

STATE OF MISSOURI



HOMELAND SECURITY AND EMERGENCY MANAGEMENT GIS

January 2007 Ice Storm

In mid-January 2007, ice storms crippled a swath of Missouri between Springfield and St. Louis. In response to these storms, the State Emergency Operations Center (SEOC) was activated. This activation represented a significant move forward in the use of GIS in emergency management and response.

A multi-agency team of GIS personnel assisted SEOC operations, marking the first such operation for the larger state GIS community. Personnel from Missouri Departments of Conservation, Health and Senior Services, Transportation, State Emergency Management Agency and Cole County produced maps and geospatial data for various aspects of the response. The team assisted SEOC operations for approximately 7 days before standing down.

The following types of maps were produced during the course of GIS operations:

- Disaster Declaration
- Generator Locations
- Power Outages
- Shelters
- Fatalities



May 2007 Flood

Continuous rains, saturated ground conditions brought flooding close to 1993 and 1995 levels in early May. On May 7, the SEOC was activated. From the initial activation through the bulk of the 24-hour SEOC, GIS provided important information to responders and decision makers.

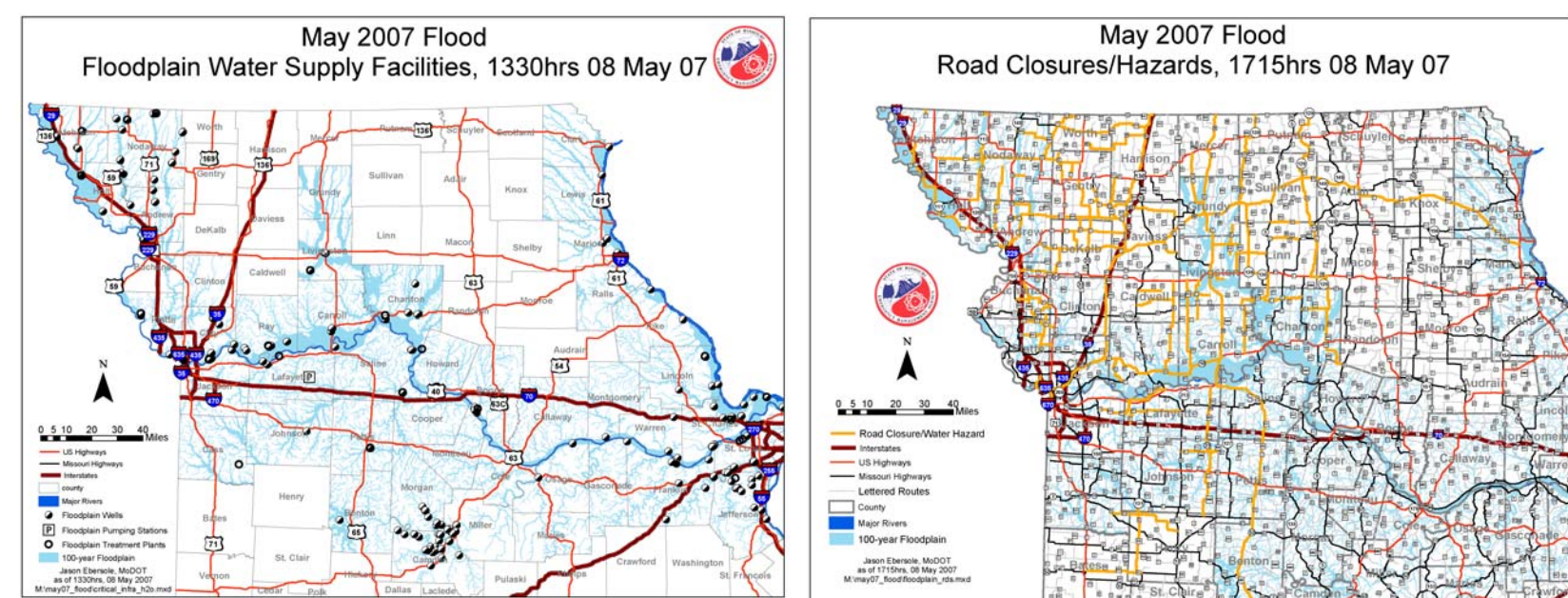
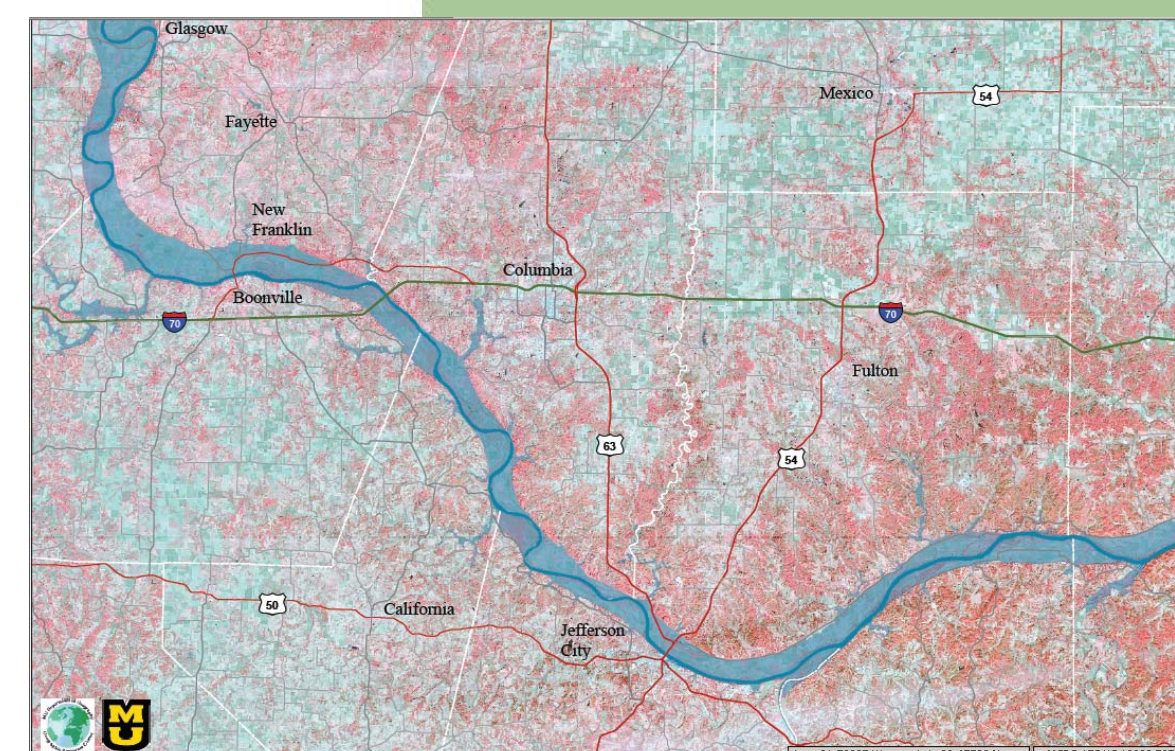
Personnel from Missouri Departments of Conservation and Transportation produced on-site maps and geospatial data for various aspects of the response. Missouri Department of Health and Senior Services used GIS to identify special needs populations located in the flood zones. The Department of Natural Resources assisted with data updates for critical facilities.

The University of Missouri - Geographic Resources Center provided GeoPDFs of the Missouri River floodplain showing aerial imagery with the 100-year and 1993 flood extents. These maps provided emergency management with an approximation of what areas could be flooded.

GeoPDFs are smart PDFs that provides some basic GIS functionality such as coordinates, measurements, query and attribute recall, as well as layer control. In an advanced form, GeoPDFs can also allow GIS-usable markups.

The following types of maps were produced during flood response:

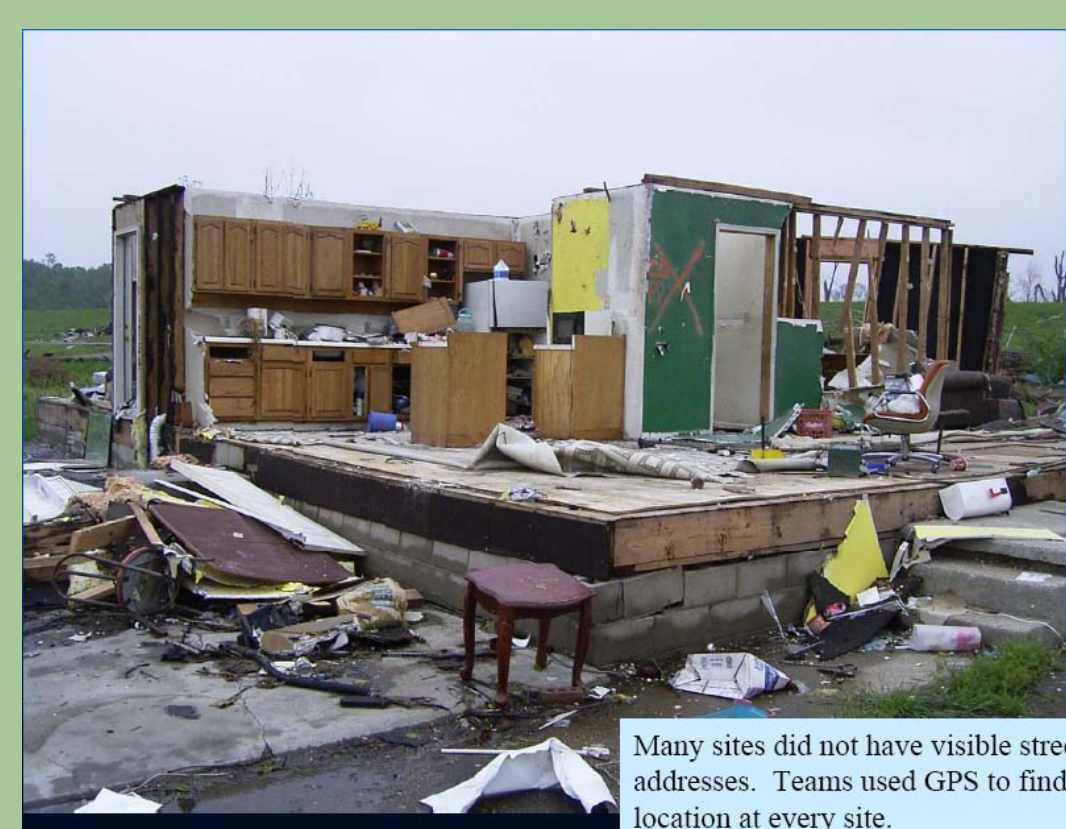
- Road Closures
- Public Drinking Water Facilities
- Hazardous Materials Locations
- Levee Breaks
- River Flood Stages
- Preliminary Damage Assessment Counties
- Special Needs Population Locations



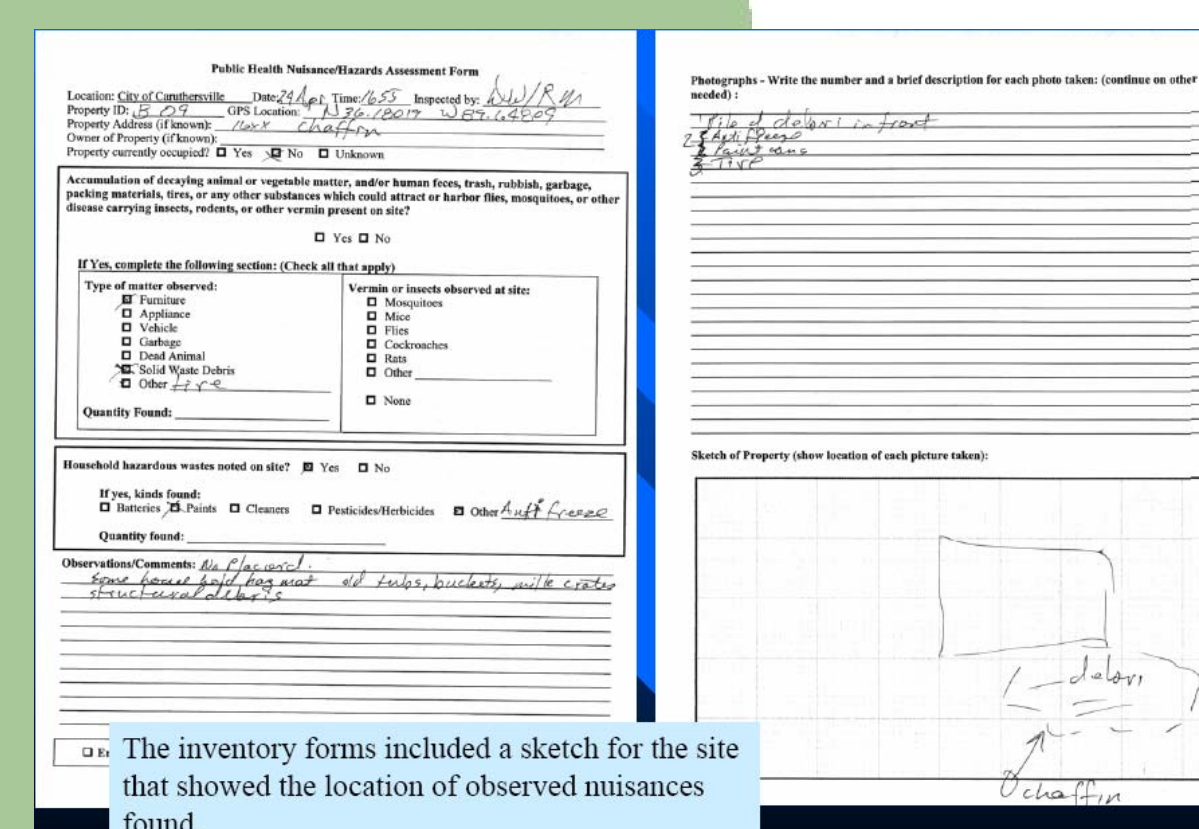
2006 Caruthersville Tornado Cleanup

In 2006, a tornado struck the town of Caruthersville, Missouri. A Department of Health and Senior Services GIS team deployed soon after to assist with mapping public nuisance locations resulting from tornado damage. The city requested this assistance to facilitate debris removal in areas hardest hit by the tornadoes.

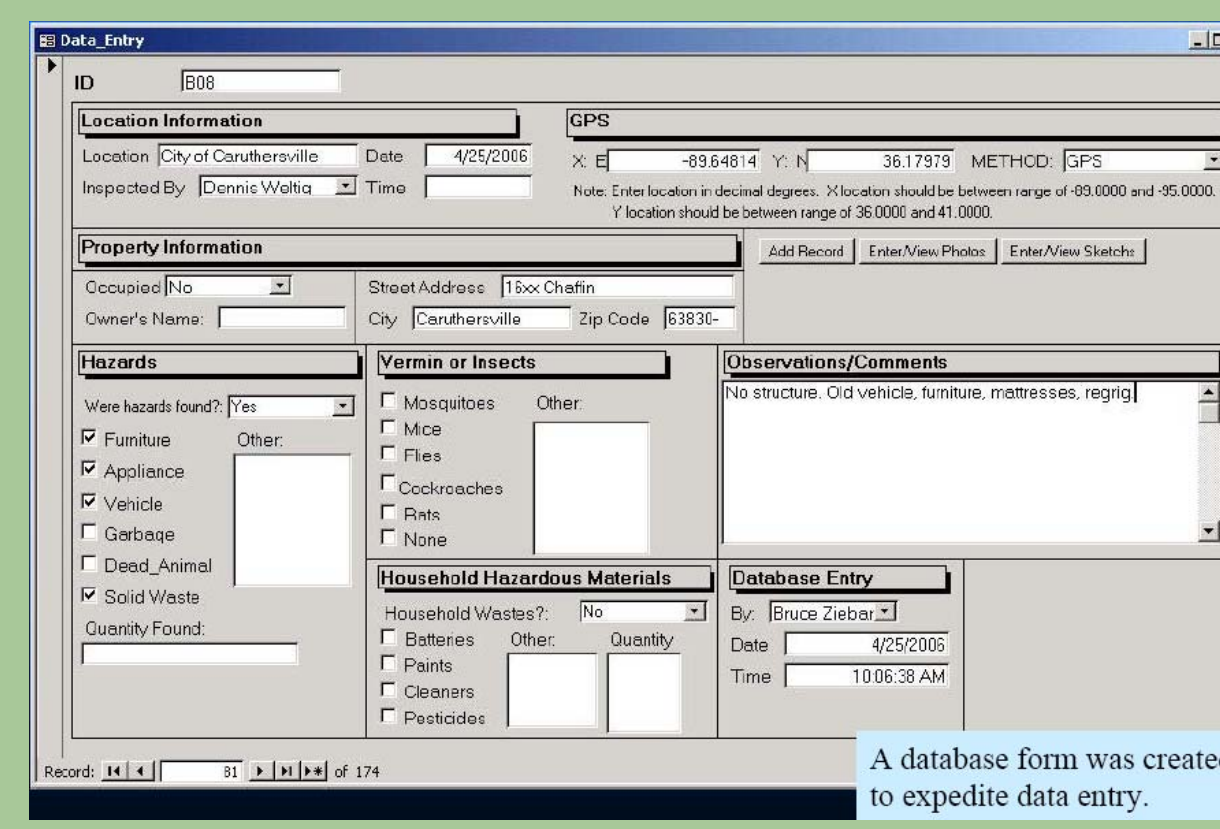
Few street signs or house numbers remained in the damaged areas, which made GIS and GPS vital for this event. Geospatial Technology was used for route creation, data collection, quality control, and event coordination. In all, 174 properties were inventoried. A database that linked collected data, photographs, maps, and scanned field reports was created and submitted to the mayor of Caruthersville to allow local efforts to continue after the response teams were gone. All participants involved were pleased with the increased speed of the recovery efforts that GIS and GPS was able to supply.



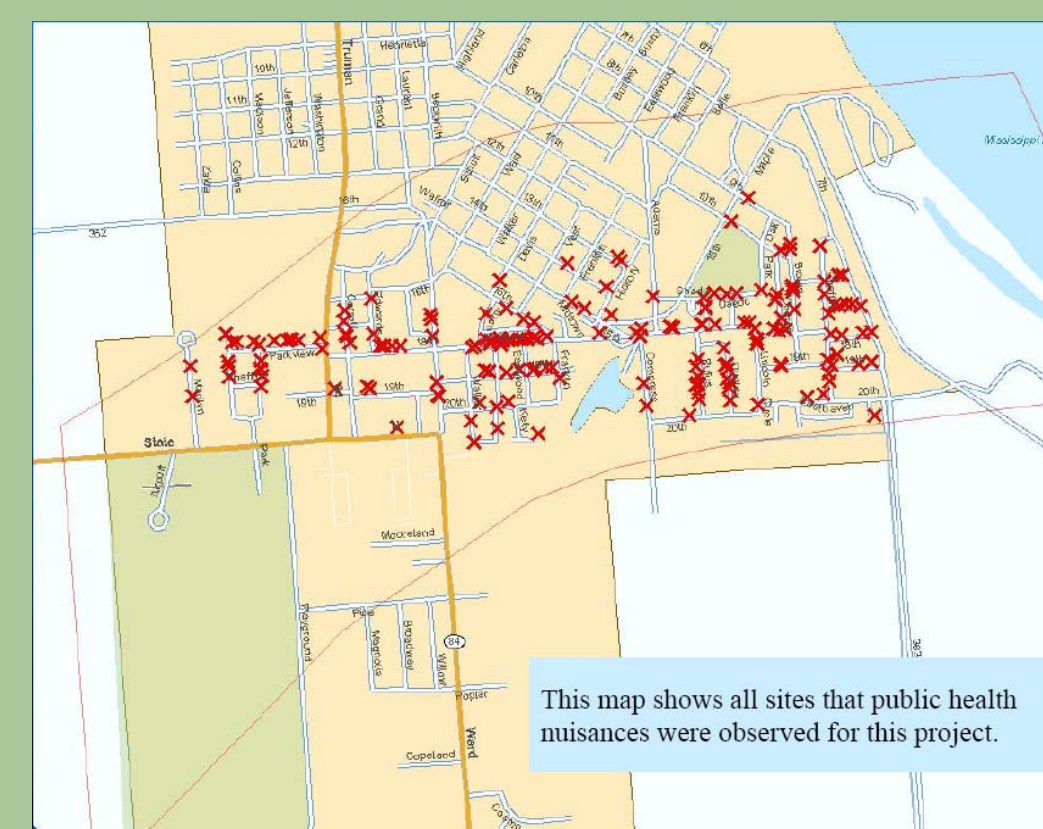
Many sites did not have visible street addresses. Teams used GPS to find a location at every site.



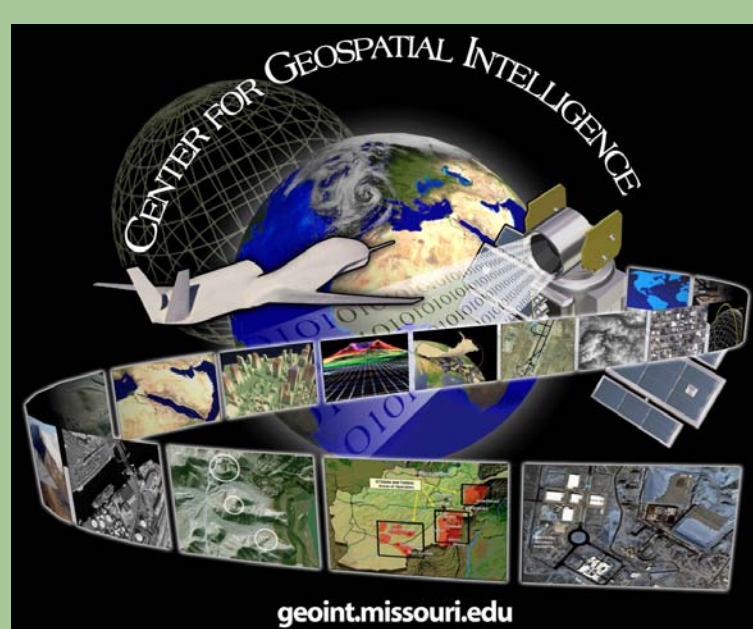
The inventory forms included a sketch for the site that showed the location of observed nuisances found.



A database form was created to expedite data entry.



This map shows all sites that public health nuisances were observed for this project.



Center for Geospatial Intelligence

The Center for Geospatial Intelligence (CGI) is an interdisciplinary center at the University of Missouri - Columbia (UMC) that involves faculty and researchers in Electrical Engineering, Computer Engineering, Computer Science, Geography, Civil & Environmental Engineering, and Geological Sciences. The center was formally established in February

2004 and is designated and supported as a "Signature Program" by the UMC College of Engineering.

The center leverages significant ongoing R&D activities at UMC in the areas of satellite and airborne remote sensing, advanced geospatial data processing, automated feature extraction and target recognition, large dataset visualization, computer vision, intelligent databases, and information retrieval. In addition, faculty from Geologic Engineering and Mining Engineering at the University of Missouri - Rolla (UMR) provide added expertise in the detection and characterization of underground structures along with UMC faculty in Civil & Environmental Engineering and Geological Sciences.

By leveraging these multi-disciplinary research skills, the center conducts leading-edge research focused on geospatial intelligence needs critical for national security, homeland defense, and military combat support.

<http://geoint.missouri.edu>

Missouri Emergency Resource Information System



Provide the State with a platform that can be used to meet the needs today, and in the future, for all jurisdictions to be able to participate in planning, managing, maintaining and executing response and recovery operations with common operating systems that provide near real-time situational awareness and synchronization of actions relating to emergencies and disasters.

The Missouri Emergency Resource Information System (MERIS) is a combined incident command system that will be deployed across the state, providing a common operational picture to all levels of response.

GIS is a vital component of MERIS, as the ability to locate incidents, response resources and facilities is pervasive throughout the system. As such, MERIS users will be able to create basic maps within the system, without the need for a designated GIS specialist. This capability will be provided to all users through a secure, shared database of GIS.

While MERIS does not eliminate the need for dedicated GIS support, it does provide responders the ability to do some mapping themselves, allowing for quicker assessments.

<http://www.dps.mo.gov/HomelandSecurity/MERIS/MERIS.htm>

Homeland Security Infrastructure Program



The Homeland Security Infrastructure Program (HSIP) is a coordinated effort to locate and inventory critical infrastructure and provide that information to the emergency response/homeland security community. Spearheaded by the National Geospatial-Intelligence Agency (NGA), HSIP seeks provide responders with highly accurate facility information and locations by working with state and local jurisdiction.

Missouri is currently working with HSIP to improve information about schools, law enforcement agencies, evacuation routes, critical health care locations and other locations. The result will be improved ability to locate and identify facilities affected by an incident, directly or in a support role.

Currently, contractors for NGA are collecting and validating data. As a return for state and local entities, the contractors provide the validated data back at no cost.

Homeland Security GIS Subcommittee



The Homeland Security Subcommittee of the Missouri GIS Advisory Committee serves as a resource for many of the GIS programs within the state's homeland security and emergency management sectors. Comprised of federal, state, local, academic and private sector personnel, the subcommittee develops or assists with grant funding, data and software architecture and development, training, and general program guidance.

The subcommittee also functions as the GIS subcommittee and advocate for the Governor's Homeland Security Advisory Council.

More information regarding the subcommittee (including meeting information, contacts and other resources) can be found at its website:

<http://www.mgisac.org/HomelandSecurity>