



## **WV GIS Technical Center 2008 ANNUAL REPORT**

Fiscal Year 2008 (1 July 2007 - 30 June 2008)

### **Mission and Objectives**

The West Virginia GIS Technical Center, located in the Department of Geology and Geography at West Virginia University, provides focus, direction and leadership to users of geographic information systems (GIS), digital mapping and remote sensing within the State of West Virginia. The WV GIS Technical Center (WVGISTC) was established under Executive Order No. 4-93 in November 1993, which specified that the Technical Center should provide technical support services to support the development and operation of GIS in West Virginia.

The primary objectives of the Center are to reduce the duplication of GIS data development among organizations; disseminate GIS spatial data, Web map services, mapping applications, and other geographic information free-of-charge through the Internet; coordinate acquisition of new data additions to the West Virginia Spatial Data Infrastructure; assist with strategic planning, development and implementation of GIS and mapping guidelines statewide; provide advisory services and training programs in GIS; and conduct research and provide education towards improvement of geographic information technologies in West Virginia.

### **Personnel**

The staff consists of two geography professors who serve as co-directors, five full-time employees, and student and temporary employees hired periodically to accomplish project tasks.

- Dr. Gregory Elmes, Co-director
- Dr. Trevor Harris, Co-director
- Kurt Donaldson, Manager
- Frank LaFone, Senior Internet Programmer
- Evan Fedorko, GIS Analyst
- Eric Hopkins, GIS Analyst
- Kevin Kuhn, GIS Analyst

### **Funding**

Primary FY 2007-08 funding of \$295,000 was received from the state-appropriated Mineral Lands Mapping Program (Fund 0253, Activity 207) approved under House Bill 2222 in February 1995. Fiscal management of this program was delegated to the WV Geological & Economic Survey, with programmatic oversight by the GIS Policy Council. Additional external funding was obtained from several grants and service contracts.

## **Projects and Activities FY 2008**

### ***Build and Disseminate State's Spatial Data Infrastructure***

The WVGISTC supports digital data conversion, data development, and coordination with federal geospatial data initiatives, statewide mapping programs, and local (county, municipal) data producers. The Center collaborates with the Statewide Addressing and Mapping Board (SAMB), U.S. Geological Survey, and other partners to create a value-added, high resolution 1:4800-scale digital base map for West Virginia. Elevation, transportation, streams and administrative map layers benefit the entire state community; government, private sector and non-profits.

*National Hydrology Dataset (NHD):* In cooperation with the U.S. Geological Survey and WVU Natural Resource Analysis Center, continued development of an attributed, linear referenced, 1:4800-scale local resolution hydrography data set for two 8-digit watersheds: Upper Guyandotte (05070101) and Gauley (05050005). Business plan and stewardship agreements for NHD are also being developed.

*Transportation and Structures:* In spring 2008 WVGISTC received a grant from the Federal Geographic Data Committee to build stewardship for integrating statewide structure and transportation data into national, standardized databases.

*Orthophotos:* This past year WVGISTC quality checked and published statewide one-meter resolution natural color and color infrared orthophotos funded by the State and USDA's National Agricultural Imagery Program (NAIP). In certain regions of West Virginia the NAIP imagery has been added to commercial products like Google Maps.

*Geology:* In partnership with the West Virginia Geological and Economic Survey, WVGISTC digitized and geo-referenced six statewide geophysical and structural maps as well as 36 landslide maps.

*Economic Development:* In partnership with the Development Office, WVGISTC created poverty rate and population maps of West Virginia.

*Historical Geospatial Data:* In the summer of 2007, WVGISTC coordinated with the WV Geological Survey, WVU Library, and State Archives to inventory historical geospatial resources in West Virginia. A report was published for Sanborn Fire Insurance Maps (1866-1982), Topographic Maps (1883-present), and Aerial Photographs (1936-present).

### ***Mapping Projects and Applications***

During fiscal year 2008, WVGISTC participated in a number of projects which generated geospatial data and products. Select projects are highlighted below:

*Flood Hazard Mapping and Hazard Determination Tool:* In cooperation with FEMA and flood map modernization contractors, WVGISTC created digital flood insurance rate maps (FIRM) for select counties in the Eastern Panhandle to assist in the implementation of a statewide digital flood-mapping program. In partnership with the State Floodplain Manager, WVGISTC created an online Flood Hazard Determination System (Figure 1). This interactive mapping tool, which utilizes the best available digital flood hazard data, elevation data, and aerial photography for West Virginia, allows home and business owners, insurance and real estate agents, developers, and flood plain managers to make informed decisions about the degree of flood risk faced and what precautions, if any, should be taken. The flood mapping application has garnered acclaim from FEMA as well as from the state floodplain management office and local floodplain managers and is part of the MapWV.gov initiative to make online mapping resources in the Mountain State available to the public. Link: <http://www.mapwv.gov/flood>

*Mass Evacuation Mapping and Modeling:* In support of emergency planning by the WV Department of Military Affairs and Public Safety, the WVGISTC at West Virginia University is developing geospatial data of critical facilities and infrastructure and building models to estimate resource capacities and potential impacts on the State of a mass evacuation from one of the surrounding metropolitan areas. Initial modeling efforts have focused on estimating the resource capacities of the food, fuel, and shelters in West Virginia under a series of disaster evacuation scenarios. In December 2007, WVGISTC published a GIS data assessment report of resource capacity maps and preliminary simulation models.

*Carbon Sequestration Mapping and Modeling:* In cooperation with federal and state energy partners, WVGISTC created an interactive carbon sequestration explorer to locate potential sequestration sites in oil, gas, and coal fields suitable of hosting a Coal-To-Liquids facility. Based on infrastructure and geological variables, 762 sites were rated for their suitability for hosting Coal-To-Liquids facilities. <http://www.wvcarb.org>

*Internet Mapping Applications:* WVGISTC assisted in the development of a Trout Stream Stocking application for the WV Division of Natural Resources (<http://www.mapwv.gov/website/dnr/viewer.htm>), a source water application for the Department of Health and Human Resources, and a National Register application for the State Historic Preservation Office.

*Next Generation Topographic Maps:* WVGISTC is working with state partners and the U.S. Geological Survey to create the next-generation topographic maps in West Virginia. In fall 2007, a workshop was held at WVGISTC in which federal and state representatives of mapping organizations presented new ideas and concepts relevant to creating a new nationwide graphic product.

### ***Geographic Information Network Services***

WVGISTC provides a suite of Internet services to disseminate geographic data and information, including the MapWV.gov portal, State GIS Data Clearinghouse, and State GIS Directory.

*MapWV.gov:* MapWV.gov is a public gateway to online mapping resources in the Mountain State, providing a wealth of high-quality maps and geographic data via the Internet. The site provides access to static and dynamic maps as well as Web map services. The target audience of MapWV.gov is the general public or casual user who is seeking geospatial information. MapWV.gov has been visited by nearly 120,000 unique visitors since its inception in early, a 17% increase from the previous year. In spring 2008 the website was re-designed and new content was added (Figure 2). To support the growth of this public service, a new enterprise hardware system was installed which expanded storage capacities from 16 to 52 Terabytes. <http://www.mapwv.gov/>

*Data Clearinghouse:* The State Data Clearinghouse has over 270 GIS data sets valued at more than \$50 million dollars. Since 2004, the website has serviced 1.8 million visitors. This includes nine Terabytes of data downloaded from the clearinghouse over the past 5 years. Mapping professionals in the state and nation are the target audience for this online service. Data is accessed by FTP download, Web map services, or links to data stewards who routinely post geospatial data on their websites. Data clearinghouse at <http://wvgis.wvu.edu/data/data.php>

### ***Strategic Planning Services***

This past year WVGISTC and other state partners completed a Fifty States Initiative grant from the Federal Geographic Data Committee to re-organize the GIS governance in West Virginia. Other strategic planning efforts include cooperating with the Office of State GIS Coordinator, WV GIS Steering Committee, and other state partners to update the 1993 GIS Development plan. The Fifty States Initiative Strategic Planning Process Guide is being used as a template to create an effective strategic plan.

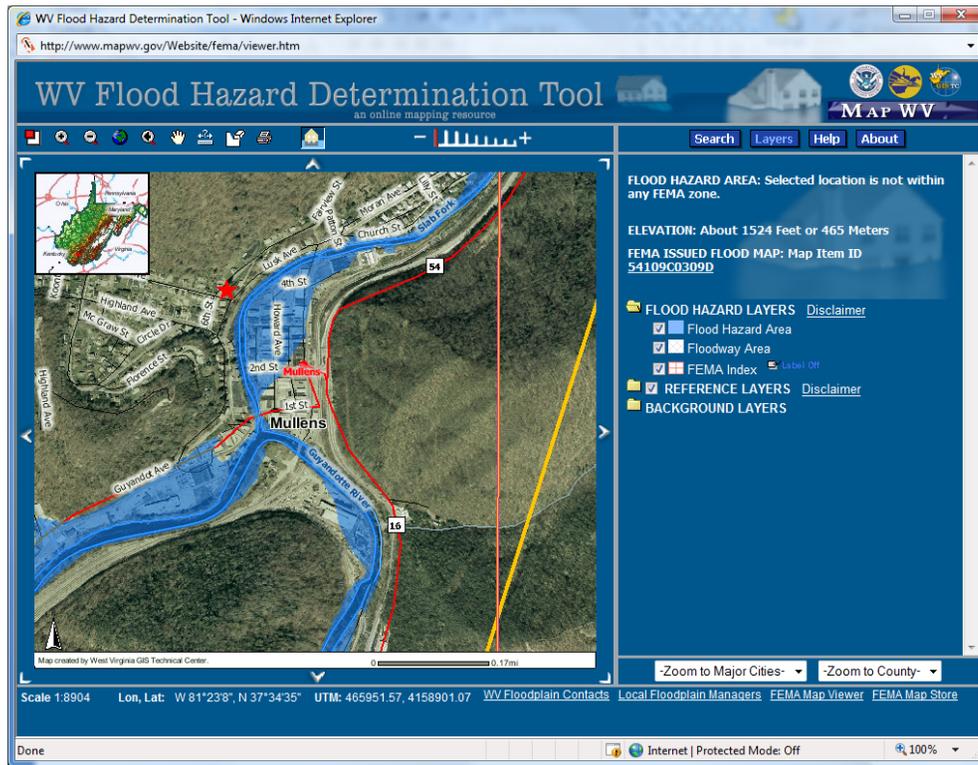
### ***Technical Support, Educational and Training Services***

WVGISTC provides outreach, educational and training support, and advisory services to the citizens, government agencies, non-profit organizations, and businesses of West Virginia in the area of GIS and related spatial data handling technologies.

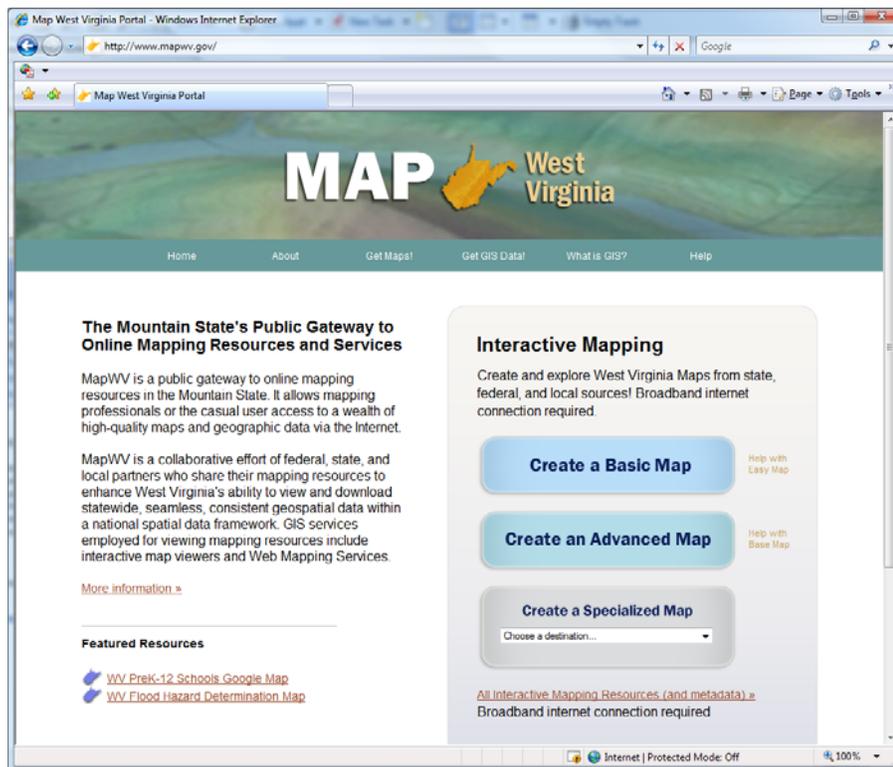
*2008 WV GIS Conference:* WVGISTC was the lead organizer of the biennial WV GIS Conference in June 2008. The theme of the WV GIS Conference was "Mapping the Mountain State...Today and Tomorrow." The largest program to date, the 2008 WV GIS Conference includes a plenary session, 28 concurrent paper presentations, a poster viewing and competition, and 17 seminars/workshops.

*Instructor-Led Training:* Staff presented workshops and training throughout the year, including five "Introduction to GIS" courses by an ESRI-certified instructor.

*WV Association of Geospatial Professionals:* WVGISTC provided Web site development and other start-up task in support of the new GIS user and advisory group in West Virginia.



**Figure 1:** The Flood Hazard Determination Tool, an online mapping application, determines if a resident lives in a flood hazard area. WVGISTC created this application for FEMA and the WV NFIP Coordinator. This application has received national acclaim from FEMA.



**Figure 2:** MapWV.gov re-design and updated content.