Articles and graphics in this newsletter prepared by: Xiaobo Cui, Paul Gisondo, Ana Hiraldo-Gomez, Connor Lynch, Deborah Parker, Dongming Tang, Ilir Tota, Sam Wear, and Zhenglu Zhang.
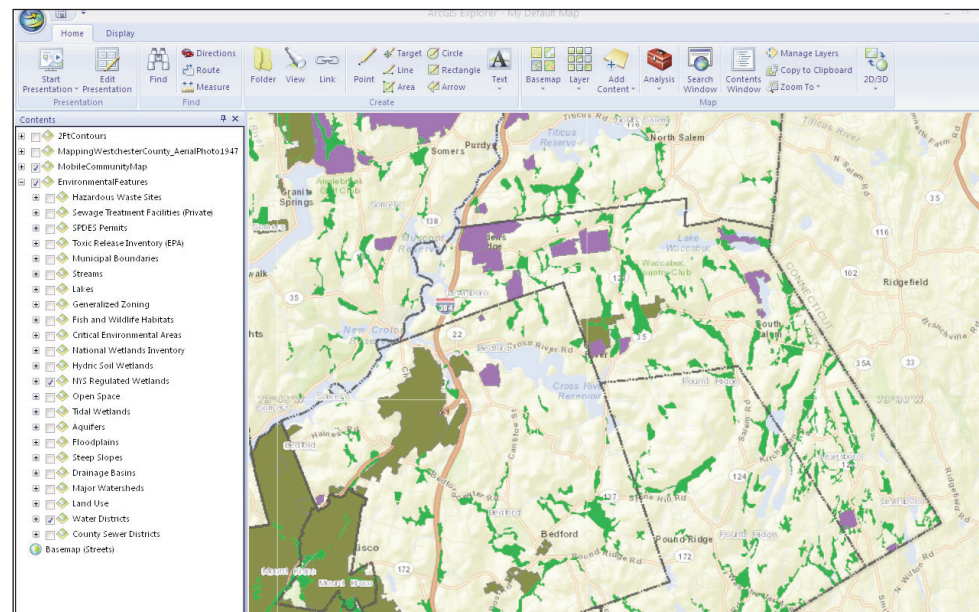
GIS Data Viewers for Everyone

The growing availability of geospatial data has been augmented by a variety of free, easy-to-use geospatial 'viewers' which can be used by individuals with limited or no GIS training. Two of the more popular viewing clients which can easily make use of Westchester County GIS data are ArcGIS Explorer (*http://www.esri.com/software/arcgis/explorer*) and the Google Earth client (*http://www.google.com/earth/index.html*). Both clients allow users to "mash-up" various sources of content whether it be local datasets or live web services being published anywhere on the Internet.
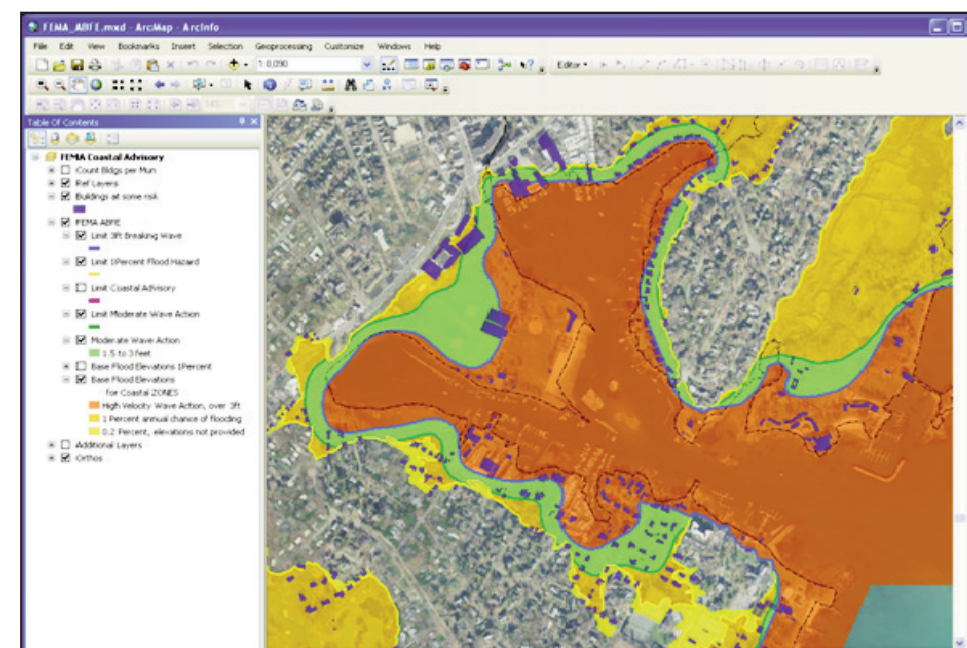
The Google Earth viewer is popular due to its large user base, easy user interface, and performance. There are many online examples of Google Earth-based GIS mapping programs and training exercises which can be identified by using the Google search engine. Google Earth users can access a wide range of Westchester County GIS data layers from the Data Warehouse found on the County GIS website at *http://giswww.westchestergov.com*. (County datasets are available as Google Earth KML files which have been "zipped" as KMZ files and available for download.) The ArcGIS Explorer client is a robust viewer with many added functions and can also access live map services from the county. The latest version of the software (Build 2500) lets users switch between 2D and 3D display, email maps and layers directly from the application, and contains a popular feature of creating and communicating with PowerPoint-type presentations. Before downloading any of the clients, users should check system requirements (processor, RAM, video cards, etc.) for the individual software package.

For more information on these and other geospatial viewing clients, contact Sam Wear at *stw1@westchestergov.com*.

Data viewers such as the latest version of ArcGIS Explorer (Build 2500) are excellent entry-level GIS software programs. The latest version of desktop ArcGIS Explorer client enables users to mash-up a variety of data formats including KML files (Google), ESRI shapefiles, raster datasets, and web services.

GEOGRAPHIC INFORMATION SYSTEMS

Geospatial Support for Superstorm Sandy

Post-Storm analysis includes development of new datasets

Westchester County GIS staff provided critical GIS mapping support to emergency responders, government agencies, utilities, and human service organizations during Superstorm Sandy. From Oct. 29 – Nov. 9, 2012, GIS staff were on site or on call 24/7 at the County's Emergency Operations Center (EOC) in Hawthorne where essential countywide emergency response activities are coordinated.

In advance of the storm, the GIS homepage *http://giswww.westchestergov.com* reminded county residents to use the 'Hurricane Zone Finder' component of Mapping Westchester County. The application locates an address relative to hurricane evacuation zones, encourages users to monitor weather reports, and provides a link to the county's emergency preparedness page.

In 12-hour shifts throughout the crisis, GIS staff prepared data and maps including the locations of nursing homes and critical care facilities operating on generator power, hurricane storm surge zones, temporary shelters, evacuation population counts, American Red Cross shelters, gas station openings/closures, road closures, traffic signal outages, damage assessments and power outages by municipality, polling (election) places running on generators, and the status of public water and wastewater treatment systems.

In the months since the storm, both FEMA and NOAA's Coastal Services Center, in conjunction with the NY Department of State, have updated coastal inundation risk maps. Both agencies have made the new data available as map services which can be used in GIS viewers. The new FEMA Advisory Base Flood Elevation (ABFE) data represents updated coastal areas at 1% and 0.2% annual risk of flooding – commonly called '100 and 500-year flood plains.' But for the first time, using direct observations of the effects of Sandy, FEMA also delineated areas that may be subject to moderate (1.5 to 3 feet), or high velocity (over 3 feet) combined surge and wave action. For these potentially wave-exposed areas, FEMA provided advisories for the height above mean sea level for finished floors in any buildings located there. ABFE data are provided as a guide, and communities may consider adopting them, to reduce impacts of similar events in the future. For Westchester, ABFE values range between 9 and 31 feet. Analysis shows over 3,400 buildings are located in or partially within these advisory areas.

For more information, contact Ilir Tota at *iat2@westchestergov.com*.

In addition to updated coastal flood risk zones (annual risk of 1% - light orange, and 0.2% - yellow), the new FEMA ABFE datasets describe areas at risk of combined surge and wave action. Green areas may be exposed to waves between 1.5 and 3 feet (moderate wave action); dark orange areas may experience high-velocity waves over three feet.

User Group Meeting
May 16, 2013

SUNY Purchase
8:30 a.m.– 5 p.m.

The annual Westchester GIS User Group will once again be held on the campus of SUNY Purchase . The day-long event will feature presentations from government, industry, and academia. The program also includes Lightning Talks at lunch time and focused workshops in the afternoon.

Join us for the largest annual meeting of geospatial professionals in the Lower Hudson Valley.

Program and registration (which is free) information is available on our website at: *http://giswww.westchestergov.com*

Yonkers GIS Shared Services

Westchester County GIS has recently entered into a formal agreement with the City of Yonkers supporting three strategic government programs, one of which is Geographic Information Systems. The initiative was spearheaded by County Executive Robert P. Astorino and Mayor Mike Spano. As part of the Shared Services agreement, County GIS staff will be assisting in building geospatial capacity in the city. Specific functions will include overseeing a GIS Steering Committee, making recommendations on hardware and software products, vendor and consultant selection support, priority applications, identifying areas where the City can leverage the county's existing GIS infrastructure, and providing budgetary estimates on initial implementation phases. For more information, contact Sam Wear at (914) 995-3047 or *stw1@westchestergov.com*.

2013 Base Map

At the completion of a lengthy competitive bid process, Westchester County has contracted with IIC Technologies, Inc. (*www.iictechnologies.com*) for Spring 2013 aerial photography which will provide the basis for the first comprehensive countywide planimetric update since 2004. Image products to be acquired include half-foot-resolution digital orthophotos and stereo images. The new imagery will be used to support the updating of planimetric datasets including building footprints, edge-of-pavement (including street centerlines), sidewalks, parking lots, bridges, and other physical features. Base map products form the foundation of dozens of applications in emergency response, public safety, public health, infrastructure management, land use planning, transportation, natural resource management, and tax mapping. For more information contact Deb Parker at *dape@westchestergov.com* or (914) 995-3888.

Municipal Zoning Maps

In cooperation with the County Department of Planning, GIS is working to update and digitize current municipal zoning district boundaries to be consistent with tax parcel boundaries and/or road centerlines. This effort supports local government by providing accurate and up-to-date GIS data layers of local zoning districts. Local officials are directly involved with reviewing draft maps, and are provided with both GIS files and hard-copy zoning maps when complete. Over the last several months, GIS updated zoning data for Ardsley, Briarcliff Manor, Irvington, the Town of Mamaroneck, Mount Pleasant, the Village of Ossining, Peekskill, the City of Rye, Sleepy Hollow, and Tuckahoe. The effort is expected to be completed by the end of 2013. For more information, contact Paul Gisondo, Department of Planning at *pxg3@westchestergov.com*.

Mapping Westchester County Updates
Portal now includes live map services from FEMA and NOAA

Mapping Westchester County (MWC) is the County's primary public-facing GIS application, providing citizens with a variety of geospatially related datasets and map services. Recent work on the application has focused on providing dynamic access to live map services published from outside sources, to the MWC viewer.

There are significant advantages of using map services. First, the data is consumed by an authoritative source using the publishing agency's symbology and labeling. Also, the content can be used without having to acquire and locally maintain a physical copy of data.

The first two map services added to the MWC viewer are (1) Advisory Base Flood Elevations (ABFEs) from the Federal Emergency Management Agency (FEMA), and (2) Coastal Inundation Hazards from the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center. These new map services can be viewed by clicking on the new Switch Basemap icon in the viewer toolbar.

Another new map service is a county Digital Surface Model. This service can also be chosen as an alternate base map and is shown with a shadow or 'hillshade' which renders in three dimensions. This map service, which is published by the county, lets users view both natural and developed terrain and is often very useful in viewshed analysis. Though not directly integrated into MWC, the county also publishes and makes available a Digital Elevation ('bare earth') Model which can also be consumed as a map service.

Other recent updates for MWC include:

- Aerial photography from both 2000 and 2010 are now available. (Note: 2000 imagery is one-half-foot resolution while the 2010 imagery is one-meter resolution.)
- 14 datasets from the Environmental Protection Agency can now be explored and/or downloaded from the application.
- Petroleum Bulk Storage and Septic Tank Location data layers have been integrated into the application as well as the Village of Elmsford's zoning district map.
- Selected data layers in the 'Livable Community' module have been modified.
- GIS databases supporting MWC have been recently upgraded to ArcSDE 10 with Oracle11g.

Users can access Mapping Westchester County at the GIS homepage. Contact Xiaobo Cui *xxc1@westchestergov.com* for more information.
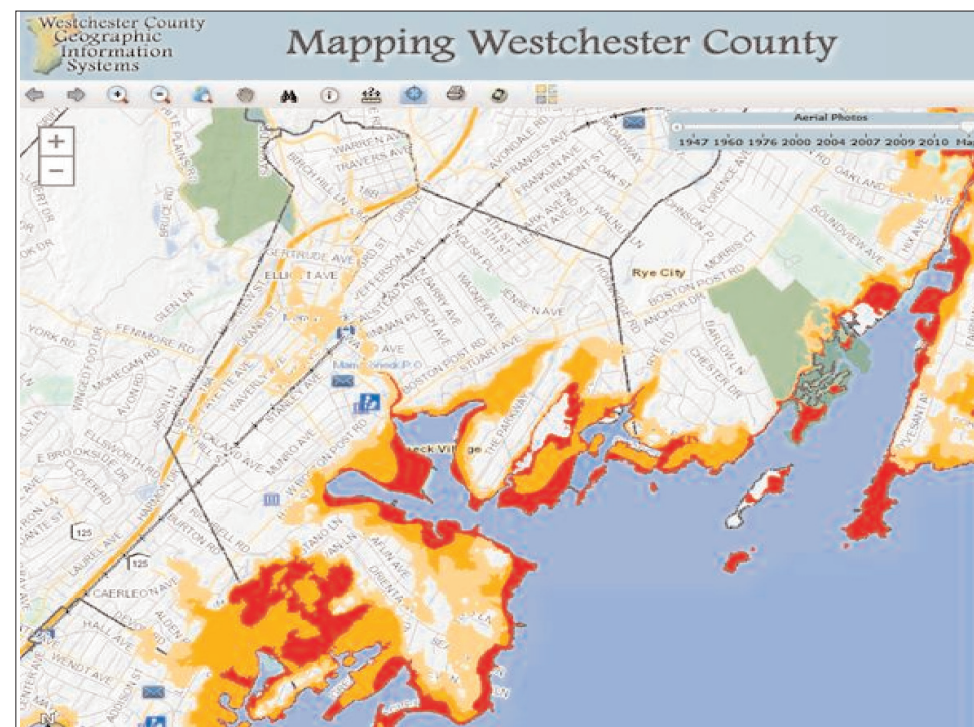
The Mapping Westchester County application now includes National Oceanographic and Atmospheric (NOAA) Coastal Inundation Hazards map services. These new map services can be viewed together with other relevant coastal datasets such as floodplains, wetlands, topography and hurricane evacuation zones.

Municipal Geospatial Programs and Activities
County GIS Products and Services used in many systems

MS4 (Municipal Separate Storm Sewer Systems) feature mapping and data collection continues to be a major focus for several local governments. Two local government consortiums (one covering the Croton-Kensico Watershed municipalities and another consisting of 18 municipalities mostly in southern Westchester County) have completed or are nearly complete in the mapping of outfalls, catch basins, drainage manholes and related storm water conveyance system features.

Bowne Management Systems, Dolph Rotfeld Engineering and Merritts GIS are leading data collection efforts for the southern consortium while Onsite Engineering coordinated efforts for northern Westchester County communities. County GIS is leading the effort to normalize attributes associated with the spatial datasets which will help support next stages of the MS4 regulatory program including in-field inspections, feature editing and report generation. The business process and work flow is identical for all municipalities, including Westchester County's own obligations under the MS4 program.

GIS meetings have recently been held with several municipalities including North Salem, Somers, Yorktown, Ossining (T/V), Buchanan, Elmsford, Peekskill, Pound Ridge, and the Village of Mamaroneck. Integration of county GIS data into a wide range of local government software programs in the areas of inspections and permit processing, assessment, building and code enforcement, and fire and police has been discussed with many municipalities.

County GIS staff recently completed a very successful program with the Village of Mamaroneck providing assistance and technical support to a village GIS intern who was responsible for consolidated and organizing both local and county GIS datasets. Much of the work was conducted in the County's GIS offices.

Since the fall, GIS staff has also met with the Town of Rye, Larchmont, Croton-on-Hudson and the Mohegan Lake fire departments to further the collection of fire hydrants in individual districts. The location of fire hydrants are ultimately integrated and made available in the County's E911 system. County GIS datasets and support has also been requested as part of the development of two municipal Hazard Mitigation Plans (Villages of Sleepy Hollow and Larchmont).

For more information on local government activities, contact Sam Wear at *stw1@westchestergov.com* or Connor Lynch at *cql3@westchestergov.com*.
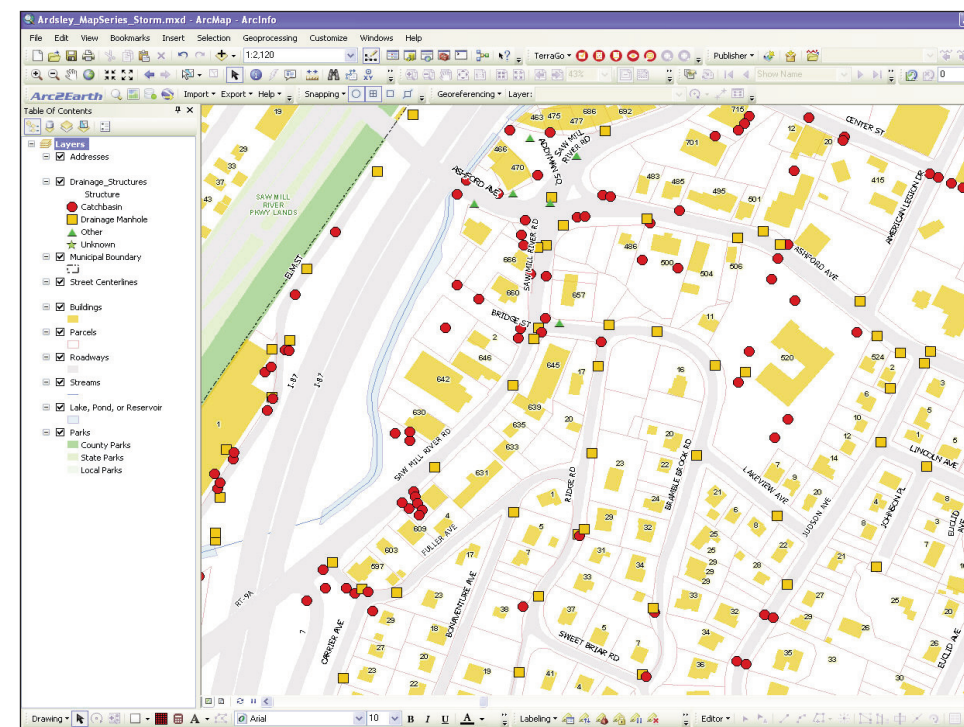
To date, the focus of MS4 mapping for local governments has been on outfalls, catch basins, and related storm water system features such as swales. The MS4 regulatory program also requires governments to inspect features on a regular basis. Westchester County government has MS4 storm water requirements too as it relates to county roads, parks, and other facilities.

ASMI Update

For the past several years, the County Department of Environmental Facilities (DEF) has utilized the Automated Sewer Manhole Inspection (ASMI) desktop application to manage sanitary sewer system data and related inspection information. The program is currently based on earlier versions of ArcGIS (9.3) and must be migrated to the ArcGIS 10.X platform. County GIS staff are now working to convert the tools to two browser-based applications: (1) a server-based viewer which supports DEF Call-Before-You-Dig functions and (2) an ArcGIS server application which supports maintenance and inspection data for both manhole and sewer line datasets. These applications are expected to replace the existing ASMI applications providing expanded access to increased DEF information stored as GIS files and videos. For more information, contact Dongming Tang at *dqt3@westchestergov.com*

Tax Parcel Viewer

Westchester County GIS continues adding new features and updating datasets to the online Municipal Tax Parcel Viewer application. Based on the last major upgrades to both ArcGIS Server 10 and the new JavaScript API, several enhancements have been made to the viewer including: 1) Integration of more than six thousand property cards to the City of Peekskill viewer, 2) Optional access to County historic air photos, and 3) adding updated 2012 tax parcel data for the City of White Plains and Town of North Castle. For a full list of the available municipalities and the new features, visit the tax parcel viewer link on the County GIS website. For more information, contact Connor Lynch at (914) 995-6532 or Zhenglu Zhang at (914) 995-5347.

Hunter College Visits GIS

On Feb. 21, graduate students from the Hunter College Geography Department (*http://www.geo.hunter.cuny.edu/*) visited Westchester County GIS for a tour of the GIS office and to attend a presentation. The visit was arranged by Professor Jochen Albrecht, who is currently teaching the graduate course titled GIS in Metro New York. The course includes student site visits to major public, non-profit and private organizations practicing state-of-the-art GIS in the metro-NYC area. The students joined discussion with GIS staff on issues such as GIS operational management, educational requirements, and geospatial data and application development. County GIS staff gave presentations focusing on the development of an enterprise program, spatial data infrastructure policies, and integrating geospatial data into county business programs.