G GEOGRAPHIC
I INFORMATION
S SYSTEMS

County Receives Initial Base Mapping Datasets

High Quality Data Anticipated to Support Many Government GIS Applications

Since the beginning of the year, Westchester County GIS has been receiving data from Analytical Surveys, Inc. (ASI) on the county's base mapping project.

The project was initiated last spring as the county committed to build the first-ever high accuracy, uniform scale base map. Overall, the project has been designed to produce a wide range of digital products which can be used and integrated into the growing number of government and business applications based on spatial data (emergency dispatching, transportation, infrastructure management, tax mapping, real estate, civil engineering, health and human services, etc.), as well as a wide range of basic geographic information systems (GIS) initiatives. The project is being carried out at the direction of

County Executive Andy Spano and the Westchester GIS Task Force, a group which includes representation from county and local government, business, and local utilities.

When completed, the project will include approximately 250 GB of data, including true color digital orthophotography and over 30 layers of planimetric data (building footprints, edge of pavement, water courses, parking lots, bridges, etc.). The planimetric data will include 5' county-wide contours while the orthophoto images will have a pixel resolution of .5'. The county's project also included the use of Light Detection and Ranging (LIDAR) technology which is one of the newest advancements in photogrammetric mapping. LIDAR consists of geodet-

ic GPS positioning, orientation derived from high-end inertial sensors, and laser technology which can collect real-time 3-D images that are immediately employed in the generation of a Digital Elevation Model (DEM).

All digital data generated from the project will meet or exceed National Map Accuracy Standards at 1'=100'. The data structure includes a grid of 2,237 tiles which are being shipped and reviewed in 40 separate delivery areas. The orthophoto images will be delivered to the county in both compressed Mr.Sid and uncompressed TIFF file formats for desktop and web applications. Planimetric data is being made available in ARC/INFO export (.E00) file format. The county is also scheduled to receive one orthophoto and one planimetric hardcopy plot for each tile (approximately 4,475 plots).

The county is currently reviewing both legal and technical issues surrounding data distribution options. Given the large file sizes of the data, on-line viewing or distribution (via a web browser) presents significant technological challenges. For example, one uncompressed orthophoto TIFF file is nearly 74 MB of data. (That's approximately 480 MB of uncompressed orthophoto data just for the Village of Buchanan)! Mr.Sid compression software (Lizard Technologies) can reduce file sizes by nearly 50 percent, which in turn can be integrated and made available through the county's GIS Internet software ArcIMS. Development and delivery of base mapping data is scheduled to continue through the end of this year. Sample products and a project overview/status can be found at our web site at *http://giswww.westchestergov.com*.
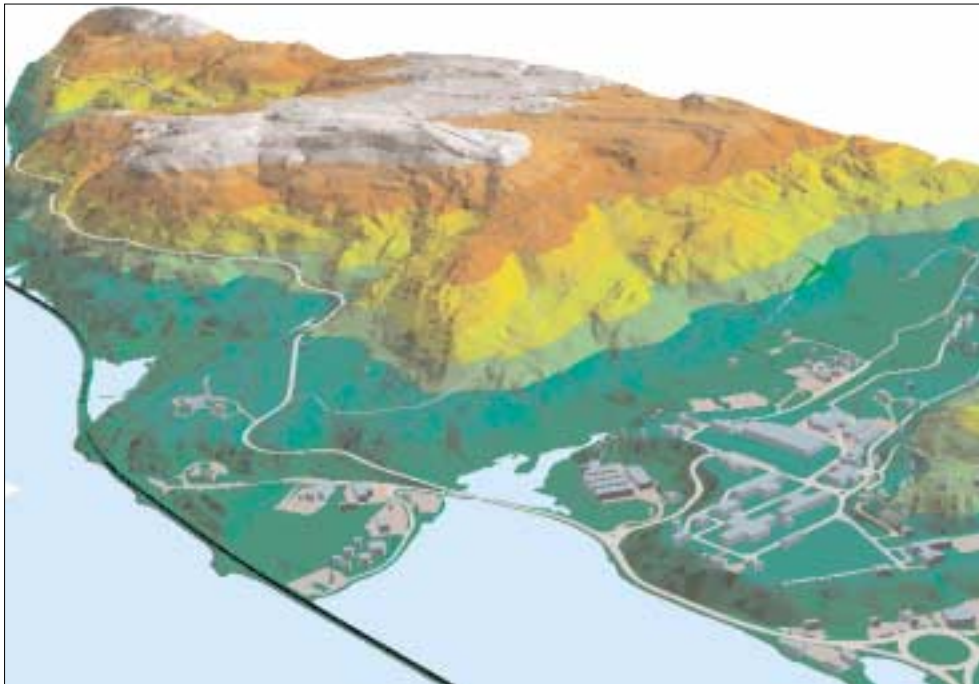
Using ArcView 3-D Analyst, images such as this can be created using data generated from the county's base mapping project. This 3-D view contains several planimetric layers including contours, building footprints, edge of pavement, and parking lots. Annsville Circle is in the lower right-hand corner, with Rte.6/202 leading north along the Hudson River towards Anthonys Nose and the Bear Mountain Bridge.

Westchester GIS Task Force

The Westchester GIS Task Force, which includes representatives from county and local government, business, and utilities, met on March 13 to review progress on the county-wide base mapping project and discuss other GIS initiatives. Topics included infrastructure data capture, potential changes to the state Technology Law which focuses on the selling and licensing of geographic data, county/local government web mapping applications, advancements and applications in GPS technology, and data sharing agreements between the county and local governments regarding the new base mapping data. Created in 1998 by County Executive Spano, the GIS Task Force meets two to three times a year and is chaired by former county Planning Commissioner Peter Q. Eschweiler. For more information on the Task Force, contact Laura McGinty at *lam7@westchestergov.com.*

Remote Sensing Workshop

On February 23, GIS staff members attended a Remote Sensing Workshop at the Center for International Earth Science Information Network (CIESIN) at the Lamont-Doherty Earth Observatory of Columbia University in Palisades, New York. Recent advancements in remote sensing data capture techniques and the processing of remote sensing imagery were discussed. GIS staff are currently reviewing options with CIESIN in developing a county-wide land cover model using LANDSAT 7 imagery which can be used separately and/or in conjunction with the new larger-scale base map datasets. The use of remote sensing technology and data is becoming more common in traditional GIS programs in the areas of land use and watershed planning, emergency response and planning, change detection, visual and 3-D modeling, and even in the updating of selected GIS coverages. For more information on the county's remote sensing development work, contact Carrie Keneally at *cek1@westchester-gov.com.*

GPS Training

On March 8, Mike Popoloski of MapCo, (West Milford, New Jersey), provided a two-day GPS training course to county staff. The course focused on the use of Trimble's Geoexplorer 3, which is the next generation handheld GPS unit from the Geoexplorer 2. The Geo3 collects data to an accuracy of 1 to 5 meter precision after differential correction and is best used for generalized mapping applications. In addition to county GIS and Health Department staff, the program also included staff from the Putnam County Health Department, which is currently working with Westchester County GIS. For more information on GPS projects in Westchester County, contact Laura McGinty *lam7@westchestergov.com.*

Westchester County GIS staff continues to provide valuable assistance to local governments on several GIS projects.

Currently, GIS staff are completing a user needs assessment for the **City of Mt. Vernon**. The county also developed demonstration and mapping projects including infrastructure data capture with GPS, and recycling, sanding/snow plowing, and garbage pick-up route maps. The county will continue to provide assistance to the city as it prepares for implementation and will also assist in organizing a GIS Steering Committee.

During the second quarter of this year, the county anticipates working on a user needs assessment with the **Village of Hastings-on-Hudson** as well. The **Town of Ossining** is currently upgrading computer equipment in the assessor's office to support RPS V4.0 and is looking to acquire digital planimetric data from the county's base mapping project which will be used to recompile the town's tax maps.

County GIS staff have an ongoing project with the **Village of Irvington** to develop and establish an entry-level GIS at Village Hall. The county developed four initial projects for a desktop system (ArcView) in the areas of environment, community facilities, zoning, and open space. Village staff also received ArcView training. The

Town of Harrison public works department recently met with county GIS staff to discuss several database development efforts which will serve as the foundation of the town's GIS. The town has also recently applied for a 2001-2002 SARA grant for a GIS users needs assessment. The **Town of Cortlandt** has recently approached the county to discuss the use of the upcoming digital orthophotography to support several land use planning applications.

The **Village of Mt. Kisco** became one of the first municipalities in the county to upgrade to the Real Property System (RPS) Version 4.0 which is used for managing property and assessment data. This new release includes basic GIS functionality, as well as the ability to store digital images such as photos and easements (see image below).

Jim Palmer, village assessor, said "*The RPS Version 4 is much more user friendly. The windows environment provides for a much more intuitive program than the previous DOS-based Version 3. In addition to the benefits of using GIS to complete a variety of mapping queries, the ability to store digital images such as photos and easements make the RPS much more useful to assessors.*" For more information on GIS in local government, contact Ana Hiraldo at *aeh2@westchestergov.com.*
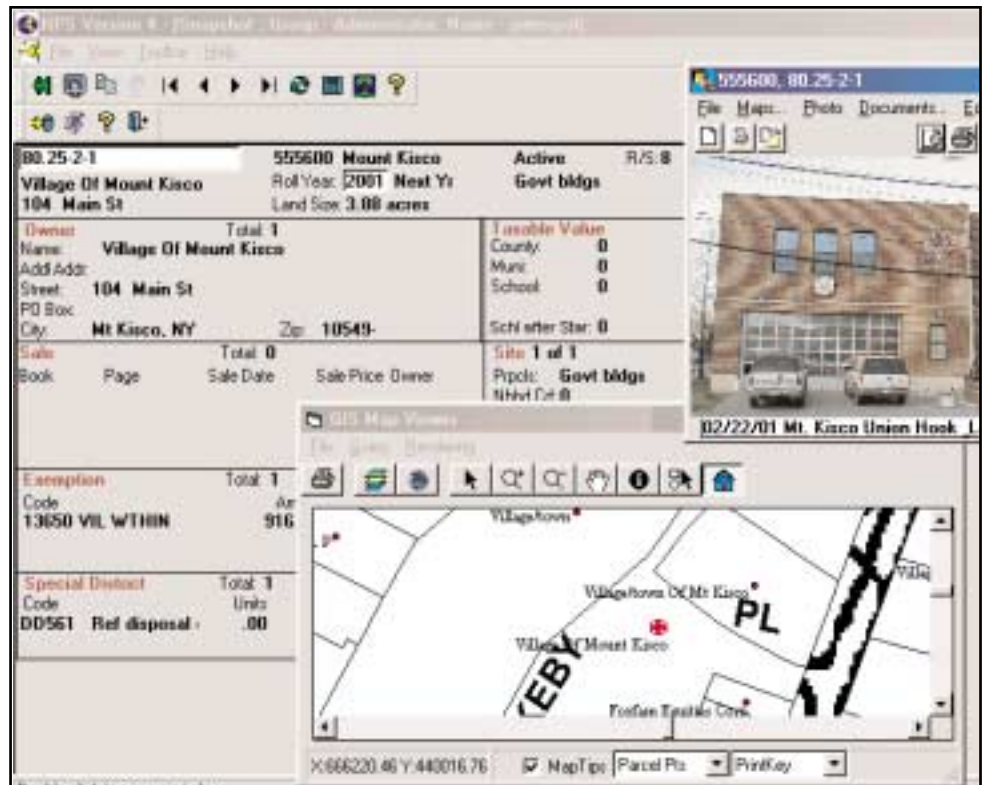
Example of RPS V4.0 with data on village-owned properties in the Village of Mt. Kisco. The new release includes a GIS Map Viewer and the ability to include thumbnail pictures of the property building.

PL-94 and Census 2000 Geography
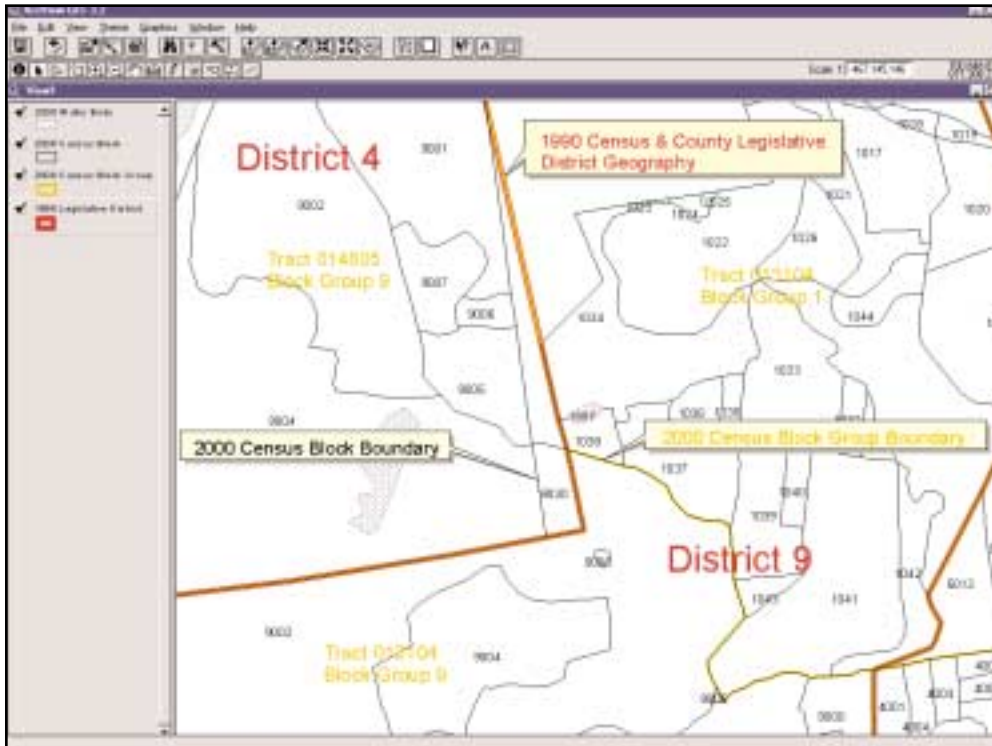
With the recent release of the U.S. Census Bureau PL-94 data, GIS staff are reviewing and documenting census geography changes between the 1990 and 2000 TIGER files. For Westchester County, the 2000 census includes one new census track, 33 fewer block groups, and nearly 1,300 new census blocks. Such changes must be taken into account when comparing population and other demographic figures between 1990 and 2000. As the U.S. Census Bureau created new units of census geography (i.e., new tracts, census blocks, etc.) for Westchester County, the reprocessing of the geographic files created "shifts" between the 1990 and 2000 TIGER geography. (Such shifts are common and to be expected). An example of this type of 1990-2000 "shift" is highlighted in the image above. Here the red County Legislative District boundary line between Districts 4 and 9 will need to be moved to the left to conform to 2000 TIGER geography. Comparison between the 1990 and 2000 figures must also take into account new census tract, block group and census block numbering schemes. For more information contact Tong Zhou at *taz2@westchestergov.com*.

County GIS Assist Local Fire Department

Fairview Fire Department, which is located in the Town of Greenburgh, is applying GIS technology to assist in the efficient deployment of resources and equipment in case of a fire emergency. Over the past several months, Captain Kevin Brooks has been working with GIS staff member Ana Hiraldo on various database and application development efforts to create a customized ArcView application. The fire department is currently using ArcView to display, query and analyze a wide range of datasets and is looking to purchase a more robust dispatching application which can be integrated with ArcView and offer more dispatching and records management functionality. The fire department is currently responsible for its own dispatching. Layers which are currently available as part of the existing application include digital tax parcel data, road annotations, fire district boundaries, fire hydrant locations, water mains, water lines, community facilities, and the TIGER street centerline file for address matching. For more information contact Ana Hiraldo at *aeh2@westchestergov.com*.

Captain Kevin Brooks of the Fairview Fire Dept. working on customized ArcView application.

Westchester County Geography Trivia

Part III: The High Peaks

Our previous newsletters challenged readers on their knowledge of "place names" and water features throughout Westchester County. Responses from our readers have been good, and we're increasingly impressed with the level of knowledge about the county's geography and landscape. The winner from our last geography trivia challenge which focused on water features was John Turrell of Peekskill who will receive a copy of a "*Getting to Know Desktop GIS,*" courtesy of ESRI. In this issue, we go from the water features of the valleys to the county's "high country." While admittedly we do not have any areas above tree line nor will our "higher" elevations ever dominate the landscape like the mountains of the Catskills or Adirondacks, the county is nonetheless home to several named and mapped mountains - most of which are scattered throughout the northern part of the county.

This geography challenge will have two parts. The first part is to match the names of the mountain with the correct municipality it is located. Using the same list, the second part of the challenge is to organize the list of mountains in descending order (highest to lowest elevation). The first person to submit the correct answer to both parts will win the book "*Beyond Maps: GIS and Decision Making in Local Government.*" All entries must be sent either e-mail or fax to Ana Hiraldo at 914-995-3269. The winner will be announced in our next newsletter. Good luck!

1. Titicus Mountain
2. Turkey Mountain
3. Dickerson Mountain
4. Bailey Mountain
5. Manitou Mountain
6. Anthonys Nose

Titicus Mountain as identified on a USGS quadrangle map. Where is it?

Westchester gov.com

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