



George E. Pataki
Governor

Spring/Fall 2004

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NYS GIS Clearinghouse: <http://www.nysgis.state.ny.us/>

GIS IN TIOGA COUNTY, NY SUMMER 2004

This summer, Tioga County's GIS usage is growing out of several related GPS projects. Earlier this year, County GIS Administrator Jennifer Gregory was the recipient of ESRI & Trimble's Mobile Mapping Government Program Award. The county was awarded a Trimble GeoXT (a real sleek unit without an external antennae or backpack) and ArcPad 6.0



Department a locational inventory with attributes of condition, type, and code for all signs, guide rails, pavement markings and culverts that are maintained by the Department. Temporary summer college student Brian Berry, along with GIS Administrator Jennifer Gregory are using SOKKIA Axis3 DGPS units loaded with IMap software and customized forms to collect these points of interest on 144 miles of roadway throughout the county. After the fieldwork is collected, shapefiles are created, metadata is defined and Map Documents are created in ArcGIS. All features on County Routes are categorized and can be viewed from the office computer with aerial photographs, county parcel data, contours and accident information layers.

Betsy Knapp, the County's part-time GIS Data Assistant, is very busy with her Compaq Ipac loaded with ArcPad 5.0. She is verifying public utility GIS data layers throughout the County's 7 water-sanitary districts. Jennifer is also excited to work with Applied GIS in the Office of Cyber Security & Critical Infrastructure Coordination's ArcIMS Pilot Program. This is a tool that will benefit employees in Public Works, Economic Development & Planning, Environmental Health, Real Property, the Sheriff's office and Emergency Response. This program gives 41 employees the opportunity to use GIS while saving Tioga County from having to purchase additional ArcGIS licenses.

For more information contact Jennifer Gregory at gregorvj@co.tioga.ny.us.

Advantages of the Cooperative



- Avoids duplication of data development
- Improves existing datasets
- Saves money, reduces project time, and saves limited staff resources

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software, both of which were used to locate all dry hydrants and access to drafting sources in efforts to update the fire district boundary maps. This equipment allows the county to collect information about each dry hydrant, including its correct location. Dry Hydrants are used to draft water from their sources such as ponds, lakes or streams, typically in rural areas where a public water system is not accessible. ArcPad was also customized using ArcPad Studio and VBScript, before loading the Map Document onto Trimble's GeoXT. Field Data was collected and later will be added to a laptop for viewing in ArcGIS. Prior to this exercise, these features had never been mapped. The fire district boundary maps, which haven't been updated since 1981, will be used by both the County Fire Rescue Team and EMS in emergency response situations. Following completion of this program, the Fire Department will keep the GeoXT to collect information in Fire Investigations and in any search and rescue efforts.

On a related note, the Governor's Traffic Safety Committee Grant Program funded the Tioga County Highway Department's Mobile Mapping effort. This funding will give the Highway

New York City's Open Accessible Space Information System



What is OASIS?

The Open Accessible Space Information System (OASIS) in New York City is a coalition of nonprofits, agencies, businesses, grassroots groups, educational institutions, and individuals. Its centerpiece is the first citywide website (www.oasisnyc.net) that enhances environmental stewardship by providing a common, free, online, open space inventory. The OASIS website helps people see and understand their neighborhoods by visualizing open space data through mapping over the Internet. It makes information available to communities that cannot afford expensive mapping tools and/or access the complex pool of government and private sources of open space data.

The OASIS collaborative came together in December 2000 under the leadership of the USDA Forest Service's Urban Resources Partnership, and now is overseen through the Forest Service's NYC Metropolitan Initiative. The vision for OASIS was to harness the growing power of online mapping tools so average citizens, neighborhood groups, and others could better appreciate and care for open spaces – whether they be community gardens, wetlands, or parks. The Forest Service realized that communities in urban centers were most in need of such tools, and therefore selected New York as the first city in which to launch the project.

OASIS includes two components. First, it is a collaborative partnership, bringing together disparate agencies, organizations, and individuals that – even though they all share an interest in open space issues – would not have come together but for the Forest Service's vision. The OASIS partnership includes federal agencies such as EPA and USGS, state/local agencies such as New York State Department of Environmental Conservation and NYC Department of Parks & Recreation. Non-governmental participants include businesses such as ESRI and Community Cartography, nonprofits such as New Yorkers for Parks, the Municipal Art Society, and the Environmental Justice Alliance, and institutions such as Columbia University.

Second, these groups have come together to pool their resources and create an online repository and delivery vehicle for open space data. No other single source provides access to this information in New York – almost four-dozen layers of spatial data about the city's "green infrastructure." The OASIS website:

- provides interactive maps of open space by neighborhood;

- identifies the elected officials who represent parks and community gardens;
- includes high resolution aerial imagery to locate trees and recreation areas;
- identifies detailed land use data (including potential open spaces such as vacant lots);
- portrays wetlands, wildlife areas, and historic landmarks; and compares Census demographics with open space land use patterns.

OASIS Solves Problems for Government, Citizens, and Community Groups

The OASIS partnership addresses several problems. For community organizations and local residents, it makes green infrastructure data accessible to groups that are without geographic information system (GIS) resources. In this way, it strengthens these groups' ability to participate in government decision-making, now that they are armed with information and analysis about open space issues in their neighborhoods. For example, community gardeners use the OASIS website to locate vacant lots that are in close proximity to their gardens, and print these maps for meeting with local legislators.

For government, it helps reduce the costs and redundancy of open space mapping efforts across agencies. It helps these agencies identify incomplete or inaccurate mapping data, especially at the neighborhood/community scale.

For all parties, it helps reduce the need for independent greening and mapping efforts that had led to inefficient data creation due to replication of efforts and incomplete open space data and maps. It enables communities

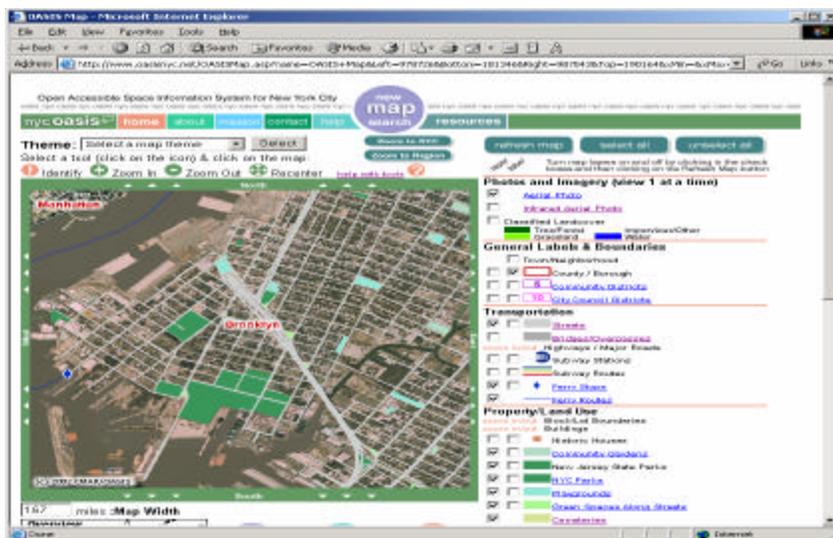
to nurture open space with modern technology and information by creating maps of open space on demand, and identifying key open-space resources and stewardship activity near a user-defined location.

Benefits of Online Open Space Mapping

OASIS benefits many constituencies. It provides value to government agencies, community organizations, and interested individuals. Users of the website include community gardeners, Boy Scouts, transit agency staff, student researchers, and even real estate brokers who cannot access the level of detailed information available through OASIS from any other single source. Organizations have used OASIS as an educational tool, training hundreds of students in basic mapping and natural resource inventory techniques. Lesson guides based on this work now serve as models for other, similar open space mapping efforts being proposed and developed throughout the country.

Perhaps most important, the OASIS website is a platform that others can use to provide access to their information, and analyze their data in relation to other open space resources. The U.S. Environmental Protection Agency's Harbor Estuary Program uses the OASIS website to deliver information on the locations of its "priority acquisition and restoration" habitat sites in the New York region. Members of the Harbor Estuary Program can now view this information in relation to natural areas, wetlands, and other sites of interest to habitat protection.

New Yorkers for Parks and the NYC Audubon Society have compiled an impressive and growing inventory of natural



OASIS... continued from page 2

areas in New York's parks. Both groups participate in OASIS so the general public can access information from the inventory using OASIS's maps, and each group benefits from sharing strategies and information resources with other OASIS partner organizations.

The Municipal Art Society's Community Information Technology Initiative (CITI) worked with NYPIRG CMAP to base its interactive mapping website for Community Boards on the OASIS system, as a way of integrating open space data with CITI's maps. This approach also helped MAS reduce expenses by using the online mapping platform already created for OASIS.

Other projects leveraging the success of OASIS include open space stewardship organizations that are developing a system to visually display existing stewardship efforts and future stewardship needs throughout the five boroughs, and the Forest Service's "Living Memorials" initiative that uses OASIS to display the locations of more than three dozen Living Memorials in the region created in response to the events of September 11, 2001.

The model of the OASIS partnership, the website itself, and these community applications are transferable resources that are being shared among partners in the planning community. Organizations in Washington DC (the Casey Trees Foundation), Baltimore (the city and Maryland natural resources agencies), Boston (the Urban Ecology Collaborative), and Detroit (the city's planning agency) are all following closely the developments with the OASIS project to develop similar initiatives in their cities.

Important Successes in Just a Few Years

The success of OASIS can be measured in several ways. First, the number of

organizations in the OASIS collaborative has grown by more than 30% since 2000. The initial group of 30 agencies and groups has increased to more than 40 organizations, reflecting the valuable services provided by the partnership and the website.

Second, the steering committee meetings consistently attract several dozen participants, indicating an ongoing interest by many OASIS partners in assuring the continuing value of this work.

Third, the OASIS website is used by thousands of individuals and organizations on a regular basis. Usage logs tracked by the website's servers indicate that the website is accessed monthly by 10,000 users, many of who visit the site more than once. The website was launched in March 2001, and has since received almost 1.5 million unique clicks on the maps and related pages.

Finally, the OASIS partnership has received awards, recognition, and funding from several organizations. The Forest Service has given OASIS two official awards: the "2004 Chief's Award for Technology Transfer," and in 2002 designated it as "a model of excellent public outreach and collaborative stewardship with underserved communities." The Municipal Art Society awarded its 2001 Certificate of Merit to the OASIS partnership, noting that "the public accessibility and vast potential of OASIS NYC as a resource deserves to be applauded." In a *New York Times* profile in late March 2001, a reporter wrote that OASIS offers "an unparalleled view of the entire city." Other foundations such as the J.M. Kaplan Fund have awarded grants to OASIS, and other agencies such as US EPA have provided funding support.

For more information contact Steve Romalewski at sromalewski@nypirg.org.

GIS Training for K-12 Educators

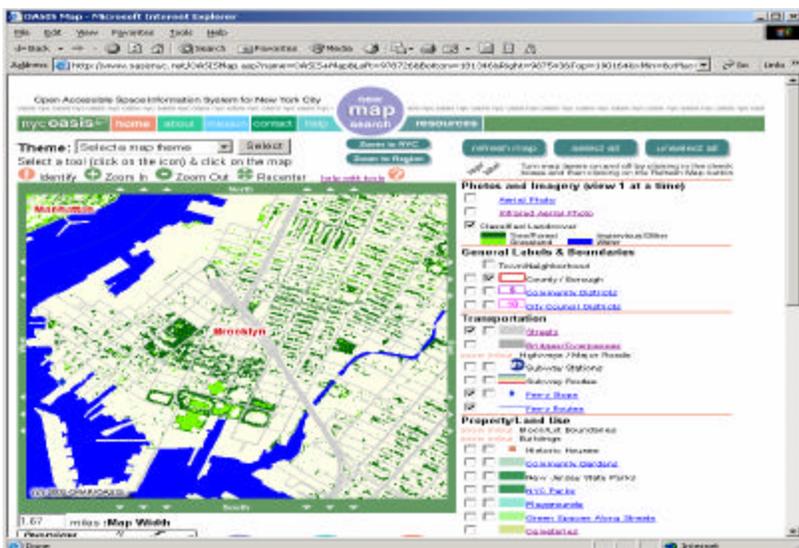


The Spatial Information Technology Center (SITC) located at Fulton-Montgomery Community College, in conjunction with the Fulton-Montgomery Education Initiative (FMEI), has been working on a project to introduce GIS into local K-12 schools. The objective of the pilot program, an innovation of Northville Central School's Marcia Craft and SITC, is to present GIS technologies and applications to K-12 teachers through the use of ESRI's *Mapping Our World (MOW)* GIS lesson book. This book contains lessons, student handouts, assessments, and rubrics, as well as the software and data CD, making the integration of GIS technology into K-12 curricula easier than before.

SITC invited six teachers from five different school districts in Fall 2002 to participate in the first session of the *MOW* project. The second session of the *MOW* project started in February 2003 and included seven teachers - three teachers from new school districts & four teachers from school districts that participated in the first session. In the third session, this past fall, there was a total of seven new teachers trained. By placing multiple *MOW* teachers in each school district, SITC hopes to provide an additional means of project support, in that these teachers will be able to learn from and work with each other. The project goal is to establish a network of at least one teacher trained in GIS in each of the school districts in FMEI.

This spring all nineteen *MOW* GIS-trained teachers from area counties were invited back to SITC for further investigation into

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GIS Training... continued from page 3

geospatial technologies to use in the classroom. These monthly meetings have been used as a forum to share ideas and research new geospatial topics. Topics of discussion and research from these meetings included Global Positioning Systems (GPS), lesson plan resources, grant opportunities, education standards, and ESRI's Community Atlas Program. A new training session will be held in July and August 2004 to get teachers trained for the upcoming school year.

SITC's role is to provide the introductory training in GIS for these teachers and to assist in modifying and creating GIS lesson plans for classroom use. SITC has placed computers, loaded with GIS software and data, in participating schools to support GIS use in the classroom. Support for the *MOW* project has also been provided by Charlie Fitzpatrick (ESRI Schools and Libraries division) through the donation of the lesson books for the teachers.

Comments from MOW Participants:

"I will use the program with fourth graders to help them see where they are in the world. They seem to only orient themselves in their own town. Many of my students seldom leave town so they don't really understand how big the areas around them are. They just learn words like county, state, country, and hemisphere but they have no meaning to them. I am hoping this program will help." – Cheryl Baggetta, Amsterdam

"I am really excited about using *Mapping Our World* in my classroom. This is just the beginning. More time and experience will lead to many exciting projects for our students. I am glad to be part of this process." – Mike Kane, Canajoharie

"I am planning on using some of the ArcView software for the study of Plate Tectonics in Earth Science. The maps are great for showing that most earthquakes occur along plate boundaries." – Kelly Horton, Broadalbin-Perth

"I spend some time every year in each level (7, 8, I, II, III, FMCC) going over the geography of the Spanish speaking countries, because this is generally a weak point among students. This training could provide resources to look at the demographics, geography, etc. of the areas we study." – Shannon Thomarie, Northville

For more information contact Alex Chaucer at achaucer@fmcc.suny.edu.

GIS Habitat Model for Spruce Grouse (*Falcapennis Canadensis*) in the Adirondack Park

The Adirondack Park Agency developed two models of potential Spruce Grouse (*Falcapennis canadensis*) habitat to aid Dr. Glenn Johnson of SUNY Potsdam in his ongoing Spruce Grouse research in the Adirondack Park (Johnson *et al* 2002, Johnson *et al* 2003). Spruce Grouse are classified as an Endangered species in New York State, with perhaps only 175-315 individuals left in New York State in very specific lowland boreal habitats in the Adirondacks (New York State Department of Environmental Conservation 2003).

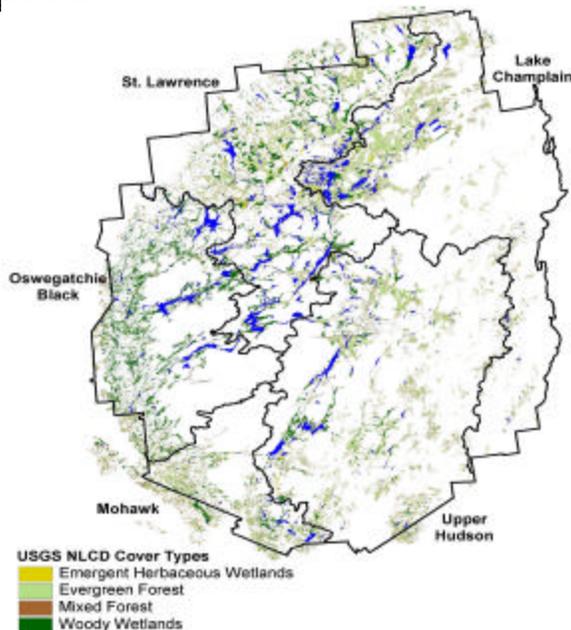
Dr. Johnson and his team of field researchers visit sites of known historic Spruce Grouse locations throughout the year to monitor survivorship and reproductive success. As their study has progressed, Johnson and his team have become interested in monitoring areas where there is currently no information on Spruce Grouse in order to have a more complete picture of population size and health.

The specific habitat type preferred by this species, cool, moist spruce-fir forests often adjacent to bogs, lends itself well to be modeled using Geographic Information Systems (GIS) technology and, therefore, GIS is an excellent tool for guiding where the research team should conduct future studies. The habitat model can also be used to measure habitat connectivity and habitat quality which can be used as a basis for a spruce grouse recovery/management plan and/or to identify areas on the landscape requiring further protection.

To develop the model, it was necessary to identify habitat requirements and habitat patterns for Spruce Grouse. The model entailed the combination of data layers such as elevation, vegetation, wetlands, and forest disturbance history. Spruce Grouse appear to be found at elevations between 385-550m and nearly level slopes of 0-11%. We used USGS National Land Cover Data to define vegetation. All the data we used in our analysis are available on the Shared Adirondack Park Geographic Information CD-ROM (Adirondack Park Agency 2001).

Based on our analysis, the Woody Wetland cover type is the best representation of potential lowland boreal habitat of all the NLCD cover types. Woody Wetland cover type acreage within the slope and elevation ranges preferred by Spruce Grouse is 210,638 acres, or 3.7% of total area of the Park. The largest expanses of connected lowland boreal habitat are located in the St. Lawrence watershed in the northwestern section of the Park, which is where existing research and monitoring has been focused. The map shows that there is extensive additional low boreal habitat outside this area where future field research can be focused, particularly in the western portion of the Oswegatchie-Black Watershed.

For more information on this project, or other GIS projects and events going on in the Adirondacks, visit <http://www.adkgis.org/>.



Preliminary Accident Location Information System (ALIS) Road Centerline Data Now Available

<http://www.nysgis.state.ny.us/inventories/cscic.htm>

This year much progress has been made with the QA review of the Accident Location Information System (ALIS) project data deliverables, particularly the street centerlines.

With such high interest in the new ALIS data and given the unanticipated delay in the final statewide deliverables, we decided to let the users have a sneak peak at the ALIS street centerlines and placed a preliminary version on the NYS GIS Clearinghouse. Since this is not the final data, only NYS GIS Data Sharing Cooperative members will be able to access the preliminary data.

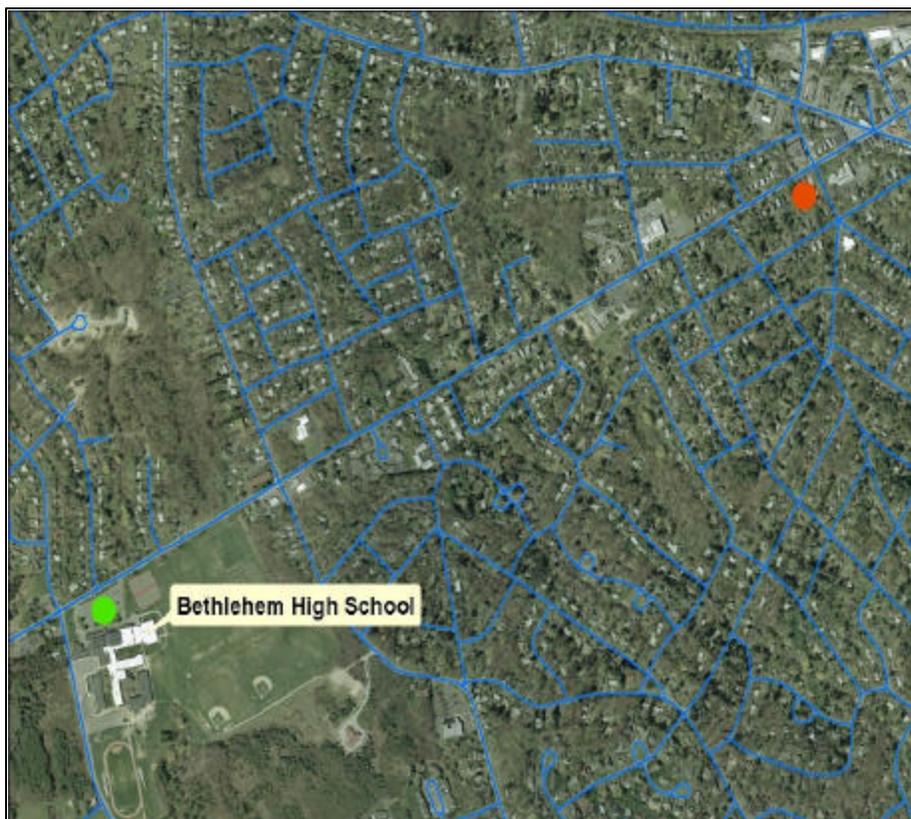
It is important to note that this preliminary data does not include the corrections NYS noted during the QA review process. It also has yet to be vertically integrated with New York State's civil boundary files and must undergo topology refinement. The final product will be available pending this integration and NYS' final review and approval of the ALIS data later this year.

Attendees at this year's NYS GIS Conference in Kerhonkson, NY (<http://nysgisconf.esf.edu>) will have an opportunity to learn more about the ALIS project including a technical look at the data during Session 2B on Monday, October 18. Additional information on the history of the project is also available in the Geographic Information Systems Technology (GIST) Newsletter's two previous issues located at <http://www.nysgis.state.ny.us/comm.htm>.

For more information contact Cheryl Benjamin at cheryl.benjamin@cscic.state.ny.us.

How do I Become a Cooperative Member?

To learn more about benefits of participating in the NYS GIS Data Sharing Cooperative, visit <http://www.nysgis/gis/datacoop.htm> or by calling Bruce Oswald at the NYS Office of Cyber Security and Critical Infrastructure Coordination at (518) 474-0865 or email at bruce.oswald@cscic.state.ny.us.



Improved Positional Location of a Geocoded Address

Red – Pre-ALIS Data
Green – ALIS Data

MARK YOUR CALENDAR!

2004 NYS 20th Annual GIS Conference
Hudson Valley Resort & Spa
Kerhonkson, New York
October 18—19, 2004

The New York State GIS Conference has become a major GIS professional development opportunity for hundreds of GIS users in the State. The conference is a great place to discover how New Yorkers are using GIS to accomplish important objectives in the public and private sectors. Technical presentations feature working professionals who share their GIS experiences and solutions in dealing with real world problems like yours. Meet fellow New Yorkers active in the GIS field, exchange information and experiences, and seek solutions to your geographic data management needs. For this, the 20th anniversary of the Conference, we are trying to set a record breaking attendance record and are encouraging more than the GIS professional and user to attend - managers, planners, students, teachers, surveyors, emergency response personnel and many more should also be encouraged to attend! Highlights of this year's conference include the new *Birds of a Feather (BOF)* session, State of the State in GIS presentation, networking opportunities, annual banquet featuring guest speaker John Cloud from NOAA, free Geocoding Training, and a Local Government Advisory Committee Meeting.

For more information, please go to <http://nysgisconf.esf.edu/>

RPSV4 and ArcGIS

As the previous GIS Administrator for Warren County, New York, my responsibilities included, among other things, distributing parcel data to County departments, Town Assessors, and anyone else who requests it. When our county implemented RPSV4, the newest version of the Office of Real Property Services' Real Property System (RPS), the method I used for extracting data from this system had to change. Although there were many improvements in V4 over V3, including changing the RPS file format from an Indexed Sequential Access Method structure to a relational database in Sybase, there didn't seem to be a simple "GIS Extract" method comparable to the one used in RPSV3 to obtain a table of parcel information to join to my parcel polygons.

I am not an RPS expert but am quite familiar with GIS software and databases. In my search of the RPSV4 functions, I found that there were many tools for accomplishing some of what I needed. These included creating custom reports, importing data into Access or Excel, and creating a point shapefile. None of these functions, however, were exactly what I needed. Some were complex, taking many mouse clicks to complete. Some were not easily repeated without keeping reams of paper to document my steps. And some just did not give the results I needed. They did not produce the same fields that I could get from the previous version (specifically SBL and Owner 2), and they used old technology and file formats (a shapefile of points based on dBase files). In summary, none of the RPSV4's built-in functions available to me were intuitive or easy to accomplish. I needed help.

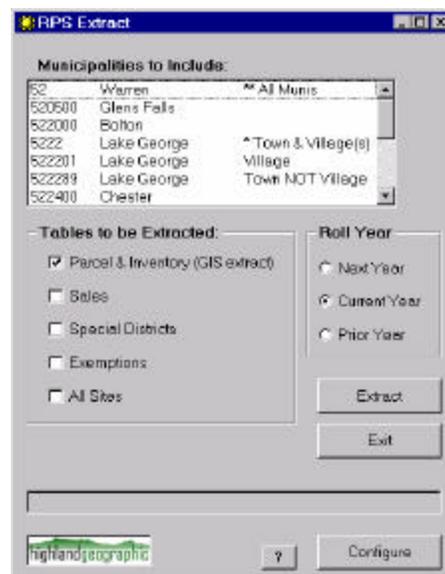
During the Summer of 2003, I sent a message to the New York State GIS email list to see if anyone had a solution for my problem. I received many responses that said they "felt my pain" but not many solutions. The one

solution that did arrive told me about the availability of a program from a GIS consultant. I purchased that program; it was easy enough to run and it ran quickly, but it still was not exactly what I was looking for. I still had to document my steps for each municipality in the county because the output was in multiple tables. I had to join all the tables together and rename the fields. It did solve my problem for the release of my 2003 parcel data, but it took about a week to get it all together in the proper format. Still, my search for a better solution continued.

In conversations with Liz Arabadjis of Highland Geographic, another GIS consulting firm that was working for the county on an entirely different task, I found she was working on such a program for another New York municipality. We spoke of the broad need for an extraction program from RPS Version 4. I suggested that it not be written with only that one municipality in mind, but rather, that it should be written so that any municipality could utilize it. We spoke at length about the functionality of the program including what fields I needed and in what format I'd like to see output. I was told that the municipalities she was working with had similar goals: we wanted the new application to be uncomplicated and we wanted the output to be straightforward. We also, however, had different needs: we used various versions of GIS, were interested in diverse fields and tables, and had different formats for our parcel identifiers. At this point I was apprehensively optimistic that I might, if it all worked out, get a tool that I needed to do my job efficiently.

I agreed to be a beta-test site for this new application. The application is a stand-alone, executable file (.exe) that connects to RPSV4's Sybase database via an existing RPSV4 ODBC connection. The program extracts data from RPS Version 4's database and writes them to a Microsoft Access file (.mdb). After a few months of testing, I have delivered my 2004 parcel data without distress. The program is

easy to use, intuitive and customizable; a user can change the fields that are extracted using the application's configuration function. *RPSV4 Extract*—choose the municipality, the tables to extract, then the Roll YearT



The tables that can be extracted are:

- The **Parcel & Inventory (GIS Extract)** table contains one record per parcel containing parcel information (acres, owner, etc) and inventory information (bedrooms, square footage, etc.)
- The **Sales** table contains a record for each sale stored in RPS.
- The **Special Districts** table contains a record for each special district that a parcel occupies.
- The **Exemptions** table contains a record for each exemption that a parcel qualifies to receive.
- The **All Sites** table contains a record for each site on a parcel.

For more information contact the Warren County Planning Department at www.co.warren.ny.us/gis/contact_us.htm.

Who's Who in GIS

Would you like to be added to the "Who's Who in GIS" Listing? Please send an e-mail to the nysgis@oft.state.ny.us. For more information, please visit <http://www.nysgis.state.ny.us/whoismain.htm>

NYS GIS Coordination Program Annual Survey Results

On Wednesday, June 2, 2004, the NYS GIS Coordination Program held its annual strategic planning meeting to prioritize activities for the coming year. To gather input and feedback from our customers, a survey was developed and posted on the NYS GIS Clearinghouse. These responses were invaluable in establishing priority GIS projects for the coming year including framework data development projects, expanded outreach and training offerings, and Clearinghouse enhancements to improve data access. For more information on the survey results, please visit http://www.nysgis.state.ny.us/surveys/04_survey_results.htm.

The NYS GIS Coordination Program would like to thank all of the respondents for participating in this important process. If you missed out on the opportunity to participate this year, we will be surveying the NYS GIS Community again in May 2005. Please keep an eye on the Clearinghouse at <http://www.nysgis.state.ny.us/> for more information and thank you in advance for your participation!

GIS in Northville Central School

Northville Central School recently completed the requirements for ESRI's Community Atlas project. The purpose of the Community Atlas project is to allow K-12 students and teachers to study their community by creating maps and descriptions which can be posted to a website for many to see. Northville Central School's project included ten computer generated maps created using ArcView 3.3. Since one of the maps had to show our location in reference to the rest of the United States, our first map included the Northeast United States. Our next map placed Northville within the boundaries of Fulton County and a third map showed the location of the village within the Adirondack Park. We were now left with the task of deciding on the rest of the thematic maps.

The students decided that since Northville was both a summer and winter recreation destination area, we needed maps for tourists. They chose to do maps highlighting recreation points, mercantile, restaurants, lodging, and historical places. Other maps suggested were the school district showing bus routes, and a map showing municipal features such as stop signs, fire hydrants, police and fire departments.

The students then broke into groups and were responsible for gathering the data necessary for their map. For the businesses, that meant obtaining addresses, phone numbers as well as their geographic coordinates. The coordinates for all locations were obtained using a GPS receiver. This turned out to be rather time consuming for the students generating the municipal map as they quickly found out there were lots of fire hydrants, stop signs and storm drains in our little village. After the data was obtained, they started making their map. This took quite a while since we only had 2 computers with GIS software, a personal laptop and a computer on loan from Fulton-Montgomery Community College's Spatial Information Technology Center (SITC).

Most of the maps the students produced used the Orthoimagery quads from the New York State GIS Clearinghouse as base maps. Students had to generate their own attribute tables so they learned about entering and editing tables. The students involved with the Snowmobile Map, drew in the trails on top of the orthoimagery while looking at a NY State Snowmobile Trail map.

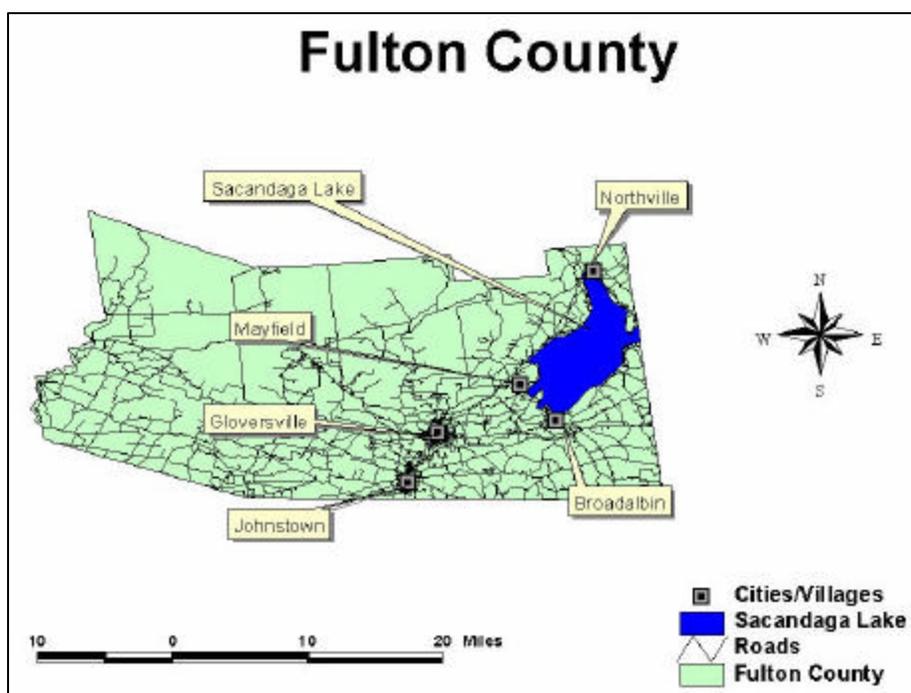
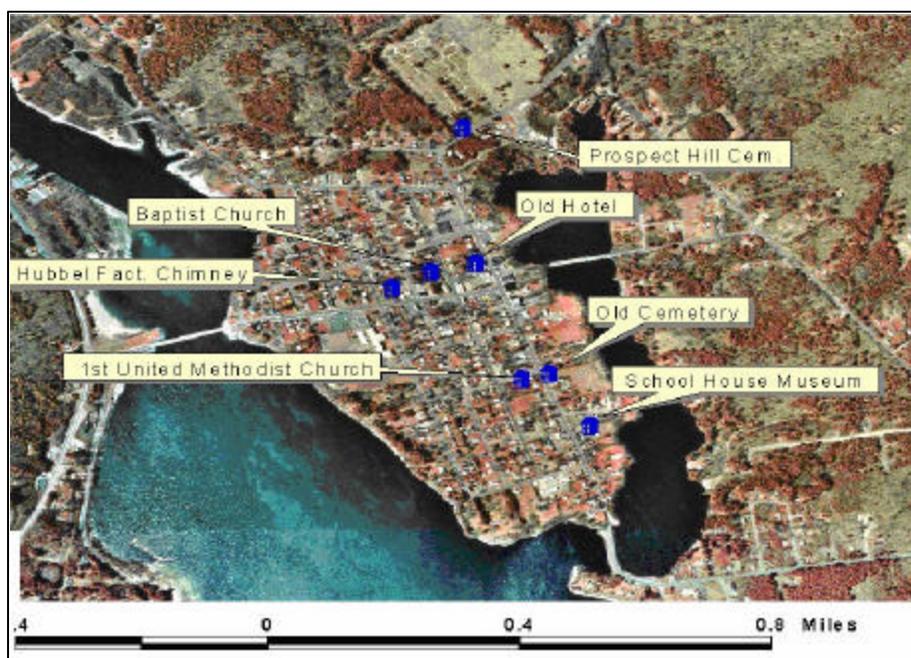
Overall, the students enjoyed working on the project and gained some useful GIS knowledge. Our reward for completing the

project was a free school site license from ESRI. The software will be installed in a student computer lab for use during this school year so that more students will be introduced to GIS.

Our project can be viewed at the following URL:

<http://gis.esri.com/industries/k-12/commatlas/03-04/mcraft/Northville%2C%20NY/index.html>

For more information contact Marcia Craft at mcraft@northville.csd.k12.ny.us.



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New York State DOT's Winter Traveler Advisory

Introduction

New York State Department Of Transportation (DOT) is undergoing a transformation which will redefine DOT's structure and modernize its mission. Originally DOT was organized to efficiently plan, design, and build the state and interstate highway systems. Now that these highway systems are mostly complete, DOT is shifting its focus towards operating the infrastructure to optimize performance within five priority areas: mobility/reliability, safety, economic sustainability, security, and the environment. It is clear that a cornerstone of this transformation is in information management. The Winter Traveler Advisory (WTA) fits well into this transformation as it offers DOT maintenance workers a new way to provide valuable information as they perform their regular work. The idea is very simple: the ability to capture information about the current status of the road network directly from snow plow operators and make it available to the public via an interactive web-base map. This article will describe the data input mechanisms, the output map functionality, technical support challenges, and public reaction to the WTA.

Input

The critical information link was already in place when we started the WTA. In most areas we already had snow plow drivers in radio contact with radio dispatchers located throughout the state. We reached out to the DOT maintenance forces to coordinate and pre-define the road segments that they would be responsible for reporting on. The reporting is to happen whenever snow and ice removal is in operation. As a plow operator drives onto one of these reporting sections they are to radio in and report the road status, and optionally include weather conditions and other pavement conditions observed. The plow driver uses the radio to communicate the report to a radio dispatcher. The radio dispatcher in the office clicks on an internal web form to enter the report. Fortunately, most of the offices that the dispatchers work from are on the DOT wide area network.

We developed a simple HTML form with radio buttons for the required status field and check boxes for the optional contributing pavement and weather conditions. The input forms are generated dynamically using J2EE and Oracle 9i Application Server. As edits are made to the reporting road segments, those changes are automatically reflected in the input form. For example, a change may be needed to the road segments to make more granular reporting possible. If the driver finds that conditions typically change in the same place along a segment, the driver may request that the segment be broken into two to allow independent reporting on the two segments.

Route Information	Road Status	Road Conditions	Weather Condition
NY81 Details	<input type="checkbox"/> No Report <input type="checkbox"/> Dry Conditions <input type="checkbox"/> Wet Conditions <input checked="" type="checkbox"/> Snow/Ice Conditions <input type="checkbox"/> Severe Snow/Ice Conditions <input type="checkbox"/> Closed	<input type="checkbox"/> Slush <input checked="" type="checkbox"/> Snow Covered <input type="checkbox"/> Slippery Stretches <input checked="" type="checkbox"/> Icy Spots <input type="checkbox"/> Slippery Spots <input type="checkbox"/> Flooded Areas	<input type="checkbox"/> Moderate Snow Fall <input type="checkbox"/> Foggy <input type="checkbox"/> Dense Fog <input type="checkbox"/> Poor Visibility <input type="checkbox"/> Heavy Snow Falling <input checked="" type="checkbox"/> Moderate Snow Falling <input type="checkbox"/> Light Snow Falling <input type="checkbox"/> Blowing & Drifting <input type="checkbox"/> Freezing Rain Falling <input type="checkbox"/> Rainy

WTA Input Form

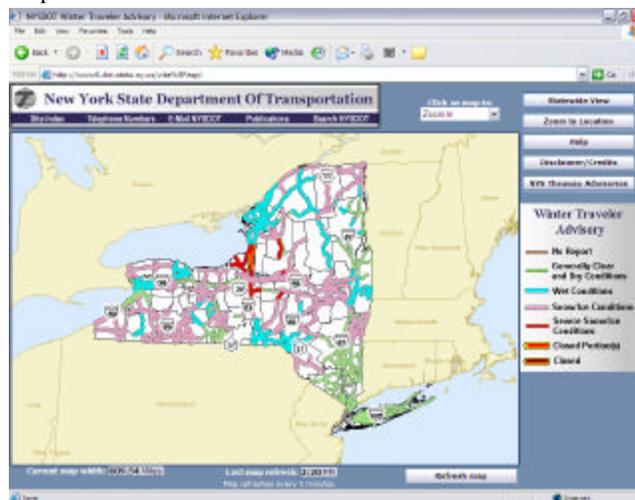
Over 700 DOT employees have input accounts to the WTA and are able to input data from more than sixty locations around the state both day and night. In some locations, the job of radio dispatcher is rotated among the plow drivers, 670 road segments are currently being reported on.

The New York State Thruway Authority also built a Winter Traveler Advisory System. The Thruway system is also based on an Oracle database. DOT and the Thruway Authority met to standardize both road segments and the wording of the status codes. We used the national standard Transportation Management Data Dictionary (TMDD) as a starting point to select appropriate code values. We established a database link to extract current road reports from the Thruway Authority system and automatically populate the NYS Thruway portion of the DOT system every ten minutes.

Since DOT does not maintain roads in New York City, we are partnering with New York City Department of Transportation, New York City Police Department and the New York City Joint Traffic Operations Center to enter reports on selected streets and highways within the city. The New York City Joint Traffic Operations Center is a node on the DOT wide area network, so reports can be entered from that center using the same forms that DOT's radio dispatchers use.

Output

Once a report is in the database, the Internet Map Server (IMS) joins it to a spatial feature representing that road segment. The road segments and the supporting base map images are stored in Oracle using ESRI's Spatial Database Engine (SDE). Reports over four hours old default to "no report".

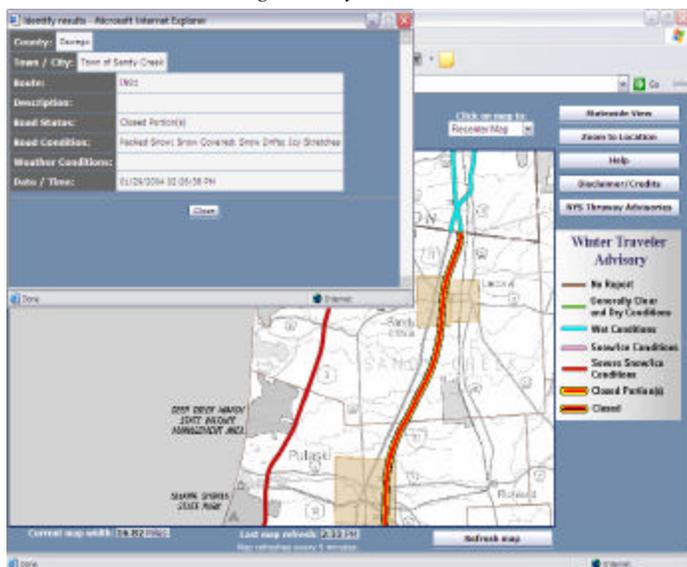


WTA State-Wide View

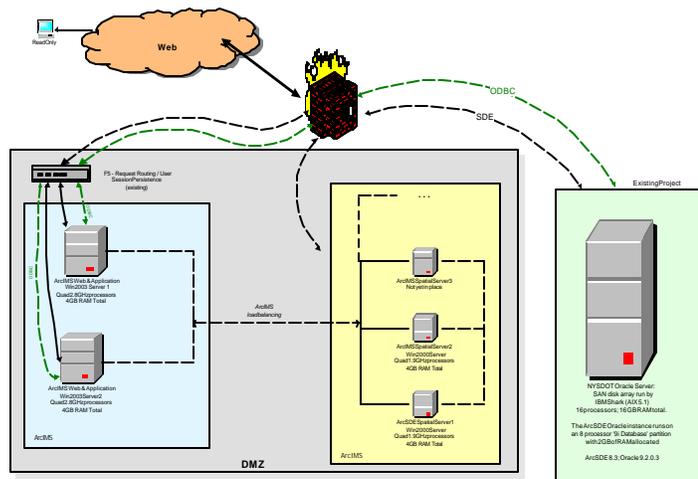
The Internet Map Server allows users to zoom in and out, re-center the map, zoom directly to a place of interest and click on a road segment to get a detailed report. Road segments are colored based on values in the status field, but other contributing weather and pavement conditions are available by clicking on the road. Using scale triggers, the Internet Map Server is configured to provide greater base map detail as the user zooms in to a larger scale.

DOT... continued from page 8

WTA Zoomed in on Oswego County



Two web servers running the Internet Map Server and Active Server Page code sends requests to two spatial servers. The spatial servers create the map images by connecting to the database to join each road report to the shape of the road stored in SDE. They then overlay the road data on the appropriate base mapping, and return a PNG image. The Internet Map Server is able to convert the screen position of the user's mouse clicks into real world coordinates to interact with SDE. Multiple instances of the Internet Map Server spatial server component are running on each spatial server.

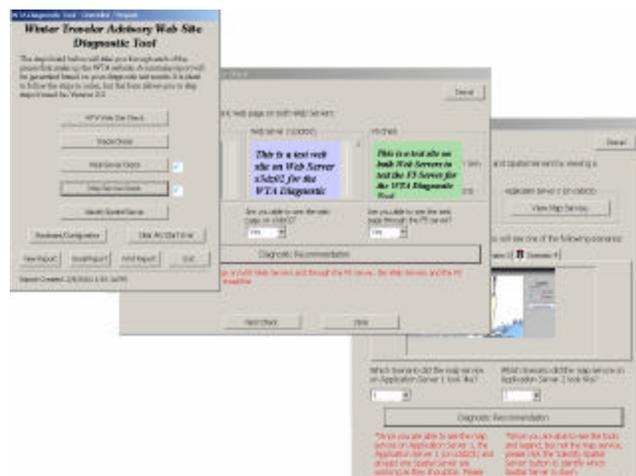


Support

The WTA is the first application requiring IT support around the clock. Although DOT's IT Group is not staffed during non-business hours, the IT managers and technical experts have developed a support plan for answering support requests during non-business hours.

Since the server components are redundant and automatically load balanced, it is very hard to know which components are functioning incorrectly when problems occur. Problems are hidden from the user by allowing the system to automatically shift requests to the components

which are working properly. To monitor the site and troubleshoot problems, DOT developed a diagnostics tool. This tool acts as a wizard displaying results from various parts of the system, and asking the support staff a series of questions about how the results look. The diagnostics tool can then automatically send an email to all support staff and management including the results of the diagnostics tool and recommended corrective actions.

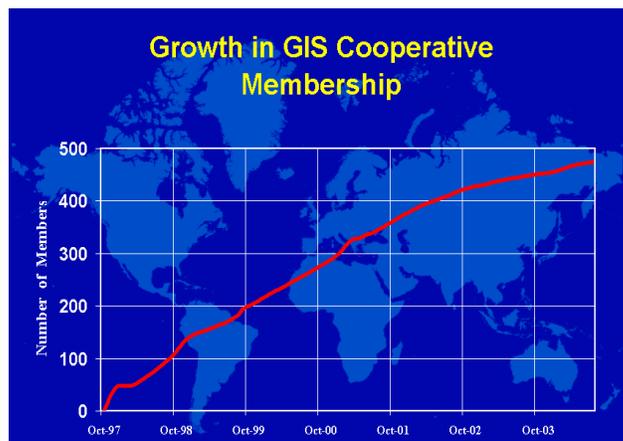


Fan Fair and Feedback

The Winter Traveler Advisory was announced to the public in a press release by Governor Pataki on January 27, 2004. View at www.state.ny.us/governor/press/year04/jan27_1_04.htm.

January 28 was a snowy day throughout New York. We received 255,000 hits in five hours that day; the system continued to run although the performance was slow. The WTA announcement was written up in at least sixteen newspapers and appeared on many TV stations. Only a few adjustments needed to be made to fine tune its performance. Now, under a normal load during a snow storm of 14,000 hits per hour, the performance is excellent. Feedback from the traveling public has been favorable. To get to the WTA go to the NYS DOT Web page (www.dot.state.ny.us) and click on the Winter Traveler Advisory link. Then to view the map, click on the Current Conditions link.

For more information on DOT's Winter Traveler Advisory contact Frank Winters at fwinters@gw.dot.state.ny.us.



Using Mapped Data to Develop Your Revitalization Strategy

Every organization has a different strategy on how they approach the revitalization of individual houses or buildings or even entire neighborhoods. The organization's experience, their general philosophy, the nature of the housing market, the funding streams available and many other variables all influence the organization's revitalization strategy. The data you choose in developing a revitalization strategy and how you use this data will impact your housing strategy since the analysis and use of data (at least as it applies to community revitalization) is a creative art rather than a science.

The purpose of this article is to propose one idea on how data and maps can be used to help understand, build, and articulate a housing strategy. It will also address the following two questions: What implications do being able to "see" an area have for overall rehabilitation strategies? How can these data be translated into a successful revitalization effort?

A preservation company may choose to use this information and decide to focus its efforts in Tract 23 because it is in the worst shape, while another preservation company may choose to focus on Tract 24 in order to keep it from deteriorating further.

By looking further at the data, one learns that Tract 23 has much more housing rated in Poor Condition, six percent, compared to Tract 24 and Tract 22 with about four percent and two percent, respectively, of housing in Poor Condition. While these numbers may not seem dramatic, focusing on housing rated Fair Condition can add additional insight. Tract 22 has the highest percentage of Fair condition housing, at over twenty seven percent. Tract 23 has almost twenty-five percent of its homes in Fair Condition while Tract 24 has only sixteen percent of its housing in this condition. With this knowledge, an organization might decide to focus a moderate rehabilitation program on Tracts 22 and 23, or conversely it might choose to focus a major rehabilitation or demolition project on Tracts 23 and 24.

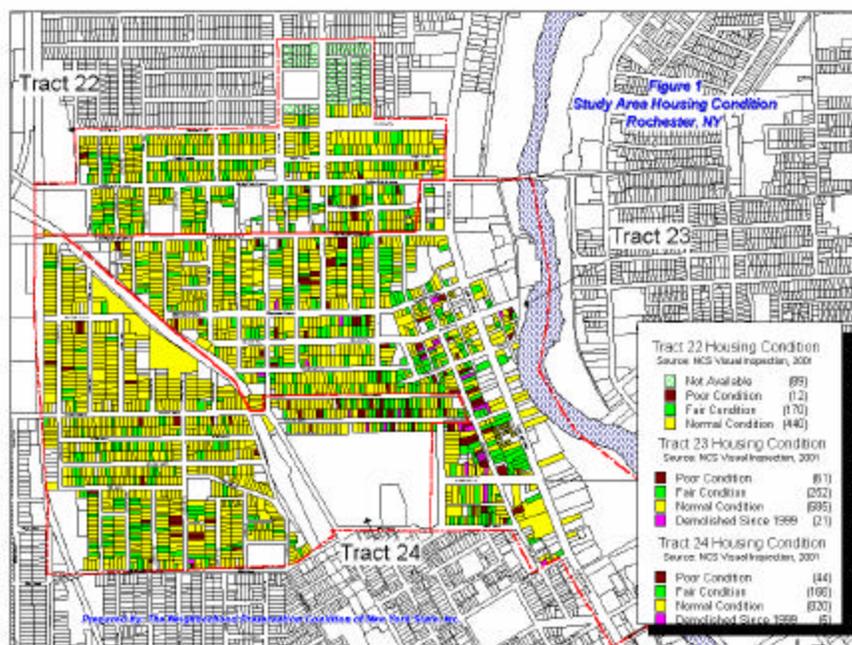
Further analysis of the data in the map yields additional clues to this area. Poor and Fair Condition housing is not evenly distributed throughout each tract, but tends to cluster on

area (above the large white section) of Tract 24. Or, if the organization was pursuing funds from the city which had just funded an economic development project near the river, it might choose to focus its efforts on the eastern edge of Tracts 22 and 23.

The illustration is relatively simple in its demonstration of housing condition. A map can include additional layers that might show the number of units in the building, whether it is owner occupied or renter occupied (or vacant/boarded up), the age of the building, transportation routes and the existence of lighting. With so many variables, there are clearly many different strategies that can be utilized. One organization may focus their efforts on buildings or neighborhoods with historic significance; another on those with easy access to services such as public transportation, shopping, and child care; and others on two-family housing, known drug dealing locations, etc.

There is not necessarily a right way or wrong way to approach neighborhood revitalization efforts; in fact many different approaches may be required to make a significant impact. The important thing is being able to articulate why a housing program is focused in certain ways and to identify what results you hope to achieve. The ability to articulate a strategy will also help in fundraising efforts as well, whether through the State's Unified Funding Round, your local Community Development Office, banks, foundations or corporations. As every preservation company is required to submit a three-year plan to DHCR by June 30, 2003, it is important to begin articulating a range of strategies that will help revitalize your neighborhood.

For more information on mapping, contact Bob Breglio at b.breglio@npcnys.org.



As the illustration indicates, a simple analysis of housing condition shows that Tract 23 has the highest percentage of Poor Condition or Fair Condition housing, almost thirty one percent of the housing stock. Tract 22 is close behind, with about twenty nine percent of the total while Tract 24 has about twenty percent of its housing in either Poor or Fair condition.

certain streets and areas within each tract. An organization may choose to rehabilitate the houses on streets which are generally in normal or better condition (the northwestern end of Tract 24 for instance) to keep blight conditions from spreading. Another organization might decide to go right into the heart of the most densely packed Poor Condition housing as seen in the northeastern

GIS Communications and Outreach

Looking to find a local GIS Users Group? Interested in contributing to GIS related electronic discussion lists? Then the NYS GIS Clearinghouse Communications webpage has the information that you are looking for. Here, you will find links to many different electronic discussion email lists, as well as links to and contact information for the many GIS user groups across New York State.

<http://www.nysgis.state.ny.us/comm.htm>

Maintaining the New York State Canal System with GIS and GPS Technology

The New York State Canal Corporation has implemented a new application for dredging analysis, using GPS receivers, depth sounding equipment, and GIS. The Corporation, under the auspices of the NYS Thruway Authority, is responsible by law for operating and maintaining the NYS Canal System. This System is comprised of 524 navigable miles of contiguous waterways—the Erie, Champlain, Oswego, and Cayuga-Seneca Canals.

One of the primary maintenance responsibilities of the Corporation and its division staff in Albany, Syracuse, and Buffalo, is to ensure that navigable depths are maintained throughout the System. Required depths vary from 12 to 14 feet, depending on location, and are maintained via dredging operations throughout the navigation season.

Until recently, determination of canal dredging needs has been extremely labor-intensive. Canal staff spent numerous hours in the field during the low water, non-navigation season, taking survey measurements of areas known to frequently fill with sediment. Traditionally, measurements were captured and depths determined via visual inspection, if water levels were low enough, or depth finding equipment. This information was then plotted by hand on large-scale schematic paper charts, brought back to the office, and volumes were estimated manually. The charts were then used to guide dredging operations for the following navigation season. This process had many shortfalls, including crude accuracy of survey information (resulting in misleading volumes), and positional inaccuracies of locations that needed to be dredged.

In 2001, the Corporation decided it needed a more accurate, less time-consuming way of

determining dredging needs. Personnel set out to develop a process that would incorporate GPS, depth soundings, and GIS combined into a single application. Field staff researched and identified equipment that could accomplish these goals, and the foundation was developed to revamp the entire dredging needs analysis process. The Corporation already had a GIS infrastructure in place, with enterprise data sets accessible to all division staff. Thus, once an application was established, the backbone for sharing data among divisions was already available.

Division staff acquired a high-precision survey depth finder (Interspace Technologies Corp.), and established a connection to a GPS receiver (Trimble ProXRS), to automatically collect bathymetric data in the channel. This equipment is mounted to a small boat that is used by Canal field staff. The vessel then conducts sweeps across the navigation channel at a speed of 5 mph, collecting channel depths and x,y coordinates every second. The units feed this data into a database that is then downloaded to an onboard PC. Once sweeps of an area on the Canal are complete, the data is brought back into the office and converted to a shapefile.

To develop the analytical portion of the application, it was necessary to establish several base layers of data for overlay and analysis purposes. Staff worked together to import and positionally correct hundreds of paper engineering “residency sheets”, which depicted the navigation channel established in the early 1900s. Once these residency sheets were overlaid atop the state’s newest digital orthoimagery using GIS software, a channel layer was developed. With field staff assistance, this layer was corrected to incorporate any changes that have occurred in the field over time. The next phase of data development was to create a shoreline layer

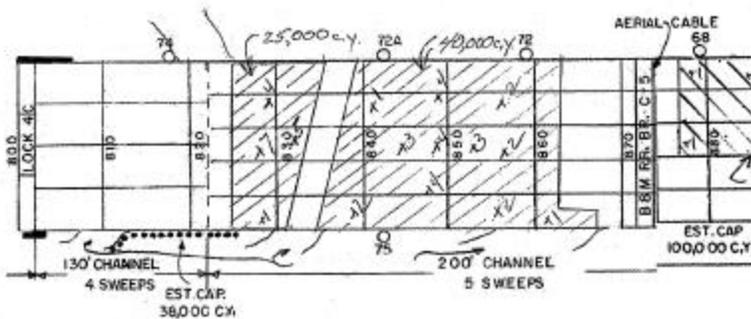
of linework to help establish water level elevations and incorporate them into the analysis of the collected bottom elevation data. The channel width varies greatly, from 75 feet to 200 feet, depending on whether the channel flows through an existing river section (canalized) or constructed solely for the purpose of the developing canal through land areas (land cut).

With the data layers established, the information is brought together and analyzed in GIS. Using the ArcGIS 3-D Analyst extension and the field-collected data, users can create a triangulated irregular network (TIN) of the area to help analyze bottom sedimentation. This layer can be symbolized and displayed in ArcMap, and can be brought into ArcScene to create a 3-D fly through of the channel. This helps to better visualize problem areas where material needs to be removed from the channel.

Using ArcObjects and VBA, Syracuse Division staff developed a volume determination process for other users with limited knowledge of GIS. This tool allows users to delineate a specific target area and create a TIN of the location. Based on the character of the channel and desired depth parameters, the application determines accurate volumes of material that may impede navigation in the channel, thus needing to be removed.

This new dredging analysis application will ultimately save the Corporation countless man-hours in collection and analysis of information, as well as yield a much more accurate depiction of program needs for years to come. The application is currently deployed in two of the three Canal Division offices and will soon be standard procedure system-wide.

For more information contact Jaime DeLuca at jaime_deluca@canals.state.ny.us.



Sample section of a chart showing areas with sediment build-up.

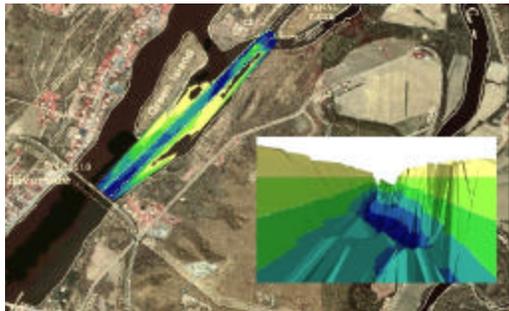


Image showing a TIN, derived from field data, overlaid on an orthoimage. Superimposed, is an exaggerated 3-D representation of channel depths.

Local Government GIS Web Hosting Pilot

Earlier this year, the NYS Office of Cyber Security and Critical Infrastructure (CSCIC) invited proposals from NYS local governments to participate in what is now called the Local Government GIS Web Hosting Pilot. The purpose of this project is to determine the usefulness of having a GIS Web Hosting Service accessible for county and local government. Specifically, the focus for the application will be to support everyday business uses for people accessing/utilizing parcel (land records) data. Each participating local government also has the option of including up to ten other local datasets they have developed. Additionally, many other state-owned GIS datasets will also be included in the ArcIMS application. The pilot will include the development of an online GIS application, as well as web hosting services for four county/local governments for a one year period. The governments selected to participate include the Town of Brunswick, as well as Clinton, Delaware and Tioga Counties. Funding for the pilot will be provided by OCSCIC with a maximum total budget of \$14,500.00 for both the application development and web hosting services for the one year period. Look to the NYS GIS Clearinghouse for more news about when the applications will be up and running.

NYS GIS Help Desk

The New York State GIS Help Desk is administered by the NYS Office of Cyber Security & Critical Infrastructure Coordination and sponsored by the New York State GIS Coordination Program. This web-based help desk is intended to provide support for both general GIS questions and specific questions regarding the technical use of the following GIS software products:

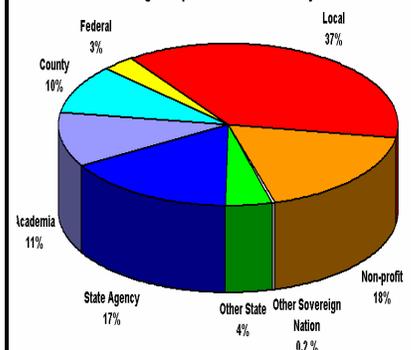
ArcGIS 9
 ArcGIS Desktop: ArcView
 ArcGIS Desktop: ArcEditor
 ArcGIS Desktop: ArcInfo
 ArcInfo Workstation
 ArcView GIS 3.x
 MapInfo Professional

Visitors can search the online **Knowledge Base** to view previously submitted questions and answers or view the Help Desk's most **Frequently Asked Questions**. Members of the NYS Data Sharing Cooperative may **Submit** GIS technical questions which will be answered within one (1) business day. All questions and answers will also be included in the searchable knowledge base. For assistance in the use of the NYS GIS Help Desk, visitors can select **Help** from the options on the left.

GIS Data Sharing Cooperative Still Growing

As expected, more and more governmental entities, not-for-profits, and academic institutions are signing the Data Sharing Agreement, allowing each other to share their GIS data sets. The number of Cooperative Members is at the time of this publication an all-time high of 472. A breakdown of Cooperative members by sector is as follows:

Data Sharing Cooperative Members by Sector



New Free Workshop, "Introduction to Geocoding and Data Improvement"

The New York State Office of Cyber Security and Critical Infrastructure Coordination (CSCIC) is pleased to announce a new, free training class "Introduction to Geocoding and Data Improvement." The class is being offered in coordination with the NYS GIS Coordination Program. This 3-hour class introduces GIS users to the basic concepts and processes of address geocoding, data improvement, and illustrating how positional error caused by geocoding may affect the results of a GIS project. Particular attention will be given to the long term effects (*i.e. cost savings*) of data and attribute improvement. In addition, attendees will learn about current CSCIC programs and available resources to facilitate data improvement and geocoding.

This class will pay particular attention to and utilize the newly released preliminary ALIS road centerline data, now available at the NYS GIS Clearinghouse.

Classes will be held at various locations around the state, including Schenectady, Kerhonkson as part of the NYS GIS Conference, Plattsburgh, Syracuse, Long Island, New York City, Buffalo, Rochester and Binghamton. The free class is available to State Agencies, Local Governments and members of the NYS GIS Data Sharing Cooperative. For more information on upcoming classes and to register on-line when a class has been scheduled, please visit the NYS GIS Clearinghouse at:

www.nysgis.state.ny.us/resource.htm. Due to expected high demand, make sure to register on-line to ensure seating is available. If you have any questions, feel free to contact John Borst at the NYS Office of Cyber Security and Critical Infrastructure Coordination at 518-473-4443.

A special thanks to the contributors to this issue: Jennifer Gregory (Tioga Co.) Frank Winters (DOT), Sara Frankenfeld (Formerly of Warren Co.) Sunita Halasz, Rigel Aldridge, John Barge (APA), Marcia Craft (Northville Central School), Alex Chaucer (Fulton-Montgomery College), Steve Romalewski (NYPIRG), Bob Breglio (Neighborhood Preservation Coalition), Jaime Deluca (NYS Canal Corp.), Cheryl Benjamin, John Borst, Tim Ruhren (CSCIC)

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