



1. Organizational Approach to GIT:

The Virginia Department of Forestry (DOF) (<http://www.dof.state.va.us>), under the Secretary of Commerce and Trade (<http://www.commerce.state.va.us/>), has been an extensive user of GIT, including GIS, remote sensing (RS), and GPS. Currently, DOF uses GIT on individual forestry applications; however, plans are in place to integrate GIT with DOF's non-spatial databases and support enterprise-wide use of GIS. DOF receives general funds from state revenues for some of its GIT activities, but is supplemented by grant funding where projects take advantage of DOF's GIT resources. Dedicated GIT staffing at DOF consists of one full-time GIS Manager and one full-time GIS/GPS Analyst. DOF also has one grant-funded part-time GIS Analyst who is dedicated to a Forest Fire Hazard Mitigation grant, as well as other employees who work with GIT regularly. The GIS Manager is the primary DOF contact for all GIT matters. Responsibilities of the GIS Manager include collection, storage, management, and analysis of data, and GI distribution and training of personnel. Additional duties are the oversight of maintenance and efficient use of GIT resources. The majority of GIT use and staff are located at the state headquarters in Charlottesville. Outside the headquarters office, some of DOF's water quality engineers use GIS, and State Forest personnel use GIS and GPS. There are no Departmental policies for the use of GIT; however informally, it is a DOF priority, and its use has been beneficial for many applications. However, DOF is currently grappling with how to best provide field personnel with geographic data and technology to meet business objectives. This is complicated by limited funding and staffing, as well as directional and methodological uncertainties the Department faces as it moves forward with GIT.

2. GIT Applications and Data Utilized:

DOF uses GIT for numerous applications. For **forest health**, DOF has used aerial surveys from 1984 to the present to track annual gypsy moth defoliation using GIS. DOF also uses GIS to manage **state lands**; evaluate forest **fire** risk; quantify and map timberlands potentially available for production; and to track riparian buffers established for tax credit on **private lands**. In addition, some DOF engineers use GIS to assist in monitoring **water** quality. Current GPS use includes mapping of features such as tree plantings on **state lands**; prescribed **fire** applications; **forest health** applications such as aerial pesticide sprays; and location of plot centers in DOF's **forest characterization** efforts with the U.S. Forest Service (USFS) on the Forest Inventory and Analysis (FIA) program. DOF presently uses U.S. Geological Survey (USGS) digital orthophotos, SPOT imagery and LANDSAT imagery in its RS efforts. A statewide forest land use and **land cover** mapping project uses FIA plot data and RS image classification. Additional RS projects involve economic application of **land cover** change detection for monitoring of tax credit compliance on **private lands** and in the future for identifying disturbed areas. DOF is working with Virginia Polytechnic Institute to develop RS image classification methodologies, which are used in the above analyses.

DOF uses GIS to calculate forest **fire** risk by aggregating ranking for fire ignition, fire spread, and value of threatened property. Fire risk was mapped in 1998 for the entire state using field foresters' expertise to delineate risk areas. This analysis is currently being revisited and is now being augmented by the creation of a GIS database containing locations of woodland home communities, fire suppression resources and fire incidents. Plans are in place to make this forest fire hazard mitigation information available to DOF personnel and the citizens of the Commonwealth using an Internet mapping application as a **communication** outlet. DOF also uses GIS in its state forest management activities. Stands on these **state lands** have been delineated using digital orthophotography and GPS and are updated as changes to the database occur.

DOF performed a statewide Forest Resource Assessment in 1995 using GIS analysis of land use and 1990 population densities. This **forest assessment** was designed to identify where commercially available timber exists, and focused primarily on **private lands**. DOF is currently examining ways to repeat and

enhance this analysis using 2000 Census data in conjunction with the forest land use layer being generated by DOF using RS technology. The aim will be to address the importance of forest lands for ecological, economic, water quality, and recreational benefits to the Commonwealth. The results of this newer analysis will be used to address one of the agency's primary strategic goals: Conservation of the Forest Land Base. DOF hopes to use an Internet mapping application similar to that for fire hazard mitigation to make the resulting assessment GIS layers available to DOF field personnel and the public at large.

DOF uses ArcView 3.2, ArcView 8.1, Spatial Analyst, ArcInfo 8.0, ArcGrid, ArcTin, and ArcPress software. DOF also has 74 Corvallis Microtechnology (CMT) mapping-grade GPS units and PC-GPS 3.6d2 licenses. In regards to RS, DOF uses ERDAS Imagine Professional version 8.4 software. Generally, DOF uses RS data and methodologies to generate and use broad-scale information, GPS to map features at the field scale, and GIS to create and maintain all scales of geographic information. GPS units are assigned to field personnel and are being used to map features. GPS data are not currently integrated into a GIS database, and a GPS "data harvesting" protocol may be developed in the future.

3. Statewide and Other GIT Linkages:

The Virginia Geographic Information Network (VGIN) is the official lead statewide organization in the Commonwealth for GI/GIT (<http://www.vgin.state.va.us/>). VGIN's mission is to facilitate the cost-effective development and use of spatial data, GIS, and related technologies in organizations throughout the Commonwealth, and maintains the state metadata clearinghouse. Virginia's two most prominent coordination groups specifically addressing statewide GI/GIT coordination are the Virginia Geographic Information Network (VGIN) Advisory Board and the Virginia Association of Mapping and Land Information Systems (VAMLIS). The VGIN Advisory Board was established to advise VGIN on issues related to the exercise of its powers and duties (www.vgin.state.va.us). VAMLIS is a grassroots group of individuals from throughout Virginia meeting to develop the foundation for a statewide, nonprofit membership association. DOF's GIS Manager participates in VGIN's Natural Resources Managers Workgroup, a group designed to give VGIN guidance about data and technology priorities for those agencies working in the natural resources fields. DOF also submits metadata about DOF-generated GIS layers to VGIN's metadata clearinghouse. Whenever possible, DOF participates in GIT education and outreach events sponsored by VGIN.

The Virginia Metadata Clearinghouse is available through the VGIN web site at (<http://www.vgin.state.va.us/>). The Clearinghouse currently includes FGDC standard metadata and FGDC compliant metadata "Lite" for state agencies and organizations in Virginia and access to additional Clearinghouses.