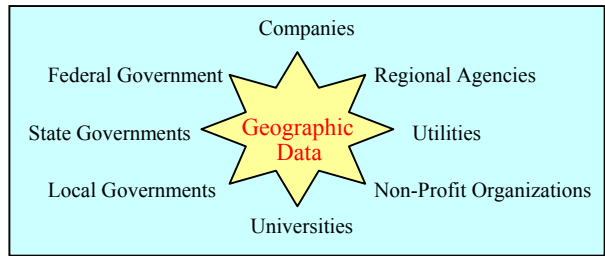




WV Framework Data – November 2001 Status Report

OVERVIEW: Originated by the Federal Geographic Data Committee (FGDC), framework is a national initiative to develop a readily available set of basic geographic data (http://www.fgdc.gov/). Creating digital data can cost millions of dollars, but when there is a network for data sharing via partnerships, an organization’s individual costs are substantially reduced. Framework data forms the foundation for both the West Virginia and National Spatial Data Infrastructures in which valuable geographic information is accessed through data clearinghouses and uniform data standards are promoted.



Data Sharing Saves Money \$\$\$\$\$\$\$\$\$\$

DATA THEMES: Framework data are divided into two categories: core data and applications data. Core data are used and shared by most everyone to create digital mapping products, whereas applications data are combined with core data for specific mapping projects.

- Core Data: Hydrography, Transportation, Orthoimagery, Elevation, Cadastral, Geodetic Control, Governmental Units, Topographic Maps

- Applications Data: Soils, Geology, Land Cover, Health Care, Criminal Justice, Cultural and Demographics, Natural Resources, Environment

All framework data themes employ a type of spatial data model. For example, framework data such as orthoimages employ a raster data model, while other framework data like hydrography may employ a vector-based model where each occurrence of a feature is assigned a unique, permanent feature identification code. Certain data models also incorporate linear referencing and geocoding. In the future, some framework data may migrate to an object-oriented data model.

FRAMEWORK PRINCIPLES: Approved mapping standards, along with cooperative efforts of local, state, federal, and private organizations, are necessary to create reliable, consistent framework data. West Virginia framework data should adhere to the following principles:


- *Data Access:* Framework data must be widely accessible through data clearinghouses that standardize the systematic collection and management of information.
- *Data Charges:* Charges for access to framework data are limited to the costs of providing access and dissemination.
- *Data Certification:* Framework data are complete, quality checked, and geometrically and topologically clean.
- *Standards:* Framework data must conform to approved technical and administrative standards.
- *Metadata:* FGDC metadata is preferred for all framework data, but abbreviated metadata is acceptable if it includes the following summary information: description, scale, location, attribute documentation, source lineage, coordinate system, and file format.
- *Coordinate Referencing System:* The use of longitude and latitude is encouraged for framework data, although the following coordinate systems are acceptable: (1) Universal Transverse Mercator (UTM), Zone 17 North, map units in meters, for statewide GIS data sets, and (2) WV State Plane Coordinate System (SPCS), North and South Zones, map units in U.S. feet, for countywide data sets. Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83) and vertical coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD 88).
- *GIS File Format:* Framework data are in a digital format that can easily import into a Geographic Information System.
- *Seamless:* Framework data are seamless across political or other collection area boundaries
- *Coincidental Boundaries:* Framework data are consistent among themes, such as coincidental alignment of a stream and political boundary.
- *Multiple Resolutions and Generalization:* Framework data consists of multiple resolutions to satisfy different users' needs. To avoid independent data collection, more detailed and complete data sets are generalized for those agencies requiring less detailed data that cover a large area.

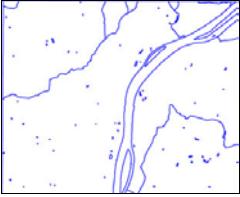
FRAMEWORK STATUS: Leadership, cooperation, and coordination are required among numerous agencies for framework to mature in West Virginia. Presently, framework for the State is progressing on four fronts: (1) development of new digital mapping standards; (2) creation of communicative networks and business partnerships to coordinate data sharing; (3) collection of more current, higher resolution data; and (4) promotion of GIS to the statewide community. For most framework data layers, the ultimate goal is to achieve statewide coverage and integration of more current, higher-resolution thematic data. In the future, most framework data will be collected at mapping scales of 1:24,000 or larger.

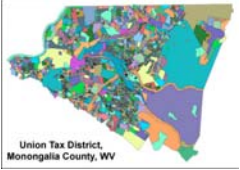
Below is the framework status of eleven core and application data themes in West Virginia. For each framework data theme there is a brief description, mapping status, ultimate mapping goal, and data producer information, including originator(s) of data, resolution, currentness, and the percentage of the State completed.

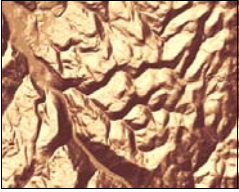
If you have any questions or remarks about this report or want to participate in framework, please contact Kurt Donaldson of the WV GIS Technical Center or the State GIS Coordinator, Craig Neidig.


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TRANSPORTATION					
	<p>DESCRIPTION: Transportation networks and facilities to include roads, trails, railroads, waterways, airports, bridges and tunnels. Road centerlines should incorporate street address ranges for geocoding applications and a linear referenced system for routing applications.</p>				
	<p>COORDINATION: Both horizontal integration (i.e., E-911 road centerlines with county assessors' tax parcels) and vertical integration (coordination among federal, state, and county transportation data producers) are required to reduce independent data collections. Thus data standards, maintenance procedures, and business relationships must be established.</p>				
MAPPING STATUS:					
<p>1) Environmental Systems Research Institute (ESRI): ESRI, a geographic information software company, is sponsoring a transportation data model consortium that will enable geographic information system (GIS) users to take greater advantage of ArcGIS 8 and the new geodatabases. http://www.esri.com/news/releases/00_4qtr/unetrans.html</p> <p>2) Federal Geographic Data Committee (FGDC): The Ground Transportation Subcommittee (GTS) promotes the coordination of geo-spatial data for ground transportation related activities. The NSDI Framework Transportation Identification Standard is a first draft of a proposed identification standard for segmenting and identifying unique road segments. http://199.79.179.77/gis/fgdc/</p> <p>3) National Park Service (NPS): The Rivers & Trails Program of the National Park Service is in the process of compiling state trails at a nominal scale of 1:100,000. http://wvgis.wvu.edu/data/statetrails.html</p> <p>4) U.S. Census Bureau (Census): The U.S. Census Bureau (Census Bureau) intends to issue a Request for Proposal (RFP) this fall to contract services in support of the Master Address File (MAF)/TIGER Modernization Program. The objectives of this program are to align existing 1:100,000-scale roads, hydrography, railroads, structures, landmarks, pipelines, power lines and other TIGER database features to a much greater locational accuracy (3-meter horizontal accuracy) for all of the nation's 3,232 counties by FY 2008. http://www.census.gov/geo/mod/maftiger.html</p> <p>5) U.S. Department of Transportation (US DOT): The Federal Highway Administration (FHWA) is in the process of enhancing the National Highway Planning Network (NHPN), a comprehensive network database of the nation's major highway system. The current 1:100,000-scale geographic database consists of over 400,000 miles of the nation's highways comprised of Rural Arterials, Urban Principal Arterials and all National Highway System routes (http://wwwcf.fhwa.dot.gov/hep10/gis/gis.html). The National Transportation Atlas Data (NTAD) is a set of transportation-related geospatial data for the United States compiled by the Bureau of Transportation Statistics (BTS). The data consist of transportation networks such as the NHPN, transportation facilities, and other spatial data used as geographic reference. http://www.bts.gov/gis/ntatlas/index.html</p> <p>6) U.S. Geological Survey (USGS): The 1:24,000-scale, 7.5-minute topographic quadrangle is the primary product of the U.S. Geological Survey's (USGS) National Mapping Program. When transportation features of topographic maps need to be revised, a USGS unit compiles information (if it exists) from the appropriate federal, state, and local agencies. The Digital Line Graph (DLG) Conversion Project is a partnership of the USGS and the WV GIS Technical Center to collect digital vector representations of roads, trails, bridges, exit ramps, tunnel portals and other detailed transportation features derived from USGS 1:24,000-scale topographic maps. DLG road attribute data is limited to road classification and federal/state highway route numbers. http://wvgis.wvu.edu/data/dlg-road.html</p> <p>7) U.S. Forest Service (USFS): The Monongahela National Forest maintains a trail and road geographic database for 3,300 miles of roads (http://wvgis.wvu.edu/data/mnf_roads.html). The spatial databases originated from 1:24,000-scale USFS Cartographic Feature Files (http://wvgis.wvu.edu/data/cff.html) and are linked to Oracle INFRA attribute tables which include linear referencing measures for event themes. http://www.fs.fed.us/news/roads/documents.shtml</p> <p>8) WV Department of Transportation (WVDOT): The Division of Highways plans, designs, builds and maintains more than 34,000 miles of state roads. Only paper maps of transportation data are accessible to the public from WVDOT. Refer to http://www.wvdot.com/7_tourists/7d1_availablemaps.htm. The Appalachian Transportation Institute (ATI) at Marshall University and the WV GIS Technical Center at WVU are developing a GIS-Transportation strategic plan for WV DOH. Project Number TRP 99-32 (http://www.marshall.edu/ati/research/projects.htmlx).</p> <p>9) WV Enhanced 911 Council: WV Public Service Commission (PSC) has approved for Verizon to fund a statewide E-911 mapping program for street addresses and road centerlines. Governor Wise has appointed a Street Addressing and Mapping Board to implement the project.</p>					
DATA PRODUCERS:					
<i>DATASET NAME</i>	<i>ORIGINATOR(S)</i>	<i>SCALE</i>	<i>MAPPING UNIT</i>	<i>% WV</i>	<i>CURRENT-NESS</i>
TIGER	U.S. Census	1:100,000	County	100	2000
National Transportation Atlas	U.S. DOT	1:100,000	State	100	2001
County Highway Maps (Not Vector)	WV DOT	1:63,500	County	100	Variable
Digital Line Graphs (DLG)	USGS	1:24,000	7.5 Min. Quad	55	1950-1997
Cartographic Feature Files (CFF)	USFS	1:24,000	7.5 Min. Quad	15	1995
E-911 Road Centerlines & Addresses	WV E-911 Council	1:1200 to 1:100,000	County	5	1999-present
Local Road Databases	County/City Govts.	1:1200 to 1:4800	Jurisdiction	?	Variable
New Roads	WV DOT / Contractors	Survey-scale	Planned Route	N/A	Variable
Major Trails	NPS, WV DNR, USFS	GPS to 1:100,000	Jurisdiction	90	Variable
ULTIMATE GOAL: Statewide 1:24,000 or larger scale, geocoded, linear referenced transportation database.					


HYDROGRAPHY					
<p>DESCRIPTION: The National Hydrography Dataset (NHD) is a comprehensive set of digital spatial data that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells. Within the NHD, surface water features are combined to form "reaches," which provide the framework for linking water-related data to the NHD surface water drainage network. These linkages enable users to access information about the connectivity and flow direction of stream networks as well as to provide a system for a linear referencing.</p>					
	MAPPING STATUS:				
	<ul style="list-style-type: none"> High resolution (1:24,000-scale or larger) NHD mapping is completed for 2 sub-basins (8-digit HUC) and has been initiated for another 16 sub-basins by conflating 1:24,000-scale hydrography USGS DLGs/USFS CFFs or WV DNR GPS'd watersheds with 1:100,000-scale data. Status graphic at http://wvgis.wvu.edu/statusgraphics/nhdstatus.html. The FGDC Framework Demonstration Project Website is now open and public. The website can be accessed at http://gis.prologic-inc.com/fgdc 				
DATA PRODUCERS:					
<i>DATASET NAME</i>	<i>ORIGINATOR(S)</i>	<i>SCALE / RESOLUTION</i>	<i>MAPPING SYSTEM UNIT</i>	<i>% WV</i>	<i>CURRENT-NESS</i>
National Hydrography Dataset	USGS / EPA	1:100,000 1:24,000	Watershed Watershed	100 6	2000 2000
Digital Line Graphs (DLG)	USGS	1:24,000	7.5 Min. Quad	67	1950-1997
Cartographic Feature Files (CFF)	USFS	1:24,000	7.5 Min. Quad	15	1995
WV DNR Watershed Files	WV DNR	GPS	Watershed	7	2000
Local Government Databases	County/Municipal Governments	1:1200 to 1:4800	Jurisdiction	?	Variable
<p>ULTIMATE GOAL: Statewide high resolution (1:24,000 or larger scale) National Hydrography Dataset (NHD).</p>					

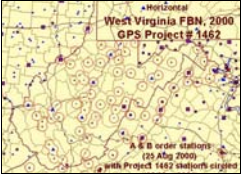
CADASTRAL					
<p>DESCRIPTION: Cadastral information refers to land ownership. Other framework data such as orthoimagery, transportation, hydrographic, and coordinate geometry are required to create a seamless digital tax parcel district file from hundreds of hardcopy maps or deed surveys. Vector-based cadastral data should be geometrically and topologically clean and linked to a single, comprehensive parcel database.</p>					
 <p style="font-size: small;">Union Tax District, Monongalia County, WV</p>	MAPPING STATUS:				
	<ul style="list-style-type: none"> “Statewide Procedures for the Manual Maintenance of Surface Tax Maps” should be updated to incorporate digital parcel mapping standards. To reduce independent data collection, the Mineral Lands Mapping Program (MLMP) and assessors’ mapping procedures and standards should be made similar. WV DTR evaluation of CAMA parcel database integration with GIS. Meeting at Senator Byrd’s office on July 10 to discuss the possibility of securing a grant in order to create a statewide Land Records Modernization Program on behalf of the County Assessors throughout West Virginia. 				
DATA PRODUCERS:					
<i>DATASET NAME</i>	<i>ORIGINATOR(S)</i>	<i>SCALE / RESOLUTION</i>	<i>MAPPING SYSTEM UNIT</i>	<i>% WV</i>	<i>CURRENT-NESS</i>
Surface Tax Parcels	County Assessors, WV DTR	Survey scale to 1:24,000	Tax District	22	Variable
<p>ULTIMATE GOAL: Statewide, seamless, vector-based surface tax parcel mapping system periodically updated with higher resolution and more current tax data.</p>					

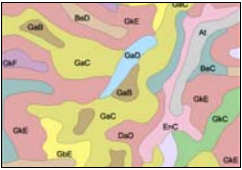
ELEVATION					
DESCRIPTION: Terrain represented by contour lines or by a Digital Elevation Model (DEM), an array of elevations for ground positions at regularly spaced intervals.					
	MAPPING STATUS:				
	<ul style="list-style-type: none"> • DOI high-priority program revising sixteen USGS 1:24,000-scale topographic maps with contour updates in mountaintop mining areas of southern WV. • USGS creating 10-meter, Level 2 DEMs at State border and New River Valley. • Mineral Lands Mapping Program (MLMP) creating 10-meter, Level 2 DEMs using the ArcInfo TOPOGRID command. Coordination is necessary between the state and USGS to derive similar 10-meter products. See status graphic at http://wvgis.wvu.edu/statusgraphics/dem10m_status.html • USGS 1:24,000-scale hypsography DLGs will continue to be created at WVU until superceded by new technologies. USGS, NRCS, MNF, and WVU are coordinating 24k DLG hypso cost sharing. • USGS State Liaison Bruce Bach leading a regional elevation group (WV, KY, TN) to coordinate affordability, reliability, and licensing policies of emerging technologies like IFSARE and LIDAR. 				
DATA PRODUCERS:					
<i>DATASET NAME</i>	<i>ORIGINATOR(S)</i>	<i>SCALE / RESOLUTION</i>	<i>MAPPING SYSTEM UNIT</i>	<i>% WV</i>	<i>CURRENT-NESS</i>
National Elevation Dataset	USGS	30 meter	Seamless Nationwide	100	2000
Digital Line Graph (DLG) Contours and Spot Elevations	USGS	1:24,000	7.5 Min. Quad	52	1950-1997
10-meter DEMs (MLMP)	USGS,WVGES	10 meter	7.5 Min. Quad	30	Variable
10-meter DEMs (USGS)	USGS	10 meter	7.5 Min. Quad	15	Variable
Local Government Databases	County/Municipal Governments	1:1200 to 1:4800	Jurisdiction	?	Variable
ULTIMATE GOAL: Statewide higher resolution (10 meters or smaller) surface elevation data.					

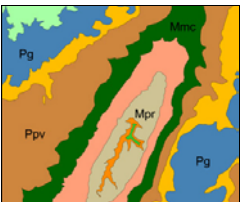
GOVERNMENTAL UNITS					
DESCRIPTION: Governmental unit boundaries for counties, incorporated places, and minor civil divisions. Each of these features includes the attributes of name and the applicable Federal Information Processing Standard (FIPS) code.					
	MAPPING STATUS:				
	<ul style="list-style-type: none"> • USGS 1:24,000-scale boundary DLGs will form the framework for governmental unit boundaries (http://wvgis.wvu.edu/statusgraphics/standarddlgstatus.html) • Coordination at the state and county level is required to collect current, higher resolution boundaries for incorporated areas and other minor civil division boundaries. 				
DATA PRODUCERS:					
<i>DATASET NAME</i>	<i>ORIGINATOR(S)</i>	<i>SCALE / RESOLUTION</i>	<i>MAPPING SYSTEM UNIT</i>	<i>% WV</i>	<i>CURRENT-NESS</i>
Digital Line Graphs (DLG)	USGS	1:24,000	7.5 Min. Quad	73	1950-1997
Cartographic Feature Files (CFF)	USFS	1:24,000	7.5 Min. Quad	15	1995
Local Government Databases	County/Municipal Governments	1:1200 to 1:4800	Jurisdiction	?	Variable
ULTIMATE GOAL: Statewide 1:24,000-scale governmental unit boundaries.					


ORTHOIMAGERY					
<p>DESCRIPTION: An orthoimage is a georeferenced image prepared from a aerial photograph or other remotely sensed data from which displacements of images caused by sensor orientation and terrain relief have been removed. An orthoimage has the same metric properties as a map and has a uniform scale. Orthoimages with pixel resolution one meter or finer are most useful for collecting detailed framework features.</p>					
	MAPPING STATUS:				
	<ul style="list-style-type: none"> • 1996-99 one-meter CIR orthophotos are accessible from either the WV Department of Environmental Protection or the WV GIS Technical Center. • A WV Remote Sensing Cooperative was established in September 2001 to catalog and share remote sensing inventories. 				
DATA PRODUCERS:					
<i>DATASET NAME</i>	<i>ORIGINATOR(S)</i>	<i>SCALE / RESOLUTION</i>	<i>MAPPING SYSTEM UNIT</i>	<i>% WV</i>	<i>CURRENT-NESS</i>
Landsat 7	USGS	1:40,000 (30 meter)	Path / Row	100	2000-present
USA Select SPOT	SPOT	1:24,000 (10 meter pan)	Path / Row	100	2000
USGS DOQQs (CIR)	USGS	1:12,000 (1 meter)	7.5 Min. Quad	100	1996-99
Local Government Databases	County/Municipal Governments	1:1200 to 1:4800 (1 foot)	Jurisdiction	?	Variable
<p>ULTIMATE GOAL: Statewide multiple resolution digital orthoimagery ranging from 30-meter to 1-foot pixels.</p>					

TOPOGRAPHIC MAPS					
<p>DESCRIPTION: A scanned topographic map provides useful background GIS information. A Digital Raster Graphic (DRG) is a scanned image of a U.S. Geological Survey (USGS) topographic map, whereas a Softcopy Primary Base Series (PBS) is a raster image of the published U.S. Forest Service (USFS) topographic map. An unclipped scanned image includes all marginal information, while a clipped or seamless scanned image clips off the collar information.</p>					
	MAPPING STATUS:				
	<ul style="list-style-type: none"> • A revised DRG product standard released in May 2001 allows for higher scan and color resolutions. http://mcmweb.er.usgs.gov/drg/drg_standard_change.html • A draft Joint Funding Agreement (JFA) between the USGS and WV will create DRGs for 75 FS Single-Edition quads using non-standard colors at 500 dpi. • WV GIS Technical Center has published NAD83 DRGs on the Data Clearinghouse. • A 1:24,000-scale USGS Topographic Map Series status graphic is posted at http://wvgis.wvu.edu/statusgraphics/toporevisions.html. 				
DATA PRODUCERS:					
<i>DATASET NAME</i>	<i>ORIGINATOR</i>	<i>SCALE / RESOLUTION</i>	<i>MAPPING SYSTEM UNIT</i>	<i>% WV</i>	<i>CURRENT-NESS</i>
Digital Raster Graphic (DRG)	USGS	1:24,000 to 1:250,000	USGS Quad Series Index	100	1950-1997
Primary Base Series (PBS) Soft-copy	USFS	1:24,000	7.5 Min. Quad	22	1995
<p>ULTIMATE GOAL: Consistent and current scanned topographic maps.</p>					

GEODETIC CONTROL					
DESCRIPTION: Geodetic control provides a common reference system for establishing the coordinate positions of all geographic data.					
	<p style="text-align: center;">MAPPING STATUS:</p> <ul style="list-style-type: none"> • WV High Accuracy Reference Network (HARN) for Federal Base Network (FBN) and Cooperative Base Network (CBN) Stations completed in Year 2000. • The WV State Code regarding coordinate systems, datums, and other geodetic control information needs updating. http://wvgis.wvu.edu/otherdocs/spcs_wvcode.pdf 				
	DATA PRODUCERS:				
<i>DATASET NAME</i>	<i>ORIGINATOR(S)</i>	<i>SCALE / RESOLUTION</i>	<i>MAPPING SYSTEM UNIT</i>	<i>% WV</i>	<i>CURRENT-NESS</i>
Geodetic Control Stations	NGS, WVALS	Survey Scale	Point Location	N/A	N/A
ULTIMATE GOAL: Very high-accuracy network of permanently monumented geodetic control points.					

SOILS					
DESCRIPTION: The Soil Survey Geographic Database (SSURGO) is a detailed, field verified inventory of the kinds and distribution of soils on the landscape, whereas the State Soil Geographic Database (STATSGO) is a generalized soils database.					
	<p style="text-align: center;">MAPPING STATUS:</p> <ul style="list-style-type: none"> • SSURGO mapping in progress for Monongalia, Marion, and Greenbrier Counties. 				
	DATA PRODUCERS:				
<i>DATASET NAME</i>	<i>ORIGINATOR(S)</i>	<i>SCALE / RESOLUTION</i>	<i>MAPPING SYSTEM UNIT</i>	<i>% WV</i>	<i>CURRENT-NESS</i>
STATSGO	NRCS	1:250,000	State	100	1994
SSURGO	NRCS	1:24,000 or larger scale	7.5 Min. Quad	40	1997-present
ULTIMATE GOAL: Statewide SSURGO maps.					

GEOLOGY					
DESCRIPTION: Bedrock and surficial geology, coal-bed mapping, oil and gas exploration.					
	<p style="text-align: center;">MAPPING STATUS:</p> <ul style="list-style-type: none"> • WVGES interactive web site provides information about the geologic features, structure, thickness, and mining status for 39 minable coalbeds in 9 WV Counties. • The North American Geologic Map Data Model Steering Committee is developing mapping standards for digital geological mapping data for inclusion into the National Geologic Map Database as required by the National Geologic Mapping Act. • Scanned images of early 1900's geological county maps available for ten counties. 				
	DATA PRODUCERS:				
<i>DATASET NAME</i>	<i>ORIGINATOR(S)</i>	<i>SCALE / RESOLUTION</i>	<i>MAPPING SYSTEM UNIT</i>	<i>% WV</i>	<i>CURRENT-NESS</i>
Coal Bed Mapping Program	WVGES	1:24,000	7.5 Min. Quad	16	1999-present
Bedrock Geology	WVGES	1:24,000	7.5 Min. Quad	1	1999-present
Oil and Gas	WVGES / WVDEP	Variable	Point Location	N/A	N/A
ULTIMATE GOAL: Statewide geologic map at 1:24,000 scale.					

LAND COVER					
DESCRIPTION: Land cover relates to the type of feature present on the surface of the earth. Both land cover datasets, WV-USGS Gap Analysis Program (GAP) and National Land Cover Dataset (NLCD), were created from classified 1992-94 Landsat TM imagery purchased as part of the Multi-Resolution Land Characteristics Consortium (MRLC) program.					
		MAPPING STATUS:			
		<ul style="list-style-type: none"> • The U.S. Forest Service and Westvaco Corporation maintain their own land cover data sets for timber management. • WV Division of Forestry, WV Division of Natural Resources, and WVU's Appalachian Hardwood Center are conducting GIS mapping for all eight State Forests. GIS data layers include management compartments, forest cover, timber stands, and recreational data. • The Natural Resource Analysis Center (NRAC) at WVU will release a more current WV-GAP Land Cover dataset in FY 2003. 			
DATA PRODUCERS:					
<i>DATASET NAME</i>	<i>ORIGINATOR(S)</i>	<i>SCALE / RESOLUTION</i>	<i>MAPPING SYSTEM UNIT</i>	<i>% WV</i>	<i>CURRENTNESS</i>
WV-GAP	WVU-USGS	1:40,000 (30 meter)	State	100	1992-94
NLCD	USGS	1:40,000 (30 meter)	State	100	1992-93
ULTIMATE GOAL: Current and higher resolution statewide land cover data sets.					

CORE FRAMEWORK MAPPING GOALS: A primary focus of the GIS Technical Center is to create, inventory, or publish commonly used geographic datasets. The primary mapping goal for each of the eight core framework datasets is re-stated (boldface type) below, along with the GIS Technical Center's current involvement with that framework layer (italic type).

(1) CADASTRAL: Statewide, seamless, vector-based surface tax parcel mapping system periodically updated with higher resolution and more current tax data.

Assist the WV Dept. of Tax and Revenue in establishing digital mapping standards for cadastral data.

(2) ELEVATION: Statewide higher resolution (10 meters or smaller) surface elevation data.

Create USGS-certified, 10-meter DEMs from 1:24000-scale DLG hypsography.

(3) GEODETIC CONTROL: Very high-accuracy network of permanently monumented geodetic control points.

Assist the Land Surveyors in revising the WV State Code regarding geodetic control information.

(4) GOVERNMENTAL UNITS: Statewide 1:24,000-scale governmental unit boundaries.

Create single, current GIS files for county boundaries and minor civil divisions such as incorporated areas.

(5) HYDROGRAPHY: Statewide high resolution (1:24,000 or larger scale) National Hydrography Dataset (NHD).

Create statewide 1:24,000-scale DLG hydrography for High Resolution NHD mapping.

(6) ORTHOIMAGERY: Statewide multiple resolution digital orthoimagery ranging from 30-meter to 1-foot pixels.

Establish a WV Remote Sensing Cooperative.

(7) TOPOGRAPHIC MAPS: Consistent and current scanned topographic maps.

Create collarless, NAD83 DRGs from all current USGS Primary Series and USFS Single-Edition topographic maps.

(8) TRANSPORTATION: Statewide 1:24,000 or larger scale, geocoded, linear referenced transportation database.

Assist the Appalachian Transportation Institute (ATI) at Marshall University in developing a GIS-Transportation strategic plan for WV DOH. Assist the WV E-911 Council in establishing a comprehensive mapping program.