

GEOGRAPHIC INFORMATION SYSTEMS

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CAD/GIS Workshop for Engineers & Public Works a Success

Professional Development Hour (PDH) credits made available to licensed engineers

Recognizing the increasing integration of computer-aided design (CAD) and geographic information systems (GIS) technologies, Westchester County GIS partnered with the Westchester/Putnam Chapter of The NYS Society of Professional Engineers (NYSSPE) (www.nysspe.org/) to host a CAD/GIS workshop at the Westchester County Center on April 7th. Nearly 100 professionals from government and industry attended the event. The workshop was successfully designed to offer Professional Development Hour (PDH) credits to licensed engineers through the Practicing Institute of Engineering, Inc (www.pie-cpc.org). Forty-four (44) licensed engineers attending the workshop received 1.5 PDH credits.

The workshop consisted of a series of technical and product presentations. Representatives from Microdesk (www.microdesk.com) started the three-hour workshop with a presentation focusing on the *Autodesk Map 3D* and *Land*

Development application. Discussion focused on how AutoCAD and GIS users transfer and utilize data within both products, as well as techniques on thematic mapping and labeling map features. Following Microdesk and a short break, Joleen Winter from Hewlett Packard (www.hp.com) provided the audience with an overview of the latest HP printer plotters and solutions. The final technical presentation was made by Parsons Brinckerhoff Quade & Douglas (PB) (www.pbworld.com), an engineering firm based in New York City. PB staff demonstrated the new *Automated Sewer Manhole Inspection* (ASMI) application which has been developed for Westchester County Department of Environmental Facilities (DEF). The application has been built to automate the current paper-based manhole inspection program for DEF and incorporates global positioning system (GPS) functions.

A workshop coffee break was sponsored by Bowne Management Systems ([\[group.com\]\(http://group.com\)\) which along with Environmental Systems Research Institute \(ESRI\) \(\[www.esri.com\]\(http://www.esri.com\)\) offered product documentation and literature at vendor tables in the rear of the lecture hall.](http://www.bowne-</p></div><div data-bbox=)

"The information from the presenters was very useful to area engineers who are increasingly using CAD, GIS, and GPS technologies" said James A. Caggiano, P.E., and current president of the Westchester/Putnam of NYSSPE.

"The workshop was beneficial as it provided insight into the ever expanding abilities of GIS as a tool to assist in the management of public infrastructure," commented Victor Carosi, P.E., DPW director from the Village of Rye Brook.

Given the success and turnout of the April 7th event, Westchester County GIS and the Westchester/Putnam Chapter of NYSSPE are considering similar workshops in the future. For more information contact Ana Hiraldo at ah2@westchestergov.com.



A capacity crowd attended the CAD/GIS Workshop at the County Center on April 7th. Representatives from area engineering companies, government GIS and Public Works programs, and academia were in attendance. The workshop agenda included demonstrations on integrating CAD, GPS, and GIS technologies.

GIS Events

NEARC

The 20th Annual Northeast Arc Users Group conference will be held at the Holiday Inn by the Bay in Portland, Maine, September 18 - 21, 2005. With the theme "*From the Mountains to the Sea*," the conference is expected to attract over 500 GIS users including government agencies, industry and academia. For more information visit www.northeastarc.org/2005.htm.

NYS GIS Conference

The 21st annual New York State conference will be held at the Rochester Hyatt, Rochester, NY, October 17-18, 2005. A wide range of workshops, vendor presentations, and demonstrations including poster sessions are scheduled. For more information and registration visit nysgisconf.esf.edu.

QA/QC Contractor Selected

Westchester County has selected Pinnacle Mapping Technologies, Inc. (www.pinnaclemapping.com/) for Quality Assurance/Quality Control (QA/QC) services associated with the countywide base map update. Spatial datasets to be updated and developed as part of the base map update will be derived from 600-scale photography obtained April 2004 from the New York State Digital Orthophotography Program (DOP). Pinnacle will employ digital and manual review techniques, as well as include web-based tracking methods to review planimetric data and street features (manholes, catchbasins, fire hydrants and utility poles) being developed by the Sanborn Map Company (www.sanborn-map.com). The county will also receive updated color orthophotography formatted to the 2000 base map program tiling system. For more information contact Deborah Parker at dape@westchestergov.com.

Web Mapping Consolidation

GIS staff are currently working to consolidate all of the county's public access web mapping programs into one application. Once fully developed and implemented, all public mapping programs will be integrated and accessible through *Mapping Westchester County* - the county's primary web mapping portal developed in conjunction with ESRI. Specific programs to be consolidated into the single application include the *Indian Point Evacuation Plan*, *Find Your Elected Officials*, and the *Community Facilities Locator* - all of which are accessible as separate programs found on the county's homepage at www.westchestergov.com. After the applications are consolidated, users will have one access point to explore different GIS web mapping programs based on the same user interface, mapping tools, and underlying HTML Servlet Connector technology. For more information, contact Xiaobo Cui at xxc1@westchestergov.com.

NACo GIS Presentation

Sam Wear was invited to make a presentation to the National Association of Counties (NACo) GIS Subcommittee during the NACo 2005 Legislative Conference, March 4-8, 2005 in Washington, DC. Entitled "*Westchester County, NY; GIS Data Licensing & Distribution Policies*," the presentation focused on the county's current GIS data distribution policies and procedures. Though issues of security and freedom of information (FOI) remain paramount in many GIS organizations, several inquiries have been made from other counties throughout the country to replicate and model the Westchester County policy. A PDF of the NACo presentation is available on the county GIS web page at giswww.westchestergov.com. For more information, contact Sam Wear at stw1@westchestergov.com.

DEF Manhole Inspection Project Implemented

Applications Integrate GPS and Data Management

Westchester County Department of Environmental Facilities (DEF) contracted with Parsons Brinckerhoff Quade & Douglas (www.pbworld.com) to design multi-functional GIS applications to automate DEF's sewer manhole inspection program. The Automated Sewer Manhole Inspection (ASMI) applications are executed as web-based, field-PC and desktop routines designed to achieve DEF goals while integrating with the County's enterprise GIS and Oracle environment.

Through a password-secured website, the ASMI web application delivers address-search, database query, and map printing functions to manage both *Call-Before-You-Dig* (Code53) requests and sewer overflow incidents that are directed to DEF.

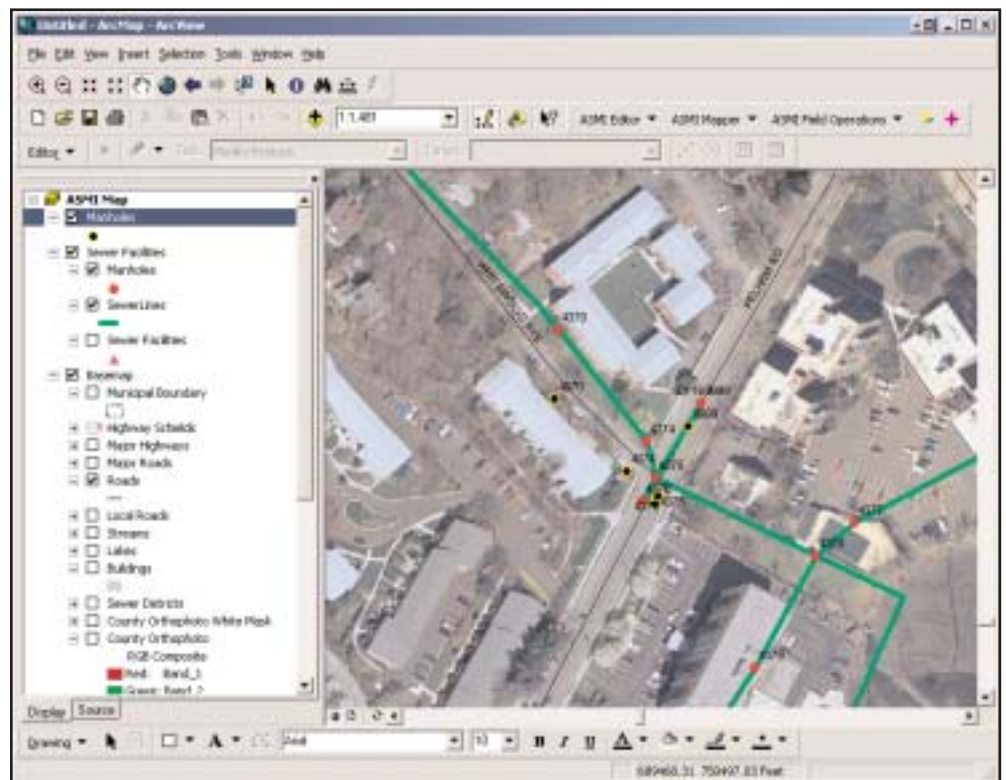
The desktop module is implemented as an ArcObjects extension to ESRI's ArcGIS-ArcMap environment, which adds a toolbar with three groups of functions to the ArcMap window. Editing tools enable data entry and position editing, and enforce data integrity. Mapping tools zoom in to an inspection area with a search on street address or manhole reference number. Field Operations tools download data records from multiple sources to the field, packaging a day's work into a dated folder. Upon check-out, records are locked for editing until the check-in process reverses the data flow. Manhole inspection

history records, with inspector's name, date and time, can also be accessed.

The ASMI field component provides sewer manhole inspection forms on Trimble's (www.trimble.com) handheld Windows CE-based GeoXT devices, streamlining work flow and replacing paper-based reports. Concurrently, ASMI integrates sub-meter GPS mapping of sewer system assets, which DEF field crews will capture with Trimble ProXR devices during the next inspections. For subsequent inspections, GeoXTs will help crews navigate back to hard-to-find manholes. Training sessions for DEF staff are included.

Michael Facelle, director of maintenance at DEF, guided the application development. "This project represents real operational improvement. Until now, we had generalized GIS point and line data, and an address-search that used old Census data. With ASMI, we can correct infrastructure locations, and enter and retrieve inspection information. We can also research a service call from anywhere, day or night."

The next inspection cycle will produce a fully updated, GPS-accurate sewer infrastructure database. DEF anticipates integrating image and video data access through the ASMI interface in the future. For more information, contact Michael Facelle (914) 813-5449 or Deborah Parker (914) 995-3888.



This image from the ASMI desktop application highlights manholes (in black) that were mapped with GPS. ASMI provides tools to "snap" sewer lines to corrected manhole locations, producing true GIS connectivity within the sewer system database, while improving the accuracy of DEF's infrastructure data.

County to Receive Updated Countywide DFIRM

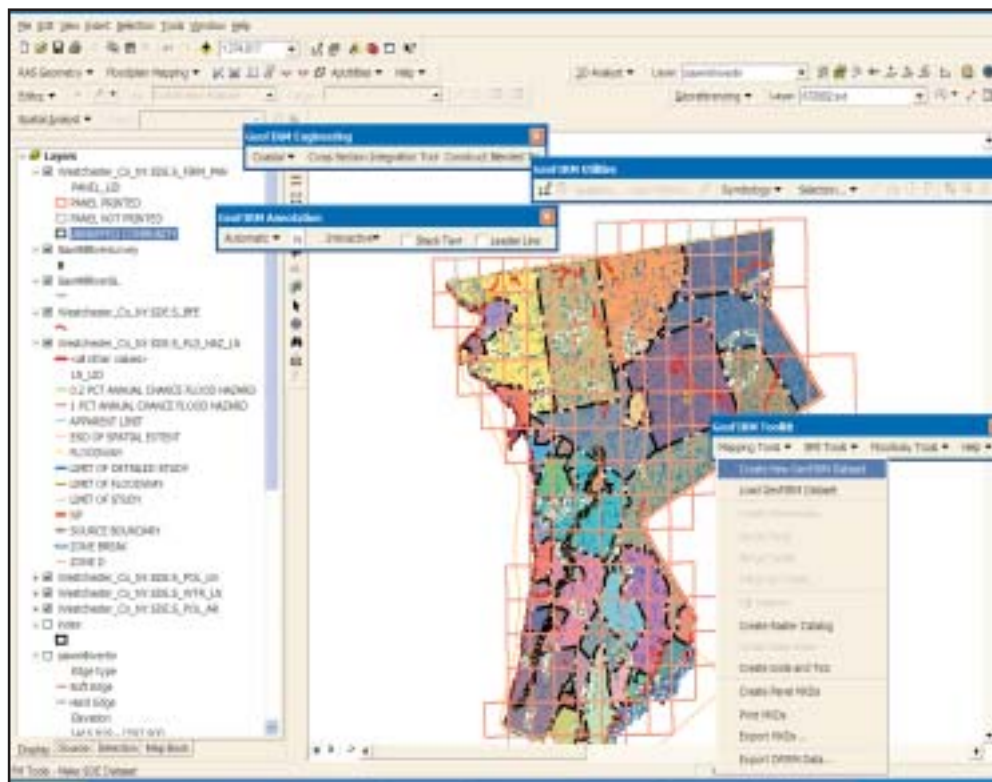
Collaborative process creates digital flood insurance rate maps

Production has begun on an updated, county-wide Digital Flood Insurance Rate Map (DFIRM) for Westchester County. The effort involves collaboration between the Federal Emergency Management Agency (FEMA), the New York State Department of Environmental Conservation (NYSDEC), Westchester County, and private engineering firms. Like all FEMA flood maps, Westchester County's DFIRM will depict flood risk zones and Special Flood Hazard Areas (SFHAs) - areas that have a 1% or greater chance of flooding in any given year. It will be used with the accompanying Flood Insurance Study report to determine flood insurance requirements and applicable floodplain development regulations.

Because of its dense population and map update needs, Westchester County emerged as an early candidate for a flood map update under FEMA's Map Modernization efforts. FEMA designed its Map Modernization plan in 1997 to address an increasing backlog of outdated maps - the result primarily of 20 years of inadequate funding. Westchester County maps typified this backlog with an average age over 20 years. Because flood hazard conditions are dynamic, older maps may not reflect recent development and/or natural changes in the environment. Up-to-date maps support a flood insurance program that is more closely aligned with actual risk, encourage wise floodplain management, and increase the public's flood hazard awareness.

For the County DFIRM collaboration, NYSDEC met with county communities to seek community input into restudy needs and priorities, and establish the scope of the work. For its part, Westchester County provided excellent GIS data including topography, base map features, and orthoimagery produced in 2000. Leonard Jackson Associates is conducting Hydrologic and Hydraulic (H&H) restudies for over 120 miles of stream throughout the county.

Dewberry (Fairfax, Virginia, www.dewberry.com), FEMA's prime contractor on the DFIRM project, is bringing the disparate individual communities' maps into a seamless countywide coverage. To produce the countywide DFIRM, Dewberry is using its GeoFIRM system, which combines more than 30 years of FEMA program experience with cutting-edge spatial information technology. The system provides project members immediate, on-screen access to all project data (digital imagery, scanned FIRMs, framework data, LiDAR, engineering data, etc.) located in an enterprise-class geodatabase. GeoFIRM relies on the new ArcGIS/ArcSDE 9.0 spatial gateway to support simultaneous editing and analysis by multiple users. Preliminary issuance of the DFIRM is projected for September 30, 2005. For more information contact Paul Weberg, Federal Emergency Management Agency (FEMA), at Paul.Weberg@dhs.gov or Sam Wear at stw1@westchestergov.com.



The new Westchester Digital Flood Insurance Rate Map (DFIRM) will be developed as a seamless countywide GIS-based map. The printed maps will be paneled based on the USGS Digital Orthophoto Quadrangle schema at scales of 1:6,000 and 1:12,000. The DFIRM is being produced using Dewberry's flood hazard analysis and mapping platform, GeoFIRM.

GIS Architecture Redesign

Over the past several months county GIS staff have been implementing several elements of a new GIS software and hardware architecture. Specific components established to date include GIS hardware and software ordering and delivering for GIS database servers and web servers. New GIS database servers are being established using an Oracle Real Application Clusters (RAC) environment. Oracle 10g and ESRI ArcSDE 9 software will be used for the GIS database.

New GIS web servers are also being established to support existing Internet, and Intranet applications, particularly with regard to the new county Emergency Operation Center. Software for the GIS web servers includes Windows 2003, Internet Information Services, ServletExec, and ArcIMS 9. The new GIS architecture also includes high availability and failover for the entire Westchester County GIS. For more information, contact Xiaobo Cui at xxc1@westchestergov.com.

Digital Elevation Model Available

A new Digital Elevation Model (DEM), based on 50-foot contours from the 2000 countywide base map project is available at the county's GIS website. The DEM was generated utilizing ArcGIS 9 with the Spatial Analyst Extension. (Note: The 50-foot contours were derived from the more accurate countywide 5-foot contours which were generated during the 2000 base map project). DEMs are commonly used for environmental analysis, telecommunications modeling, cartography, 3-D surface representation, and simulation and training for military programs. Both PDF and ESRI raster file formats of the DEM are available at the county's website (giswww.westchestergov.com). The PDF file (6 MB) can be found under Maps link and the raster file (46 MB) under the environmental features link. For more information, contact Cindy Louie at llc4@westchestergov.com.

Fire District Boundary Updates

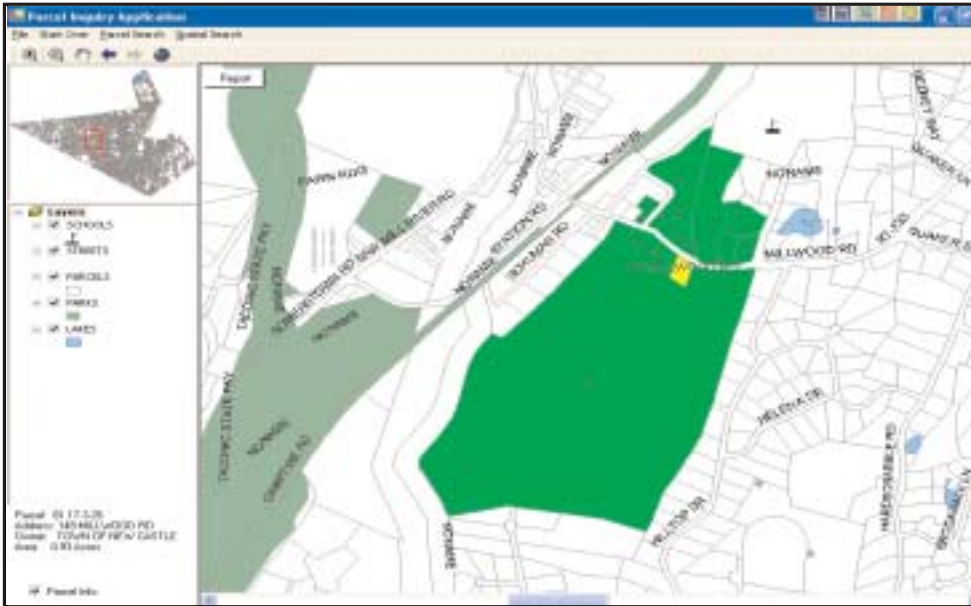
GIS staff continue to support digital mapping and geographic database development efforts for the county's E911 system which provides dispatching to 33 fire departments and 12 emergency medical services throughout the county. Over the past several months, boundaries for four fire districts (Port Chester, Croton, Yorktown, and Rye City) have been updated in the mapping system. Spatial edits are incorporated into both the county's central GIS database and the county emergency dispatching system which utilizes Intergraph Public Safety (IPS) software (publicsafety.intergraph.com). Fire and EMS district boundary updates are made on a monthly basis and are available on the County's GIS website. For more information, contact Cindy Louie at (914) 995-3014 or email at llc4@westchestergov.com.

Desktop Tax Parcel Viewer Application Developed

Westchester County GIS has recently completed development of a "light" desktop tax parcel viewing application with emphasis for deployment in local government. The application was built utilizing ESRI's ArcEngine 9.0 technology with Microsoft's VB .NET programming language and requires mini-

mal client side GIS software. Necessary software includes Microsoft .NET Framework version 1.1 and ESRI ArcEngine Runtime version 9.0. (www.esri.com/software/arcgis/arcgisengine/about/runtime.html). The application is ideal for local governments with limited


GIS infrastructure. Originally intended to be a program for assessors to retrieve and analyze tax parcel information, the application's easy-to-use interface allows for use on public access terminals as well. Support for development of the application was provided by Bowne Management Systems (Mineola, NY).



Highlighting the abutters function in the new tax map/parcel application, this screen shot shows all tax parcels (green) within 500 feet of 149 Millwood Rd. (yellow) in the Town of New Castle. The "Report" button in the upper left hand corner of the screen will generate a report with detailed information of the parcels and a snapshot of the map.

The application allows users to search tax parcel information by owner name, Section/Block/Lot (SBL), and address. After a specific parcel is identified, the application "zooms" to the selected parcel which is highlighted and labeled. The application includes a powerful "abutters" function which allows users to identify either adjacent parcels or parcels within a specified distance (i.e., 100', 200', 500', etc). The on-screen map will zoom to the extent of the selected parcels with different colors for the subject parcel and all "neighboring" parcels. Such functions are common when it is necessary to identify adjacent property owners for proposed zoning variances or special use permits. Basic map navigation tools, such as zoom in/out, pan, and full view, are also built in to the application and users can print out a map utilizing an 8" X 11" map template.

For more information on obtaining the application, set-up, and other system requirements, contact Tong Zhou at (914) 995-3012.



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