cost of the overall Pickwick Reservoir Tributaries Restoration and Protection Project was $1,219,228, of which $720,900 was comprised of CWA section 319 funds. Section 319 funds were expended in the following way: $139,006 for technical assistance, $42,417 for education and information outreach, and $540,477 for BMP installation. Participating state and local stakeholders contributed a total of $498,328 towards the implementation of the watershed project.

U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-15-001YY
November 2015

For additional information contact:

Ann Porter
Mississippi Department of Environmental Quality
Ann_Porter@deq.state.ms.us
601-961-5394

MDEQ Releases 2014 Annual State Solid Waste Report

Trent Jones, Environmental Permits Division

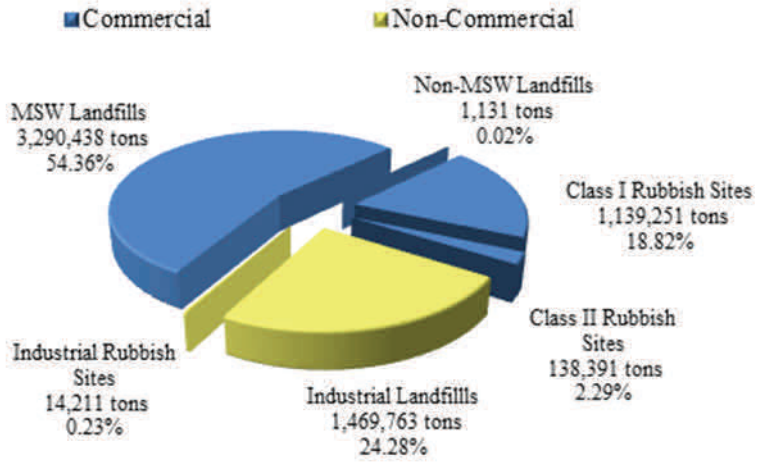
MDEQ recently completed the 2014 Status Report on Solid Waste Management Facilities and Activities. The annual status report is developed by MDEQ for the preceding year by the end of the next calendar year, and it summarizes and provides information on solid waste management and disposal activities that were conducted in Mississippi.

The report is based on information provided to MDEQ by the individual facility owners and includes summary information for the solid waste management facilities and activities listed below:

- ►Municipal Solid Waste Landfills
- ►Non-Municipal Solid Waste Landfills
- ►Class I and Class II Rubbish Sites
- ►Industrial and Institutional Landfills
- ►Industrial and Institutional Rubbish Sites
- ►Transfer Stations
- ►Land Application Sites
- ►Processing Facilities
- ►Composting Facilities
- ►Beneficial Use of Nonhazardous Solid Waste and/or By-Products
- ►Waste Tire Management

The 2014 report indicates that just over 6 million tons of solid waste was received for disposal at commercial and non-commercial landfills and rubbish sites as shown in Figure 1 (see next page). This total tonnage represents a nearly 700,000 ton decrease in total nonhazardous solid waste disposal in Mississippi in 2014 as compared to 2013. This decrease occurred primarily at non-commercial solid waste landfill facilities in the state.

FIGURE 1



The 2014 annual report also indicates that other solid waste management facilities managed solid wastes as follows:

FACILITY	TOTAL TONS MANAGED
Transfer Stations	753,100
Land Application Sites	22,149
Processing Facilities	123,387
Composting Facilities	24,226

Additionally, over 700,000 tons of industrial and other solid waste by-products were distributed during 2014 for legitimate end uses through the MDEQ Beneficial Use program. Finally, the report shows that over 4.8 million passenger tire equivalents were managed in 2014 and approximately 86 percent of the waste tires were recycled.

An electronic version of the full report is posted on the Solid Waste Facility Reporting Program webpage for review by the general public as well as other members of the regulated community.

Please visit the MDEQ Solid Waste Program webpage (www.deq.state.ms.us/solidwaste) or contact Trent Jones at trent_jones@deq.state.ms.us or (601) 961-5171 for additional information.

Solid Waste Management Facility Annual Reporting

Due February 28, 2016

The Solid Waste Management Program at MDEQ is reminding the owners and/or operators of all solid waste management facilities that an annual report on the solid waste management or disposal activities conducted during Calendar Year 2015 is due to the agency no later than February 28, 2016. These reporting requirements apply to landfills, rubbish sites, transfer stations, land application sites, processing facilities, composting facilities, and also to beneficial use determinations. The annual report is required pursuant to Mississippi Code Annotated §17-17-219, the Mississippi Nonhazardous Solid Waste Management Regulations, and/or the specific requirements of the solid waste facility operating permit.

Facility specific reporting notifications and forms will be available in late January, and electronic forms are available at www.deq.state.ms.us/solidwaste. To access the forms, click on "Solid Waste Reporting" on the left hand side of the page. Hard copies of these forms will also be mailed to all facility owners and operators in late January. Operators are asked to submit two copies of the completed Annual Reporting Form and the supporting information. Forms should be completed and submitted for all solid waste facilities with a valid solid waste management permit or authorization, even if the facility was inactive during the calendar year. For questions, contact Trent Jones at 601-961-5726 or trent_jones@deq.state.ms.us.

MDEQ Annual Report Available

The agency's Fiscal Year 2015 Annual Report was recently completed and is available at the following link: http://bit.ly/1OUyXfE . The report contains comprehensive information on MDEQ's programs, responsibilities, initiatives, and outreach.

Annual Reporting Requirements

Many environmental permits require permit holders to submit annual compliance reports to MDEQ. Some examples include the annual reports required of solid waste management facilities, annual reports required by Baseline Industrial storm water permits, and the Annual Certificate of Compliance (ACC) required by Clean Air Act permits.

These reports serve a pivotal role in MDEQ's regulatory efforts, and failure to submit a timely, complete, and accurate annual report constitutes a violation of the applicable permits and the underlying environmental laws. Such violations are subject to enforcement by MDEQ, which can include the assessment of penalties, and any penalties assessed for an untimely report are in addition to any penalties which may be associated with an inaccurate report or underlying violations noted in the report.

Unlike other report submittals, it is important to note that ACC's must be submitted both to MDEQ and the Environmental Protection Agency (EPA). Failure to submit a timely, complete, and accurate ACC is subject to independent enforcement by EPA. EPA closely monitors timely submittal of ACC's and has demonstrated their interest in the past by initiating enforcement with permit holders failing to comply with reporting requirements.

Efficiently transmitting the reports is often as important as the information contained within. To demonstrate timely submittal(s), retain proof of delivery and receipt of reports sent to MDEQ and EPA. Clearly identify the submittals, include the appropriate permit number, and reference the permit conditions it is meant to satisfy. Staples are preferred to paperclips since most submittals are date stamped in the MDEQ mailroom. Finally, reports required under different permits should be submitted under separate cover letters. Following these steps facilitates the routing of these submittals to the appropriate individuals for review and minimizes misplaced submittals.

For questions or more information, contact Chris Sanders, Environmental Compliance and Enforcement Division, at 601-961-5171.

For any questions or additional information, please contact Kayra Johnson, Data Administration Branch, at 601-961-5106 or via email at Kayra_Johnson@deq.state.ms.us.

NetDMR Training Available

On October 22, 2015, EPA promulgated the NPDES E-Reporting rule, and in order to comply with requirements set in this rule, any permittee in the State of Mississippi that is required to submit Discharge Monitoring Reports (DMRs) must begin submitting them electronically by no later than December 20, 2016.

MDEQ has implemented the use of EPA's NetDMR for the electronic submittal of DMRs. Several training classes are being offered throughout the state to help with the transition to electronic submittals.

Each class is three hours and includes a hands-on exercise using NetDMR. Classes are limited to 25 people and registration is required. To register, contact Annette Brocks at 601-961-5252 or via email at Annette_Brocks@deq.state.ms.us. Please include name, phone number, and class to attend.

Upcoming January NetDMR classes

Class # 21 -- Delta State University, Cleveland.
January 26, 2016, 8:30 am, Delta State University, Ewing Hall Room 238.

Class # 22 -- Delta State University, Cleveland.
January 26, 2016, 1:30 pm, Delta State University, Ewing Hall Room 238.

Class # 23 -- Delta State University, Cleveland.
January 27, 2016, 8:30 am, Delta State University, Ewing Hall Room 238.

Class # 24 -- Delta State University, Cleveland.
January 27, 2016, 1:30 pm, Delta State University, Ewing Hall Room 238.

For a complete list of classes being offered, please visit: http://www.deq.state.ms.us/MDEQ.nsf/page/NetDMR_NetDMRClassroomTraining2?OpenDocument.

Geoarchaeology

David T. Dockery, RPG, Office of Geology, and Vin Steponaitis, Director of the Research Laboratories of Archaeology, University of North Carolina at Chapel Hill

Geoarchaeology is the use of geologic techniques to examine topics which inform archaeological knowledge and thought. Archaeologists frequently bring stone artifacts to the Surface Geology Division of MDEQ's Office of Geology with the questions: "What is this rock, and where did it come from?" Stone artifacts made from Mississippi bedrock have been found in other states, especially sedimentary quartzite from the Tallahatta Formation. James Starnes and David Thompson (Office of Geology) recently found an ancient quartzite tool-making quarry in the Tallahatta Formation in Newton County with associated debitage (flaked material produced in chipping stone tools). Thus, archaeology joins environmental studies, construction activities, mineral resource investigations, and geologic hazards as areas where staff's geological expertise is applied.

In 1996, Dockery and Steponaitis met at the Mississippi Department of Archives and History in Jackson where a number of effigy pipes from various locations had been assembled based on the fact that they were composed of a similar-looking limestone (see "Effigy Pipes Made of Glendon Limestone from Mississippi" in the November 2013 issue of MDEQ's *Environmental News*). Effigy pipes are carved pipe bowls depicting people or animals or both. Dockery identified some ten of the pipes as made of Glendon Limestone, which probably came from Native American sites in the Vicksburg area. Steponaitis asked, "How do you know that?" He was then shown the wafer-shaped fossils in the limestone belonging to a group of large Foraminifera of the species *Lepidocyclina supera*, a guide fossil to the Glendon Limestone and Byram Formation. This started a collaboration using geoarchaeology to examine other effigy pipes in the Harvard Museum, The Cultural Resources Center of the Smithsonian Museum in Washington, D.C., the Grand Village of the Natchez Museum in Natchez, the Mississippi Department of Archives and History, and private collections. Another Glendon Limestone pipe was studied by the authors at the Gilcrease Museum in Tulsa, Oklahoma (*Gilcrease Journal*, 2014, volume 11, number 1, p. 36-45). Figure 1 shows a Glendon Lime-

stone effigy pipe recently examined in the National Museum of Natural History collection (the Arkansas Hot Springs cat pipe) and the cross section of the *Lepidocyclina supera* used in its identification.

Figure 1. Left, the Arkansas Hot Springs cat pipe in the National Museum of Natural History. Right, Cross section of *Lepidocyclina supera* in the Glendon Limestone on the pipe's surface. Pictures taken on December 8, 2015.

Mississippi effigy pipes were also carved from sandstone, several of which are believed to have been carved from the Catahoula Sandstone of southwestern Mississippi. Our help was again requested. These pipes lack fossils and must be identified by petrographic means. James Starnes gave the three key features of Catahoula Sandstone as opal cement, scattered black chert pebbles and/or sand grains, and angular sand grains. These key features were put to the test on a whirlwind, foundation-funded, tour by planes, trains, subways, and cars from December 7 to 9, 2015, to examine sandstone effigy pipes in five museums in three states in three days, including: (1) the American Museum of Natural History in New York, (2) the Brooklyn Museum (3) the University of Pennsylvania Museum in Philadelphia, (4) the Smithsonian's National Museum of the American Indian Cultural Resources Center, and, (5) the Museum Support Center in Suitland, Maryland. Figure 2 shows staff (left) and effigy pipes studied at the American Museum of Natural History. Figure 3 shows staff and an effigy pipe studied at the Brooklyn Museum. Figure 4 shows staff and effigy pipes studied at the University of Pennsylvania Museum. Figure 5 shows effigy pipes studied at the Cultural Resources Center.

Figure 2. Left, American Museum of Natural History staff (front to back) Anibal Rodriguez, Nell Murphy, and Adam Watson. Right, sandstone effigy pipes studied at the museum. Pictures taken on December 7, 2015.

Figure 3. Left, Nancy Rosoff, Brooklyn Museum curator of The Arts of the Americas (far left) and Anibal Rodriguez (far right). Right, pipe studied with hand-held digital microscope and laptop computer. Pictures taken on December 7, 2015.

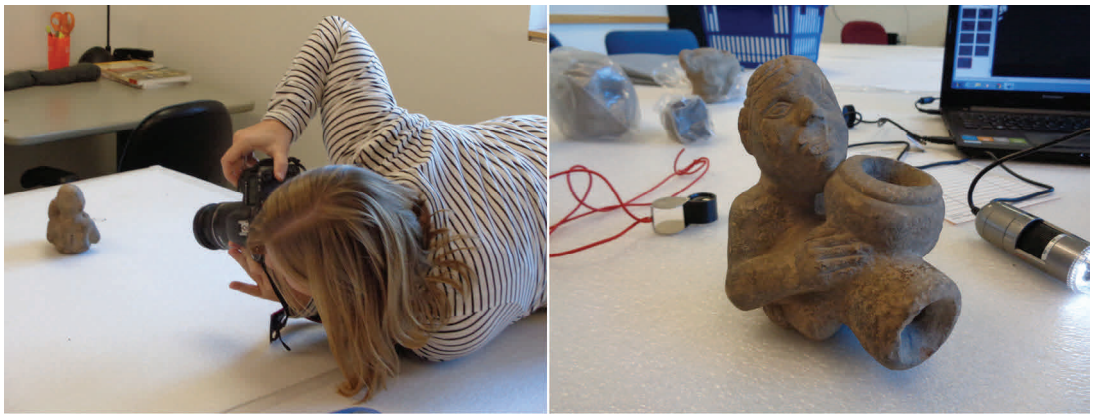


Figure 4. Left, Meg Kassabaum, Assistant Professor of Anthropology at the University of Pennsylvania and Assistant Curator, American Section, University Museum, photographs a sandstone effigy pipe to be studied. Right, closeup of effigy pipe at the Penn Museum. Picture taken on December 8, 2015.

Figure 5. Left, entrance to the Smithsonian's Cultural Resources Center in Suitland, Maryland, just outside of Washington, D. C. Right, cart with stone effigy pipes to be studied. Pictures taken on December 8, 2015.

MDEQ ENVIRONMENTAL ACTION LINKS

- Draft permits currently at public notice, http://opc.deq.state.ms.us/publicnotice.aspx

- Permits and certificates issued in the last 90 days, http://opc.deq.state.ms.us/report_permits.aspx

- General permit coverages issued in the last 90 days, http://opc.deq.state.ms.us/report_gnp_issued.aspx

- Notices of Intent for coverage under a Statewide General permit received by the Environmental Permits Division, http://opc.deq.state.ms.us/report_gnp_notice.aspx

- List of the 401 Water Quality Certifications currently at public notice, http://opc.deq.state.ms.us/report_wqc_public_notice.aspx

- List of the compliance inspections recently conducted, http://opc.deq.state.ms.us/report_eced_tasks.aspx

- Orders issued by the Mississippi Commission on Environmental Quality, http://opc.deq.state.ms.us/report_orders.aspx

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PICTURE OF THE MONTH

Turkey photo taken by Jonathan McKinnon, MDEQ Office of Geology, in Sallis, Mississippi.