DIGITAL TEXAS
2006

Biennial Report on
Geographic Information Systems Technology

TGIC
Texas Geographic Information Council

About the Texas Geographic Information Council

In 1997, the 75th Legislature established the Texas Geographic Information Council (TGIC) as the primary coordinating body for geographic information systems (GIS) in Texas state government. The coordination role is designed to achieve cost effective use of GIS data and technologies and to support the incorporation of GIS into state agency business functions. TGIC includes forty-five members from state, local and federal agencies and universities.

The executive director of the Texas Department of Information Resources (DIR) and the executive administrator of the Texas Water Development Board (TWDB) serve as the executive sponsors of the Council.

About this Report

The Texas Geographic Information Council (TGIC) is required by Section 16.021 of the Texas Water Code to publish a biennial report on the use of geographic information systems (GIS) technology by state government. This report, *Digital Texas 2006*, is the third biennial report submitted by the Council.

This report provides an inventory of GIS projects and activities within state government and makes recommendations on issues related to the use of geospatial data and technologies within the state.

ONLINE REPORT

The 2006 *Digital Texas* report is published as an electronic document and can be accessed from TGIC's Web site (http://www.dir.state.tx.us/tgic). The Texas Base Map Plan, a companion document, will be updated during Fall 2006 and will be available online in December 2006.

September 1, 2006

The past two years have seen new awareness and widespread growth in the use of geographic information systems (GIS) by mainstream business and for individual pursuits. Within the public domain, GIS has recently expanded beyond technical mapping and earth imaging to serve as a catalyst for new and innovative solutions across a wide spectrum of public services.

Texas has continued to build on its public geographic data and technology assets, keeping pace with the significant advances in the capabilities of commercial data and systems providers, university researchers and dedicated GIS professionals in government.

We have seen and are experiencing a number of cross currents: 1) the continued need to find long term sustainable funding for the development and stewardship of the state's geographic assets, 2) the reduction of regular funding support for base mapping by federal entities, and 3) the widespread adoption and reliance on GIS data and mapping services particularly as available via the internet.

Digital Texas 2006 marks what we believe to be a period of exciting challenges and huge opportunities. The challenges reflect the ongoing need to ensure we deliver the full value of GIS, continue to forge partnerships that result in increased economies of scale for data purchases, and improve efficiencies for state government entities through a shared services model.

Perhaps most importantly, we need to strengthen and invest in lasting relationships to expand the network of talented professionals using GIS technology services to positively affect the lives of the citizens of Texas.

Lorelei Weitzel   Claire DeVaughan
Chair   Vice-Chair
Texas Geographic Information Council   Texas Geographic Information Council
Texas Water Development Board   United States Geological Survey

Digital Texas 2006

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Executive Summary

The members of the Texas Geographic Information Council (TGIC), through cooperative use of geographic information systems (GIS), create products and services in support of responsive government, enabling Texas to better inform our citizenry, stimulate economic benefits and support strategic decision making.

The leadership of Texas faces a wide range of complex issues that share our common geography, and GIS technology has assumed a central role in delivering unique insights to address many of these challenges. During the past two years, state GIS services have helped meet the needs of several high profile events:

- Locating hurricane victims and directing life saving resources to high priority areas during Hurricane Rita
- Responding to wildfires, monitoring drought, and forecasting flood impacts
- Helping support law enforcement actions along the Texas/Mexico Border

TGIC's role is to ensure that GIS data is available, that GIS is integrated into agency business, and that these efforts are accomplished in the most cost effective manner possible. TGIC has identified the following significant factors in achieving the common interests of its members and their customers:

1. Establish a common geographic foundation through the development of digital base maps.
    Ensure Texas has a solid foundation for geospatial technology by sponsoring the completion and ongoing enhancement of 24 statewide digital base maps adopted in the Texas Base Map Plan *(See Section 2)*.

2. Provide a coordination and collaboration framework for GIS technology.
    Serve as the state geospatial coordinating council for Texas. Coordinate GIS programs across state government with federal, state, local, regional, university and private sector partners to ensure that individual agency projects are aligned with the long-term strategic interests of the state and citizens of Texas.

3. Provide access to GIS assets for all our citizens.
    Maximize the value of public investments in GIS technology by ensuring that data are easily shared and made available to all governmental agencies, the business sector and the state's citizens rather than invested in the duplication of datasets that already exist.

4. Establish a cost effective approach to providing enterprise geospatial infrastructure.
    Work to support the development of a cost effective enterprise geospatial infrastructure to support all state agencies, not only those who have GIS specialists on staff. Provide access to the state's vast wealth of geographic data for use in furthering agency goals and make the data available through Internet-based GIS applications and services.

TGIC member agencies have diligently maintained a model for over three decades that is based on collaboration, cooperation, and shared resources. The result of these efforts is a geographic information resource for Texas that has produced significant value for the state and its citizens.

The Texas Strategic Mapping program (StratMap) has created digital statewide mapping that is a core asset used by all levels of government and made available to the public. Using a unified approach to base mapping has significantly reduced the cost of developing and enhancing the data. During the past two years, Texas has realized significant economic savings. For example, StratMap has:

1. Entered into a contract with the Federal Emergency Management Agency (FEMA) to acquire important elevation mapping for the Texas coast. For each state dollar, FEMA contributed more than 2.5 dollars. These data will support accurate planning within storm surge and flood zones.

2. Completed the National Hydrography Dataset for the entire state. These data were acquired with matching funds of 2.5 to 1 and are essential for setting flood plain policy as well as supporting statewide water monitoring and planning.

3. Acquired the first update to aerial imagery for the entire state in 10 years. These aerial maps were acquired at a cost of less than 50 cents on the dollar. Without the state funds to support the project, it would not have been possible to match the accuracy of the older data already in the state archive.

As TGIC moves forward, we will continue to refine the process of GIS development and align our implementation strategy with state goals. TGIC presents a clear example of shared resources, leveraged investment, and value to the state. It has been cited in the Texas Department of Information Resources' (DIR) strategic plan and TGIC continues to evolve to meet the needs of its members as GIS becomes a part of our everyday life. Furthermore, TGIC's efforts establishing shared services for GIS are consistent with the Texas Model of the Enterprise, described in *Shared Success*, the 2005 Texas Strategic Plan for Information Resources Management *(see Appendix C)*. In the Texas Model, shared functions are delivered as a service wherein agencies pool resources to establish a common solution.

As part of its charge in completing this report, TGIC has formulated two recommendations for the coming biennium:

1. Alter the statutory timeframe for producing this report.
    Changing the date of this report to "not later than November 1" will allow tighter integration with agency strategic plans and will better position this document to help the state leadership prioritize future investments in geographic information systems.

2. Support the Texas Elevation Reference System.
    The modernization of the state network of survey benchmarks will allow Texas to more accurately measure the relationship of the ground to sea level, improving the accuracy of levees, airport runways, new roads, and coastal storm surge protection.

This report also includes an update on the Texas Base Map Initiative and Strategic Mapping program along with highlights of valuable uses of GIS by TGIC entities *(See Section 2)*. A chronological history of GIS coordination efforts *(Appendix A)* and an inventory of state GIS assets *(See Appendix B)* are provided.

> *The Texas Geographic Information Council is created to provide cost-effective and useful exchange and retrieval of geospatial information both within and among the various agencies and branches of government, and from the agencies and branches of state government to the people of Texas and their elected representatives.*

Membership

State and Regional Associations

City of San Antonio
County Information Resources Agency
Texas Association of Counties
Texas Association of Regional Councils
Texas Board of Professional Land Surveying

State Universities and Research Centers

Houston Advanced Research Center
Stephen F. Austin University Forest Resources Institute
Texas A&M University Academy for Advanced
    Telecommunications and Learning Technologies
Texas A&M University Cooperative Extension
Texas A&M University - Corpus Christi Computing &
    Mathematical Sciences Department
Texas A&M University Department of Forest Science
Texas A&M University Spatial Reference Center
Texas State University
Texas Tech University
University of Texas Bureau of Economic Geology
University of Texas Center for Space Research

Federal Agencies

United States Geological Survey

State Agencies

Governor's Office of Economic Development and Tourism
Office of Court Administration
Office of the Attorney General
Office of the Governor of Texas
Public Utility Commission of Texas
Railroad Commission of Texas
Texas Animal Health Commission
Texas Army National Guard
Texas Building and Procurement Commission
Texas Commission on Environmental Quality
Texas Commission on State Emergency Communications
Texas Department of Agriculture
Texas Department of Criminal Justice
Texas Department of Family and Protective Services
Texas Department of State Health Services
Texas Department of Housing and Community Affairs
Texas Department of Human Services
Texas Department of Information Resources
Texas Department of Insurance
Texas Department of Transportation
Texas Education Agency
Texas Forest Service
Texas General Land Office
Texas Historical Commission
Texas Legislative Council
Texas Natural Resources Information System
Texas Parks and Wildlife Department
Texas Rehabilitation Commission
Texas State Soil and Water Conservation Board
Texas Water Development Board

The Texas Natural Resources Information System (TNRIS) is the principal state archive and clearinghouse for geospatial and natural resources data. TNRIS, a division of the Texas Water Development Board, maintains an extensive library of digital and printed map data and delivers information about data available from external sources. The clearinghouse archives hardcopy and digital maps, remote sensing imagery, groundwater, and surface water data, metadata and GIS data for Texas and the Texas/Mexico border region. TNRIS is a leader in the use of Internet map services to help people discover, view, and download data for their area of interest.

TNRIS manages the Strategic Mapping Program and Borderlands Information Center and provides training opportunities. TNRIS also provides management and administrative support to TGIC, the TGIC Technical Advisory Committee and several workgroups.

TNRIS: www.tnris.state.tx.us

The Department of Information Resources (DIR) is the state's lead information technology office and is directed by the State Chief Technology Officer. DIR works to ensure that all forms of information technology are deployed within state government in an effective and cost efficient manner.

DIR recognizes that geographic information systems (GIS) is a key technology for the State of Texas and is working to encourage its effective and efficient deployment through state coordination activities. This is to ensure against duplication of organizational effort and maximize cooperative opportunities for GIS systems development. DIR guides and supports the appropriate use of GIS by:

1. providing state GIS coordination for inter-agency and inter-governmental efforts,
2. setting state GIS policies and technical standards,
3. integrating GIS planning into the State Strategic Plan for Information Resources Management, and
4. providing TGIC management, agency coordination, report publishing, and web site management.

DIR: www.dir.state.tx.us

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RECOMMENDED INITIATIVES

RECOMMENDATION 1

Strengthen the Texas Elevation Reference System Program

Issue

Texas currently depends on a network of survey monuments to consistently determine elevation throughout the state. This information is critical to have a consistent answer to fundamental public policy questions - is a home located in a floodplain, is a roadway sinking and creating a costly safety hazard, or how high should a protection levee be built along the coast?

Recent advances in Global Positioning Systems (GPS) create an unprecedented opportunity to improve the accuracy and certainty of ground elevations. This network is crucial for the accuracy Texas needs to plan communities, respond to disasters and make long term investments.

Texas relies on a network of accurate elevation survey monuments throughout the state to locate and measure three-dimensional relationships such as whether a home is located in a floodplain, if a roadway is sinking creating a costly safety hazard, or how high to build a protection levee along the coast.

Historically, Texas has depended on a national program that has used traditional – less accurate techniques to establish official survey monuments. With recent advances in Global Positioning Systems (GPS) new, more precise means are now available to increase the accuracy, and certainty of ground elevations. This network of points is critical for extending three-dimensional accuracy to local positional surveys conducted throughout the state.

Value of Accurate Elevation Data

Reliable elevation data is essential both for scientific inquiry and for safety and convenience. It allows people to measure, for example, how fast a piece of land is sinking (a process called subsidence). It improves aircraft navigational aids to make approach-and-landing procedures safer. Because it precisely pinpoints the rise and fall of land surfaces, it increases the efficiency of water delivery and drainage systems, and helps reduce urban and agricultural runoff and water pollution. For the same reason, it allows more precise modeling of storm-surge and pollution trajectories during extreme weather and hazardous spill events.

Benefits

Height Modernization also improves disaster preparedness and recovery and infrastructure projects. GPS is especially useful when latitude, longitude, and elevation must be quickly established in areas where the local infrastructure has been largely destroyed; when a construction, public works, or transportation project involves large-scale coverage; and when difficult, rugged terrain lies between survey points.

In economic terms, a state-of-the-art National Spatial Reference System saves state and local governments vast sums of money. It replaces expensive, labor-intensive field surveying projects (including flood-plain and other mapping activities) with new, more timely and cost-efficient GPS technology. It reduces engineering errors and disasters caused by changing land surfaces due to subsidence, movements of the Earth's crust, floods, earthquakes, and other natural phenomena. *(NOAA 2006)*

The National Geodetic Survey is the federal agency responsible for national benchmarks that define the reference system used to make elevation determinations. To achieve the federal standard, Texas A&M University at Corpus Christi has established the Texas Spatial Reference Center as the responsible entity to manage Texas Height Modernization Program and ensure the accuracy and availability of the reference system.

The U.S. Congress funded the Texas Height Modernization program for the first two years, and additional funding is anticipated for the third year with the assistance of the U.S. National Geodetic Survey. Receiving the Texas Legislature's statutory designation will assist Texas A&M University-Corpus Christi in securing continued federal funding. Additional funding may come through cooperative agreements and contracts with Texas state and local government entities.

Recommended Action

1. In coordination with Texas A&M University, Corpus Christi, TGIC will recommend the adoption of the Height Modernization Program standards by other Texas state agencies and government entities.
2. Designate Texas A&M University at Corpus Christi and the Texas Spatial Reference Center as the official state entity for the federal Height Modernization program and provide statutory authority for this program.
3. Consider providing state funding to establish match for ongoing federal support

RECOMMENDATION 2

TGIC Would Benefit from Participating in a Streamlined Reporting Cycle

Issue

The TGIC Biennial Report is required for submission to the Legislature by September 1 of each even numbered year. Moving the timing of this requirement will improve the alignment with other information technology legislative reports, and allow TGIC agencies to better coordinate strategic plans and recommendations regarding GIS initiatives.

Recommended Action

Align the due date for the TGIC Biennial Report to coincide with the Biennial Performance Report for Information Technology that is due on November 1st of each even numbered year.

Benefits

A November 1st deadline will provide an opportunity for the legislative recommendations of the TGIC Report to be synchronized with the recommendations of other complimentary legislative reports that are due during the same time period as well as provide context to appropriation requests across agencies that impact state GIS capabilities.

The November 1st due date would avoid the overlapping demands that are occurring with other end of the fiscal year reporting requirements that arise from the September 1st due date.

Staff time and production costs will be reduced for the development of the TGIC Legislative Report when combined with development work on other complimentary legislative reports. For example, survey instruments on information technology and GIS could be combined.

Background

TGIC is required by Section 16.021 of the Texas Water Code to publish a biennial report on the use of GIS technology by state government by September 1 of each even numbered year. The statutory mandates of the report are to: 1) Inventory known state agency GIS projects, and 2) Recommend initiatives to improve the state's GIS programs.

DIR cited in the Statewide Technology Management Report, 79th Legislature that there are at least twenty-three separate report survey instruments and IT reports related to information technology that are submitted to the legislature on a biennial basis. Aligning the TGIC report due date to November 1st with other IT reports will save time and effort that goes into separately inventorying and reporting GIS data and systems. The November 1st date would also provide an opportunity for TGIC to coordinate a strategic planning process and avoid the overlapping demands that are occurring with other end of the fiscal year reporting requirements that arise from the September 1st due date.

TGIC will develop an updated Texas Base Map Plan and a GIS business assessment prior to the upcoming legislative session as companions to this Legislative Report. The Texas Base Map Plan will provide detailed information on the status of digital map layers in the state. The business assessment will provide an analysis of agency requirements and needs for data and centralized technology services and recommend initiatives and funding alternatives for delivering GIS to state government and the citizens of Texas.

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Section 2

TEXAS BASE MAP INITIATIVE STATUS

The Texas Base Map Initiative was a result of a coordinated effort by TGIC to develop a set of agreed upon statewide digital base map datasets, in response to the demand for common GIS data resources that can be widely used by all sectors of government, business, and most importantly, the citizens of Texas. The base map is an accumulation of shared, centralized and easily-accessible datasets that describe the landscape as a collection of the most widespread components, such as:

- elevation,
- water and road networks,
- political boundaries,
- critical structures and
- other ground features as captured by
- aerial photos.

The accessibility of the base map is accomplished through a centralized distribution and dissemination system. In economic terms, the designation of the Texas Strategic Mapping Program (StratMap) as a long term base mapping solution, and of TNRIS as the center for data dissemination, allow TGIC agencies to greatly reduce investments in data development, hardware and data storage costs. Base maps can be shared and reused among organizations because they are built to common standards using the latest technology and a common geographic scale. Therefore, they save tax dollars by being used many times by many organizations.
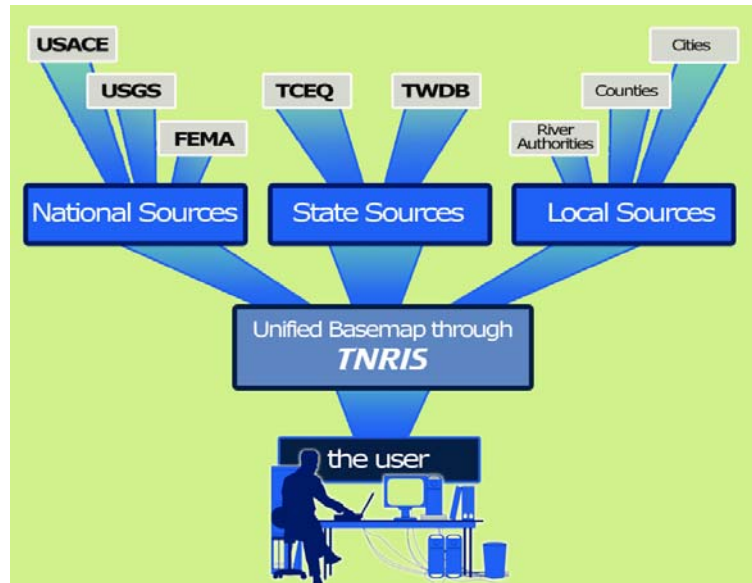
To depict the fast changing landscape and respond to the increased role of GIS applications in everyday life, the base map needs continuous updates and refreshes, as well as enhancements that provide appropriate detail. These updates are driven by input from TGIC member agencies and their mission critical applications.

The base map helps promote a coordinated government by maximizing investment, reducing duplications, providing detailed, easily-available information, technical expertise and education. TGIC strives to consistently meet the critical needs of Texas while ensuring the lowest development cost through intergovernmental funding partnerships and coordination of work.

The Texas Height Modernization Program highlighted in Section 1 helps form the foundation for correctly positioning Texas base map data. The Height Modernization survey data ensure that all base map data from aerial photography to roads have appropriate positional accuracy to serve the diverse usage of base map data.

The current Texas Base Map Plan was last updated in 2004 with another update process set to begin in the fall of 2006. Progress on the components of the Base Map Plan is not a linear progression due to limitations in funding and staff project management resources. Consequently, progress is often

incremental and driven by partnership opportunities and synergy occurring from other program needs for base map themes.

The status table on the next page provides information *"at a glance"* about a number of the themes within the Texas Base Map Plan. The table shows production status, immediate needs to complete development, funding sources, project assessment and stewards for each dataset.

The StratMap section of the report describes the numerous uses of the base map data and how people and organizations across Texas can save money, time and effort, while producing better results and being able to exchange information.

Priority	Theme Title	Description	Status	Immediate Need	Funding Source	Assessment	Steward(s)*
1	**Orthoimagery (aerial photography)**	Digital aerial photography that have been corrected to remove all distortion. Combines image characteristics of photo with geometric qualities of a map.	**Ongoing Updates**	**Ensure funding available**	**StratMap (2007-2008)**	Critical need for data since other data sets derived from it. Partnerships with Farm Service Agency and state agencies make StratMap funds go further.	TNRIS, USDA, USGS
2	**Transportation Network**	A seamless statewide collection of municipal, county, private and state roads. Based on roadbed centerlines and includes attributes.	**Ongoing Updates**	**Integrate w/ transportation**	**StratMap (2007-2008)**	Transportation and address data have been managed separately to date. There is a critical need to collect these data together and create and maintain a state road network with an accompanying a public domain address network. This is consistently cited as a high priority by TGIC organizations.	TxDOT, TNRIS, Census
3	**Street Addressing Network**	Network of street names with address ranges and/or points that can be linked to related geographic data such as roads and boundaries.	**Proposed**				Municipalities, counties, COGs
4	**Critical Infrastructure**	Point locations and attributes of public and private facilities in the transportation, public health, government, energy, defense, and other sectors.	**Proposed**	**Standards**	**Not available**	Develop comprehensive program to collect and prepare infrastructure data in a GIS format.	Local, regional, state, federal
5	**Elevation Model**	Terrain elevations recorded as a series of points or grid cells with a specific value. The density of different elevations models can vary widely.	**Ongoing Updates**	**Additional Appropriations**	**StratMap (2007-2008), FEMA**	New laser derived (Lidar) elevation data being developed along coast for FEMA. Lidar needed elsewhere for statewide flood planning.	TNRIS, USGS
6	**Surface Water**	Shows surface hydrographic features including lakes, ponds, swamps, canals, springs, rivers, and intermittent/perennial streams.	**Ongoing Updates**	**High resolution drainage**	**StratMap (2007-2008)**	1:24,000-scale National Hydrography Dataset completed. There is an increased need to add higher resolution features like urban drainage and highway outfalls.	TNRIS, USGS
7	**Parcel Index**	Network of county-level digital data containing deeded recorded land parcels and depicting individual property boundaries for reference purposes.	**Proposed**	**Standards**	**Not available**	Local appraisal districts collect parcel data in different manners. Need to research dataset and draft state standards.	Appraisal Districts
8	**Political Boundaries**	Polygons showing city limits and county and state boundaries. Includes certain publicly and privately owned lands like parks and golf courses.	**Ongoing Updates**		**StratMap (2007-2008)**	TxDOT and local governments are collecting municipal and county boundary information.	TxDOT, TNRIS
9	**Land Cover**	Classifies different features on the earth's surface into categories. These include forest, water, wetlands, croplands, urban - each further subdivided.	**Proposed**	**Pilot project & standards**	**Not available**	USGS is completing National Land Cover Dataset for TX using 2001-2002 data. TPWD, TNRIS, other agencies initiating larger scale long-term updates.	TPWD, TCEQ, TNRIS, USGS
	Census Boundaries	Polygons based on census mapping units, such as blocks and tracts, with attribute data containing demographic and socioeconomic information.	**Ongoing Updates**		**Census**	U.S. Census Bureau is working with state and local governments to improve boundary accuracy for 2010 Census.	TLC, Census
	Elevation Contours	Terrain elevations recorded as series of contour lines each having a constant elevation. Similar to elevation models and sometimes uses same input data.	**Ongoing Updates**		**FEMA**	Limited contours being produced by FEMA along cost with Lidar. Need for inland contours to be determined.	TNRIS, USGS
	Flood Hazard	Depicts the extent of 100- and 500-year floodplains, base flood elevations, and risk premium zones for property insurance purposes.	**In Production**		**FEMA**	Federal program is updating and digitizing current FEMA flood hazard paper maps. The project is planned for completion in 2010.	FEMA

Highest Priorities (vertical label)

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Priority	Theme Title	Description	Status	Immediate Need	Funding Source	Assessment	Steward(s)*
	Geodetic Control	Network of points with very accurate horizontal and vertical positional values. Points used to properly reference precise data collection (i.e. land surveys).	See recommendations		NGS	Upgrade and maintain a statewide network of geodetic control monuments through National Geodetic Survey's Height Modernization program.	Texas A&M, NGS
	Geographic Names	A database with geographic coordinates and attribution for named places and sites such as communities, schools, and geographic features.	Updates Needed (2003 data)	Additional Appropriations	Not available	Texas geographic names database completed in 2003 as part of StratMap. Requires ongoing maintenance to support critical infrastructure layer.	TNRIS, USGS
	Groundwater	Groundwater availability models that show outlines of aquifers and contain detailed attribution on water quality, chemistry, and quantity.	Proposed		TWDB	Integrate TWDB Groundwater Availability Models into GIS-compatible data.	TWDB
	Historical Aerial Photography	Digital imagery created by scanning and rectifying older aerial photographs. Converted imagery can be combined with other images and GIS data.	Proposed	Additional Appropriations	Not available	Digitally scan and convert historical aerial photos at TNRIS to match other GIS data layers. Could be part of StratMap.	TNRIS
	Original Texas Land Survey	Digital land parcel polygons based on early surveys that originally allocated lands across Texas.	Ongoing Updates		GLO, RRC	Both GLO and RRC maintain OTLS data and make it available for to the public through different media.	GLO / RRC
	Remote Sensing Control Network	Network of photo-identifiable points with established positions used as references to evaluate map features, aerial photography, and imagery.	Proposed		Not available	A database of ground control point data needs to be developed from the data collected by TxDOT & USGS for Texas Orthoimagery Program.	UT-CSR, TxDOT, TNRIS
	Satellite Imagery	A collection of images obtained by orbiting satellites (not aerial photography) that record data in the visible and infrared spectrum.	Proposed	Additional Appropriations	Not available	Archived satellite data from Landsat and other sensors available but none newer than 2001. New data needed.	UT-CSR, NASA, USGS
	Soil Surveys	Polygons based on soil characteristics with extensive attribution. Updated digital versions of older soil survey publications.	Complete in 2007		USDA	NRCS producing 1:24,000 SSURGO data. Over 240 counties complete.	NRCS
	Special District Boundaries	Local and administrative zones including legislative, voting precincts, school districts, utility districts, and other taxing and non-taxing districts.	Proposed		Not available	School and legislative districts are currently being maintained by TLC. TGIC Report recommendation supports digital maps for new districts.	To Be Determined
	Surface Geology	Formations of rocks and sediments found at ground level along with supporting information like faults and rock composition and age.	Complete in 2007		StratMap (2007-2008), USGS	Digitizing of 1:250,000 scale maps completed in 2004. Edge matching and quality assurance are underway.	BEG, USGS
	Watersheds	Regions based on the area drained above a point selected on a stream or river. Watersheds vary greatly in size and can be grouped to form larger basins.	Updates Needed		USDA	Sub-watershed boundaries have been developed statewide except for the coast. This can be done when new Lidar elevation models are available.	TWDB, NRCS, USGS
	Weather	Geographic database showing real-time and historical weather data across Texas collected from a comprehensive weather sensor network.	Proposed		Not available	Collect and store weather data from many sources and distribute via the Internet.	Texas A&M, NWS

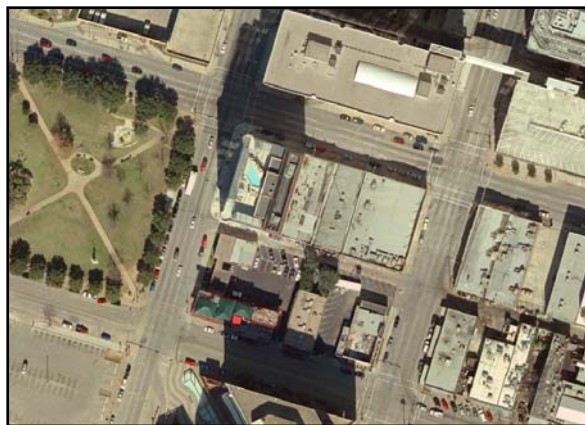* Local, regional, and state stewards shown in black text, federal stewards are in green text.

The statewide scope of StratMap is a critical factor in its value to the state. Its goal is to assure all areas of Texas are mapped to a common state standard. At any given moment, Texans have access to a base map that provides:

- Currency and detail,
- Completeness and consistency – a commitment that rural areas lacking urban tax base and resources are mapped to the same statewide standard,
- State funding compounded with federal dollars (at a minimum ratio of 1:2.5),
- Significant savings realized through centralized data development and distribution,
- Instantly available information via the Internet for use anywhere in the state (wildfires in the Panhandle, natural gas production in West Texas, floods in Central Texas, forest lands in East Texas, or Coastal hurricanes).

The StratMap data acquired to date include aerial photography, transportation, surface water and more. In addition, there are other base map components that TGIC members have required. Further details on base map data, both in process and proposed, are provided in the TGIC Texas Base Map Plan.

Emergency Management:

Managing resources in preparation for, and response to, emergencies is a complex collection of staging and moving people and equipment, determining priorities, and assessing mitigation effectiveness. Emergency management can be described as an exercise involving directing many mobile resources over a variety of geographic areas and circumstances. Details need to be known about the resources being moved and the routes they use and conditions at their destinations. Geographic base map data can help provide much of that information.

High resolution image showing downtown Austin rooftop detail (2003, Capital Area Council of Governments).

Basic base map data such as imagery, transportation and address networks, surface water, and political boundaries can all provide details on the conditions facing emergency responders. Geographic data can also contain attributes that aid planning further. For example, digital highway data can list the number of lanes available for an evacuation route. Information on roadside resources and special conditions such as contra-flow lanes can be factored into planning. Geographic data can also show:

- *Locations* of critical facilities (hospitals, refineries) and infrastructure (fire hydrants, pipelines)
- Evacuation *routes* away from disaster zones and access routes in for emergency responders
- *Resources* available to emergency managers (hospital beds, shelter status)
- *Conditions* on the ground (aerial photography, land cover)

In emergency response, managers need data showing past and current conditions. Information on the past can be easily accessed through base map datasets and then compared to current conditions. For

instance,imagery collected immediately after a hurricane can be compared to existing base map imagery to see what properties, structures, and people are affected and to what degree. Once emergency mitigation is complete, data collected during the event and recovery now form a new set of base map data serving as reference data should another disaster occur.

Environment:

The rapid urban growth in much of the state has the potential to adversely affect the environment. The

goal is to arrive at a measurable and descriptive summary of environmental conditions through a unified understanding of all elements involved. Smart planning with GIS guides development and associated factors, such as roads, schools and water supply. Detailed elevation, networked surface water, geology, transportation and Census information are all contributing to create the common picture. Updated flood maps, park land management transportation planning, construction, agriculture are dependent on access to good environmental data.
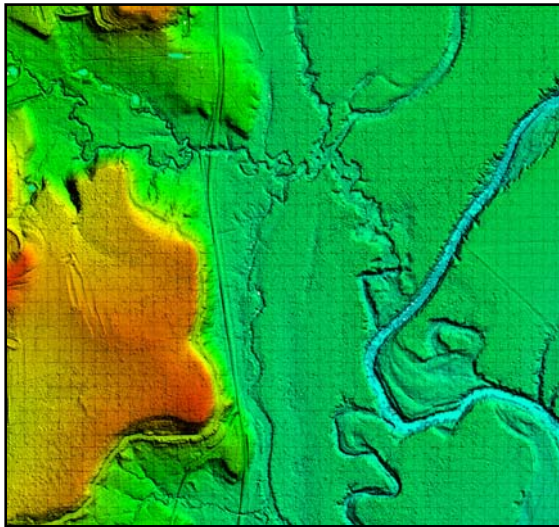
Transportation mapping and addressing:

Transportation mapping builds a statewide network that links private and government products and

services to citizens and customers. A complete, unified, and continuously maintained transportation database allows improved service delivery and ensures more consistent contact between customers and government. Enhancements associated with transportation include: addresses, right of way, routing aids, proximity to utilities, number of lanes and speed limits, sign locations, all in a comprehensive dataset. Intelligent transportation systems further add value to the network by using the latest technology to manage traffic congestion and shorten response time for emergency services.
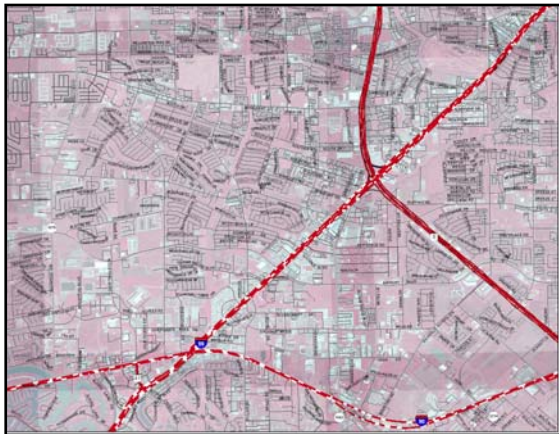
AGENCY ACTIVITIES AND PROJECTS

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A primary purpose of the Texas Geographic Information Council (TGIC) is to ensure that the state's investment in geospatial technologies is coordinated and cost efficient. Even more important is to ensure that these investments in geospatial technology are being effectively used to solve our state's challenges.

Geospatial technology can contribute toward charting a successful future for Texas by providing the means to locate and analyze changes in population, economic activities, natural resources, and critical infrastructures and make meaningful plans to adapt to those changes. TGIC is working to facilitate the use of GIS technology, as a statewide resource to support the current and future needs of Texas. The TGIC vision, presented in this report, *Digital Texas 2006,* is to leverage the state's investment in GIS technology by delivering geographic data and services that will help civil servants and citizens better perform their jobs and solve problems more efficiently.

Texas government has utilized GIS related technologies for over 30 years to solve its challenges. This section -**Agency Activities and Projects, 2005-2006** demonstrates several examples of how Texas state agencies are using GIS technology to better manage state resources and perform their missions over this time period. State agencies work with many types of geographic and location related data – boundaries, districts, regions, property parcels, addresses, facilities, infrastructure and demographics. GIS technology provides these agencies with the ability to manage vast amounts of data and then geographically analyze and interpret it to make better decisions.

Together these applications and initiatives help illustrate the wide range of uses and benefits that the technology offers. Considering these few examples in the context of overall government functions in Texas, it is evident that we are just beginning to harvest the full benefit of GIS technology.

Office of the Attorney General – Legal Technical Support Division

Project Name: Border Colonia Geography Online

Description: The Office of the Attorney General (OAG) created and maintains an extensive Colonia Geographic Database for the border region. The database has been created to assist the OAG to fulfill obligations to colonia residents, provide data for colonia project funding proposals, assist the U.S. Bureau of the Census to acquire the necessary geographic data to ensure a complete enumeration of colonia residents, and provide the basis for developing a registry of colonias suitable for listing as Census Designated Places. The database stores accurate geographic and descriptive data on over 2,000 colonia areas in 30 border area counties.

Maps and data from this database are now viewable on-line at maps.oag.state.tx.us/colgeog/.

Colonia geography includes the location, boundary and area of each colonia, roads serving the community, the internal road network and, in some counties, driveways leading to occupied units. The proximity of colonias to other geographic features as well as their relationship to census geographic units is also displayed. The database stores additional, non-geographic information on colonias collected from various state and local entities.

Contact: Dr. David Falk at David.Falk@oag.state.tx.us
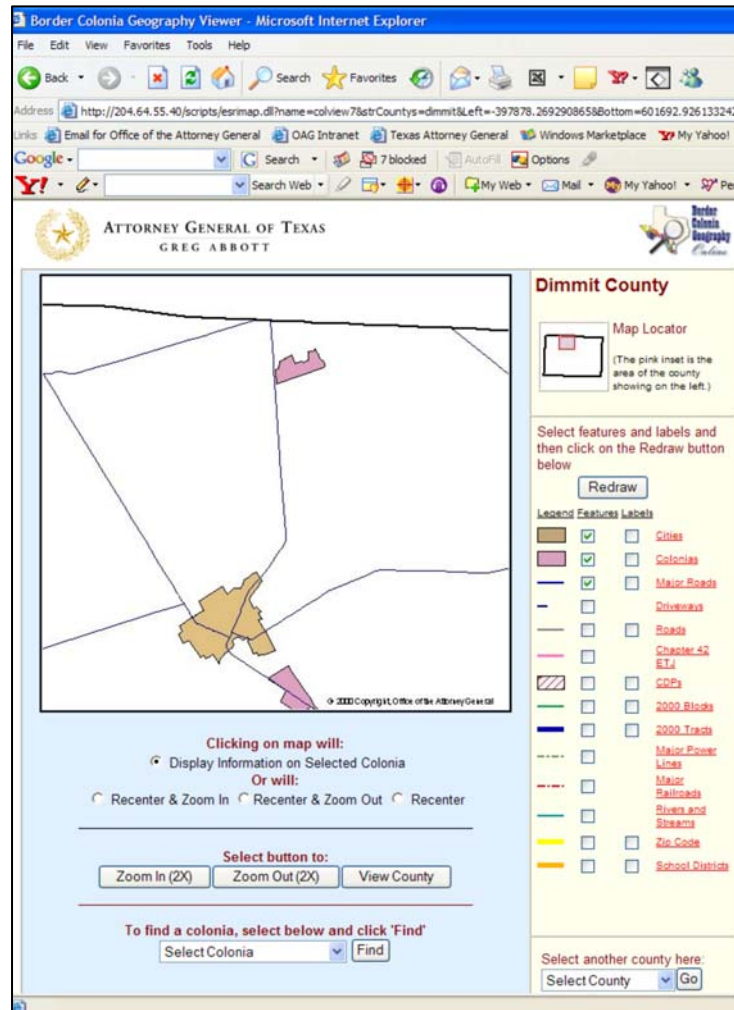
Railroad Commission of Texas

Project Name: Public GIS Viewer - Oil & Gas Wells, and Pipelines

Description: The general public has long needed quick and convenient access to location information about oil and gas wells and pipelines in Texas. In December 2005, the Railroad Commission of Texas (RRC) released its Geographic Information System (GIS) Map Viewer to provide public access to location information about oil and gas wells via interactive maps.

The Public GIS Viewer provides the locations of more than one million currently active and historical oil and gas wells, along with more than 253,000 miles of active and abandoned natural gas and hazardous liquid pipelines. The Public GIS Viewer also includes base map data captured from U.S. Geological Survey 7.5-minute quadrangle maps and the Original Texas Land Surveys.
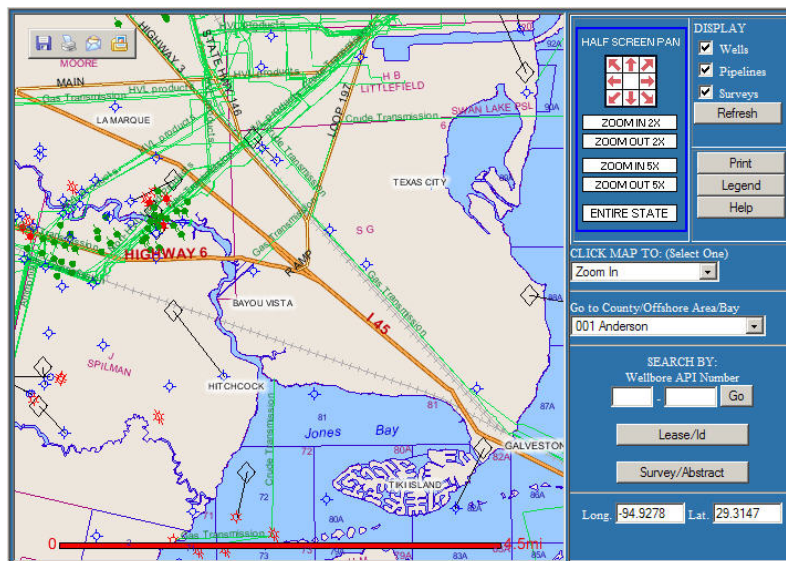
Today, the Public GIS Viewer receives more than 1.5 million hits per month and usage has grown steadily since the viewer was introduced. The number of GIS images created and served in December 2005 was 262,123. By March 2006, the number had increased to 334,001. This is an increase of over 27% in the first four months, and usage continues to increase.

Contact: Robert Aleman
robert.aleman@rrc.state.tx.us

Project Name: Hurricane Rita Response with GIS

Description: In preparation for Hurricane Rita, the Railroad Commission assembled a team of responders to conduct a rapid assessment of industry facilities. The assessment was conducted by helicopter immediately after the hurricane passed. The responders originally requested hardcopy maps that were to be referenced during the facility assessments. It was later determined that the large amount of information that would be needed for the assessment was too much to render on a hardcopy map. The solution was to load GIS software and the facility data onto stand-alone laptops that would be taken on the helicopter flight.

The responders were not GIS technicians or GIS power users; therefore, a lightweight and simple to use software package was required. Some of the GIS data was created quickly and specifically for the Hurricane Rita facility assessment from text data containing addresses. These addresses were processed through address locators and then the spots were visually verified over aerial photography. The data was packaged and loaded onto three laptops. GIS data for the assessment included: wells, pipelines, gas plants, storage facilities, and reference base map data. The GIS data was deemed invaluable in assisting the response efforts.

Contact: Robert Aleman, robert.aleman@rrc.state.tx.us

Stephen F. Austin State University
Forest Resources Institute

Project Name: The Columbia Regional Geospatial Service Center System

Description: This project is the result of Congressional appropriations through the Department of Defense, Army-Air National Guards. The purpose of the project is to complete and deploy a prototype regional geospatial service center system, involving Stephen F. Austin State University in eastern Texas, The University of Texas at El Paso in western Texas and the Texas Natural Resources Information System acting as hub to the system. Texas Tech University will come on line with the system in FY 07. There are three primary project objectives:

1. To support emergency planning and response by regional governments and the National Guard.
2. To support regional economic development.
3. To facilitate natural resources management in each region served by the system.

Using advanced computing systems, and state-of-the-art networking, the centers provide access to technologies and expertise not traditionally available to rural communities. Access to the system is via the Internet. The project already has aided in preparation of FEMA hazard mitigation plans for East Texas Council of Governments counties, as well as Nacogdoches and Angelina Counties.
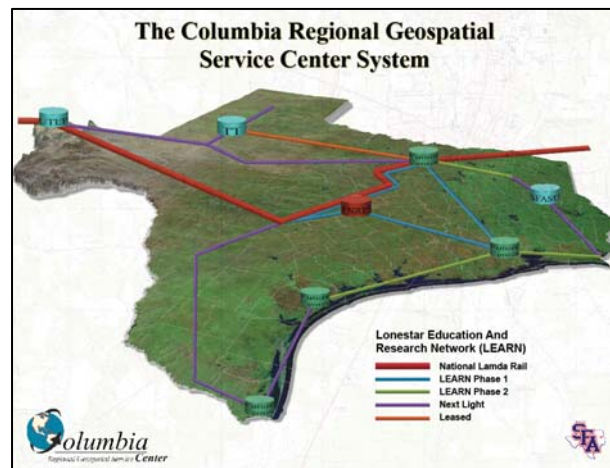
Contact: Dr. James C. Kroll (jkroll@sfasu.edu).

Project Name: East Texas Forest Inventory Project

Description: The East Texas Forest Inventory Project (ETFI) is a remote sensing-based forest inventory initiative to develop and deploy methodologies for inventorying forest resources more quickly and accurately than current procedures allow. The project originally was funded by the State of Texas and is based on methodologies developed in cooperation with Mississippi State University. The ultimate goal of the project is to provide forest resource data crucial to economic development in east Texas. There are three primary objectives of this project:
1. To utilize satellite imagery (remote sensing) to produce accurate land cover and forest age maps of east Texas;
2. To augment these maps with forest resources data collected on the ground; and,
3. To deliver forest resource-related data to user groups as an economic development tool, as well as for many other uses.

Using remote sensing technologies, augmented with "on-the-ground" measurement, data are produced that are useful for economic development, landscape change detection, reforestation monitoring, forest health assessments, and many other uses. These data also can be produced in a timely manner, making biannual updates are possible. The pilot study of this project produced land cover maps and forest resource data for Angelina, Nacogdoches, San Augustine and Shelby Counties, TX. Data produced has been used successfully to develop new methodologies for predicting forest susceptibility to Southern Pine Beetle infestation and could potentially be used for fire hazard assessment, as well as other mitigation activities.

Contact: Jason Grogan (jgrogan@sfasu.edu).

Texas A&M University at College Station – Academy for Advanced Telecommunications and Learning Technologies

Project Name: Texas Mesonet

Description: The Texas Mesonet is an Internet portal providing real-time Texas weather information. It provides the data via a website in conventional weather-map format, as well as providing a query capability which can provide the current observations for a weather measurement site, as well as a 24 hour historical record.
The system is capable of providing both real-time and historical environmental surface observations, including meteorological data and air-quality data.

Federal, state, industry, and citizen participants routinely collect weather observation data in Texas, but they do so independently of one another, resulting in disparate data. The Texas Mesonet project at Texas A&M University, with the support of the State Climatologist, is collecting and archiving these disparate datasets. As a result, a working prototype is now available on the Texas Mesonet web site: mesonet.tamu.edu.

MESONET

is a dense network of carefully positioned automated environmental monitoring systems with real-time data collection and dissemination capability.

AVAILABLE OBSERVATIONS

- 1-hour Rainfall History
- Air Temperature
- Barometric Pressure
- Humidity/Dew Point
- Other Pollutants
- Ozone Levels
- Particulate Air Quality Counts
- Visibility
- Wind Speed and Direction

At this time, the Mesonet web site provides public access to real-time and historical Texas weather data in both GIS and database formats. A statewide comprehensive weather sensor network will provide knowledge of current conditions across every area of the state, as well as instant access to current weather information for citizens, schools, agencies, and industry.

Over the last year, Texas Mesonet has implemented web services that provide data to GIS users, via Open Geospatial Consortium Web Map Service (WMS) and Web Feature Service (WFS) specifications. WMS provides a georeferenced image, which can provide a backdrop for other GIS layers. WFS provides specific data values based on user-specified requests. Additional information can be found on the Texas Mesonet website.

Contact: mesonet.tamu.edu

TEXAS A&M | Institute of Renewable Natural Resources

Project Name: High Resolution Imagery Monitoring of Conifer Encroachment in Texas, Montana, and New Mexico

Description: Conifer encroachment has been a major factor in influencing the biological potential of rangelands throughout large portions of Texas, New Mexico, and Montana. Rangelands provide natural catchments and filtering for the majority of water used by the states. Managing these critical resources is important to the long term sustainability of the national water supply.
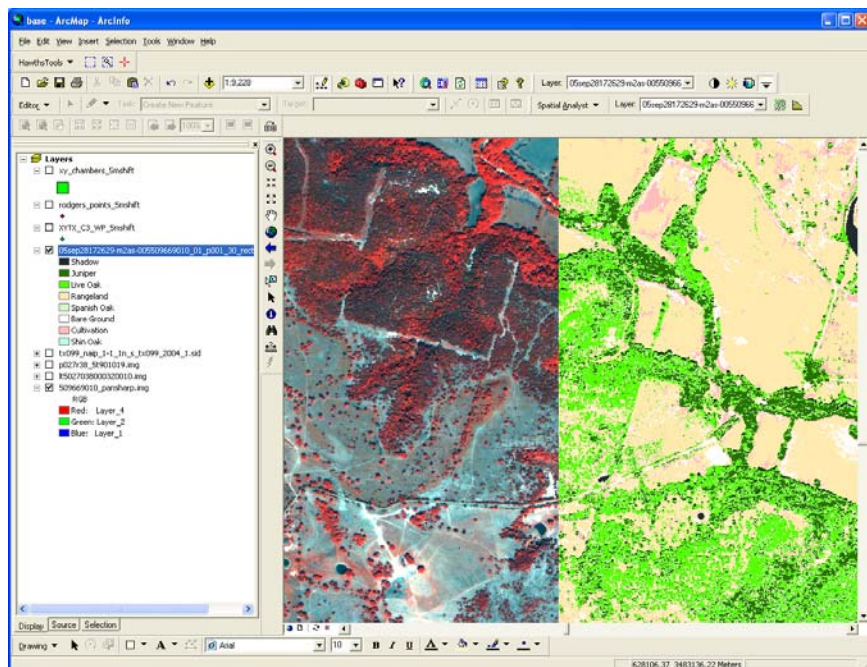
Monitoring encroachment and evaluating management practices is difficult from ground surveys and through low resolution imagery, which does not detect early encroachment well. The ability to monitor early encroachment enables a wider range of management strategies as well as possibilities for reducing the cost of management practices. The goal of the study was to provide important baseline information for researchers and land managers about the use of new technologies and potential enhancement to the decision support process.

In Texas, Ashe juniper *(Juniperus ashei)* is a widely distributed native conifer that is encroaching on rangelands as a result of management practices and land use practices over the past 100 years. Ashe juniper can impact watersheds and the quality and quantity of water coming off a watershed. Results of this study will be used to help researchers and land managers understand how high resolution imagery may provide an additional management tool for monitoring woody species of interest on watersheds and across rangelands.

Contact: Amy E. Hays, Geospatial Extension Specialist, ahays@tamu.edu, or geospatial.tamu.edu

Texas Animal Health Commission

Project Name: Map Locators for Emergency Planning

Description: An increased awareness of the threat of agro-terrorism attack, as well as the impact of natural disasters on animals, has expanded the agency's role in emergency management. Because of the agency's expertise in animal health, the State Coordinator of the Governor's Division of Emergency Management designated TAHC as the state's lead agency for all animal issues involving emergencies – whether man-made disasters, acts of agro-terrorism, or naturally occurring animal disease outbreaks. TAHC is also tasked to assist local governments in preparing for, responding to, recovering from, and mitigating against emergencies affecting animals.

TAHC's mission in preparing for and responding to emergency situations involving animals includes this project for map locators, conducted in collaboration with the Texas State Emergency Operations Center (EOC). The main goal is to construct a GIS-driven database that will give up-to-the hour status information regarding emergency shelters primarily for the safe housing of domestic pets and livestock. This information will assist TAHC personnel in emergency logistics to assist evacuees and their pets and livestock, and will also facilitate staff communications to state and federal agencies during these natural disasters, such as hurricanes, tornados, or wildfires.

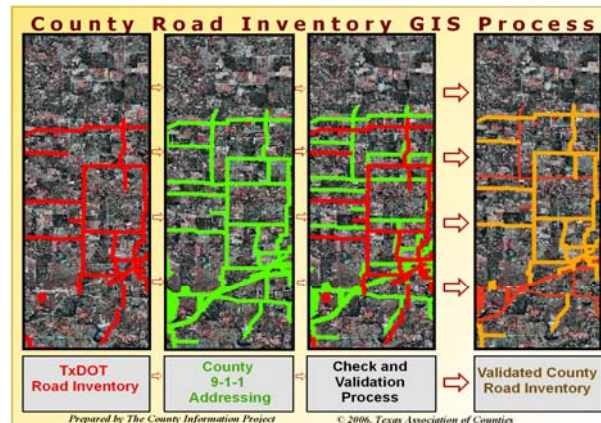**Contact:** Scott Lary (slary@tahc.state.tx.us) or www.tahc.state.tx.us/emergency/emergency_links.shtml

Texas Association of Counties

Project Name: H.B. 1117, Chapter 258 Texas Transportation Code

Description: The 78th Texas Legislature enacted House Bill 1117 which allows counties with a population of 50,000 or less to spatially identify those roads which the county recognizes as county owned and to establish a legal claim on those county maintained roads. The legislation also requires the county to prepare a map of county roads at a scale of 1":2000' and make it available for public review. The Texas Association of Counties coordinating with the Texas Association of Regional Councils, Texas Judges and Commissioners Association, as well as individual councils of government and county law specialists, have recommended a procedure using GIS and several StratMap layers to produce map books for county government and citizen review.

Using the TxDOT County Road Inventory and Census Bureau road files as a starting point, county officials and the public are working with E9-1-1 addressing staff to compare datasets and select those roads which are determined to be county owned and deselect those the county considers to be private. Disputed roads are tagged for presentation during the dispute process. Through the GIS process disparate data sets are reconciled, resulting in a spatially accurate county road inventory that matches the emergency services database. Through coordination with local councils of government and TNRIS, the county road data contributes to the transportation base map effort.

Contact: Bruce Barr, CFM at (bruceb@county.org).

Texas Commission on Environmental Quality - Office of Compliance and Enforcement / Monitoring Operations Division

Project Name: Environmental Monitoring and Response System (EMRS)

Description: The Texas Commission on Environmental Quality's (TCEQ) Environmental Monitoring Response System (EMRS) will function as a new GIS-based agency system to monitor near real-time environmental events for both air and water within the state of Texas. EMRS application will help focus agency resources (regional staff) to manage facilities regulated by the TCEQ.
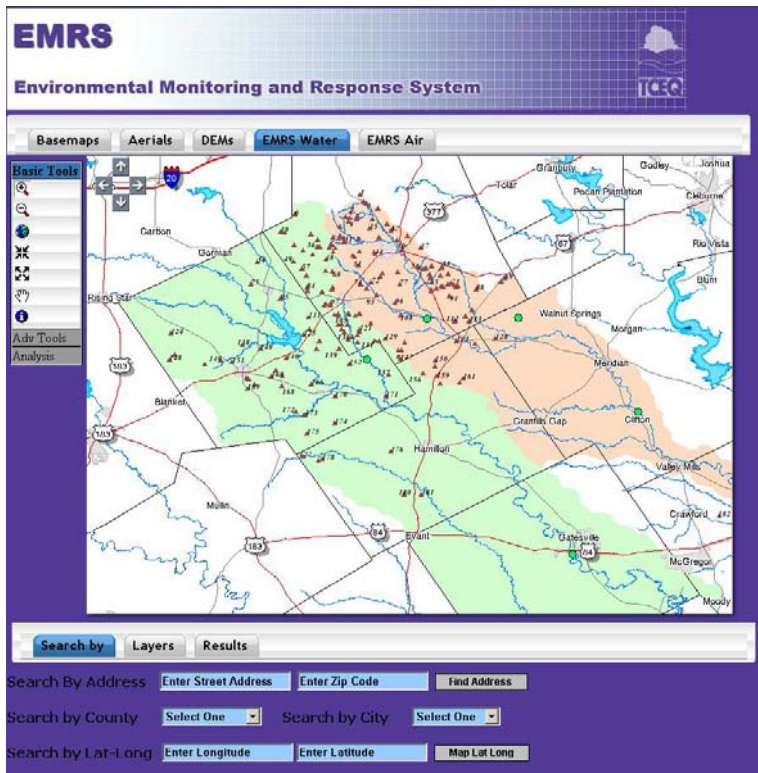
The EMRS application is designed to provide a tool that enhances the ability of regional staff to monitor near real-time environmental conditions and as a result will help provide a more effective response to environmental crisis. A primary objective of EMRS is to harvest environmental and administrative (non-spatial) data from various agency enterprise databases and integrate these data with spatial data as a final output.

A network of real-time air quality monitors in the Houston Ship Channel region provides the air sensory input for EMRS air pilot project. A network of real-time water quality monitoring stations in the Texas Bosque/Leon watershed (northwest of Waco) provides the water sensory input for EMRS water pilot project. Two fundamental EMRS goals are: 1) provide a geographic perspective of real-time environmental upset events for agency staff, and 2) provide targeted industry notification as events occur.

Contact: Joseph Rincon jrincon@tceq.state.tx.us

Project Name: Surface Water Quality Monitoring Information System (SWQMIS)

Description: The SWQMIS Project is a collaborative effort on the part of multiple TCEQ program areas throughout the agency: SWQM, Monitoring Data Management and Analysis (MDM&A), Clean Rivers Program (CRP), Total Maximum Daily Load (TMDL) Program, Surface Water Quality Standards, and Quality Assurance, among others. The SWQMIS project will consolidate and modernize the input, validation, analysis, and reporting of information related to surface water quality monitoring for the State of Texas. The project will also provide a suite of analytical and reporting tools that will be used to support 303(d) and 305(b) Assessments and Section 305(b) of the Clean Water Act.
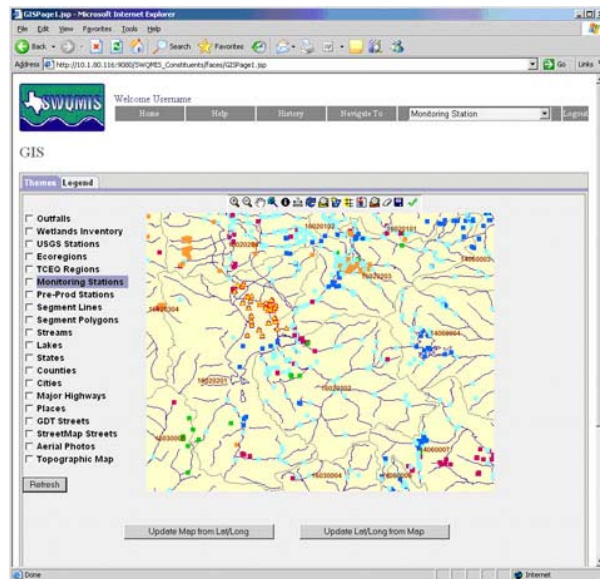
GIS functionality is an integral component of SWQMIS. GIS provides accurate geo-referencing taken from Monitoring Stations. Monitoring Stations are discrete points where water sampling occurs. Currently these station points are managed using ArcGIS desktop with data submission on paper and via e-mail. SWQMIS station management tools are fully integrated into the system, eliminating the need for standalone desktop software and providing self-service functionality for system users. Additionally, many SWQMIS users will not have access to GIS or GPS systems. The standardized mapping tool eliminates the need for these systems, will assist with spatial data quality and shall be available to both TCEQ staff and authorized external parties.

Contact: Julie Lee (julee@tceq.state.tx.us).

Texas Department of Criminal Justice - Criminal Justice GIS Program

Project Name: Training and Production Work for Tax-supported Entities

Description: The Texas Department of Criminal Justice (TDCJ) has a GIS Training/Production Program in its Manufacturing and Logistics Division. The production side of the program deals with GIS conversion projects for various tax-supported agencies in Texas. Currently, it is working on a project with the Office of the Attorney General dealing with oil and gas rights for property owned by the state along Texas highways.

The training aspects of the program include training offenders on ESRI products, Intergraph products, imaging products, databases, large format scanning, civil technology and cartography. All of the offenders assigned to the GIS program complete a two-year apprenticeship program certified by the U.S. Department of Labor that provides the offender with marketable skills when released. Currently there are 26 offenders assigned to the program.

Contact Information:
www.tci.tdcj.state.tx.us

Texas Department of Information Resources
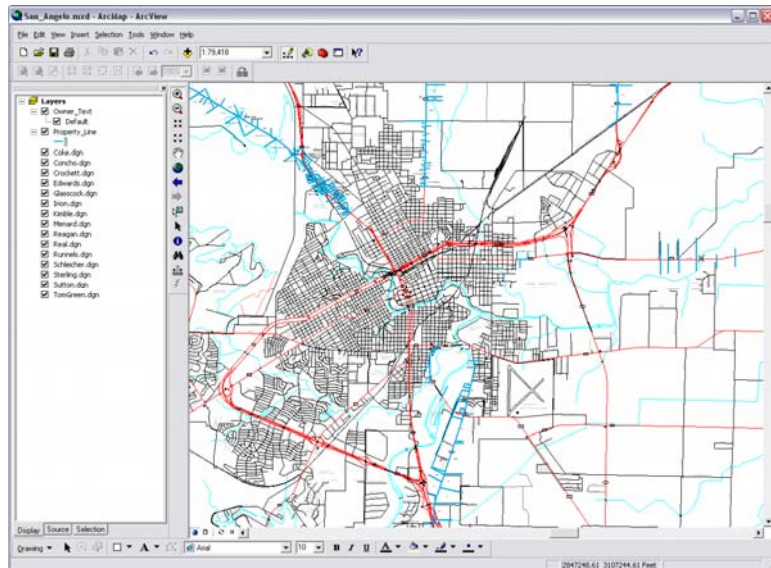
## Project Name: Capitol Complex Facilities Map

Description: DIR collaborated with the Texas Building and Procurement Commission (TBPC), and Texas Department of Public Safety (TxDPS) to develop a GIS database of state owned buildings and parking facilities within the Texas Capitol Complex. DIR converted data collected by TBPC and TxDPS into a GIS format and is working on a series of GIS maps for the Capitol Complex.

This database will serve a variety of purposes such as facility planning, routing for public events and security logistics, parking requirements analysis, and general purpose location maps. This map shows state owned buildings and parking facilities located on a high-resolution aerial photograph.

Contact: Michael Ouimet (michael.ouimet@dir.state.tx.us)
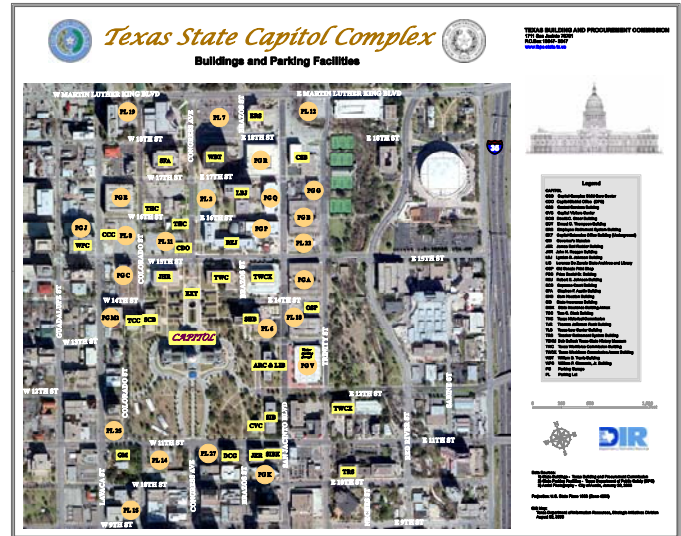
Project Name: Telecommunications Infrastructure Map
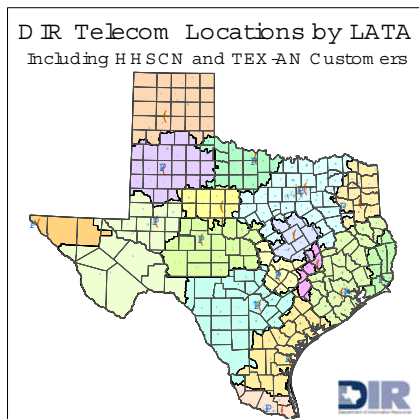
Description: DIR has initiated the Telecommunications Infrastructure Map project to enhance the ability of DIR to better operate, maintain, and market its statewide telecommunications services. The project will map the location of DIR's contracted and state owned telecommunications and network infrastructure, services and customers. In addition, GIS mapping of the DIR telecommunications infrastructure can significantly aid in developing Business Continuity and Disaster Recovery (BCP/DR) Plans as well as emergency communications.

The Telecommunications Division (TD) of DIR provides a wide variety of telecommunications services to eligible customers throughout the state. These services, including voice, data, videoconferencing, and Internet connectivity are provided by DIR through operation of major and secondary networks, and through numerous contracts for communications-related services.

The centralized telecommunications system for the state of Texas is known as TEX-AN. With the exception of state universities and legislative bodies, all state agencies are required to use the telecommunications services provided by TEX-AN. TEX-AN also serves other eligible organizations such as cities, municipalities, counties, education service centers, independent school districts, and higher education. DIR is also upgrading the capabilities of the Health and Human Services Consolidated Network (HHSCN), which it now manages, to enhance services and expand coverage to government entities throughout the state.

Contact: Michael Ouimet (michael.ouimet@dir.state.tx.us)
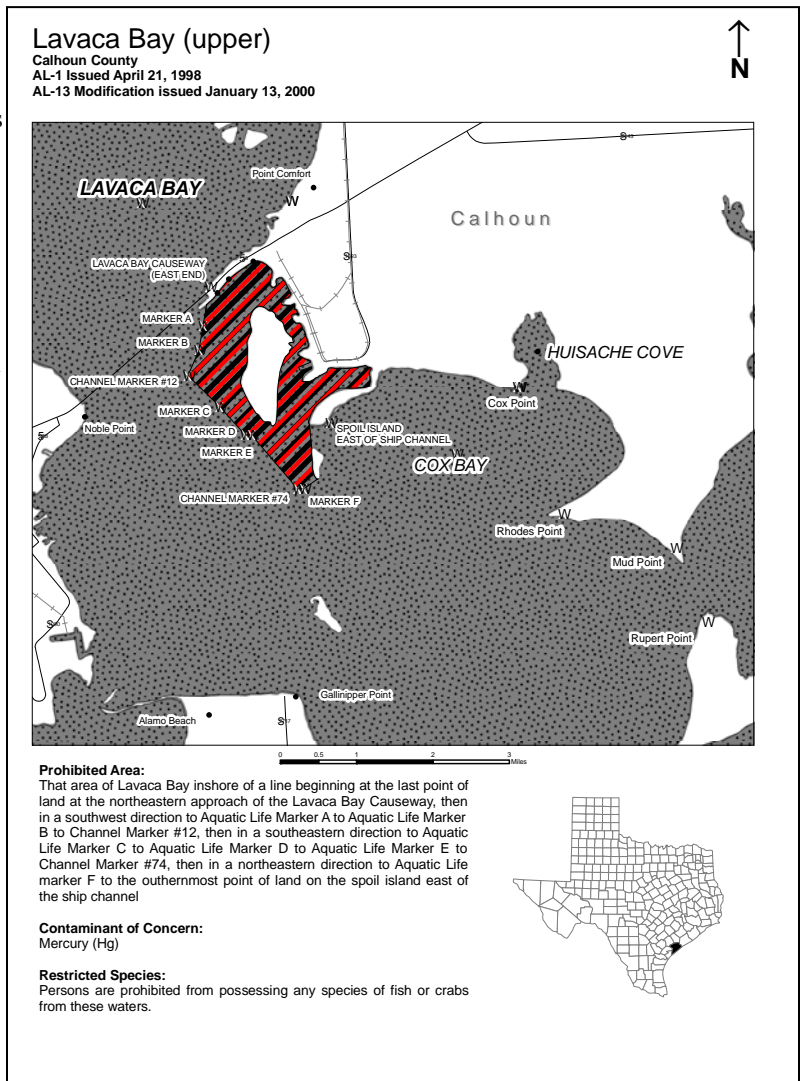
Center for Health Statistics

Project Name: Texas Fish Consumption Guide

Description: The DSHS Seafood Aquatic Life Group tests fish and shellfish tissues for contaminates from many public waters in the state. The resulting fish consumption advisories and bans are published in a booklet that is available to the public through the Seafood Aquatic Life Group (512-834-6757). This information is also posted on the Internet at www.dshs.state.tx.us/.

In collaboration with the Seafood Aquatic Life Group, the GIS Section in DSHS Center for Health Statistics develops maps using Digital Orthoimagery, surveys and data collected from the field. The maps show the location of the affected water bodies.

Contact: Tracy Haywood gis@dshs.state.tx.us

Lavaca Bay (upper)
Calhoun County
AL-1 Issued April 21, 1998
AL-13 Modification issued January 13, 2000

Prohibited Area:
That area of Lavaca Bay inshore of a line beginning at the last point of land at the northeastern approach of the Lavaca Bay Causeway, then in a southwest direction to Aquatic Life Marker A to Aquatic Life Marker B to Channel Marker #12, then in a southeastern direction to Aquatic Life Marker C to Aquatic Life Marker D to Aquatic Life Marker E to Channel Marker #74, then in a northeastern direction to Aquatic Life marker F to the outhernmost point of land on the spoil island east of the ship channel

Contaminant of Concern:
Mercury (Hg)

Restricted Species:
Persons are prohibited from possessing any species of fish or crabs from these waters.

Texas Department of Transportation

Project Name: Main Street Texas

Description: Main Street Texas (MST) is an internal data portal utilizing a pre-packaged graphical user interface (GUI) that supports the integration of data throughout TxDOT. MST provides structured and standardized spatial data to all TxDOT business units.

This interface allows the user to view spatial and business data in a table, on a map, or in a document view such as a PDF. The MST Client is reachable through an Intranet browser and the tables used for the interface and transactions are housed on an Oracle spatial database.
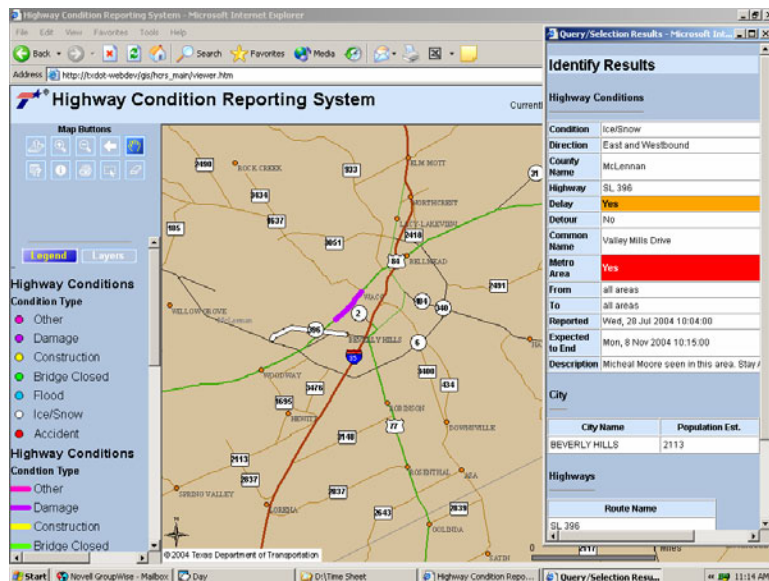
Contact: Jim Patterson, Senior GIS Analyst jpatters@dot.state.tx.us)
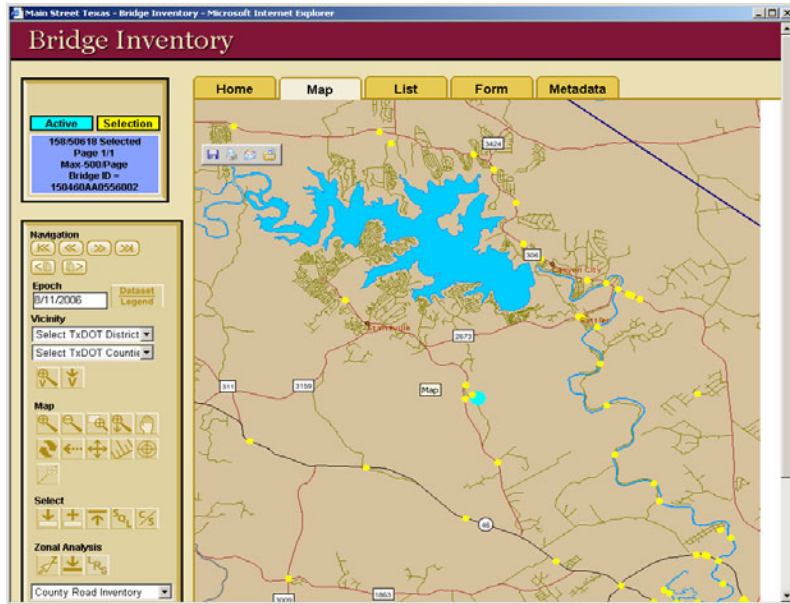
Project Name: Highway Conditions Reporting System

Description: Implemented in September 2004, the Highway Conditions Reporting System (HCRS) system provides the traveling public real-time reports on highway conditions statewide including weather conditions, accidents, construction, and other events that might represent delays or road closures. Hurricane evacuation routes and, new for 2006, location of contraflow lanes will be available in the event of a hurricane.

Contact:
www.dot.state.tx.us/GIS/HCRS_main/viewer.htm

T E X A S
FOREST ★ SERVICE
The Texas A&M University System

Forest Resource Protection

Project Name: Southern Wildfire Risk Assessment (SWRA)

Description: The Texas Forest Service and the Southern Group of State Foresters have embarked on a multi-state wildland fire risk assessment for the 13 Southern states that will allow agencies and organizations at the national, state, and local levels to obtain a clearer picture of what the overall potential is for wildland fire and its associated problems.
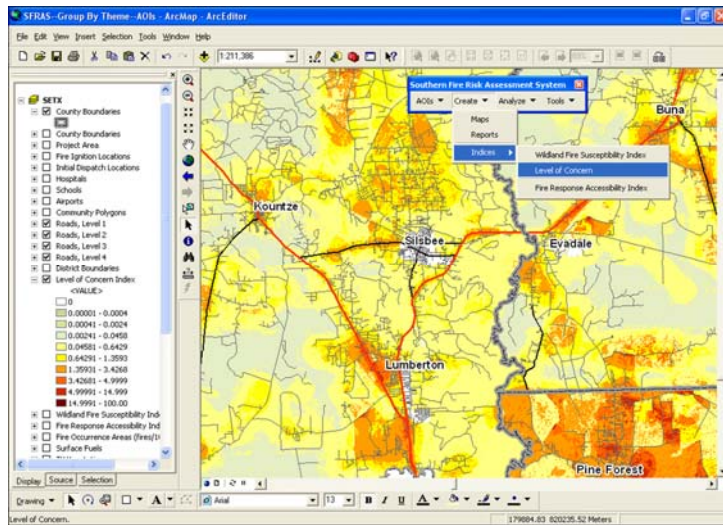
The core component within the Southern Wildfire Risk Assessment will be a wildland fire risk analysis model. The risk model contains calculations to derive indices of Wildland Fire Susceptibility, Fire Effects, Fire Response Accessibility and Wildland Fire Risk. GIS tools will be available to support custom fuels management, modifying fire occurrence and resource locations, and determining the resultant effect on future wildland fire risk. The risk assessment model will be customized with a comprehensive GIS database built specifically to meet the needs of the Southern states.

Objectives:
- Rapidly identify areas that may require additional tactical planning
- Allow agencies to work together to better define priorities and improve emergency response
- Increase communication with local residents to address community priorities and needs
- Identify resource allocation based on the potential for severe fire problems, and
- Plan and prioritize hazardous fuel treatment programs.

Contact: Tom Spencer (tspencer@tfs.tamu.edu) or
Curt Stripling (cstripling@tfs.tamu.edu)

Texas General Land Office, GIS Division

Project Name: State Land Management - GISWeb
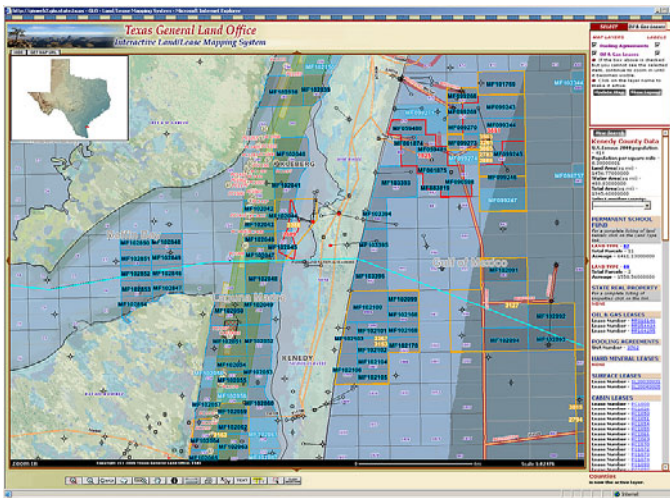
Description: The Texas General Land Office (GLO) manages more than fifteen million acres of state land and waters, including coastal bays and the near-shore Gulf of Mexico. More than $337 million annually is generated for public education by leasing state-owned property for oil, gas, and mineral production and other uses. GIS maps and databases are used in advertising land for lease, appraisal, permitting, inspection, and other tasks necessary to manage thousands of widely scattered tracts of state-owned land and minerals.

In 2005, the GLO implemented the *GISWeb*, an Internet-based mapping and analysis tool that allows users to display any area of Texas and look at many types of information. The Interactive Land/Lease Mapping System within the GISWeb gives prospective lessees the ability to view maps and information pertaining to state lands, including tracts available for nomination in oil/gas lease sales. These lease sales generate an average of $60million dollars per year. The system is also used within the agency for tracking revenue generated by oil and gas leases. Leasing of state lands has generated more than $1.4 billion dollars for Texas public schools and other programs in the last five years.

Contact: gisweb1.glo.state.tx.us/website/gisweb.cfm

Project Name: Oil Spill and Hurricane Emergency Response

Description: In September 2005, the GLO's Oil Spill/Emergency Response Team was deployed to New Orleans at the request of the U.S. Coast Guard for search and rescue missions following Hurricane Katrina. The GLO produced GIS maps and aerial photography, which were used extensively on missions in flooded areas where typical maps were not useful. Two weeks later, Hurricane Rita made landfall on the Louisiana/Texas coast. The GLO's GIS Division provided maps and processed more than 40 gigabytes of aerial photography for response efforts.

In the wake of Rita, GIS played a major role in mitigating many oil spills and other damage incidents. Following detection of an oil spill in the Galveston Channel, the GIS Division used maps and historical photography to locate an old tank farm that was the source of the spill. With this information, the response team was able to find the responsible party. The GLO also finished a full-color atlas of the lower Texas coast depicting shoreline characteristics, sensitive areas, and public and private facilities to be used in oil spill response decision-making.

Contact: www.glo.state.tx.us

1954 TANK FARM SPILL AREA

1992 photography overlay on 1954 photography
Texas General Land Office

Texas Natural Resources Information System

Project Name: **Seamless Trans-boundary Imagery for Texas/Mexico Sister Cities**

Description: Current, updatable, accurate and GIS-compatible base maps are needed for a wide variety of environmental and other applications. This project will begin to satisfy that need. The applications of aerial photography mosaics as base maps and for use in a variety of combinations with other data layers such as hydrography, transportation and geographic names has been frequently shown. The mosaics are an excellent foundation for accurate and up-to-date base maps that can be used by health and environmental specialists. They are Internet accessible, seamless from one side of the border to the other and GIS compatible with numerous other datasets. The mosaics are unique in that they show significant areas of both sides of the border on the same image product. Previous transboundary views have been limited to only portions of individual "spillover" frames.

Portion of Nuevo Laredo/Laredo Cities Image
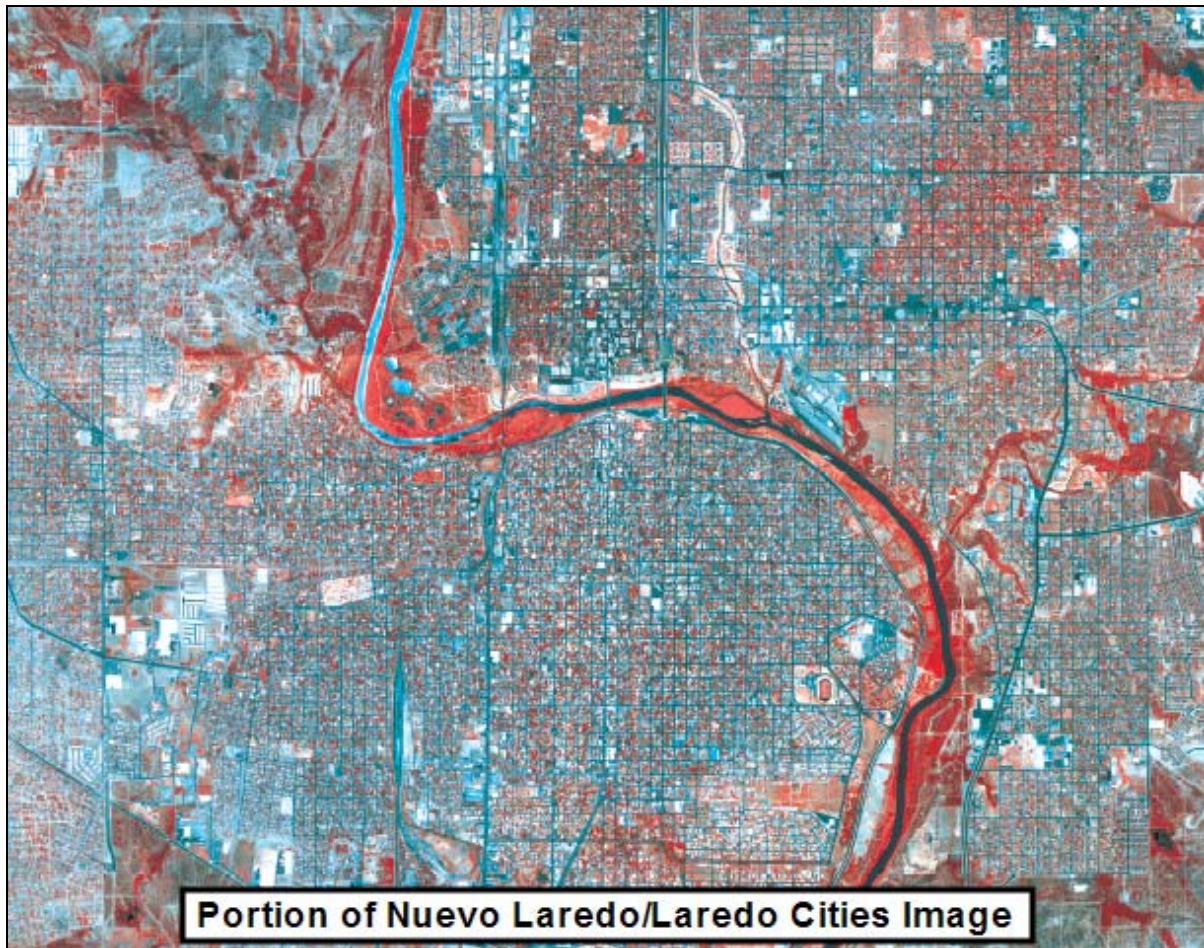
More images of the mosaics are available at: ftp://ftp.tnris.org/temp/BIC/EPA_Sister_Cities/
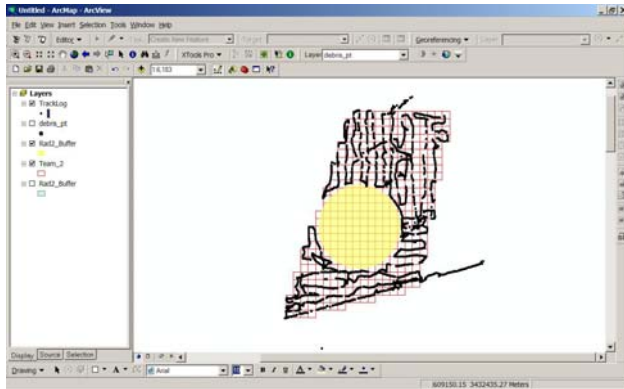
Contact: Miguel A. Pavon (mpavon@bic.state.tx.us)

Texas Parks & Wildlife, Law Enforcement Division

Project Name: Parrie Haynes Ranch Disaster Exercise

Description: A training exercise was held at the 4,000 acre Parrie Haynes Ranch in Central Texas. In the training scenario, terrorists in a small plane crashed before completing their mission of an aerial broadcast of a light radiological agent. Game wardens surveyed and compiled waypoints and data from a simulated crash site while working around two hotspots. The exercise provided hands-on use of sub-meter and consumer grade GPS units and the use of data collection applications.


The warden GIS team used the collected data to provide maps of the progress of the search area to Incident Command. The team produced a database supplying details of each piece of wreckage, and tracked each search team's location throughout their work detail to verify coverage of assigned areas and that no team crossed into contaminated areas.

Map illustrates search grid with team track and radiological buffer zone.

Project Name: Hurricane Rita Search and Rescue

Description: Texas game wardens provided search and rescue efforts during the aftermath of Hurricane Rita to East Texas residents. Wardens used four-wheel drive vehicles, tow chains, and chain saws to make their way into rural areas to provide rescue, water, and food to victims. They used GPS units to mark the locations of those in need of medical supplies and keep track of their progress.

The collected data was used to avoid duplication of search efforts and to pass critical waypoints to new waves of workers. GIS analysts provided the data in map form to Incident Command for planning purposes.
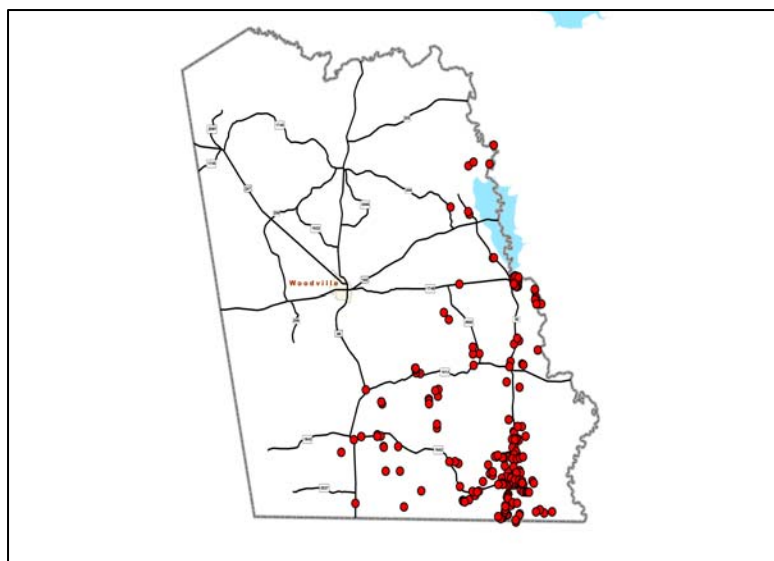

Map depicts welfare, medical, and law enforcement action taken by game wardens in Tyler County.

Texas Tech University, Department of Geosciences

Project Name: Deep Sedimentary Thermal Regime of the Texas-LA Continental Shelf

Description: This project is conducted in collaboration with geologists at the Minerals Management Service. The main goal is to construct a GIS-driven database of temperature distribution within deep sediments (2 to 7 km below seafloor) off the shore of Texas, Louisiana, Mississippi, and Alabama in the Gulf of Mexico. The database will be helpful for petroleum researchers in assessing hazard risks associated with hydrogen sulfide (H_2S) gas in deep natural gas reservoirs. H_2S gas is extremely toxic.
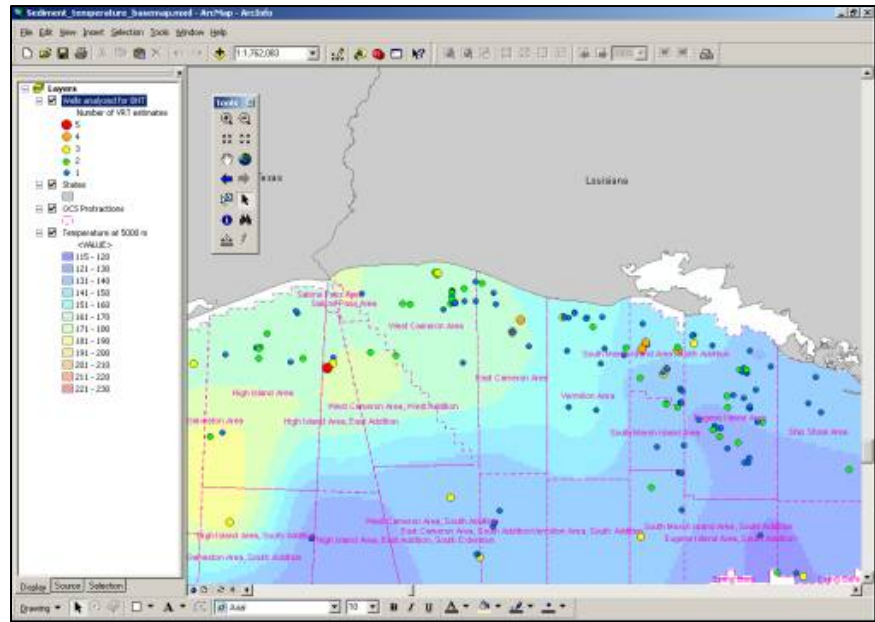
Computer screen shot of sedimentary temperatures.

The gas also poses logistical problems in drilling, because it can corrode most steel. Oil companies try to avoid drilling into a geologic formation that contains H_2S gas. H_2S gas is generated from a series of chemical reactions partly controlled by the reservoir formation temperature.

Petroleum researchers will use the new GIS-driven database in mapping out the deep sediment temperature in the vicinity of their exploration targets prior to drilling. The information will help them in determining the risk of a planned exploration well drilling into an H_2S-bearing formation.

**Contact:** Dr. Seiichi Nagihara (seiichi.nagihara@ttu.edu).

Texas Water Development Board

Project Name: Water Information, Integration, and Dissemination Portal

Description: The Texas Water Development Board (TWDB) has developed a water information portal to speed on-line access to current comprehensive state water data. The Water Information Integration & Dissemination (WIID) system utilizes internet-based mapping technology to significantly improve access to water-related data. For more than 40 years, the TWDB has collected and disseminated a variety of water information including data on population and water demand, planning, water availability, water/drought monitoring, water conservation information, and financial program information. Under the WIID program, comprehensive water information is made more easily accessible through a web-based map service application. The WIID hosts basic water-planning related information required to be distributed by Senate Bill 1 (75th Legislature) and links to, or lists contacts for, related information owned by Texas Commission on Environmental Quality and Texas Parks and Wildlife.

The WIID portal currently contains four applications. They are: the Groundwater Database, Submitted Driller's Report, the Water Planning and Water Use Survey, and the Surface Water Data and Mapping Tool. The ProjectInfo application, that contains financial program information, is scheduled to be added in the near future.

Ongoing maintenance and enhancement of the WIID system continues based on the need to add newly acquired data, such as the recently submitted data provided by the Regional Water Planning Groups for the 2007 State Water Plan. Updates and additions to available geographic data are made as more current and accurate datasets become available.
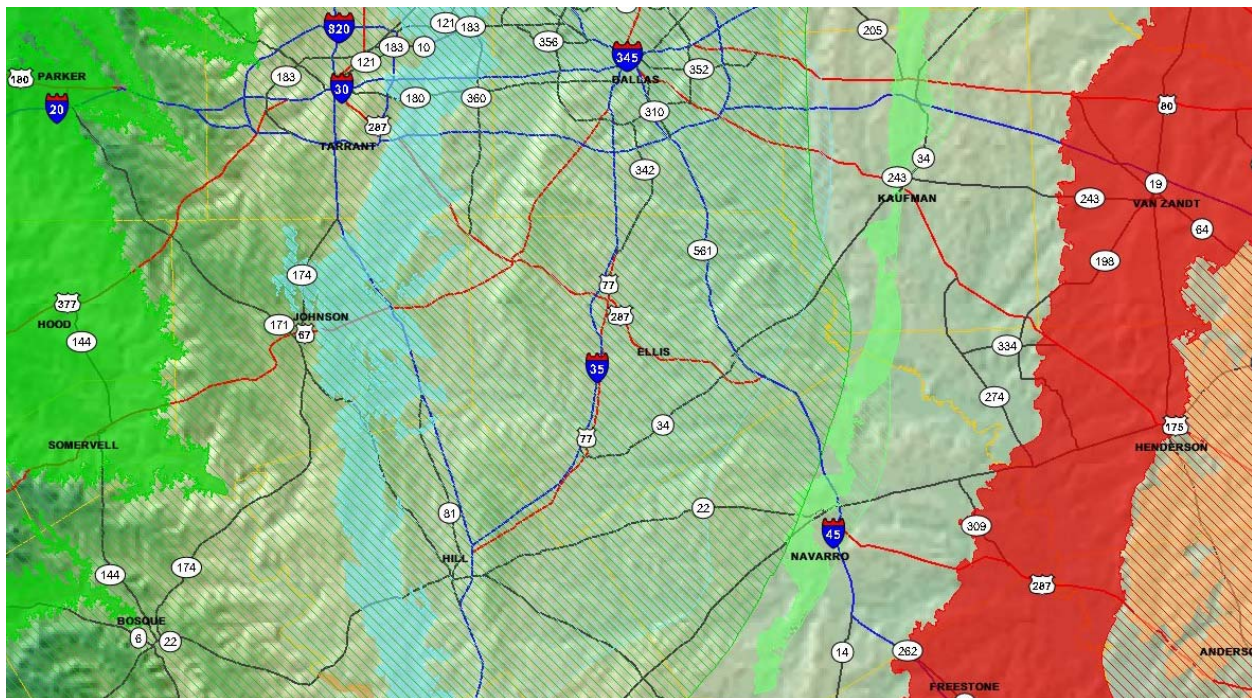
Contact: Anh Selissen (anh.selissen@twdb.state.tx.us)

Project Name: CSR and the 2005 Hurricanes

The University of Texas Center for Space Research (CSR) supports the Governor's Division of Emergency Management (GDEM) before, during, and after hurricane threats to the Gulf Coast with geospatial analyses for decision makers, modeling and visualization for storm surge and damage estimation, and construction of a common operational picture for the Governor's Emergency Management Council that shows the disposition of responding teams from Texas Military Forces and state agencies. Actions during Hurricanes Katrina and Rita provide several examples of this support.

In preparation for the hurricane season, CSR maintains and updates the State's general population and special needs shelter database under the direction of the State Mass Care Coordinator. Regional and local shelter maps are produced to assist the organization of resources to be made available for evacuees. Custodial care facilities, such as nursing homes, assisted living facilities, state schools and criminal justice facilities, are also mapped from data provided by state agencies to aid in the safe evacuation and relocation of groups needing special assistance. The CSR direct broadcast receiving station provides real-time access to NOAA, NASA and international satellite observations of approaching storms. Satellite imagery is prepared for immediate display in the State Operations Center and assists the hurricane analysts from the National Weather Service (NWS) who link to NOAA data networks from their position next to CSR in the State Operations Center. The recent initiative by NWS to produce GIS-compatible data for their observations, advisories, warnings and model forecasts permits the rapid exchange of information.

With the landfall of Hurricanes Katrina and Rita, federal agencies made available large volumes of satellite and aerial sensor imagery. To facilitate data access, CSR created websites to host the imagery in bundled sets of GIS-compatible data. In several instances, imagery originally released in obscure file formats was converted to user-friendly formats, such as GeoTIFF. CSR provided access to the data through an FTP delivery system with data organized by type (satellite, aerial) and collection time (pre- and post-event) as well as through websites with image location maps for each data collection. A logical system of organization that includes map indices, metadata and straight forward data descriptions expedites the delivery of timely imagery for disaster impact assessment.

Immediately after the landfall of Hurricane Rita, CSR directed the collection of digital aerial photography by the Texas Civil Air Patrol (CAP) to assess the degree and style of damage along the storm track and to detect pollution associated with the destruction of petrochemical storage tanks and pipelines and the sinking of ships and barges. After each CAP mission, the digital images and associated data files were transmitted to CSR, where the imagery was compiled, geo-located and posted to a website along with a regional index map of image center points. Photointerpretation of the digital images in conjunction with pre-event photography allowed CSR analysts to assign a damage class to each photograph collected by the CAP.

For the 2006 hurricane season, CSR continues to work with the GDEM on a broad range of projects. One new aspect of geospatial support involves the information required to manage emergency fuel operations during a mass evacuation. The analysis requires both fuel demand and supply modeling to determine the best locations for fuel terminals, tanker fleets and emergency fueling points in proximity to evacuation routes.

Supporting graphics could include: satellite images of Hurricanes Rita and Katrina, storm surge model visualizations, shelter maps, New Orleans IKONOS and LiDAR search-and-rescue, images, safe exit and reentry maps, staged resources maps, power outage maps, CAP aerial photos of damage and pollution, Radarsat image of oil slicks, etc.

Contact: Gordon Wells (gwells@csr.utexas.edu)

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Appendix A

HISTORY OF TEXAS GIS COORDINATION

Today, the Texas Geographic Information Council (TGIC) is the State's geographic information coordinating, planning, and advisory body. TGIC was formed by statute during the 75th Legislature in 1997 and its roles and responsibilities are listed in Section 16.021 of the Texas Water Code. Coordination and partnerships among Texas agencies, however, were underway long before 1997, and the people, agencies, and organizations participating in those efforts made TGIC and its current initiatives possible.

1952-1957	Texas experiences its most devastating drought of record. The severe water shortages reveal the necessity of statewide water planning and greater study of water resources.
1957	As the drought ends, the 55th Texas Legislature authorizes formation of the **Texas Water Development Board (TWDB)**. TWDB originally serves as a component of the **Texas Board of Water Engineers**. In addition to water planning, one of the new agency's responsibilities is to gather water-related data, including maps.
	The Legislature also provides funds to the Board of Water Engineers to initiate a cooperative mapping plan with USGS. Agreement signed between the two agencies in December 1957.
1960	The **Texas Mapping Advisory Council (TMAC)** is established by the Board of Water Engineers, without outside support or mandate, to enable the state to have a greater voice in the cooperative mapping program. TMAC has both private sector and public entity members with the Board providing administrative support.
1964	TWDB assumes its role as a separate agency and offers water planning and financing services to local, regional, and state agencies.
1968	TWDB, under direction of the Legislature, forms the **Texas Water-Oriented Data Bank**, to "incorporate all hydrologic data collected by state agencies."
1972	The Data Bank is renamed the **Texas Natural Resources Information System (TNRIS)**, which has since run continuously to date. The mission of TNRIS is to provide a "centralized information system incorporating all Texas natural resource data, socioeconomic data related to natural resources, and indexes related to that data that are collected by state agencies or other entities" (Texas Water Code, 16.021).
	The **TNRIS Task Force**, with 17 member agencies, is organized to help define the nature of the data to be collected and provide further coordination between TNRIS and state agencies.
1977	TNRIS receives $500,000 NASA grant to transfer Landsat (federal satellite imagery program) and GIS technology to state agencies.
1983	TNRIS Task Force publishes "*Developing a Digital Base of Map Information for the Texas Natural Resource Agencies*" which accurately predicted need for base map layers like transportation and elevation.
1984	TPWD publishes highly detailed *Vegetation Types of Texas* map as a GIS product. Map is first of its kind to associate potential vegetation with location.
1985	The final Texas map (Paris quadrangle) in the 7.5-minute, 1:24,000-scale USGS topographic map series is complete. Texas is the first state west of the Mississippi to accomplish this. The state, primarily under the guidance of TMAC, has contributed over $7,000,000 to the cooperative mapping program with USGS.
1987	Texas Railroad Commission begins transfer of over 1,000,000 oil and gas well records into GIS database for improved access by the public.
	TNRIS Task Force sponsors the **first statewide GIS conference** titled "A Symposium on Geographic Information Systems and Remote Sensing" in April. It is held at the William B.

Travis Building and Jack Dangermond, founder of Environmental Systems Research Institute (ESRI), is the series' first keynote speaker.

1988 TNRIS acquires its first ESRI Arc/Info GIS software license.

GLO begins plans for development of GIS database incorporating biological, habitat, wetlands datasets; jurisdictional boundaries; and Permanent School Fund (PSF) land and minerals datasets.

1990 The **GIS Advisory Committee** is formed by charter through the Department of Information Resources (DIR) and has 13 member agencies and universities. The group is charged to make recommendations about the need for statewide coordination of GIS. Participants included GLO, DIR, TPWD, RRC, TxDOT, TWC (now TCEQ), TNRIS, Bureau of Economic Geology (BEG), TWDB, UT, TAMU, SWTSU, and the Governor's Office.

1991 The GIS Advisory Committee is divided into several related committees to gather more comprehensive input. These are (1) the GIS Applications Coordination Working Group, (2) Spatial Data Standards Committee, (3) Attributes Standards Committee, and (4) the GIS Legal Issues Committee.

The first committee, **GIS Applications Coordination Working Group**, has executive membership from GLO, RRC, TPWD, TxDOT, TWC, and DIR. These agencies sign a Memorandum of Cooperation and the **GIS Planning Council** is formed on May 28. This group is re-chartered and membership is extended to other agencies.

Supporting the GIS Planning Council is the **GIS Managers Committee**. The Managers Committee draws its members from GIS professionals and managers from TGIC member organizations (rather than the more executive focus of Planning Council). The Committee's function is to support the Council by researching and investigating technical issues.

GLO incorporates land use, habitat, and oil and gas wells on PSF land into GIS spatial database. Agency also begins organizing the GLO/GIS map library to store spatial data being developed and obtained.

1992 Governor Ann Richards signs Executive Order #AWR 92-6 charging the Council with preparing a business plan. PlanGraphics, Inc. is hired to write the "*Geographic Information Systems Business Plan*" which is delivered on May 19.

The **Texas GIS Standards Committee** publishes "*Standards and Guidelines for Geographic Information Systems in the State of Texas.*" The GIS Standards Committee was created by merging several of the committees derived from the GIS Advisory Committee.

Planning Council publishes the "*GIS Base Map Requirements Proposal.*"

1993 TNRIS establishes the Texas/Mexico Borderlands Information Center (BIC) with assistance from the Environmental Protection Agency (EPA).

TNRIS begins making GIS data available via the Internet.

1994 Planning Council publishes "*Plan for Interagency Coordination.*"

Planning Council publishes the first state GIS strategic plan, "*Building Texas GIS Infrastructure.*"

1995 Several Planning Council member agencies provide state matching funds to enable USGS high resolution color infrared (CIR) aerial photography to be collected over a two-year period (1995-1996).

The Office of State Federal Relations provides state seed funds to match federal funds for digital orthoimagery production. The **Texas Orthoimagery Program (TOP)** begins and is managed by DIR.

GLO completes Atlases for Texas (upper and lower coast) showing biological, habit, shoreline and jurisdictional boundary datasets for Oil Spill Prevention and Response Program. Also completes the development of the Submerged Land GIS dataset for use in leasing PSF offshore mineral tracts.

1996	The second state strategic plan, "*United Through a Common Geography*," is published by the GIS Planning Council in December.
	The TNRIS Task Force and GIS Planning Council form joint committee (Blue Ribbon Committee) to investigate merging the two groups.
	DIR published "*The StratMap Concept Proposal*" in September 1996, as a supplement to the General Services Commission "*Report on Study on Reasonable Charges for Geographic Information Systems Data*". This document laid-out a plan for cooperative-funding of a state mapping program that was funded by the legislature through Senate Bill 1 in 1997.
1997	The 75th Legislature approves Senate Bill 1 which (1) merges the TNRIS Task Force and the GIS Planning Council into the **Texas Geographic Information Council (TGIC)**, and (2) provides funding for the **Texas Strategic Mapping Program (StratMap)**. The role of TGIC in state GIS coordination is recorded in Section 16.021 of the Texas Water Code. The group also adopts a new charter.
	StratMap's role is to complete seven digital statewide base map layers over four years. The layers are orthoimagery (funds provided to continue TOP program at DIR), elevation contours, elevation models, surface water, transportation, soil surveys, and political boundaries.
	The Managers Committee function remains intact but the group is renamed **Technical Advisory Committee (TAC)**. Membership is later broadened to include anyone from TGIC member organizations.
	TGIC publishes a second edition of the previous strategic plan "*United Through a Common Geography*" in November.
1999	TGIC publishes "*Geographic Information Framework for Texas*" (aka *GIFT*) which lists major Council goals and initiatives.
	TMAC holds its last meeting with the acknowledgement that TGIC is performing most of the tasks TMAC provided.
	The Managers Committee's Interagency Land Use/Land Cover (LULC) Working Group releases "*Texas Land Classification System*" which revised the schema used to classify vegetation in Texas.
2000	TOP program is completed with 17,772 digital images created across Texas.
2001	StratMap completes its seven layers and enters maintenance mode. The seven layers were built using approximately $40,000,000 in state and matching funds, in-kind contributions, and related data. The 77th Legislature provides funds for maintenance of orthoimagery, transportation, and political boundaries and funds for creation of the **National Hydrographic Dataset (NHD)** for Texas.
	Texas Water Code is amended to require TGIC to deliver a report on GIS technology progress to the Legislature by September 1st of even numbered years.
	TNRIS makes StratMap data available online via new Digital Data Distribution System interface.
	TGIC receives an Excellence Award for the Innovative Use of Technology in State Agencies from the Texas Association of State Systems for Computing and Communications (TASSCC). The Award recognized the Texas Strategic Mapping and Texas Orthoimagery Programs "*for outstanding application of communications and/or computing technologies in an innovative way which significantly improved internal operations, customer services, or communications between agencies or citizens of Texas.*"
	GLO is supporting and developing Intranet/Internet desktop GIS applications for allowing both internal and external users access to PSF mineral and surface leasing; developing additional layers for Oil Spill Prevention and Response; and monitoring coastal erosion and the beach and dune program for the Coastal Management Program.

2002   TGIC publishes its first Legislative Report, "*Digital Texas*." The report lists has sections on (1) TGIC initiatives (base mapping, data access, enterprise GIS, education, and critical infrastructure), (2) agency GIS applications, and (3) base map layers.

TGIC releases its first "*Base Map Plan*" that details 21 statewide map layers deemed necessary by TGIC member organizations.

2003   TGIC member agencies and other local, regional, and federal agencies extensively employ GIS technology to assist with the Space Shuttle *Columbia* recovery.

The Texas Geographic Society (TXGS) forms as a nonprofit organization dedicated to promoting GIS excellence in all applications and at all levels of the public and private sectors in Texas. Key aspects of TXGS's efforts include promoting TNRIS, data sharing, GIS education and using GIS for natural hazard analysis and mitigation planning.

TXGS awarded first Hazard Mitigation Planning Grant: begins, with TNRIS, the cooperative development of the Texas Hazard Mitigation Package.

2004   TNRIS enters into agreement with USDA – Farm Service Agency (FSA) for new statewide orthoimagery to update the TOP data from 1995-1996. TCEQ, USGS, and USDA – Natural Resources Conservation Service (NRCS) assist TNRIS with funding.

TGIC publishes 2nd edition of the "*Digital Texas*" Legislative Report. The Base Map Plan is updated and three new layers (weather, groundwater, and special districts) added.

In first Texas Geographic Society Gala: Celebrating the National Map of Texas takes place at the Bob Bullock Texas State History Museum. Event includes high-level State and national speakers and celebrates the many successes of TNRIS and TGIC.

2005   New statewide color infrared imagery is completed and made available via the Internet.

The 1:24,000 scale National Hydrography Dataset (NHD) is completed for the state. This is the foundation for all water-related information in the state.

2006   TNRIS enters into agreements with the Federal Emergency Management Agency (FEMA), the International Boundary and Water Commission (IBWC), and the Lower Colorado River Authority (LCRA) to produce new very high resolution elevation data. **Lidar** technology employs an airborne laser sensor to rapidly and accurately measure terrain elevations.

The Texas General Land Office unveils its new Interactive Land/Lease Mapping System which shows Original Texas Land Survey boundaries, leases, state-owned lands, and new coastal imagery.
TGIC signs National Spatial Data Infrastructure (NSDI) Partnership Agreement with the USGS National Geospatial Programs Office.

GIS ASSET INVENTORY

This section provides an overview of current and planned GIS software and data utilization, agency data development priorities and technological trends. The Texas Legislature directs TGIC to conduct a biennial inventory of its member organizations within State government to identify current and planned GIS projects and to gather information about GIS programs. The inventory was conducted using a Web-based survey designed by TGIC's Steering Committee. The Department of Information Resources (DIR) published the survey and compiled the submitted data. All source data cited in this section is derived from this 2006 TGIC inventory. Follow-on to this survey is anticipated to be conducted by TGIC for local and regional governments in Texas in 2007.

GIS Application Software

All of the TGIC member agencies report using commercial off-the-shelf (COTS) software as their primary GIS software as opposed to customized software produced in-house. The larger agencies also conduct extensive programming customization of GIS COTS software for specific in-house applications and web services.

GIS software can be installed on individual personal computers in a client-based configuration or accessed through a server-based network. Client-based software is an effective choice for agencies seeking to implement GIS technology, and offers cost savings as well as the advantage of simplicity in processing data on a user's local machine. GIS client software is used by 58% of the TGIC reporting agencies, as it is the lowest cost entry into GIS use.

Server-based software enables an organization to support multiple users and centrally manage data for increased efficiency in agencies with complex GIS projects. A GIS server represents a more significant resource investment. Universities and agencies among TGIC member organizations with a strong focus on GIS have utilized a server-based environment, though a number of agencies plan to implement a server-based environment. Currently 55% of TGIC reporting agencies are using a GIS server configuration and 17% have plans to migrate, for a total of 72% of TGIC agencies using server technology in the near future.

TGIC Agencies: GIS Software Environment

- 3%
- 10%
- 37%
- 18%
- 32%

Legend:
- Client-based only
- Client and server-based
- Client (now) and server-based (planned)
- No GIS software
- Server-based only
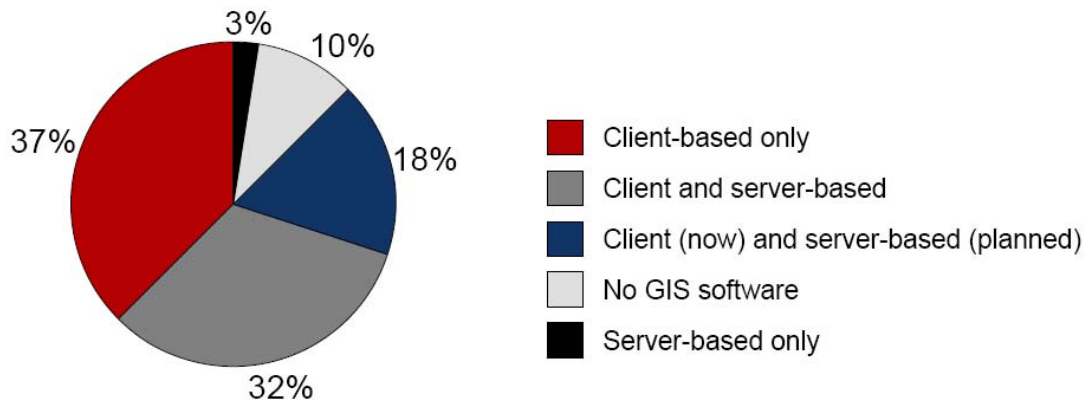
Geodatabase Software
A geodatabase joins data features such as districts, boundaries, and orthophotography and stores them together in a relational database. This allows for concurrent use in multiple locations, secure access to GIS data, minimized duplication of effort, and simplified data maintenance. A geodatabase provides a common framework for sharing a GIS, builds logical relationships between different types of data, validates data, and controls access. It also provides tools for analysis and automating tasks, and is useful for accessing and managing large datasets as the GIS information available to be mapped and analyzed continues to grow.

Fifty percent of the TGIC agencies use a centralized geodatabase server, and 14% are planning to add this capability soon. As new projects are started and sources of funding established, an agency may purchase a geodatabase server for use on a particular project. New projects may then require purchase of a secondary geodatabase server, perhaps from a different provider. ESRI products account for 86% of the primary geodatabase software purchased among TGIC agencies. A greater diversity in geodatabase choices is seen in the market for secondary servers, where ESRI has a 54% share and other companies such as Informix, IBM, Microsoft, and Oracle account for the remaining 46%.

Agency Dataset Reporting – Licensed and Fee-based Services
Eight agencies reported using a total of 11 licensed datasets, covering themes such as oil and gas wells, districts and boundaries, transportation infrastructure, and aerial imagery. Vendors sell a license to use their dataset with varying constraints on distribution of the proprietary data. Fee-based datasets function on a subscription model; notably there were no fee-based datasets reported in use by TGIC agencies. Nationally there is a trend toward dataset acquisition through licensed and fee-based Web services instead of in-house development of original datasets. Reporting on licensed data is consistent with this trend, but fee-based data is not part of the picture at Texas state agencies.

Agency Priorities – New Dataset Development
As part of the inventory, TGIC agencies identified priorities for development and distribution of new geospatial datasets. Their priorities indicate the importance of new aerial imagery, updated transportation and addressing data in particular. These datasets are essential for a broad range of applications of GIS technology by these agencies.

Digital aerial photography	28%
Transportation and addressing	24%
Elevation/Digital Elevation Model	12%
Critical facilities and infrastructure	12%
Hydrography	8%
Land use and land cover	6%
Districts and political boundaries	4%
Other	4%
Parcels	2%
Survey GPS control	2%

Appendix C

2005 TEXAS STRATEGIC PLAN FOR INFORMATION RESOURCES MANAGEMENT

A Model for
Shared Success

AN ENTERPRISE APPROACH FOR TECHNOLOGY IN TEXAS

The statewide goals for information resources management will require substantial coordination among all levels of government (see reverse). In its 2004 report, *Foundation for Change,* DIR introduced its model for sharing and managing the state's technology investment. The Texas Model of the Enterprise is a refinement of this model, reflecting new legislation and the vision of greater cost efficiencies, improved services, and a shared technology infrastructure that is flexible, innovative, and supports agencies in meeting their missions.

The base of the Texas Model—the statewide infrastructure layer—delivers shared functions that, similar to utility services, are needed by all agencies, but are not unique or specific to an individual agency.

The Texas Model of the Enterprise

Building on the statewide infrastructure layer is the collaboration layer. This layer supports the shared development of guidelines and practices that contribute to effective enterprise management of information and communications technology. One practice includes guiding the development of integrated architectures that advance data and information sharing among agencies. Another practice employed in this layer is establishing a collaborative approach for evaluating opportunities to standardize agency business processes where common needs exist. Additionally, this layer supports the adoption of statewide technology rules and standards.

Leveraging each of the preceding layers, the most important is the agency layer, which supports the unique functionality that an agency must deliver to successfully support its mission. By unifying Texas government through coordinated commitments and shared responsibilities, the state can strategically align its significant investment in information and communications technology with agency business needs.
Together, the layers of the Texas Model of the Enterprise comprise the vision for effective technology planning and service delivery, promoting shared success throughout the enterprise.

The Texas Model of the Enterprise (above) and the related objectives, strategies, and goals (reverse side) are detailed in *Shared Success: Building a Better Texas through Shared Responsibilities*, the 2005 State Strategic Plan for Information Resource Management. *Shared Success* was published in December 2005 by the Texas Department of Information Resources and is available on the DIR web site. www.dir.state.tx.us.

Acknowledgments

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