



### ***1. Organizational Approach to GIT:***

The Maryland Department of Natural Resources (DNR) (<http://www.dnr.state.md.us>) Forest Service (<http://www.dnr.state.md.us/forests>) is an active user of GIT. Most use is on an individual project level, rather than enterprise-wide. GIS technology is used widely in the field offices by staff via desktop computers, and laptops in the field. However, GIT use is only a component of most Service personnel's regular responsibilities. The Service's GIS Geomatics Lab provides support to 74 GIS/GPS users and GIS data developers throughout the Service's four regions, as well as those stationed at headquarters. The DNR itself has a Geographic Information Services Division (GISD) that provides department-wide mass production services, and has several GIS/imagery projects. These data sets are placed on CD and are distributed and used throughout all Service GIT user levels. The role of the Service's GIS Coordinator is to coordinate with the DNR GIS Council, the Maryland State Geographic Information Committee (MSGIC), the Federal Emergency Management Agency (FEMA), the U.S. Forest Service (USFS) and the Department of Defense where GIT/GIS issues are involved. The Coordinator also fulfills GIS project grants as required, and is responsible for the research and development of GIT solutions to the Service's data needs by providing reports and GIS analyses to program directors. The Service recognizes the need for and the benefits of having a GIT enterprise data management system and is taking steps towards this goal in cooperation with other DNR units. The DNR is researching enterprise GIT solutions through its GIS Council and GIS Steering Committee, which would allow for widespread data sharing and internet data editing. Although no formal policies for GIT exist, the Service maintains a series of cooperative agreements with various units within the DNR as well as other federal and state agencies for data sharing and product development. Furthermore, DNR is in the process of developing an agency wide GIT/GIS policy paper for fiscal year 2003, which the GIS Council will forward to the GIS Steering Committee for final review and recommendation before being signed by the Department Secretary. GIT has faced several hurdles within the department during implementation. Staff training has been a constant concern with lack of proper training leading to costly errors in data production, lost data, and lack of metadata files for historic data.

### ***2. GIT Applications and Data Utilized:***

The Service uses GIS for several applications including **forest characterization**, such as inventories; **watershed** planning and analysis; **forest assessment**, such as vegetation monitoring and wildland urban interface (WUI) modeling; **fire** threat modeling; emergency fire management and disaster response planning; conservation easement planning and tracking; and **other natural resource** applications such as multiple resource management and general mapping. The Service uses a wide range of Federal GIS data sets for Federal grant projects as well as those developed and provided by other units within DNR and other state agencies. The Service has also applied GIS and IKONOS imagery in **urban forestry** projects with local governments such as Baltimore.

The Service has developed the WUI Fire Model for the USFS, which is intended to provide planning aids for emergency response teams and assist in the better utilization of the state's fire fighting resources. There are several phases to the WUI Model. Each phase is a further development of the Model, which will be completed as grant funds are made available to the Service. Phase-1 was a county level analysis based on housing unit density, fire history, and basic fuel types, and was completed this past fiscal year. Phase-2 is a detailed spatial analysis model using satellite imagery to predict areas more prone to wildfire impact at the sub-subwatershed level. Phase-3 will provide detailed data on water resources for fire fighting, tree species fuels modeling using ground truthed Gap Analysis Project (GAP) data at 2-hectare resolution, detailed county-level fire department run area data sets and a cultural/natural resources-based fire sensitivity layer. There are five additional phases, each including more improved analysis and additional data collection, which will be made available to fire fighting planners. Additionally, the Service is involved in the Mid Atlantic Interstate Forest Fire Protection Compact. The Compact has seven

member states in the northeastern U.S., which coordinate the sharing of fire fighting resources and personnel during wildfire events within any of the member states. The Compact also works together to find solutions for common problems facing fire personnel within the region. The Service was contracted by the Compact to complete Phase-1 WUI Modeling for its member states, with this work completed. Several Compact member states are discussing contracting the Service to complete the Phase-2 level of analysis for them. The Service has completed the first two Phases of analysis for Maryland, with Phase-3 analysis currently under development.

Other projects involving the Service include the USFS Stewardship Pilot Project and the Strategic Forest Lands Assessment Project. The Service has also used GIT for **wildlife**, assisting the Maryland Wildlife and Heritage Service, which spearheaded the Maryland Gap Analysis Program (GAP). The Service's own GIS Geomatics Lab produces any mass mapping products required in-house, with the exception of the Conservation Reserve Enhancement Program (CREP), which utilizes DNR GISD services for outreach materials development. DNR began using GIT in 1986 for wetlands studies and now uses it for many other applications, including forestry. In addition, the DNR operates a state-wide mapping website, described below. Furthermore, in response to future emergency management, DNR is investigating options for providing Department-wide data sharing and editing via Internet using ArcIMS™ software.

Currently, DNR and the Service are working with the USFS on the Strategic Forest Lands Assessment, an effort to identify ecologically and economically important forests statewide. The project uses GIS analyses for ecological, socioeconomic and vulnerability assessments to improve resource and **economic** management activities in forest product based economies (<http://www.dnr.state.md.us/forests/conferences/sfla/index.htm>). The identification of these strategic forest lands will serve as a guide for DNR land conservation and stewardship programs. The Maryland Forest Service is extensively involved with this **assessment** at the planning, development and analysis stages. The project includes a logging probability analysis that will be included in another project involving strategic forest lands and DNR's Chesapeake and Coastal Watershed Service (CCWS). This second project is being conducted in cooperation with the Mid-Atlantic Regional Earth Science Applications Center (MA-RESAC) at the University of Maryland (UMD) (<http://www.geog.umd.edu/landcover/resac/research.htm>). DNR recently received a NASA grant for this project, which will utilize MA-RESAC products, including **land cover** maps created using LANDSAT-7 imagery, and methods to assess land use change, map net primary production (NPP), and conduct high resolution forest mapping, including LIDAR use. Cover maps will be used to identify patterns of forest fragmentation and changes in forest cover from the mid-1980s to the present, and DNR management activities will be linked to spatial attributes of forest distribution. In addition, a demonstration of LIDAR imagery will produce ultra-high accuracy digital surface elevation models (DEMs) and forest height and biomass maps. The Service has not had direct interaction with the MA-RESAC project other than a few consultation meetings.

### ***3. Statewide and Other GIT Linkages:***

GI/GIT activities in Maryland have been coordinated through the volunteer efforts of the Maryland State Geographic Information Committee MSGIC since 1991 (<http://www.msgic.state.md.us>). No single office has been designated, exists informally, or has funding to serve as the lead GI/GIT entity in state government. Four state agencies lead GI production and GIT usage, including the Department of Planning (MDP), DNR, State Highway Administration (SHA) and the Department of Housing and Community Development. DNR maintains the MSGIC web site and a statewide mapping atlas called MERLIN Online (<http://www.mdmerlin.net>). This electronic atlas includes all of the data produced by state agencies and many other partners, including federal agencies and universities. It operates under a simple-to-use JAVA client that is sent to the users' machine when they log onto the system. MSGIC serves as the lead GI/GIT coordination group in the state. The Maryland Local Government Geographic Information Committee (MLOGIC) is within MSGIC, and assists it in representing all state and local government sectors using

GI/GIT, including education (K-16), private sector vendors and users, and the public. The Service's GIS Coordinator works with the MSGIC.

Maryland's metadata server (<http://www.towson.edu/cgis/metadata/>) was developed by the Towson University Center for Geographic Information Sciences. It is one of the newest nodes in the Federal Geographic Data Committee's metadata clearinghouse, and can be accessed via the FGDC Web site. Metadata is also available for the Chesapeake Bay Program, whose territory incorporates the entire Chesapeake Bay watershed and includes parts of Maryland, Virginia, West Virginia, Delaware, Pennsylvania, and New York. Much of DNR's data is intended for internal use but may be made available upon request and review with a license agreement.