MISSISSIPPI DIGITAL EARTH MODEL (MDEM), Definition and Standards

Compiled by
Stephen D. Champlin, RPG

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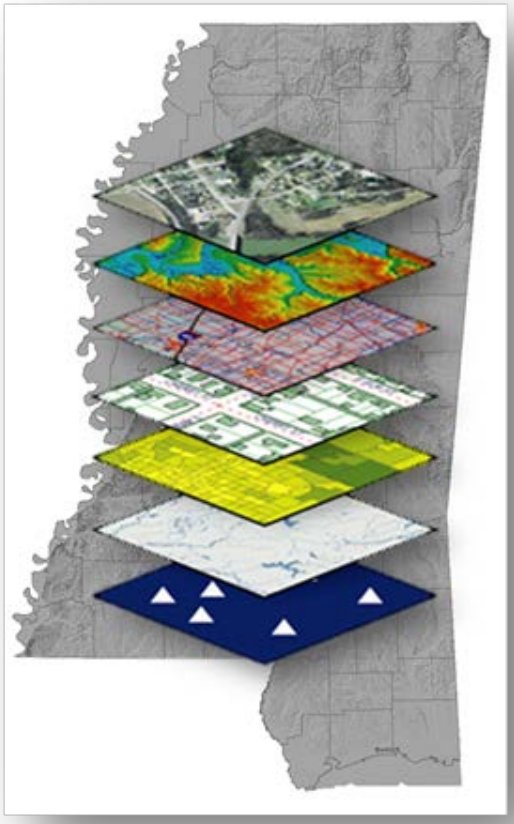

DEPARTMENT OF ENVIRONMENTAL QUALITY
MISSISSIPPI OFFICE OF GEOLOGY
Geospatial Resources Division

David T. Dockery, III, RPG
State Geologist

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MISSISSIPPI DIGITAL EARTH MODEL (MDEM), Definition and Standards

INTRODUCTION

The purpose of this OPEN-FILE REPORT No. 292 is to compile into one easily accessible document, the original 2003 legislation which created the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems, and the documents that in 2004 laid out the "Definition and Standards" for the Mississippi Digital Earth Model (MDEM). The "Standards" were adopted by the Council in December, 2004.

The Mississippi Legislature, in its 2003 regular session, passed House Bill 861 to establish the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems. It also charged the Mississippi Department of Environmental Quality to manage the development of a digital land base computer model of the State of Mississippi, to be called the Mississippi Digital Earth Model (MDEM). The law went into effect July 1, 2003, and stated in part:

"The Mississippi Department of Environmental Quality, Office of Geology and Energy Resources shall be responsible for program management, procurement, development and maintenance of the Mississippi Digital Earth Model, which should include the following seven (7) core data layers of a digital land base computer model of the State of Mississippi:

1. Geodetic control;
2. Elevation and bathymetry;
3. Orthoimagery;
4. Hydrography;
5. Transportation;
6. Government boundaries; and
7. Cadastral. With respect to the cadastral layer, the authority and responsibility of the Mississippi Department of Environmental Quality, Office of Geology and Energy Resources shall be limited to compiling information submitted by counties.

For all seven (7) framework layers, the Mississippi Department of Environmental Quality, Office of Geology and Energy Resources shall be the integrator of data from all

sources and the guarantor of data completeness and consistency and shall administer the council's policies and standards for the procurement of remote sensing and geographic information system data by state and local governmental entities."

WHAT IS MDEM?

The **Mississippi Digital Earth Model (MDEM)**, in simple terms, will be an up-to-date, highly detailed, computerized map of the State of Mississippi. It will be similar to, and coordinated with, the National Map being coordinated at the federal level by the U.S. Geological Survey. The seven framework layers mentioned in the law are the standard components of electronic maps as used everywhere by the geographic information system (GIS) community. An explanation of what is meant by each of the framework layers is given below.

Geodetic control provides a common reference system for establishing the coordinate positions of all geographic data. Benchmarks are established to help provide geodetic control.

Elevation and bathymetry provide information about terrain. Elevation refers to a spatially referenced vertical position above or below a datum surface. Bathymetry refers to depths below water surfaces.

Orthoimagery refers to georeferenced images prepared from aerial photographs or other remotely sensed data from which displacements of images caused by sensor orientation and terrain relief have been removed.

Hydrography refers to water bodies, including rivers, streams, canals, ditches, reservoirs, lakes, and ponds.

Transportation features include roads and streets, railroads, bridges and tunnels, waterways and ports, and airports.

Government boundaries show the geographic areas of units of government, such as states, counties, incorporated places, minor civil divisions, and American Indian reservations.

Cadastral refers to property maps, such as those prepared by counties and used for property tax purposes. Cadastral data represent the geographic extent of the past, current, and future rights and interests in real property. These maps must show all property lines very accurately and are usually prepared at the scale of 1 inch to 400 feet. As specified in the law, MDEQ's role would be simply to compile the information submitted by the counties.

HOW WILL MDEQ IMPLEMENT MDEM?

It will take years to collect all of the data required to make MDEM. Some information, such as the cadastral layer, is being collected now by the counties. The challenge will be to ensure that these data are electronically compatible from county to county. Other data will be collected by MDEQ and other state government agencies. For example, the Mississippi Department of Transportation has a significant amount of information mapped about the transportation facilities of the state.

The overall process will need to begin with the collection of high-quality, high-resolution aerial photography that will be composited and rectified into orthoimagery. Then lidar instruments will be flown to collect topographic (land surface elevation) information. The lidar data when combined with orthoimagery will allow accurate placement of streams and other water bodies, thus giving us the hydrography layer. The Mississippi Department of Environmental Quality has staff dedicated to managing the MDEM program. As funding becomes available, contractors managed by MDEQ will complete the data layer development which may include orthoimagery and lidar data collection.

MDEM STANDARDS

To qualify as Mississippi Digital Earth Model (MDEM) data, information must meet minimum standards. State agency staffs worked with the Policy Advisory Committee (PAC) and the Technical Users Group (TUG) to draft standards for each of the seven framework layers. These standards were presented to the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems (Council), which adopted them at its meeting of December 2, 2004.

Overarching Staff Recommendations

The following recommendations for adoption by the Council apply to all of the framework layers included in MDEM.

1) All data included in MDEM must be compliant with the Federal Geographic Data Committee Content Standard for Digital Geospatial Metadata (FGDC CSDGM).
2) All data included in MDEM will meet United States National Mapping Accuracy Standards (USNMAS)
3) All geospatial applications included in MDEM must be compliant with Open Geospatial Consortium (OGC) interface specifications.
4) All data included in MDEM should follow the Federal Geographic Data

Committee/American National Standard for Information Technology (FGDC/ANSI) Geographic Information Framework Data Content Standards.

a. Base Standard
b. Cadastral
c. Digital Orthoimagery
d. Elevation
e. Geodetic Control
f. Governmental Unit Boundary Exchange
g. Hydrography
h. Transportation Base Standard
i. Transportation: Air
j. Transportation: Rail
k. Transportation: Roads
l. Transportation: Transit
m. Transportation: Inland Waterways

5) All data to be included in MDEM must be in one of 3 projections

a. Mississippi State Plane East
b. Mississippi State Plane West
c. Mississippi Transverse Mercator (MSTM)

6) Establishment and maintenance of an official National Spatial Data Infrastructure (NSDI) metadata node for Mississippi

Metadata Standards

Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," was signed on April 11, 1994, by President William Clinton. Section 3, Development of a National Geospatial Data Clearinghouse, paragraph (b) states:

> Standardized Documentation of Data. Beginning 9 months from the date of this order, each agency shall document all new geospatial data it collects or produces, either directly or indirectly, using the standard under development by the FGDC, and make that standardized documentation electronically accessible to the Clearinghouse network. Within 1 year of the date of this order, agencies shall adopt a schedule, developed in consultation with the FGDC, for documenting, to the extent practicable, geospatial data previously collected or produced, either directly or indirectly, and making that data documentation electronically accessible to the Clearinghouse network.

The staff, in conjunction with the PAC and the TUG, recommends:

1. The Council adopts the Federal Geographic Data Committee (FGDC) metadata standard as a requirement for all geographic datasets to be collected as part of MDEM.

Orthoimagery Standards

Digital orthophotography provides an intuitive map base, which eliminates the need for detailed mapping of many individual features. The USGS manages production of the digital orthoimagery quad program. This 1:24,000 orthoimagery dates from 1996, and is in need of updating. Although not required by the Mississippi State Tax Commission, some counties have chosen to use orthophotography as a base for their cadastral mapping. MDOT often develops large-scale orthophotography products for mapping transportation corridors.

The staff, in conjunction with the PAC and the TUG, recommends:

1. For acceptance into the Mississippi Digital Earth Model, digital orthoimagery must be of a minimum scale of 1" = 100' (1:1,200 scale, 6" pixel) for urban areas and 1" = 400' (1:4,800 scale, 2' pixel) for rural areas.
2. Data spatial accuracy should meet the parameters of National Map Accuracy Standards (NMAS) for 1" = 100' (1:1,200) scale mapping for the urban areas and 1" = 400' (1:4,800) scale mapping for the rural areas.
3. Imagery shall be color infrared, natural color, or black & white.

Transportation Standards

The transportation system includes both physical and non-physical components representing all modes of travel that allow the movement of goods and people between locations. Transportation is an ever-changing and evolving element of Mississippi's infrastructure, particularly in urbanized, high-growth areas. This layer is currently developed and maintained separately at different spatial accuracies on federal, state, local, and private levels. Each agency of government develops and maintains its own database at different scales and accuracies using different standards and formats. Much of the local street data is maintained only in a hard-copy format.

Accurate digital vector graphic features representing transportation elements can be captured from aerial photography. The orthoimagery utilized in this process should be of suitable accuracy for proper collection to the various transportation features. Just as cadastral mapping is accomplished at two different scales, the transportation features should also be captured at those same scales. Data spatial accuracy should meet the parameters of National Map Accuracy Standards (NMAS) for 1" = 100' (1:1,200) scale mapping for the urban areas and 1" = 400' (1:4,800) scale mapping for the rural areas. The following are examples of transportation features:

- Paved Roads
- Unimproved Roads
- Road Centerlines
- Road Curbs

- Paved Road Shoulders
- Unpaved Road Shoulders
- Bridges
- Overpasses
- Tunnels
- Ports
- Paved Parking Areas
- Unpaved Parking Areas
- Paved Driveways
- Unpaved Driveways
- Sidewalks
- Trails
- Alleys
- Railroads
- Airports
- Pipelines
- Major Power Lines
- Navigable Waterways

The staff, in conjunction with the PAC and the TUG, recommends:

1. The Council adopts the layers listed above as the initial elements to be included in the digital transportation layer of MDEM.
2. Data spatial accuracy should meet the parameters of National Map Accuracy Standards (NMAS) for 1" = 100' (1:1,200) scale mapping for the urban areas and 1" = 400' (1:4,800) scale mapping for the rural areas.

Cadastral Standards

Rule 6 (Standards of Acceptance) of the Aerial Photography and Property Ownership Mapping Standards of the Mississippi State Tax Commission requires counties to produce aerial photography imagery at least once every ten years, and to update property ownership maps to conform with the new photography. The State Tax Commission does not require the counties to develop digital orthophotography or digital property ownership maps. The State Tax Commission requires that the ownership maps be developed at a minimum scale of 1" = 100' (1:1,200) scale for the urban areas and 1" = 400' (1:4,800) scale for the rural areas.

The staff, in conjunction with the TUG and the PAC, recommends:

1. For acceptance into the Mississippi Digital Earth Model, cadastral coverage should be developed at a minimum scale of 1" = 100' (1:1,200) scale for the urban areas and 1" = 400' (1:4,800) scale for the rural areas and be developed on digital orthoimagery that meets MDEM standards.

2. Data spatial accuracy should meet the parameters of National Map Accuracy Standards (NMAS) for 1" = 100' (1:1,200) scale mapping for the urban areas and 1" = 400' (1:4,800) scale mapping for the rural areas.
3. The "best fit" methodology rather than the "metes and bounds" methodology may be used for cadastral mapping, thereby achieving significant cost savings.

Elevation & Bathymetry Standards

In the past, the USGS has been the lead agency for production of digital elevation models. In addition, MDOT contracts for production of digital elevation data on a frequent basis to support highway planning and design. MDEQ is acquiring digital elevation data in a limited number of counties to aid in the development of Digital Flood Insurance Rate Maps (DFIRMs) for FEMA.

Digital elevation models and contours were traditionally developed using conventional photogrammetric mapping technology. Several new remote sensing technologies for elevation data capture have emerged over the past decade that allow for substantial savings of time and money.

The suggested digital elevation model for MDEM should be of adequate resolution to support development of topographic vector contours at three different intervals:

- One-foot contours for areas characterized as flat with subtle relief variation, such as the Gulf Coast and the Delta, to support hydrographic modeling and drainage analysis. This element covers approximately 10,000 square miles of the state.
- Two-foot contours in urban areas, including areas within the one-mile buffer of municipal corporate limits. This element covers approximately 6,500 square miles of the state.
- Five-foot contours in rural areas, which covers the remaining portion of the state. This element represents approximately 31,500 square miles of the state.

The staff, in conjunction with the PAC and the TUG, recommends:

1. The Council adopts the above listed specifications to be established as the initial elements to be included in the digital elevation layer of MDEM.
2. Data spatial accuracy should meet the parameters of National Map Accuracy Standards (NMAS) for 1" = 100' (1:1,200) scale mapping for the urban areas and 1" = 400' (1:4,800) scale mapping for the rural areas.
3. The elevation standards would not apply to bathymetry. Bathymetric standards are currently being developed on the Federal level.

Geodetic Control Standards

The original NAD 83 geodetic network was computed mostly by using traditional surveying observations and methods. Very few GPS observations were included in the adjustment computation. The design and implementation of this network preceded the developments of the GPS technology and therefore the practical usage of these control points for GPS applications can be problematic. The first difficulty in using most of these control points is that they are not "GPSable." In other words, the points are located near objects that obstruct the required clear visibility between the receiver and the satellites. The second difficulty is that many of these points are in locations that are not easily accessible. To work efficiently with GPS one needs to have quick and easy access to control points. The third difficulty in using the original NAD 83 network is that control points are spaced irregularly. Hence, there is a high chance that there will be insufficient control points in the vicinity of your project. The final difficulty is that the original NAD 83 network is not accurate enough to serve as control for GPS observations.

To eliminate or significantly reduce these problems, several states (including Mississippi) have developed, in conjunction with the National Geodetic Survey (NGS), a High Accuracy Reference Network (HARN). The HARN was designed to establish GPS observable geodetic control points accessible 24 hours a day by car or light truck within, at most, 30 to 45 minutes travel from any point in the state. Once the HARN was established, a new adjustment was computed and the points in the network were assigned new coordinates different from those of the original NAD83 adjustment. The results of the new adjustment is named NAD83 (199x), where (199x) is the year in which the adjustment was completed (e.g., NAD83 (1998) was completed in 1998, etc.). Changes in positional (horizontal) coordinates from the original NAD 83 are expected to range between 1-3.5 feet; thus, the code-based GPS data collection will not be affected by the new values.

The new HARN provides the fundamental reference for all subsequent survey projects in the state. Mississippi currently has 210 HARN stations scattered about the state on a 15-mile (25-kilometer) grid. The HARN is available as a part of the National Spatial Reference System (NSRS) and is managed and distributed by the National Geodetic Survey. Data are available from the NGS in a variety of media. While the accuracy of the new HARN stations is excellent, the spatial density is lacking. Ideal MDEM spacing would be on a grid of approximately 6 miles (10 kilometers) to adequately support airborne photography and elevation mapping. A control densification survey of an additional 800 HARN stations is needed to fill the gaps between the existing stations. This densification effort should be designed and accomplished according to the guidelines of the ***National Height Modernization Surveys (NHS) System Manual #NOS-NGS-58*** to ensure that the complete network meets an acceptable level of vertical accuracy.

The staff, in conjunction with the PAC and the TUG, recommends:

1. The Council adopts the High Accuracy Reference Network (HARN) points established and maintained by the National Geodetic Survey (NGS) as the standard horizontal geodetic control layer of MDEM.
2. The Council adopts the ***National Height Modernization Surveys (NHS) System Manual #NOS-NGS-58*** as the standard for increased vertical control of the MDEM geodetic layer.
3. The Council adopts **NAVD88** as the vertical datum standard.

Governmental Boundaries Standards

The U. S. Census Bureau maintains separate governmental boundary files developed at scales of 1:100,000. Examples of the types of Census Bureau boundary files include:

- Census Block Groups, Divisions, Regions, and Tracts
- Congressional Districts
- Consolidated Cities
- County Subdivisions
- Metropolitan Areas
- School Districts
- State Legislative Districts
- ZIP Code Tabulation Areas

Some examples of the entities that have jurisdiction over setting and maintaining boundaries are:

- Mississippi Secretary of State
- U.S. Census Bureau
- Mississippi Dept. of Wildlife, Fisheries, & Parks
- The National Park Service
- The National Forest Service

More accurate governmental boundaries exist for areas such as municipalities and counties. These layers are often kept at the city and county level.

The staff, in conjunction with the PAC and the TUG, recommends:

1. Governmental boundaries be combined with and/or integrated with existing boundaries of cities, counties, or other entities which have a defined legal basis for jurisdiction.
2. Data spatial accuracy should meet the parameters of National Map Accuracy Standards (NMAS) for 1” = 100’ (1:1,200) scale mapping for the urban areas and 1” = 400’ (1:4,800) scale mapping for the rural areas.

Hydrography Standards

The current statewide stream and shoreline files are primarily the USGS 1:100,000 and 1:24,000 Digital Line Graph (DLG) files. These files represent stream locations derived for the existing USGS quadrangle maps; however, the level of detail required for state and local mapping programs is not available, nor do these files represent current information in many areas. The following are examples of hydrographic features that should be collected:

- Drains
- Bays
- Springs
- Lakes
- Ponds
- Canals
- Rivers
- Streams
- Dams
- Spillways
- Inundation Areas
- Reservoirs

The staff, in conjunction with the PAC and the TUG, recommends:

1. The Council adopts the above listed features as the initial elements to be included in the digital hydrographic layer of MDEM.
2. Data spatial accuracy should meet the parameters of National Map Accuracy Standards (NMAS) for 1” = 100’ (1:1,200) scale mapping for the urban areas and 1” = 400’ (1:4,800) scale mapping for the rural areas.

DETAILED OVERARCHING STAFF RECOMMENDATIONS

Content Standard for Digital Geospatial Metadata (CSDGM)

The objectives of the standard are to provide a common set of terminology and definitions for the documentation of digital geospatial data. The standard establishes the names of data elements and compound elements (groups of data elements) to be used for these purposes, the definitions of these compound elements and data elements, and information about the values that are to be provided for the data elements.

Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," was signed on April 11, 1994, by President William Clinton. Section 3, Development of a National Geospatial Data Clearinghouse, paragraph

(b) states: "Standardized Documentation of Data, ... each agency shall document all new geospatial data it collects or produces, either directly or indirectly, using the standard under development by the FGDC, and make that standardized documentation electronically accessible to the Clearinghouse network." This standard is the data documentation standard referenced in the executive order.

The standard was developed from the perspective of defining the information required by a prospective user to determine the availability of a set of geospatial data, to determine the fitness the set of geospatial data for an intended use, to determine the means of accessing the set of geospatial data, and to successfully transfer the set of geospatial data. As such, the standard establishes the names of data elements and compound elements to be used for these purposes, the definitions of these data elements and compound elements, and information about the values that are to be provided for the data elements. The standard does not specify the means by which this information is organized in a computer system or in a data transfer, nor the means by which this information is transmitted, communicated, or presented to the user.

In addition to use by the Federal Government, the FGDC invites and encourages organizations and persons from State, local, and tribal governments, the private sector, and non-profit organizations to use the standard to document their geospatial data.

The staff brings the following recommendation for adoption by the Council from the Policy Advisory Committee (PAC) and Technical Users Group (TUG)

All data included in MDEM must be compliant with the Federal Geographic Data Committee Content Standard for Digital Geospatial Metadata (FGDC CSDGM).

United States National Map Accuracy Standards

The NMAS define accuracy standards for published maps, including horizontal and vertical accuracy, accuracy testing method, accuracy labeling on published maps, labeling when a map is an enlargement of another map, and basic information for map construction as to latitude and longitude boundaries.

The staff brings the following recommendation for adoption by the Council from the Policy Advisory Committee (PAC) and Technical Users Group (TUG)

All data included in MDEM will meet United States National Mapping Accuracy Standards (USNMAS)

The Open Geospatial Consortium

The Open Geospatial Consortium, Inc (OGC) is an international industry consortium of **267** companies, government agencies and universities participating in a consensus

process to develop publicly available interface specifications. **OpenGIS®** Specifications support interoperable solutions that "geo-enable" the Web, wireless and location-based services, and mainstream IT. The specifications empower technology developers to make complex spatial information and services accessible and useful with all kinds of applications.

The Open Geospatial Consortium, Inc. (OGC) is a non-profit, international, voluntary consensus standards organization that is leading the development of standards for geospatial and location-based services. Through our member-driven consensus programs, OGC works with government, private industry, and academia to create open and extensible software application programming interfaces for geographic information systems (GIS) and other mainstream technologies. Adopted specifications are available for the public's use at no cost.

The staff brings the following recommendation for adoption by the Council from the Policy Advisory Committee (PAC) and Technical Users Group (TUG)

All geospatial applications included in MDEM must be compliant with Open Geospatial Consortium (OGC) interface specifications.

Geographic Information Framework Data Content Standards

Standards facilitate the development, sharing, and use of geospatial data. The FGDC develops geospatial data standards for implementing the NSDI, in consultation and cooperation with State, local, and tribal governments, the private sector and academic community, and, to the extent feasible, the international community.

The draft framework data standards were initially developed through the Geospatial One-Stop e-Government initiative; however, the FGDC has assumed leadership for continued standards activities. The standards are intended to establish common requirements to facilitate data exchange for seven themes of geospatial data that are of critical importance to the National Spatial Data Infrastructure (NSDI), as they are fundamental to many different Geographic Information Systems (GIS) applications. The seven geospatial data themes are: geodetic control, elevation, orthoimagery, hydrography, transportation, cadastral, and governmental unit boundaries. These themes are known as NSDI framework themes.

Framework data standards specify a minimal level of data content that data producers, consumers, and vendors are expected to use for the interchange of framework data, including through Web services. Each of the framework data standards includes an integrated application schema expressed in Unified Modeling Language (UML). The application schema specifies, as appropriate, the feature types, attribute types, attribute domain, feature relationships, spatial representation, data organization, and metadata that define the information content of a data set. While the framework data standards do not specify a single structure for the interchange of data, each standard includes an

informative annex that describes implementation using the Geography Markup Language (GML) Version 3.0 developed through the Open GIS Consortium, Inc. (OGC).

Framework data standards will have a positive impact on the overall GIS community by promoting data exchange through common means of describing data content. The standards are expected to decrease the costs of acquiring and exchanging Framework data among creators and users in Federal, State, local, and other governmental agencies, the private sector, and the academic community. The private sector (software developers and vendors) will benefit through development and marketing of software tools that exploit data based on these data content standards.

The staff brings the following recommendation for adoption by the Council from the Policy Advisory Committee (PAC) and Technical Users Group (TUG)

All data included in MDEM should follow the Federal Geographic Data Committee/American National Standard for Information Technology (FGDC/ANSI) Geographic Information Framework Data Content Standards

1) ***Base Standard***
2) ***Cadastral***
3) ***Digital Orthoimagery***
4) ***Elevation***
5) ***Geodetic Control***
6) ***Governmental Unit Boundary Exchange***
7) ***Hydrography***
8) ***Transportation Base Standard***
    a. ***Transportation: Air***
    b. ***Transportation: Rail***
    c. ***Transportation: Roads***
    d. ***Transportation: Transit Transportation:***
    e. ***Inland Waterways***

Standardization of Map Projections

Map projections are attempts to portray the surface of the earth or a portion of the earth on a flat surface. Some distortions of conformality, distance, direction, scale, and area always result from this process. Some projections minimize distortions in some of these properties at the expense of maximizing errors in others. Some projections are attempts to only moderately distort all of these properties.

Conformality

When the scale of a map at any point on the map is the same in any direction, the projection is conformal. Meridians (lines of longitude) and parallels (lines of latitude) intersect at right angles. Shape is preserved locally on conformal maps.

Distance

A map is equidistant when it portrays distances from the center of the projection to any other place on the map.

Direction

A map preserves direction when azimuths (angles from a point on a line to another point) are portrayed correctly in all directions.

Scale

Scale is the relationship between a distance portrayed on a map and the same distance on the Earth.

Area

When a map portrays areas over the entire map so that all mapped areas have the same proportional relationship to the areas on the Earth that they represent, the map is an equal-area map

Even though the computational resources required to store and re-project geospatial data has become relatively inexpensive, it is to our advantage to standardize data projections for inclusion in MDEM. While no single projection is ideal for every use, Mississippi users of government GIS use one of 3 projections: Mississippi State Plane East, Mississippi State Plane West, or Mississippi Trans Mercator (MSTM).

The staff brings the following recommendation for adoption by the Council from the Policy Advisory Committee (PAC) and Technical Users Group (TUG)

All data to be included in MDEM must be in one of 3 projections

1) ***Mississippi State Plane East***
2) ***Mississippi State Plane West***
3) ***Mississippi Trans Mercator (MSTM)***

NSDI Clearinghouse Node

The Federal Geographic Data Committee (FGDC) is tasked by Executive Order 12906 to develop procedures and assist in the implementation of a distributed discovery mechanism for digital geospatial data. Using the data elements defined in the Content Standards for Digital Geospatial Metadata, governmental, non-profit, and commercial participants worldwide can make their collections of spatial information searchable and accessible on the Internet using free reference implementation software developed by the FGDC.

The Clearinghouse Activity, sponsored by the FGDC, is a decentralized system of servers located on the Internet which contain field-level descriptions of available digital spatial data. This descriptive information, known as metadata, are collected in a standard format to facilitate query and consistent presentation across multiple participating sites. Clearinghouse uses readily available Web technology for the client side and uses the ANSI standard Z39.50 for the query, search, and presentation of search results to the Web client.

A fundamental goal of Clearinghouse is to provide access to digital spatial data through metadata. The Clearinghouse functions as a detailed catalog service with support for links to spatial data and browse graphics. Clearinghouse sites are encouraged to provide hypertext linkages within their metadata entries that enable users to directly download the digital data set in one or more formats. Where digital data are too large to be made available through the Internet or the data products are made available for sale, linkage to an order form can be provided in lieu of a data set. Through this model, Clearinghouse metadata provides low-cost advertising for providers of spatial data, both non-commercial and commercial, to potential customers via the Internet.

Clearinghouse allows individual agencies, consortia, or geographically-defined communities to band together and promote their available digital spatial data. Servers may be installed at local, regional, or central offices, dictated by the organizational and logistical efficiencies of each organization. All Clearinghouse servers are considered "peers" within the Clearinghouse activity -- there is no hierarchy among the servers -- permitting direct query by any user on the Internet with minimum transactional processing.

The staff brings the following recommendation for adoption by the Council from the Policy Advisory Committee (PAC) and Technical Users Group (TUG)

Establishment and maintenance of an official National Spatial Data Infrastructure (NSDI) metadata node for Mississippi

MDEM DATA & AVALABILITY

In addition to the MISSISSIPPI COORDINATING COUNCIL FOR REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEMS legislation directing the creation and development of MDEM, it called for the “development, operation and maintenance of a delivery system infrastructure for geographic information systems data.” The legislation also required that a “warehouse for Mississippi's geographic information systems data” be provided.

To accomplish the above, several of the State Agency members on the Council have worked together towards those ends. Over the years, MDEQ has coordinated or worked

closely with the Mississippi Department of Information Technology Services (MDITS), the Mississippi Automated Resource Information System (MARIS) and Mississippi State University (MSU). MDEQ has also worked closely and in partnership with the Federal Emergency Management Agency (FEMA), the United States Geological Survey (USGS), Natural Resources Conservation Service (NRCS), and National Oceanic and Atmospheric Administration.

The Mississippi Geospatial Clearinghouse

The Mississippi Geospatial Clearinghouse (MGC) created and operated by MDITS provides access to a comprehensive spatial information warehouse of Geographic Information Systems (GIS) resources of Mississippi for use by government, academia, and the private sector. Below is the internet link for the Mississippi Geospatial Clearinghouse:

http://www.gis.ms.gov/Portal/home.aspx?x=1345&y=894&browser=Netscape

The Mississippi Automated Resource Information System (MARIS)

The MARIS has for many years provided access to a comprehensive spatial information warehouse of Geographic Information Systems (GIS) resources of Mississippi for use by government, academia, and the private sector. In recent years MARIS has housed and distributed a significant portion of the newer data layers making up MDEM. Below is the internet link for MARIS:

http://www.maris.state.ms.us/

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Appendix A

MDEM Glossary and Acronyms

DFIRM – Digital Flood Insurance Rate Map

FEMA – Federal Emergency Management Agency

FGDC - Federal Geographic Data Committee

MDEM – Mississippi Digital Earth Model

MDEQ – Mississippi Department of Environmental Quality

MDOT – Mississippi Department of Transportation

NAD – North American Datum

NMAS – National Mapping Accuracy Standards

PAC – Policy Advisory Committee. As part of the HB 861 legislation, a Policy Advisory Committee was also created. The members of the advisory committee are made up of policy level officials from major state, local, regional and federal agencies, including, but not limited to, the National Association of Space Administration, the Mississippi Institute for Forestry Inventory, the Mississippi Department of Wildlife, Fisheries and Parks, the Mississippi Public Utilities Staff, the Department of Marine Resources, the county E911 coordinator, the State Health Officer, the Commissioner of Agriculture and Commerce, the State Tax Commission, the Council of Consulting Engineers and the Mississippi Band of Choctaw Indians, as well as members of the private sector.

The Council – The Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems. During the 2003 session, the Legislature passed HB 861, which created the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems. The coordinating council is responsible for coordination of remote sensing and geographic information system activities within Mississippi. It is mandated to establish and enforce policies and standards that will "make it easier for remote sensing and geographic information systems around the state to share information and to facilitate cost-sharing arrangements to reduce the costs of acquiring remote sensing and geographic information system data." The coordination council's authority covers all local, regional, and state governmental agencies in Mississippi except for institutions of higher learning.

Staff – MDEQ Office of Geology personnel (During time period when MDEQ Directors chaired the Council).

TUG – Technical User's Group. During the 2003 session, the Legislature passed HB 861, which created the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems. This legislation created a staff level technical users committee, in which any public or private sector entity in Mississippi interested in remote sensing and geographic information may be allowed to participate. At this time, there are two sub-committees. They are the Standards sub-committee and the Clearinghouse sub-committee.

USGS - United States Geological Survey

APPENDIX B

MISSISSIPPI LEGISLATURE

2003 Regular Session

To: Conservation and Water Resources

By: Representative Brown, Morris

House Bill 861

(As Sent to Governor)

AN ACT TO CREATE THE MISSISSIPPI COORDINATING COUNCIL FOR REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEMS; TO AMEND SECTION 25-53-5, TO ASSIGN ADDITIONAL DUTIES TO THE DEPARTMENT OF INFORMATION TECHNOLOGY SERVICES; TO AMEND SECTION 49-2-9, TO ASSIGN ADDITIONAL DUTIES TO THE MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY, OFFICE OF GEOLOGY AND NATURAL RESOURCES; AND FOR RELATED PURPOSES.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MISSISSIPPI:

SECTION 1. (1) There is established the Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems, hereinafter referred to as the "council." The council shall set and assure enforcement of policies and standards to make it easier for remote sensing and geographic information system users around the state to share information and to facilitate cost-sharing arrangements to reduce the costs of acquiring remote sensing and geographic information system data. The council shall not oversee or regulate the activities of higher education entities where it relates to the fields of teaching or research; however, the council shall be informed of these activities for the purpose of coordinating these higher education activities with other public remote sensing and GIS initiatives to achieve the maximum benefit for the State of Mississippi and its taxpayers. The council's responsibilities include, but are not limited to:

(a) Coordination of remote sensing and geographic information system activities within Mississippi;

(b) Establishing policies and standards to guide Mississippi Department of Information Technology Services (MDITS) in the review and approval of state and local government procurement of both hardware and software development relate to remote sensing and geographic information system;

(c) Oversight of MDITS' implementation of these responsibilities;

(d) Preparing a plan, with proposed state funding priorities, for Mississippi's remote sensing and geographic information system activities, including development, operation and maintenance of the Mississippi Digital Earth Model;

(e) Oversight of the Mississippi Department of Environmental Quality's development and maintenance of the Mississippi Digital Earth Model, including establishing policies and standards for the procurement of remote sensing and geographic information system data by state and local governmental entities and establishing the order in which the seven (7) core data layers shall be developed;

(f) Designating Mississippi's official representative to the National States Geographic Information Council and to any other national or regional remote sensing or geographical information system organizations on which Mississippi has an official seat;

(g) Establishing and designating the members of an advisory committee made up of policy level officials from major state, local, regional and federal agencies, including, but not limited to, the National Association of Space Administration, the Mississippi Institute for Forestry Inventory, the Mississippi Department of Wildlife, Fisheries and Parks, the Mississippi Public Utilities Staff, the Department of Marine Resources, the county E911 coordinator, the State Health Officer, the Commissioner of Agriculture and Commerce, the State Tax Commission, the Council of Consulting Engineers and the Mississippi Band of Choctaw Indians, as well as members of the private sector;

(h) Creating a staff level technical users committee, in which any public or private sector entity in Mississippi interested in remote sensing and geographic information may be allowed to participate;

(i) Coordinate with the State Tax Commission to assure that state and local governmental entities do not have to comply with two (2) sets of requirements imposed by different organizations;

(2) The Mississippi Coordinating Council for Remote Sensing and Geographic Information Systems will be composed of the following members:

(a) The Executive Director of the Mississippi Department of Environmental Quality;

(b) The Executive Director of the Mississippi Department of Information Technology Services;

(c) The Executive Director of the Mississippi Department of Transportation;

(d) The Executive Director of the Mississippi Emergency Management Agency;

(e) The Executive Director of Mississippi Development Authority;

(f) The Secretary of State;

(g) The Executive Director of the Mississippi Forestry Commission;

(h) The Director of the Mississippi State Board of Registered Professional Geologists;

(i) A representative from the Institutions of Higher Learning, appointed by the Commissioner of the Institutions of Higher Learning;

(j) One (1) mayor, serving a municipality, appointed by the Executive Director of the Mississippi Municipal League;

(k) The Executive Director of the Mississippi Municipal League or his designee who will serve as the member;

(l) One (1) county supervisor appointed by the Executive Director of the Mississippi Association of Supervisors;

(m) The Executive Director of the Mississippi Association of Supervisors or his designee who will serve as the member;

(n) A member of the Tax Assessors/Collectors Association, to be appointed by the president of that association;

(o) A representative of the Planning and Development Districts, appointed by the Governor;

(p) A Senator, as a nonvoting member, appointed by the Lieutenant Governor; and

(q) A Representative, as a nonvoting member, appointed by the Speaker of the House.

The members of the council shall serve for a term concurrent with their service as an elected or appointed official or concurrent with the term of the appointing official.

The Executive Director of the Department of Environmental Quality shall serve as council chair and the Executive Director of Information Technology Services as vicechair for the first two (2) years. After the first two (2) years, the council shall elect from its members a chair and vicechair, for terms to be specified by the council.

With regard to the designee chosen by the Executive Director of the Mississippi Municipal League or the Executive Director of the Mississippi Association of

Supervisors, the designee shall become a permanent member of the council for a term concurrent with the term of the appointing executive director.

(3) At the direction of the chairman of the council and contingent upon the availability of sufficient funds, each member may receive reimbursement for reasonable expenses, including travel expenses in accordance with rates established pursuant to Section 25-3-41, incurred in attending meetings of the council. Any member of the council who is also a state employee may not receive per diem compensation for attending meetings of the study committee but may be reimbursed in accordance with Section 25-3-41 for mileage and actual expenses incurred in the performance of the duties, if authorized by vote, at a meeting of the council, which action must be recorded in the official minutes of the meeting. Legislative members of the council will be paid from the contingent expense funds of their respective houses in the same amounts as provided for committee meetings when the Legislature is not in session.

(4) The council may accept money from any source, public or private, to be expended in implementing the duties under this act.

(5) The council may utilize staff employed by the agencies affected by this act and any other assistance made available to it.

SECTION 2. Section 25-53-5, Mississippi Code of 1972, is amended as follows:

25-53-5. The authority shall have the following powers, duties, and responsibilities:

(a) The authority shall provide for the development of plans for the efficient acquisition and utilization of computer equipment and services by all agencies of state government and provide for their implementation. In so doing, the authority may use the MDITS staff, at the discretion of the executive director of the authority, or the authority may contract for the services of qualified consulting firms in the field of information technology and utilize the service of such consultants as may be necessary for such purposes.

(b) The authority shall immediately institute procedures for carrying out the purposes of this chapter and supervise the efficient execution of the powers and duties of the office of executive director of the authority. In the execution of its functions under this chapter, the authority shall maintain as a paramount consideration the successful internal organization and operation of the several agencies so that efficiency existing therein shall not be adversely affected or impaired. In executing its functions in relation to the institutions of higher learning and junior colleges in the state, the authority shall take into consideration the special needs of such institutions in relation to the fields of teaching and scientific research.

(c) Title of whatever nature of all computer equipment now vested in any agency of the State of Mississippi is hereby vested in the authority, and no such equipment shall be disposed of in any manner except in accordance with the direction of the authority or

under the provisions of such rules and regulations as may hereafter be adopted by the authority in relation thereto.

(d) The authority shall adopt rules, regulations, and procedures governing the acquisition of computer and telecommunications equipment and services which shall, to the fullest extent practicable, insure the maximum of competition between all manufacturers of supplies or equipment or services. In the writing of specifications, in the making of contracts relating to the acquisition of such equipment and services, and in the performance of its other duties the authority shall provide for the maximum compatibility of all information systems hereafter installed or utilized by all state agencies and may require the use of common computer languages where necessary to accomplish the purposes of this chapter. The authority may establish by regulation and charge reasonable fees on a nondiscriminatory basis for the furnishing to bidders of copies of bid specifications and other documents issued by the authority.

(e) The authority shall adopt rules and regulations governing the sharing with, or the sale or lease of information technology services to any nonstate agency or person. Such regulations shall provide that any such sharing, sale, or lease shall be restricted in that same shall be accomplished only where such services are not readily available otherwise within the state, and then only at a charge to the user not less than the prevailing rate of charge for similar services by private enterprise within this state.

(f) The authority may, in its discretion, establish a special technical advisory committee or committees to study and make recommendations on technology matters within the competence of the authority as the authority may see fit. Persons serving on the Information Resource Council, its task forces, or any such technical advisory committees shall be entitled to receive their actual and necessary expenses actually incurred in the performance of such duties, together with mileage as provided by law for state employees, provided the same has been authorized by a resolution duly adopted by the authority and entered on its minutes prior to the performance of such duties.

(g) The authority may provide for the development and require the adoption of standardized computer programs and may provide for the dissemination of information to and the establishment of training programs for the personnel of the various information technology centers of state agencies and personnel of the agencies utilizing the services thereof.

(h) The authority shall adopt reasonable rules and regulations requiring the reporting to the authority through the office of executive director of such information as may be required for carrying out the purposes of this chapter and may also establish such reasonable procedures to be followed in the presentation of bills for payment under the terms of all contracts for the acquisition of computer equipment and services now or hereafter in force as may be required by the authority or by the executive director in the execution of their powers and duties.

(i) The authority shall require such adequate documentation of information technology procedures utilized by the various state agencies and may require the establishment of such organizational structures within state agencies relating to information technology operations as may be necessary to effectuate the purposes of this chapter.

(j) The authority may adopt such further reasonable rules and regulations as may be necessary to fully implement the purposes of this chapter. All rules and regulations adopted by the authority shall be published and disseminated in readily accessible form to all affected state agencies, and to all current suppliers of computer equipment and services to the state, and to all prospective suppliers requesting the same. Such rules and regulations shall be kept current, be periodically revised, and copies thereof shall be available at all times for inspection by the public at reasonable hours in the offices of the authority. Whenever possible no rule, regulation or any proposed amendment to such rules and regulations shall be finally adopted or enforced until copies of said proposed rules and regulations have been furnished to all interested parties for their comment and suggestions.

(k) The authority shall establish rules and regulations which shall provide for the submission of all contracts proposed to be executed by the executive director for computer equipment or services to the authority for approval before final execution, and the authority may provide that such contracts involving the expenditure of less than such specified amount as may be established by the authority may be finally executed by the executive director without first obtaining such approval by the authority.

(l) The authority is authorized to purchase, lease, or rent computer equipment or services and to operate said equipment and utilize said services in providing services to one or more state agencies when in its opinion such operation will provide maximum efficiency and economy in the functions of any such agency or agencies.

(m) The authority shall assist political subdivisions and instrumentalities in their development of plans for the efficient acquisition and utilization of computer equipment and services. An appropriate fee shall be charged the political subdivision by the authority for such assistance.

(n) The authority shall adopt rules and regulations governing the protest procedures to be followed by any actual or prospective bidder, offeror or contractor who is aggrieved in connection with the solicitation or award of a contract for the acquisition of computer equipment or services. Such rules and regulations shall prescribe the manner, time and procedure for making protests and may provide that a protest not timely filed shall be summarily denied. The authority may require the protesting party, at the time of filing the protest, to post a bond, payable to the state, in an amount that the authority determines sufficient to cover any expense or loss incurred by the state, the authority or any state agency as a result of the protest if the protest subsequently is determined by a court of competent jurisdiction to have been filed without any substantial basis or reasonable expectation to believe that the protest was meritorious; however, in no

event may the amount of the bond required exceed a reasonable estimate of the total project cost. The authority, in its discretion, also may prohibit any prospective bidder, offeror or contractor who is a party to any litigation involving any such contract with the state, the authority or any agency of the state to participate in any other such bid, offer or contract, or to be awarded any such contract, during the pendency of the litigation.

(o) The authority shall make a report in writing to the Legislature each year in the month of January. Such report shall contain a full and detailed account of the work of the authority for the preceding year as specified in Section 25-53-29(3).

All acquisitions of computer equipment and services involving the expenditure of funds in excess of the dollar amount established in Section 31-7-13(c), or rentals or leases in excess of the dollar amount established in Section 31-7-13(c) for the term of the contract, shall be based upon competitive and open specifications, and contracts therefor shall be entered into only after advertisements for bids are published in one or more daily newspapers having a general circulation in the state not less than fourteen (14) days prior to receiving sealed bids therefor. The authority may reserve the right to reject any or all bids, and if all bids are rejected, the authority may negotiate a contract within the limitations of the specifications so long as the terms of any such negotiated contract are equal to or better than the comparable terms submitted by the lowest and best bidder, and so long as the total cost to the State of Mississippi does not exceed the lowest bid. If the authority accepts one (1) of such bids, it shall be that which is the lowest and best.

(p) When applicable, the authority may procure equipment, systems and related services in accordance with the law or regulations, or both, which govern the Bureau of Purchasing of the Office of General Services or which govern the Mississippi Department of Information Technology Services procurement of telecommunications equipment, software and services.

(q) The authority is authorized to purchase, lease, or rent information technology and services for the purpose of establishing pilot projects to investigate emerging technologies. These acquisitions shall be limited to new technologies and shall be limited to an amount set by annual appropriation of the Legislature. These acquisitions shall be exempt from the advertising and bidding requirement.

(r) All fees collected by the Mississippi Department of Information Technology Services shall be deposited into the Mississippi Department of Information Technology Services Revolving Fund unless otherwise specified by the Legislature.

(s) The authority shall work closely with the council to bring about effective coordination of policies, standards and procedures relating to procurement of remote sensing and geographic information systems (GIS) resources. In addition, the authority is responsible for development, operation and maintenance of a delivery system infrastructure for geographic information systems data. The authority shall provide a warehouse for Mississippi's geographic information systems data.

SECTION 3. Section 49-2-9, Mississippi Code of 1972, is amended as follows:

49-2-9. (1) Effective July 1, 1979, the commission shall have the following powers and duties:

(a) To formulate the policy of the department regarding natural resources within the jurisdiction of the department;

(b) To adopt, modify, repeal, and promulgate, after due notice and hearing, and where not otherwise prohibited by federal or state law, to make exceptions to and grant exemptions and variances from, and to enforce rules and regulations implementing or effectuating the powers and duties of the commission under any and all statutes within the commission's jurisdiction, and as the commission may deem necessary to prevent, control and abate existing or potential pollution;

(c) To apply for, receive and expend any federal or state funds or contributions, gifts, devises, bequests or funds from any other source;

(d) To commission or conduct studies designed to determine alternative methods of managing or using the natural resources of this state, in a manner to insure efficiency and maximum productivity;

(e) To enter into, and to authorize the executive director to execute with the approval of the commission, contracts, grants and cooperative agreements with any federal or state agency or subdivision thereof, or any public or private institution located inside or outside the State of Mississippi, or any person, corporation or association in connection with carrying out the provisions of this chapter; but this authority under this chapter and under any and all statutes within the commission's jurisdiction, except those statutes relating to the Bureau of Recreation and Parks, shall not include contracts, grants or cooperative agreements which do not develop data or information usable by the commission, or which provide goods, services or facilities to the commission or any of its bureaus, and shall exclude any monies for special interest groups for purposes of lobbying or otherwise promoting their special interests; and

(f) To discharge such other duties, responsibilities and powers as are necessary to implement the provisions of this chapter.

(2) The Mississippi Department of Environmental Quality, Office of Geology and Energy Resources shall be responsible for program management, procurement, development and maintenance of the Mississippi Digital Earth Model, which should include the following seven (7) core data layers of a digital land base computer model of the State of Mississippi:

(a) Geodetic control;

(b) Elevation and bathymetry;

(c) Orthoimagery;

(d) Hydrography;

(e) Transportation;

(f) Government boundaries; and

(g) Cadastral. With respect to the cadastral layer, the authority and responsibility of the Mississippi Department of Environmental Quality, Office of Geology and Energy Resources shall be limited to compiling information submitted by counties.

For all seven (7) framework layers, the Mississippi Department of Environmental Quality, Office of Geology and Energy Resources shall be the integrator of data from all sources and the guarantor of data completeness and consistency and shall administer the council's policies and standards for the procurement of remote sensing and geographic information system data by state and local governmental entities.

SECTION 4. This act shall take effect and be in force from and after July 1, 2003.

Appendix C

OFFICIAL
MINUTES OF THE
MISSISSIPPI COORDINATING COUNCIL FOR
REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEMS

DECEMBER 2, 2004

PRESENT

Charles Chisolm, Chair, Mississippi Department of Environmental Quality
David Litchliter, Vice Chair, Mississippi Department of Information Technology Services
Dannie Reed, Representative, Mississippi House of Representatives
Tommy Moffatt, Senator, Mississippi State Senate
Joe Blount, Mississippi State Tax Commission
Joel Yelverton, Mississippi Association of Supervisors
Shirley Hall, Mayor, City of Richland
Chuck Carr, Central Mississippi Planning and Development District
Clay Lewis (for Leland Speed), Mississippi Development Authority
John Simpson (for Larry L. "Butch" Brown), Mississippi Department of Transportation
Barbara Collier, Tax Assessors/Collectors Association
James Sledge, Mississippi Forestry Commission
Rick Ericksen, Mississippi State Board of Registered Professional Geologists
David Shaw, Mississippi State University
Andy Taggart, Madison County Board of Supervisors
James Brinson (for D. L. Fortenberry), Mississippi Department of Public Safety
Jim Steil, Technical Users Group Chairman
Phil Sullivan, Policy Advisory Committee Chairman
Bill Cheney (for Eric Clark), Secretary of State
Al Goodman (for Robert Latham), Mississippi Emergency Management Agency
Jackie Swan (for Jeanie Smith), Mississippi Municipal League

Chairman Charles Chisolm opened the meeting and thanked Senator Tommy Moffatt, Representative Dannie Reed and Tax Commissioner Joe Blount for attending. A quorum being present, the motion to adopt the minutes of September 2, 2004, was made by Chuck Carr and seconded by David Shaw. The minutes were adopted.

Claude Johnson of Information Technology Services (ITS) updated the Council on the progress of developing the geospatial Express Products List (EPL). An agreement with ESRI appears very close, MapInfo is exchanging information with ITS and is moving rapidly, and Intergraph is engaged in the process.

Steve Champlin of Mississippi Department of Environmental Quality (MDEQ) and Bill McDonald of Mississippi Geographic Information (MGI) reviewed the progress made in the FEMA-funded, statewide flood map modernization project. It was requested that the data this program generates become a part of the clearinghouse. The level of involvement of county and city officials was substantiated and it was suggested that county economic development people be invited to the community meetings.

Bud Douglas of the Department of Human Services requested the Council officially sanction a subcommittee to develop standards for geocoding addresses for the State. He suggested the state build it and own it. The subcommittee will develop standards for adoption and then present a plan to create the data set/service. A motion to establish this subcommittee was made by Rick Ericksen and seconded by Joel Yelverton; the motion passed.

Cragin Knox then presented a summary of the process which resulted in the Mississippi Digital Earth Model (MDEM) standards which he is submitting for Council adoption. These proposed standards were extensively reviewed by the Policy Advisory Committee (PAC) and the Technical Users Group (TUG) on multiple occasions with widespread participation. It was reiterated that these standards are not going to require the cities and counties do this level of quality but these proposed standards do set a minimum for data which qualifies as MDEM data. The notion of incentives for meeting these standards was briefly discussed. The need for educating local government officials on this subject was recognized as very important. There were brief comments on the effort to develop a Request for Project (RFP) related to a statewide orthoimagery flight. A committee is working on this even though the funding is not yet identified. Once the RFP is developed there will be an effort to find the funding. Andy Taggart made a motion that the MDEM standards be adopted, David Litchliter seconded and the motion was adopted.

Cragin Knox gave a brief outline of the Legislative Report he is preparing for the Council. The initial draft will go out to the members next week for review and comments.

Claude Johnson presented a description of how the clearinghouse/portal project is structured and the progress being made. One of the several teams in this project deals with requirements definition, which is determining the needs of the targeted users. There will be a series of meetings with user groups such as cities, counties, water districts and others. Another large issue in the project is choosing which relational database will handle the clearinghouse data. David Litchliter informed the Council that ITS did get the funding they had requested as a part of the state bonding. He said ITS got funding for the clearinghouse, fiber optic expansion, and a mirror data center to be located at the Educational Research Center in Jackson.

David Shaw discussed the education and outreach efforts of the Education Subcommittee he is chairing. This committee has met twice and has identified three tiers of needed education. The first is education for policy level people. This is critical because these people are the decision makers including budget spending. The second group is the mid-level managers who are responsible for getting the needed work done on time and on budget. The third level is the technicians who actually work with the data. The Council discussed the opportunities that exist with the cities' and counties' organizations for outreach through their published newsletters and statewide meetings. The Council also recognized the need for a statewide Geographic Information Systems (GIS) meeting

which will bring all of the GIS/Remote Sensing (RS) parties together. David Shaw wants to inventory existing educational opportunities already available, create the vision of how to achieve this educational effort, inventory the people assets and future data acquisitions, design needed training, and use all media outlets to achieve this task. It was recognized that there are many state organizations which would create speaking opportunities to get the word out.

Jim Steil then briefly reported on the TUG's activities. The TUG reviewed and contributed to the MDEM standards development and helped develop the requirements definition plan. He reported that NSGIC is pursuing a national orthoimagery program conducted by the federal government. He has been invited by Louisiana and Arkansas to their annual GIS conferences in order to observe their methods for conducting those gatherings.

Phil Sullivan reported on the PAC's activities which included multiple passes by the widespread participation on the MDEM standards. The PAC unanimously recommended these final proposed standards. The PAC was also approached by Bud Douglas to help develop a geocoding effort by the Council. Phil stated the PAC is very high on the need to educate, especially the local elected officials. There is a need to have good speakers/presenters to make these presentations effective. The next PAC meeting is scheduled for Feb. 10 at 10:30 in Canton at the Center for Advanced Vehicular Systems (CAVS) facility.

Chairman Chisolm thanked Phil Sullivan and Jim Steil for their efforts in moving the Council efforts forward.

Mr. Chisolm then expressed his concern for a lack of progress about coordination among state, county, and local governments. He thinks there is a lot of activity taking place which is still not coordinated. Cragin Knox explained that the Tax Commission will be furnishing him with a current schedule for counties to fly aerial imagery. There is also a project ongoing with ITS to launch an interactive website where parties planning GIS/RS projects can register those projects. These projects will be displayed on maps at the website which will allow interested parties to see who will be doing what and where. The Council staff will be playing an active role in facilitating coordination of activities that are planned by Mississippi government at all levels. Jim Steil thought the clearinghouse, when up and running, will help with the desired coordination. Joel Yelverton suggested the need for incentives, though small. He will support efforts to communicate with the counties. Andy Taggart suggested a conference call to the supervisors at their regularly scheduled Monday meetings.

The date for the next Council meeting was set for March 1, 2005, at 1:30 p.m. at DEQ. A tentative date of May 24, 2005, was proposed for the following meeting.

Chairman Chisolm adjourned the meeting at 4:00 p.m.