RESPONSE TO REQUEST FOR QUALIFICATIONS FOR:

DIGITAL PARCEL DATA PRODUCTION AND REGIONAL WEBSITE

SUBMITTED TO:

CENTRAL CONNECTICUT REGIONAL PLANNING AGENCY

SUBMITTED APRIL 1, 2013 BY:

www.AppGeo.com

24 School Street, Suite 500, Boston, MA 02108
Tel: 617-447-2400 ● Fax: 617-259-1688

APPGEO PROPOSAL: 2013-0030P

This proposal includes methods and ideas that shall not be disclosed for any purpose other than to evaluate this proposal. Should a contract be awarded to AppGeo, the Government shall have the right to duplicate, use, or disclose this proposal to the extent provided in the resulting contract.

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March 27, 2013

RE: Transmittal Letter for Response to RFQ for Digital Parcel Data Production and Regional GIS Website

Dear Mr. Pickering:

Applied Geographics, Inc. (AppGeo) is responding to the Central Connecticut Regional Planning Agency (CCRPA) Request for Qualifications (RFQ) for Digital Parcel Data Production and Regional GIS Website because we have the right combination of experience and skilled staff to meet your needs for data support, and because we offer a cost-effective and high-performance hosted Web GIS application.

AppGeo understands that the CCRPA is seeking to create parcel data for three of its municipalities, to enlist ongoing support for parcel maintenance, and to roll out a regional GIS Website for all of its seven municipalities.

This proposal presents our qualifications and the information required by the RFQ. Highlights of our qualifications include:

- Collected existing parcel data for the entire State of Connecticut and standardized into the FGDC Cadastral Publication Standard which was the precursor to the current Cadastral Data Standards (CDA) standard
- Converted more than 50 Massachusetts towns into the MassGIS Level III standard upon which the Connecticut CDA standard was based
- Designed and built municipal and regional GIS Websites that provide all of the required functionality and more using modern spatial information technologies, including a new MapGeo mapping application that is used by 56 communities in 7 different states.
- More than a decade of hosting GIS websites for municipalities, counties, and regions, including cloud hosting on our own secure private, high performance virtual cloud on Amazon Web Services.

We have organized our response to include all of the items (1 – 10) asked for in the RFQ, *Requirements for the Statement of Qualifications*.

Should you have any questions concerning this proposal or require additional information, please feel free to contact me directly by telephone (617-447-2402) or email (sanderson@appgeo.com).

We would greatly look forward to the opportunity to serve the CCRPA through this project.

Sincerely,

Steve Anderson
Senior Vice President

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1. APPGEO INFORMATION

Applied Geographics, Inc. (AppGeo)

Office from which work will be managed and performed:

Commerce Center One
333 East River Drive, Suite 106
East Hartford, CT 06108

860-643-4401 (Main)
860-263-3521 (Fax)
sanderson@appgeo.com

FEIN: 04-3124927

Authorized Representative:

Steve Anderson, Senior Vice President
617-447-2402 (Direct)
860-643-4401 (Main, Connecticut Office)

Alternate Authorized Representative:

Rich Grady, President
617-447-2455 (Direct)
617-447-2400 (Main, Boston, MA Office)
rgrady@appgeo.com

Project Director:

Michael Blake, Senior Project Manager
617-447-2406
860-643-4401 (Main, Connecticut Office)
mblake@appgeo.com

For all of the above, normal Hours of Work are: 9-5, M-F

2. APPGEO PROFILE

A. QUALIFICATIONS AND EXPERTISE

I. QUALIFICATIONS

1. TYPE OF EXPERTISE

AppGeo provides a complete range of high quality Geographic Information Systems (GIS) and GIS-related Information Technology (IT) consulting services and innovative solutions. Our service offerings include the following:

- GIS strategic and business planning, needs assessment, implementation planning
- Geospatial data modeling, data development and integration
- GPS-based data collection
- Custom applications for desktop, Web and mobile platforms
- Standardized web, desktop, and mobile platforms and solutions
- Cartography and Spatial Analysis
- Training and Technical support
- Hosting of Web applications

With specific regard to the main service requirements of this project (digital parcel data and GIS Web application deployment), AppGeo has expertise in and provides the following services/tasks:

- Parcel creation and maintenance:
  - Safe **handling** of all hardcopy property maps and data
  - **Evaluation** of property maps and base maps, data models, data standards, metadata, and CAMA systems, and any other inputs to the digital parcel data development process
  - **Scanning** parcel maps
  - Property Map **Image rectification and registration** to the base map layer
  - Heads-up **digitizing** of map features and annotation, can include (a) Coordinate Geometry-based property delineation, (b) manipulation and registering of digital files in GIS or AutoCAD formats
  - **Verify** Unique Identifier for Each Parcel
  - **Property map grid** replication or creation
  - **Link** Parcels to CAMA Database
  - **Quality Assurance and Quality Control** – a set of manual and automated procedures that cover all steps of the process: error checking on property map details, establishment of appropriate base map, uniqueness of parcel identifiers, image rectification and registration, CAMA-GIS data integration and linking, CAMA-

parcel match rates and error reporting, check plotting (hard copy and/or onscreen review)
  - **Check Plot** Production and Town Review
  - Creation of useful **derivative map products** from coded digital parcel data and other data layers, e.g., zoning, historic districts, voting districts, road centerlines, key interest points, and so forth

- Development of Interactive GIS Websites:

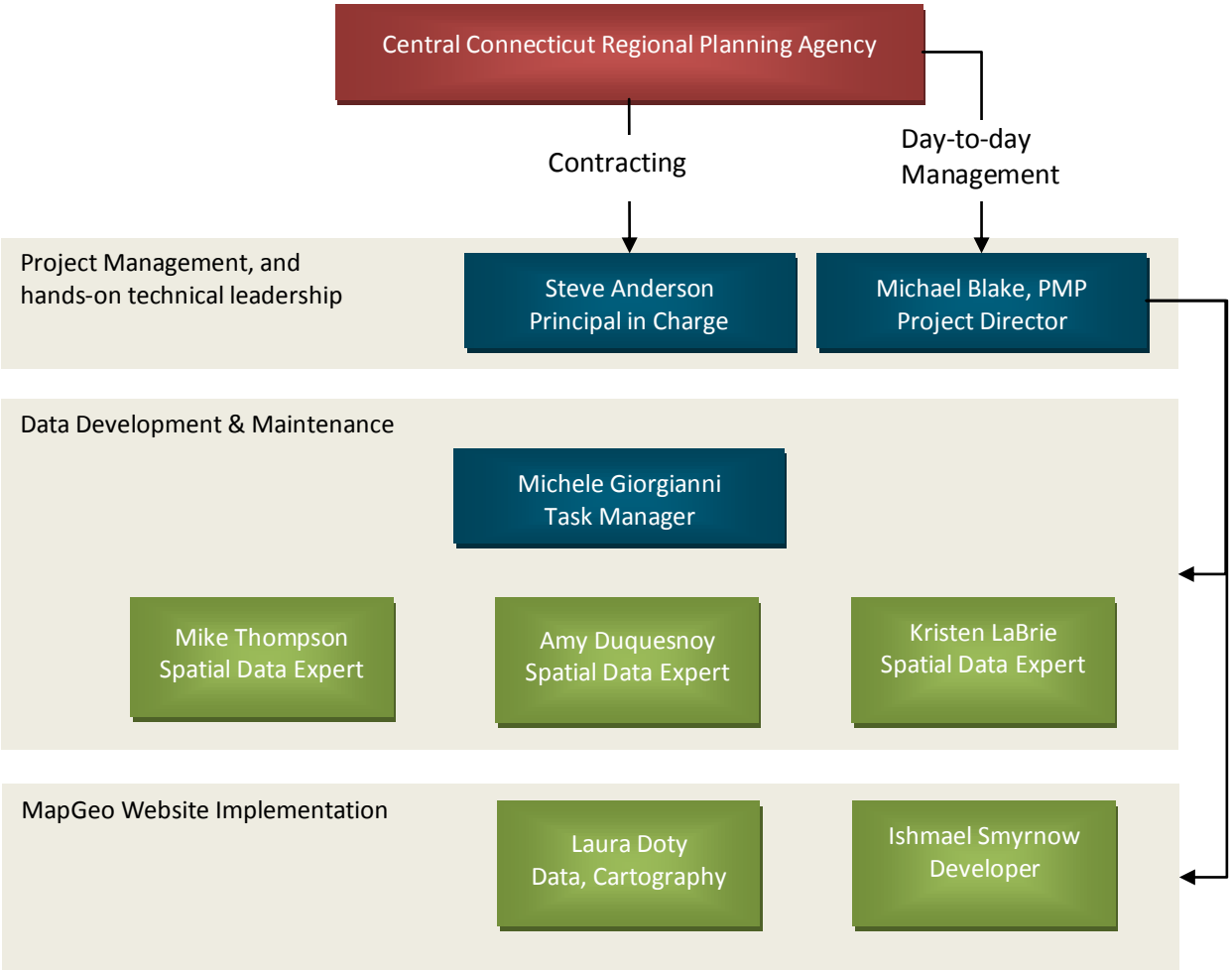
  - Collaborative **design** with client input and feedback, including formal workshops and JAD sessions and informal facilitated discussion, requirements analysis
  - Business **process analysis**, workflow evaluation, use case development , specification, and documentation
  - Creation of **interface** mock-ups, wire frames, User Interface concepts, and prototypes
  - **Graphic** concepts, branding and style
  - **System and software architecture**, diagramming and technical specification, hosting infrastructure, virtualization
  - **Data** modeling, database design, physical and logical data models, metadata
  - Application **programming**, unit or functional **testing**, system or beta testing, acceptance testing
  - Development of application-related **Web services** (map and data), integration with customer business systems and third party Web services, integration with customer databases through parameterized
  - **Installation** on client's host environment OR deployment to cloud hosting environment, research on hosting options/costs/administration requirements
  - Onsite **technical support** for install, testing, launch, including knowledge transfer to Client Site administrators and managers.

2. HOW LONG PROVIDED SERVICE

AppGeo was founded in the Commonwealth of Massachusetts in May of 1991 and has had a Connecticut office for 10 years and are now located in East Hartford. We have provided the above range and types of services since its founding 22 years ago with a focus on serving local governments across New England.

3. ORGANIZATIONAL CHART OF PROPOSED TEAM BY ROLES

On the following page is an organizational chart for the proposed Project Team.



4. SUMMARIZE PERSONNEL, EQUIPMENT AND AVAILABILITY

The qualifications of the proposed personnel are summarized below. All proposed personnel are available to work on this project, and the level of effort will depend on the stage of the project. Resumes are provided in an Appendix to the proposal. As described elsewhere in this section (Section 2.a.i.5), AppGeo has all the necessary software licenses, computing facilities, and other related equipment to perform all of the tasks required for this project.

Steve Anderson, Senior Vice President, GISP, will serve as **Principal-in-Charge**, responsible for all contractual matters, overall project oversight and quality assurance. Mr. Anderson has more than 25 years as a GIS consultant primarily focused on serving Connecticut state and local government.

Michael Blake, Senior Project Director, PMP, will serve as **Project Director,** responsible for day to day management and reporting, project communications, task management

across the different project requirements, staff assignments, and progress reporting. Mr. Blake has more than 20 years of experience as a GIS manager and consultant.

Michele Giorgianni, Assistant Director of Local Government, will serve as **Parcel Data Task Manager**, responsible for all aspects of parcel creation and maintenance services for the CCRPA. Ms. Giorgianni has ten years of GIS consulting experience involving all facets of municipal GIS implementation focused on Southern New England.

Data Production Team:

Kristen LaBrie, Project Manager, 8 years of experience
Amy Duquesnoy, GIS Analyst, 5 years of experience
Mike Thompson, GIS Analyst, 3 years of experience

Web Application Implementation Team:

Laura Doty, GIS Analyst, 5 years of experience in GIS analysis, data integration
Ishmael Smyrnow, Developer, 5 years of Web development experience

5. COMPLETE DESCRIPTION OF ABILITY TO PROVIDE SERVICES

As discussed above, AppGeo has experience in all aspects of this project, including performing this exact type of work for Connecticut municipalities and regional Councils of Government. Details that follow confirm and describe our ability to provide the services sought by reference to skills, technologies and completed project work.

With regard to parcel data development and updating:

- AppGeo has provided parcel data development or parcel maintenance for more than 30 Connecticut municipalities, for communities associated with regional Councils of Government (SECCOG, CRCOG), and for municipalities across the Northeast totaling hundreds of thousands of parcels.

- AppGeo collected and standardized parcel data for 139 towns in Connecticut bringing them into the FGDC Cadastral Publication Standard on a statewide Broadband Availability project for the Department of Public Utility Control funded through the National Telecommunication and Information Administration (NTIA) Statewide Broadband Data Initiative (SBDI).

- AppGeo has extensive experience with parcel conformance to state standards, including more than 80 municipalities in Massachusetts, which is the digital parcel standard upon which the Connecticut State Standard is based

- AppGeo routinely provides parcel (and other data layer) maintenance services to municipalities across New England as a part of ongoing technical support

- AppGeo has systems, staff, and appropriate software in place for efficient handling and processing of parcel data from its source - hard copy map sheets, CAD drawings, survey plans - to the finished digital data products integrated with CAMA data records (see immediately below for list of software)

- Familiarity with the majority of CAMA systems and database formats in use in New England including Vision, CLT, eQuality, Patriot

With regard to interactive Web applications, AppGeo has depth and breadth of staff capacity and expertise, technology resources, and a track record of innovation:

- AppGeo has a team of 5 full-time application programmers led by Vice President and Director of Software Architecture, Peter Girard, who has more than 25 years of experience as a GIS consultant and applications developer.

- AppGeo programming staff has expertise with modern Web application, GIS, and Spatial IT technologies. Technologies, software and third party tools we maintain and use include:

  - Esri ArcGIS, ArcGIS Server, ArcSDE, ArcPAD
  - OpenGeo suite: GeoServer, GeoServer Web Cache (GWC), PostGIS
  - CAD drawing and design software
  - Relational Database Management Systems (Oracle, ArcSDE, SQLServer, PostgreSQL, PostGIS, MSAccess, MySQL, SQL-Lite).
  - Safe Software FME - Data integration and conversion software
  - GPS Data Collection devices (Trimble)
  - QTM – Quick Terrain Mapper LiDAR data processing and analysis software
  - GitHub for online, collaboration, review, and code management, including ticketing
  - Programming and applications software, environments, and tools - .NET, AJAX, Visual Studio.NET, VB, VB.NET, C#, JavaScript, ArcGIS Server, ASP.NET, AJAX, ArcObjects, Python scripting
  - Data and imagery compression software (Mr.SID) and tiling and caching methods
  - Collaboration software and environments: GoToMeeting, GoToWebinar, Wiki, Sharepoint

- AppGeo has provided client Web application hosting services for 10 years and maintains a secure hosting infrastructure at its Boston Office, and we manage hosting of GIS applications in a virtualized secure private cloud on Amazon Web Services that includes more than 50 websites at present, including several in Connecticut

- Based on its maintenance and use of the above software and hosting infrastructure, AppGeo has in-depth knowledge and experience in system security, load management and sizing, system architecture, and current IT trends and technologies.

- AppGeo employs a full-time system administrator and an IT specialist, who support our technology infrastructure, hosting environments, and provide technical support to our clients, as needed

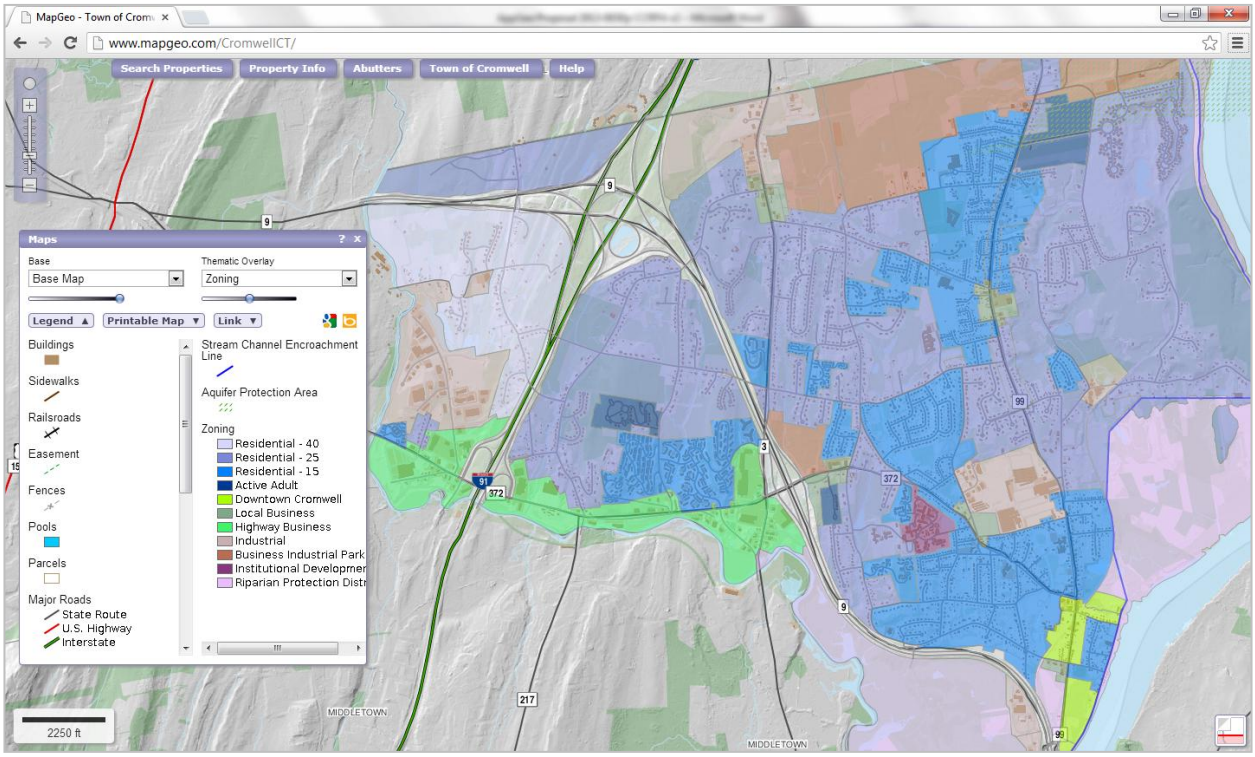
- Working with various municipal departments, AppGeo programmers have developed a variety of interactive applications that meets the needs of municipal departments for spatial data, especially property data, for example:

  - Abutter's applications for assessors
  - Network trace and flow applications for public works and utilities
  - Mobile applications for public works field crews
  - Environmental permitting and regulatory compliance and mapping for wetlands
  - Map-based document management systems for municipal facility and asset management
  - Address point data creation and maintenance applications integrated with public safety, permitting and public works departmental workflows
  - Cemetery mapping and management systems applications

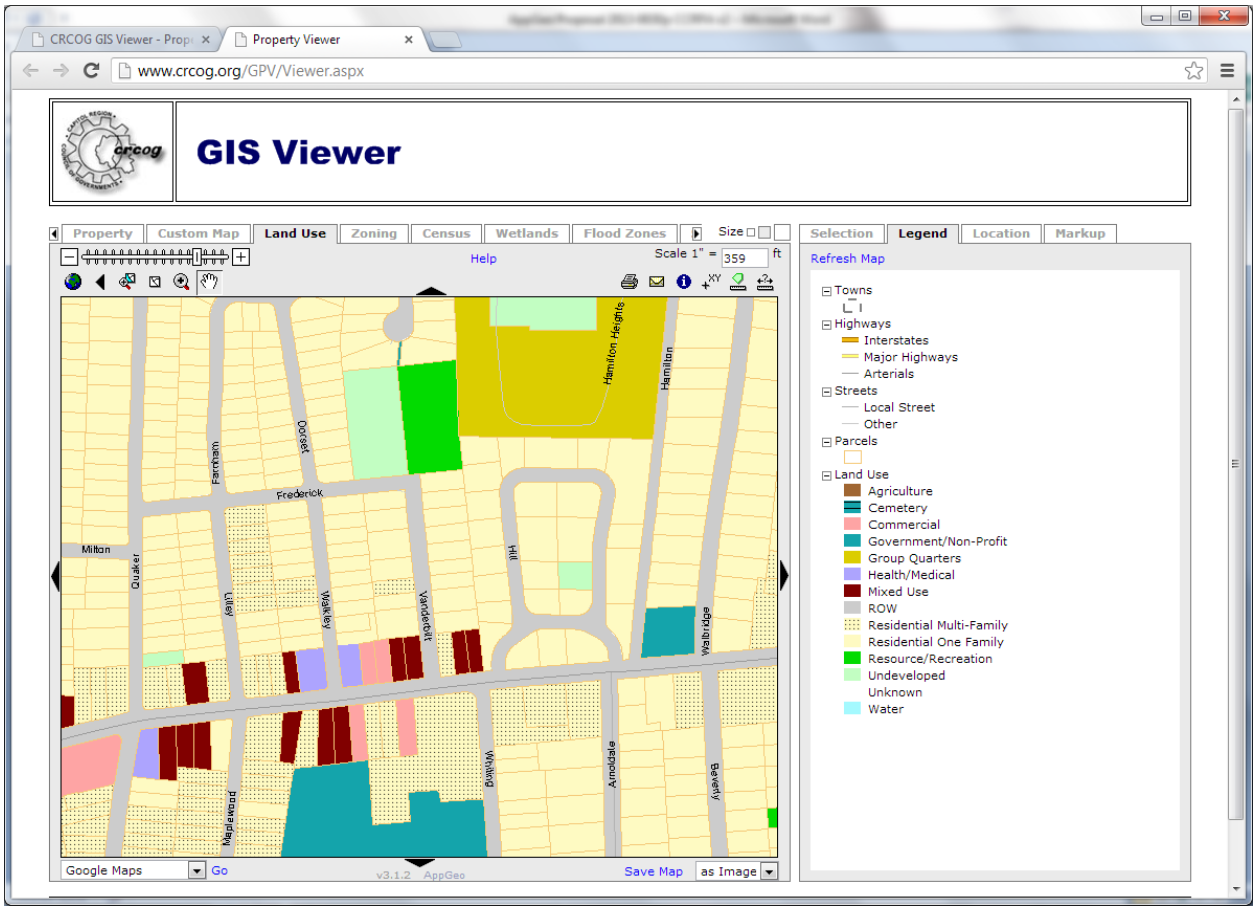
- AppGeo is familiar with the library of geospatial data layers available from federal and State of Connecticut sources, as well as private third party web services (Google Bing, Esri, Open Street maps, etc.) and knows how to access and incorporate those data into interactive web mapping applications

- Examples of Web applications that AppGeo designed and built and that are in use in Connecticut include the following here examples:

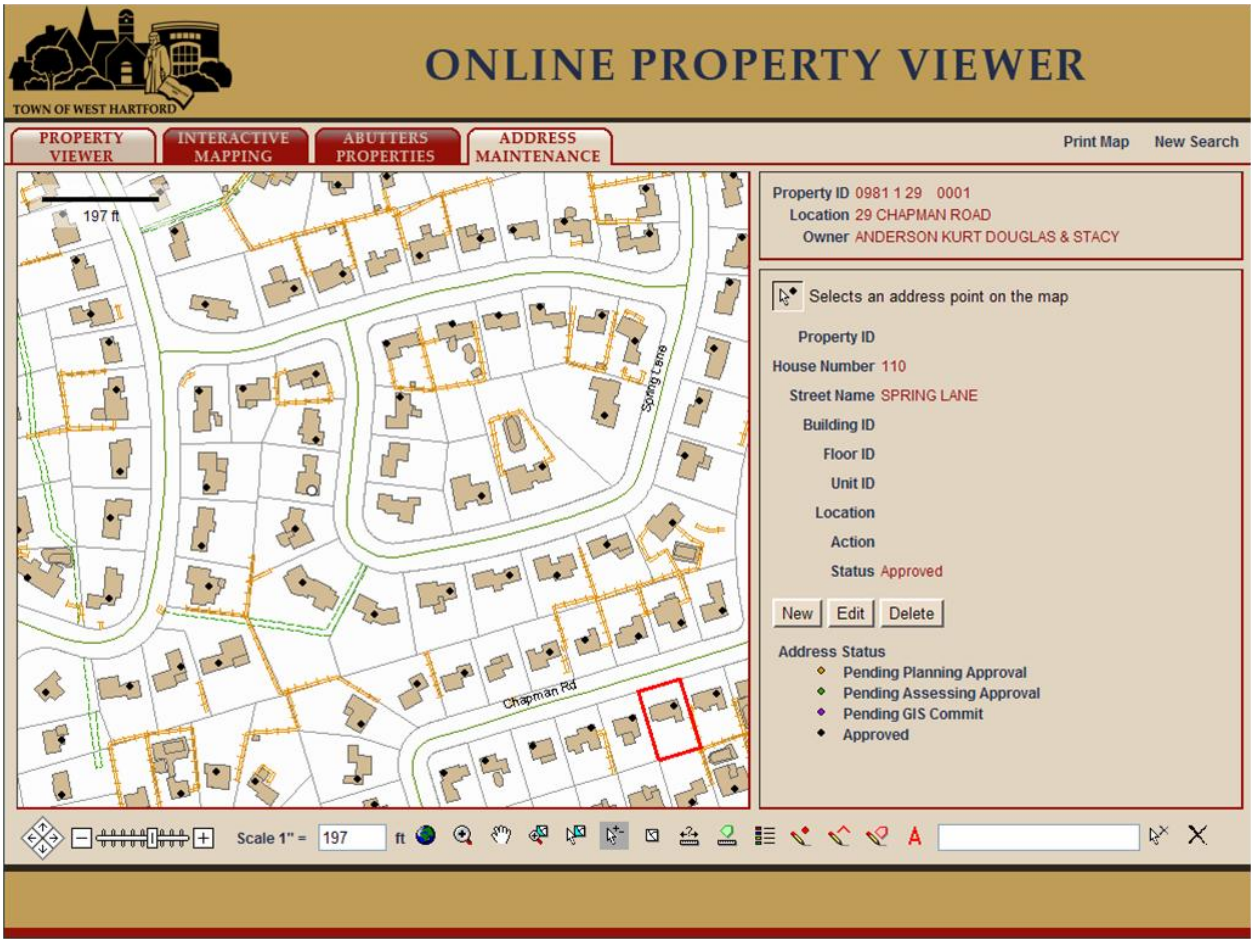
- AppGeo's **MapGeo™** is a hosted Property Mapping Solution in current use by **Barkhamsted, Cromwell, Darien, Essex, Lyme, Marlborough, Norwich, Old Lyme, Old Saybrook, Plainfield, Prospect, Tolland, Thompson, and Westbrook** (below is a screenshot of Cromwell's MapGeo site showing an overlay of town wide zoning, www.mapgeo.com/cromwellct). MapGeo provides easy-to-use mapping capabilities that meet the needs of Town staff, private businesses and the general public for property information and basic GIS functions – search, navigation, thematic overlay, mark up, printing, map sharing, abutters identification and mailing list generation. MapGeo can be implemented at a regional or county level supporting multiple entities.



- AppGeo has created a configurable Web mapping application framework, **the GPV®,** which makes it easy to connect a Web mapping application to a database system or to create stand alone Web applications. Because of the extensive functionality and flexibility of GPV, it is a powerful tool for municipal governments. GPV is in use by the Capitol Region Council of Governments (CRCOG) whereby it serves all 29 towns that make up the region (http://www.crcog.org/gissearch/). A screen shot below illustrates a land use overlay on a parcel data layer. The right hand panel shows that layers and groups of layers can be turned on/off individually.



- AppGeo has created custom Web applications that meet the specific needs of customers, whether for sharing data with the public or integrating GIS functions with workflows and business systems. One example is for SECCOG, for whom AppGeo created (and now hosts) a custom regional Web GIS application: http://host.appgeo.com/sccog/Default.aspx). Another example is for West Hartford, for whom AppGeo created an address point data maintenance workflow application that is seamlessly integrated into the Town's mapping website (also built and hosted by AppGeo - http://host.appgeo.com/westhartfordct/default.aspx) as shown below, the Address Maintenance Tab (secure access only). Authorized users within different departments of the Town can access different views and functions on the Address Maintenance tab and perform specific tasks – request, edit, comment, verify, approve, etc. – according to their role and authority.



II. QUALITY ASSURANCE AND CONTROL

1. DESCRIBE QA/QC PROGRAM

Our Quality Assurance and Control Program is baked in to our project management, and also embedded in our task approach. For this project, we discuss our QA/QC program and approaches with respect to Project Management, Parcel Creation and Maintenance, and Interactive Web Application Development.

Project Management:

To ensure the quality of our work and that our efforts meet project goals and objectives, we consistently perform the following management tasks and roles:

- Maintain the project schedule
- Assign the appropriate and qualified personnel to each task/activity, this is the role of the Principal-in-charge and the Project Manager
- Monitor task assignments and progress against the project schedule, milestones, task definition and level of effort anticipated for that task
- Maintain data on project activity – staff effort, resources expended, task assignments, meeting notes, project achievements
- Report regularly to and consult with the client on progress at the task and overall project level
- Provide for our internal Team review of all project deliverables
- Facilitate review of project deliverables, including delivery of intermediate (beta or draft) and final products in a timely manner, and with allowance for client time to review

To perform the above tasks efficiently and effectively, AppGeo utilizes the following combination of systems, tools and methods:

- Designation of a Point of Contact and back-up point of contact for all client-AppGeo communications
- Designation of a Point of Contact for each of our sub-contractors (if any)
- Utilize MS Project for creating and managing the overall project schedule
- Utilize our Deltek Vision accounting system and project management software for developing multi-phase project plans, tracking level of effort (hours and costs) by staff, task and phase, for reporting on project activity, and for invoicing
- Track Project and Staff resources using a tool developed by AppGeo to monitor staff workloads and ensure staff availability for key assignments and ongoing projects
- Utilize a variety of project collaboration tools to facilitate communication with our clients and other project stakeholders, including event scheduling, data collection (surveys), document sharing, document version control, software repository and version control, and general information sharing and online meetings, including: GitHub, GoToMeeting and GoToWebinar, Survey Monkey, and SharePoint.

Parcel Creation and Maintenance:

For all parcel data development projects we perform a variety of Quality Assurance and Quality Control measures as a routine part of the workflow, including manual and automated procedures that cover all steps of the process:

- Review with client of methods and expectations for positional accuracy and representation ahead of digitizing
- Review of property map source materials for legibility, scanning, detail, etc., prior to scanning
- Review of currency, resolution, etc., for determining an appropriate base map(s)
- Uniqueness of parcel identifiers
- Image rectification and registration error checking
- CAMA-GIS data integration and linking routines that check for (a) duplicate parcel numbers, (b) oddly coded parcels, (c) unencoded parcels, and (d) other errata that may arise
- CAMA-parcel match rates and error summary and detailed reporting back to customer
- Check plotting (hard copy and/or onscreen review)

Interactive Web Application Development:

Our approach to application development is collaborative and involves the client in the design and review process. Depending on where the application is to be hosted, we work with the client to finalize and/or install the application. As a result, QA/QC is tightly coupled with everything we do to design and build a custom application. For example,

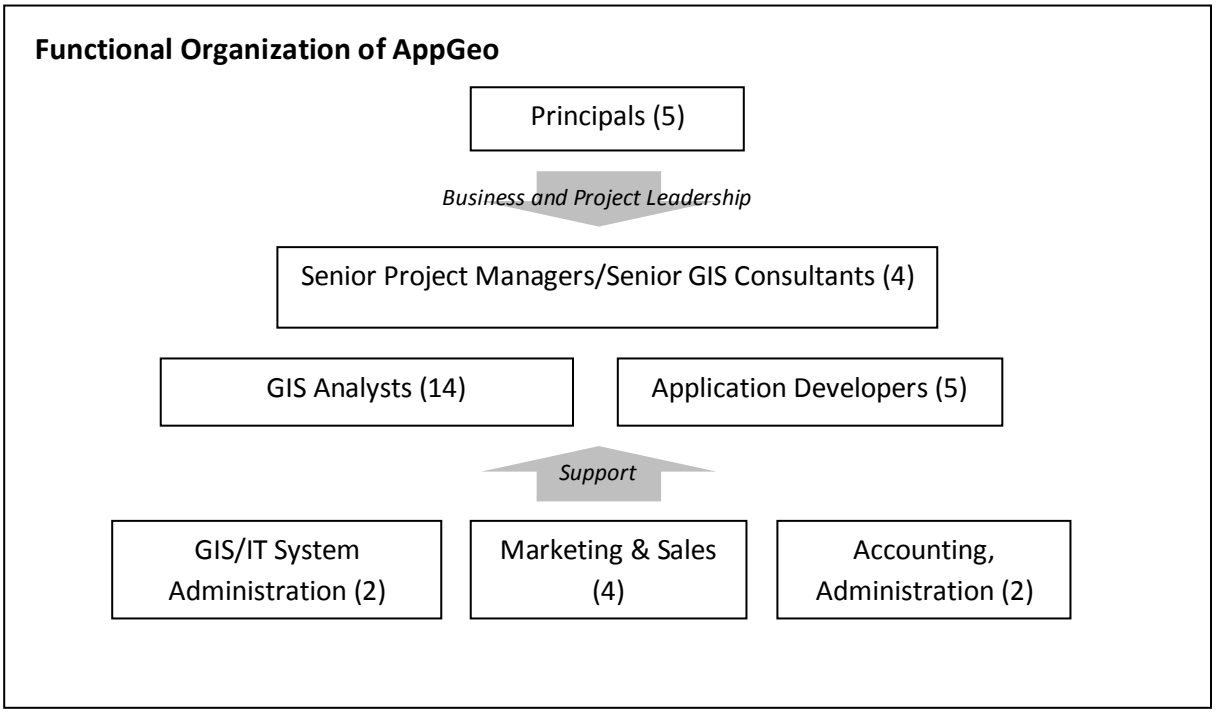
- Our collaborative design and use case analysis ensure that we understand the purpose and use of the application
- Our interface, system, and other technical design documentation ensure that all parties understand and have a say in the look and feel and specification of the final result, and ensure the fit between the “concept” and the technology
- Our modeling (data), internal code review and documentation, and unit and system testing ensure that our applications (code, system, performance, etc.) match the specification
- Our use of modern, best practices and Web technologies (discussed above, Section 2.a.i.5) provides inherent quality control on our code and applications
- Customer review provides an additional check on quality and “meeting” the specification, including in some cases the use of online survey tools to automate the collection of client and stakeholder feedback on the Beta or final application
- Use of GitHub as a collaboration environment for managing code and ticketing bug fixes and requested changes provides an environment for control, back up, accountability, and quality assurance

- Direct technical support (onsite or off) to the client for deployment coupled with documentation and knowledge transfer to client site administrators and managers provides the final check on quality of the final deliverable

2. DESCRIBE QA/QC PROTOCOLS FOR SIMILAR PROJECTS

AppGeo protocols and practices for similar projects are as described immediately above for Parcel Creation and Maintenance and for Interactive Web Application Development.

B. ORGANIZATION CHART



C. LEGAL STATUS

AppGeo is a privately-held, for profit corporation founded in the Commonwealth of Massachusetts, registered to do business in several states, including Massachusetts, Connecticut, all the other New England States, New York, New Jersey, Maryland, California, Minnesota, and several others.

3. QUALIFICATIONS OF KEY PERSONNEL

See Appendix A. We have collected and included resumes at the end of this response because of the number of pages involved. Each staff on the project is introduced and their role described in Section 2.a.i.4, and an organizational chart is provided in 2.a.i.3.

If the Optional Task is approved under the contract, then AppGeo will utilize additional support services from Genesys, a geospatial data development firm that we have worked with before.

4. SIMILAR PROJECTS AND REFERENCES

Parcel Creation and Maintenance:

For parcel creation and maintenance to a published standard, AppGeo has completed parcel data upgrades to the MassGIS Digital Parcel File Level III standards for 58 municipalities across the Commonwealth, and to the FGDC Cadastral Publication Standard for 139 Connecticut municipalities.

The **Massachusetts' projects** involved management, coordination, and conformance for a state-funded program to bring municipal parcel data into conformance with MassGIS Digital Parcel File Level III standard for 58 municipalities in the Commonwealth (*projects currently underway):

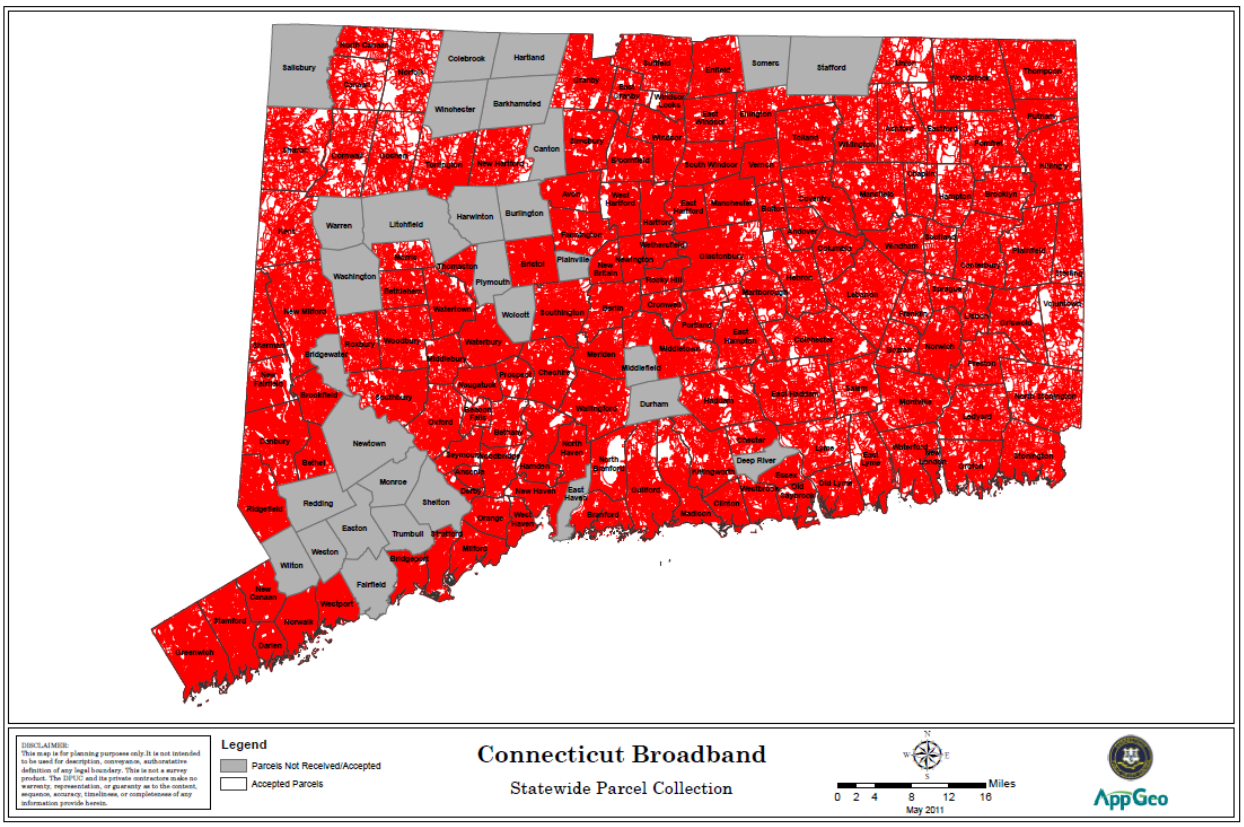
- Acton
- Berkley
- Canton
- Clinton
- Dighton
- Holyoke
- Leyden*
- Middleborough
- New Bedford
- Paxton*
- Pittsfield
- Raynham
- Salem
- Southbridge
- Waltham
- Amherst
- Blackstone
- Chatham
- Conway
- East Longmeadow
- Hopkinton
- Manchester*
- Middleton*
- New Salem*
- Peabody
- Plympton
- Reading
- Sandwich
- Spencer
- Westport
- Ayer*
- Boxborough*
- Chelmsford
- Dedham
- Gill*
- Ipswich
- Marion
- Milford
- Norfolk
- Pelham*
- Princeton*
- Rehobeth
- Seekonk
- Taunton
- Bedford
- Brookfield
- Chicopee
- Dennis
- Grafton
- Lexington
- Mattapoisett*
- Milton
- Norton
- Pembroke
- Randolph
- Royalston*
- Shrewsbury
- Wakefield

AppGeo was responsible for all aspects of the work from collecting the data fromteh municipalities to scanning, transformation, heads up digitizing, concatenation, parcel IDs, annotation, quality control, CAMA linking, and final delivery to MassGIS.

Reference Contact is: Neil MacGaffey, Assistant Director

Office of Geographic Information (MassGIS)
Commonwealth of Massachusetts
One Ashburton Place, Room 1601
Boston, MA 02108
(617) 619-5641; Neil.Macgaffey@state.ma.us

The **Connecticut parcel collection** and conformance project involved the collection of existing digital parcel mapping data from every municipality in the State. This collected data was then quality checked for conformance to specifications for parcel identification and parcel accuracy. Data that passed this initial quality check were loaded into the available data standard which was the FGDC Cadastral Publication Standard. AppGeo collected and standardized over 1 million parcels and delivered this data to the State.



Reference Contact is: William Vallee, Connecticut Broadband Policy Coordinator

Office of Consumer Council
Ten Franklin Square
New Britain, CT 06051-2605
860-827-2905; william.vallee@ct.gov

AppGeo has provided similar services to regional councils in Connecticut, including the Capitol Regional Council of Governments (CRCOG) and the Southeastern Connecticut Council of Governments (SCCOG).

AppGeo's provision of GIS consulting services to **CRCOG** extends back almost ten years. For CRCOG, AppGeo conducted a needs assessment and completed a multi-phased project data development. AppGeo developed a methodology to generate and update a GIS land use layer for the 29 municipalities in the Capitol Region that included a procedure for converting land use data sets into Capitol Region land use categories. AppGeo collected all electronic parcel bases and Assessor's databases in eighteen (18) of the member towns and standardized the parcels into a regional data layer. AppGeo worked cooperatively with CRCOG staff to complete development for the remaining eleven (11) communities. AppGeo provided all oversight, coordination, and training for CRCOG staff to take over maintenance of the data.

Reference Contact is: Erik Snowden, GIS Coordinator

Capitol Region Council of Governments
241 Main St.
Hartford, CT 06106
(860) 522-2217 x217; esnowden@crcog.org

For **SCCOG**, AppGeo collected existing parcel data and CAMA from its 18 member towns. Since the data was not available in all towns or the data was several years out of date, AppGeo converted data from hardcopy tax maps or surveys and deeds for updating several towns. All of this data was then conformed to a standardized data model and published through a regional mapping application. Most towns were also provided a CAMA uploader program so the individual towns could refresh the property ownership information on the regional web site.

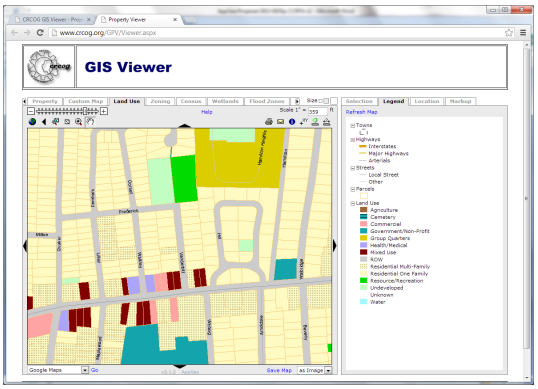
Reference Contact is: James Butler, Executive Director

Southeastern CT Council of Govts
5 Connecticut Ave
Norwich, CT 06360-4592
(860) 889-2324; jbutler@seccog.org

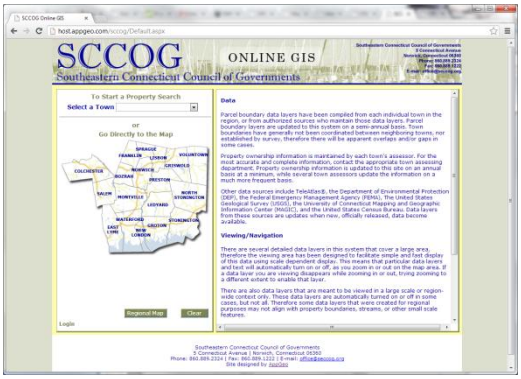
Interactive Web Mapping Applications for Regional Government:

For the above two Connecticut regional councils, AppGeo has created regional interactive GIS Web applications. References for this work are as listed above.

For CRCOG, the application is built on AppGeo's GPV® technology, a configurable Web mapping application builder. The current application serves the 29 towns in the region (http://www.crcog.org/gissearch/). CRCOG staff has the ability through the GPV to configure and modify the functionality, and control the display and type of data shown through the application. The extensive functionality of the GPV (layer control, buffering options, tab-based organization of layers, mark up capabilities, etc.) makes it a powerful GIS platform for the region's municipal staff, businesses, and residents. The application is hosted locally by CRCOG.



For SCCOG, AppGeo is hosting a regional GIS application (http://host.appgeo.com/sccog/Default.aspx), one that is custom built and that we are in the process of moving to our newer MapGeo hosted technology.

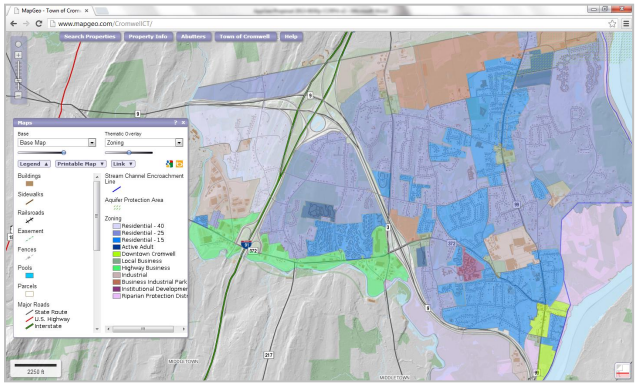


Since we are proposing to deploy our MapGeo hosted web mapping service for the CCRPA, we identify several Connecticut MapGeo reference customers on the following page.

AppGeo's MapGeo™ Hosted Web Mapping Platform:

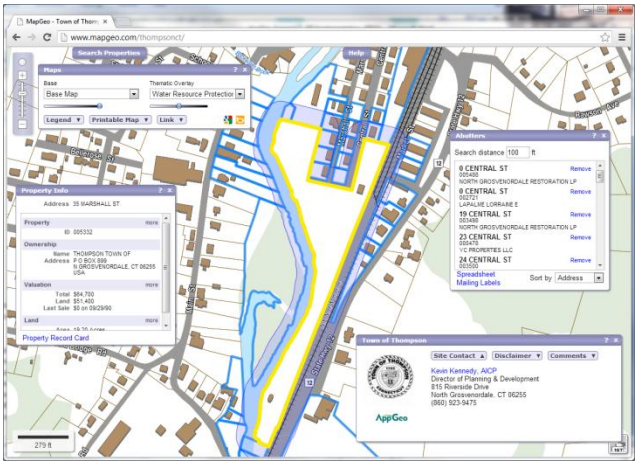
AppGeo's MapGeo™ technology has been deployed for more than 50 local government entities including counties and municipalities. Some example sites include the following:

www.mapgeo.com/cromwellct



Shawna Baron, Assessor
41 West Street, Cromwell, CT 06416
(860) 632-3442; sbaron@cromwellct.com

www.mapgeo.com/thompsonct



Kevin Kennedy, AICP
Director of Planning & Development
815 Riverside Drive
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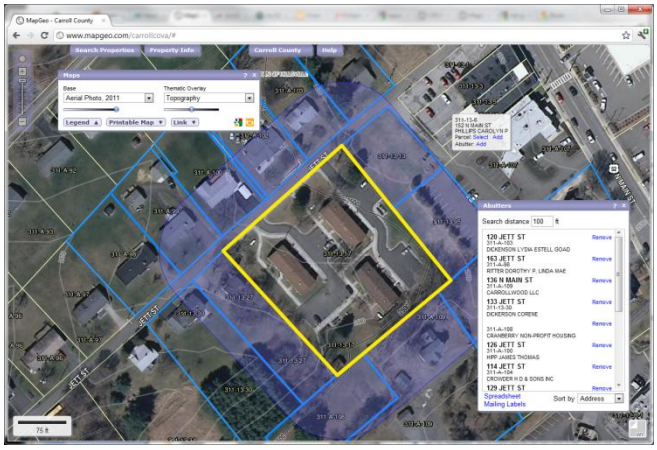
www.mapgeo.com/carrollcova



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More about MapGeo:

MapGeo was designed for "ease of use" by GIS and non-GIS users alike who are familiar with basic online mapping functions. MapGeo was designed for "ease of deployment" by municipalities since it is provided on a subscription basis with no requirement for hosting infrastructure, software licenses or system administration. There is also a CAMA data uploader option that automates the loading and updating of CAMA data to the hosted database.

MapGeo provides a high-level of functionality that will meet the needs of the public and staff for property information and map overlay, for map mark up, printing, and sharing, and for abutters lists and property record data display.

Key features of MapGeo that will benefit the CCRPA include:

- ✓ Easy to use, intuitive, no training required
- ✓ Full-screen, resizable map display
- ✓ Fast performance using the latest tile caching techniques and cloud hosting services
- ✓ Modern interface with rich interactivity without the need for plug-in components
- ✓ Makes it easy to find properties based on a variety of search variables
- ✓ Automates key geographic functions, such as abutters' identification and mailing list generation
- ✓ Printable map PDF output, map mark up, email sharing
- ✓ Integrates the display of State and Federal data layers, Google Maps, Bing Maps, Street Views, Open Street Map, and other publicly available base map and thematic data.
- ✓ Full integration with existing websites through links that can launch the application in context (with specific map themes or locations displayed)
- ✓ Integration with CAMA data systems (data uploading, property record card display)
- ✓ Expandable to include new data layers as they are developed by the Town, or to consume third party web mapping services that can be combined with Town data.
- ✓ Protects confidential information, segregates sensitive information from public access for controlled secure/authorized access by Town staff
- ✓ Configurable to meet your needs for data privacy and functionality
- ✓ Provides for comments to be emailed back to Town, includes online help, tips and documentation

Of additional benefit, AppGeo's programming staff continuously updates MapGeo features based on feedback from MapGeo users, and these enhancements are immediately made available to all current subscribers.

5. TECHNICAL APPROACH

This section presents the details of our proposed approach, including work plan, schedule, methods and deliverables.

WORK PLAN AND SCHEDULE

Applied Geographics, Inc. (AppGeo) understands that the CCRPA (Agency) wishes to develop a regional GIS capability for its member towns which includes collection of existing data from four municipalities, conversion of cadastral data as well as annual maintenance for three municipalities, and a regional GIS web site.

The Agency has a set of specific tasks that it wishes to complete through this project with a phased timeline. The main tasks include:

- Task 1. Contact Burlington, Plainville, and Plymouth for source tax maps and assessor CAMA data.Conv
- Task 2. Create digital parcels meeting at least the CDA Level II standard with linkage to the assessor CAMA data.
- Task 3. Review of preliminary parcel base mapping for these three municipalities with CCRPA staff.
- Task 4. Perform quality control and corrections based on feedback.
- Task 5. Review converted data with the three municipalities and incorporate comments.
- Task 6. Deliver converted GIS data to CCRPA.
- Task 7. Develop a regional GIS web site that also incorporates acquired spatial data from the other four member towns.
- Task 8. On a semi-annual basis, perform digital updates to the parcel base map data for three member towns that were involved in the conversion in prior tasks. Maintenance will be performed for a 5-year period.
- Task 9. Updates to the GIS website for a period of 5-years. Updates will be made on a semi-annual basis.

Our work plan will follow the timeline described in the proposal to complete the above tasks in a phased manner as shown on the following page.

APPROACH AND DELIVERABLES

This section presents a detailed description of how AppGeo will perform the above Tasks for the Agency and deliver high-quality products for each item.

KICK-OFF MEETING

Upon notice to proceed from the Agency, AppGeo will schedule a meeting to review the project plan, schedule, review the respective responsibilities of AppGeo and the Agency, and discuss expectations and deliverables. Decisions made at the meeting regarding finalizing the project schedule, scope of work, and other details such as the communications plan for the member towns. The decisions made will be summarized by the AppGeo Project Manager in a written memo or revised schedule. This meeting will ensure that all parties have a clear understanding of the project steps, deliverables, responsibilities, and timeframe. It will provide for ongoing communication and collaboration between the respective project managers.

DEVELOP DIGITAL PARCEL DATA

AppGeo understands that this aspect of the project is to create a seamless, town wide parcel data geodatabase for Burlington, Plainville, and Plymouth that aligns with the latest available 2012 orthophoto base map from the State, contains the basic tax map features, is up-to-date to match current conditions, can be linked to the Town Assessor's database, and follows the Connecticut Cadastral Data Standard to achieve at least Level II compliance.

Basic tax map features includes parcel lines, road ROW, permanent easements, and tax map boundaries. The basic text components will include lot number, lot size, and address. All of these text layers will be constructed as feature-linked text within the ESRI geodatabase framework so that text values are automatically updated when the related feature attribute is updated. This reduces the long-term cost of tax map maintenance. Other text layers such as road names will come from the available E911 roads data available from the State of Connecticut.

An optional project task is also proposed to capture lot dimensions. Even though the lot lines can be measured within the GIS, it is often preferred by Assessors that the survey or deed lot line dimensions are individually added from the tax maps. Maintenance of the data over the 5-year update period would always use the survey or deeded line dimensions and be individually placed.

Because of the number of projects we have completed similar to this project, the processes we have developed, and our experience with all aspects of the project, we have developed an approach that will deliver a high-quality product. The following methodology has been designed to meet your goals.

1. SOURCE DATA ASSESSMENT

AppGeo will meet with each town and perform an assessment of any existing digital data (GIS, CADD), the source tax maps (for accuracy and currency), and available sources of surveys (typically through the Town Clerk's office). Based on that assessment, a detailed automation approach will be developed for each of the three towns.

AppGeo will also obtain an extract from the Town Assessor's CAMA database and validate the single field to be used to link to the GIS parcel layer. In this process, condominium units will also be identified and an intersection table compiled for linking to the parcel main property in the GIS.

2. REGISTER & RECTIFY PARCEL MAPS

In general, it is assumed that the automation will be from the existing tax maps so the maps will need to be scanned and registered to the base map. This registration will usually have to be done on a block by block basis, while maintaining parcel line lengths as defined by the dimension text on the maps, and will not be rubber-sheeted as a whole sheet. What this means is that for each block of parcels any errors that are encountered will be constrained to fit within each roadway block. AppGeo may encounter some sheet edge matching issues during this process. If required, deed and survey plan research will need to be completed in order to assist with resolving these issues. It is understood that this research work would be done by the Town staff and the appropriate deeds or plans will be provided to AppGeo.

3. CONVERT MAP FEATURES AND TEXT

All lines will be visually checked and line intersections will be closed in order to produce proper topology and construct a polygon feature that is identified so that it can link to the Assessor's CAMA database. Text annotation shown on the maps will be converted and organized into several classifications, including Lot Number, Lot Size, and Address Number.

Lot numbers will be created as feature linked annotation. Area values will be populated into the parcel layer's attribute table from the text shown on the plat map. The area annotation will then be created as feature linked annotation. If the tax map does not display an area then the value will be populated from the area field in the CAMA database, if available. Address point features will also be created and the address number text will be feature linked to the address number field.

4. ALIGN PARCELS AND ANNOTATION

The right of way lines and interior lot lines for each block of parcels and supporting data (parcel numbers, dimension text, etc.) will be adjusted to visually match base map features. When aligning boundaries with water bodies, visible hydrography lines will be digitized from the base map if they do not align with the visible water features on the base map. These lines will be

used as the parcel boundary. Parcel lines will then be extended or trimmed to the digitized hydrography lines.

AppGeo will also clean-up all parcel text features to make sure that they properly align with the adjusted parcel line work. In addition, each sheet will be edge matched to the sheets that are adjacent to it, and features that are duplicated on adjacent maps will be eliminated. All parcel line vertices and end points will be snapped to adjacent parcel lines to assure proper closure.

5. BUILD PARCEL LAYER WITH UNIQUE IDENTIFIER FOR EACH PARCEL

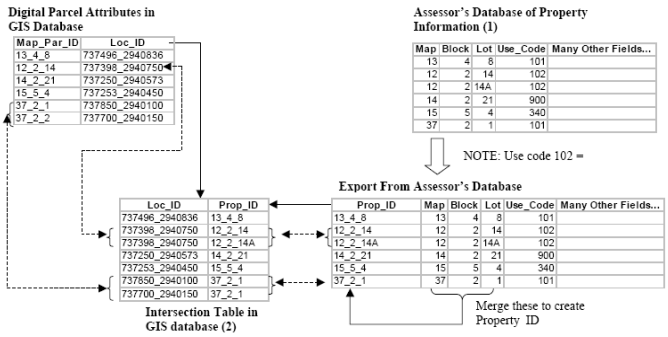
AppGeo will construct the seamless parcel base layer and verify that each parcel is coded with a unique identifier. Each parcel will be coded with the Map, Block, and Lot numbers identified on the source map. Once these fields have been populated, another field will be populated to store the Parcel Id. This field will be populated with a composite of the Map, Block, and Lot fields. Duplicates will be searched for and, if found, researched against the original source maps.

If a coding error is found, it will be corrected. If an actual duplicate is found, it will be identified for resolution with the town by creating an errata point. This will now allow the parcel base to be initially linked with the Assessor's database. The parcels will then be coded with the Unique ID from the Assessor's database (either PID or GISID if used). The final link to CAMA will be done using the Unique Assessor's ID field if possible in order to get the best possible match rate. Parcel attributes will also contain a Type field and most will be coded with the Parcel type. Parcels/Polygons that do not seem to be an actual parcel and do not have a Parcel Id will be coded appropriately as ROW, WATER, etc. The schema of the parcel layer will adhere to the guidelines specified in the current Connecticut Cadastral Standards document.

6. LINK OF PARCELS TO THE TOWN'S CAMA DATABASE

AppGeo will link the parcels to the Assessor's database. The Town will provide a copy of an export/backup of this database to AppGeo. A common file format such as ASCII, DBF, XLS, etc., will be required although a database backup is preferred (Vision.dmp file from Vision Server). This database will be used for making the linkage of the parcels in ArcMap. Our staff has worked with virtually every CAMA system in use by Assessors and as a result we know that an export file from the system can be created. We have worked extensively with Vision's CAMA system as well and we can assist the town with this process if necessary.

Figure 1: Role of Intersection Table in Linking Parcels and Assessor's Database



This linkage will allow us to perform a quality control/quality assurance step that will ensure that all parcels depicted on the maps have been created and coded properly. There should be a one-to-one relationship of parcel land records in the Assessor's database to parcels in the digital parcel base. The exception is condo-type properties.

Towns often have a number of parcels of land that have multiple buildings on them that are owned by multiple people (such as condominiums). An intersection table is a table that we can create which will establish the "many-to-one" relationship of condos and these special types of parcels. By creating an intersection table a user of the GIS can search on one condo owner and select the condo master parcel that is partly owned by this owner, and also search or find a condo parcel and get a list of all the property owners in this condominium. AppGeo will create this Intersection Table for the parcel base.

After we correct any automation errors found as a result of the linking, it has been our experience that there will still be some parcel mismatches. We will provide a report to the town with our findings. This will consist of a list of properties in the Assessor's database that do not have a matching parcel on the map. This list will be sorted by both street address and by Parcel Id (Map/Lot). AppGeo will also provide a map depicting the parcels that do not have a matching CAMA record for resolution by the town. We will then work with the town staff to reconcile these issues and develop as close to a 100% match rate that is possible. It is highly likely that changes or corrections will need to be made in both the mapping data and the Assessor's database to complete this effort. AppGeo will not be responsible for making the changes to the Town's CAMA system, but will advise the town on what changes need to be made.

7. STANDARDIZE PARCELS

Whether parcels currently exist, exist and need to be updated, or need to be created from scratch, they all need to be migrated into a single consistent format. The project has specified that the Connecticut Cadastral Data Standards (CDA) will be used. All data will comply with at least Level II of this standard and any surveys or deeds used to resolve or update the maps will comply with the Level III of the standard. This compliance includes parcel line accuracy, topologically clean data, linkage between the GIS and the Assessor's CAMA data, and metadata. For all parcel datasets developed and/or updated AppGeo will provide basic FGDC compliant metadata.

8. QUALITY ASSURANCE AND QUALITY CONTROL AND PARCEL LAYER ACCURACY ASSESSMENT

AppGeo makes a concerted effort to ensure the accuracy of its data development. QA/QC is one of the primary functions of both the Project Manager and the Production Manager. After each parcel map is automated AppGeo looks for and corrects errors in line work (dangling lines, intersect errors, etc.) and labeling/text errors. Line work and labeling are again checked for the seamless parcel data layers. Finally, the Project Manager and Production Manager will review all

corrections and revisions made before submission to each Town. In addition AppGeo will come on-site and deliver the check plots and explain our recommended process for review and comment by the Town.

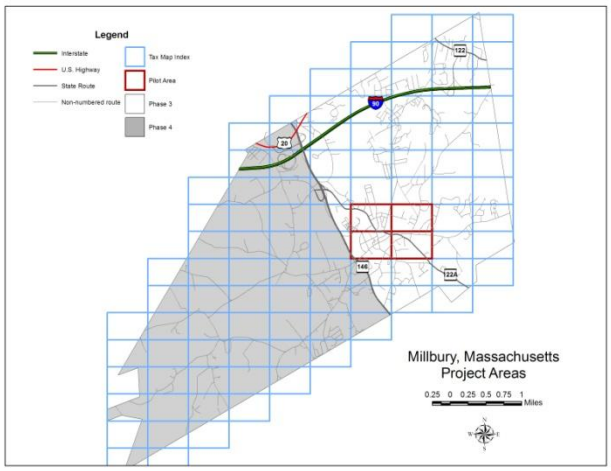
9. CHECK PLOT PRODUCTION AND TOWN REVIEW

AppGeo will produce both hard copy maps and digital data for this project. One hard-copy set and one electronic version (PDF) of draft tax map check plots will be provided to each town for review and comment. These check plots will show the converted line work and annotation, will highlight the parcel mismatches, and will match the original tax map layout as closely as possible. The Town should understand that in order to maintain the appropriate scale and extent of the maps, paper size and/or title block adjustments may be made. Town personnel will be able to add any missing annotation values to the check plots, as well as note any other corrections to the converted data that they identify from their review. AppGeo will update the electronic data and make corrections based on the Town's comments. AppGeo will review the process for mismatch resolution with the town staff during the pilot project review meeting to assure that this process goes as smoothly as possible.

10. PILOT PROJECT

In order to assure that all project team members are in agreement with the final deliverables for the project, AppGeo employs the use of a pilot project. AppGeo will execute a Pilot Project of an area of each Town that will consist of at least 4 contiguous map sheets which will be decided on at the project kick-off meeting.

The Pilot Project will allow the Agency, each Town, and AppGeo staff to test the conversion methodology and check plot format. During the Pilot, important aspects of the project will be tested and evaluated for use during the remaining tasks of the assignment. The following protocols will be developed and refined during the Pilot as appropriate:



- All aspects of the database design and layering conventions

- The design and development of data processing routines
- Creation and refinement of the Quality Control routines and methodologies
- The standards, marginalia and layout for the check plots

The pilot project will include a Pilot Review Meeting with the Agency and eachc Town. At this meeting the pilot deliverables will be reviewed and AppGeo will explain the mismatch reconciliation process and errata report. It will be each Town's responsibility to review and markup the pilot deliverables with corrections which will be incorporated by AppGeo.

11. PARCEL MAP UPDATES

AppGeo assumes that the source maps are updated with the most current parcel information. If additional map updates are needed in order to make the converted data current, this will be done through the maintenance task. These updates will be based on recorded plans and surveys and other source materials to be provided by each Town.

AppGeo employs the whole parcel editing approach to parcel updating, which has the benefit of incrementally improving the accuracy of the parcel maps each year. With this approach, all parcels that are shown on a survey map are reconstructed using the bearings and distances on the plan, and then the surrounding (less accurate parcels) are adjusted to the new (more accurate) parcels.

AppGeo will use ESRI's ArcGIS to complete all parcel changes identified on the drawings and plans provided by the Town. The updates will be performed entirely using Coordinate Geometry

(COGO) with the bearings and distances shown on the plans. This means that for all updates for which a survey is provided, the entire parcel(s) will be re-drawn using coordinate geometry. If an AutoCAD drawing is provided, then the line work will be taken from the AutoCAD data and imported into the GIS data. If a survey or an AutoCAD file is not provided to AppGeo for an update, then that parcel data change will be completed by digitizing the new line work from a scanned copy of the drawing that is provided.

The best starting point for the construction will be picked based on all available sources, including all the visible evidence on the orthophotos, such as road edges, buildings, etc. and the corresponding survey information or an actual coordinate value if the survey is tied in to the State Plane Coordinate system. Once the parcel has been drawn, it may be rotated around the starting point to best fit the ortho evidence. Then all the adjacent parcel lines will be adjusted to the newly constructed parcel(s). All parcels will be closed polygons.

AppGeo will ensure that all updated parcel polygons are properly coded with the correct Parcel ID so that they will link to the Assessor's CAMA database. Feature level metadata, such as the type of edit, editing method, source for the edit, and edit date will be entered into each polygon's attributes.

All annotation changes noted on the plans will be updated in the GIS annotation layers. These include Lot Number, Acreage, parcel dimensions, address number, street names, etc.

It is the Town's responsibility to make a note of the new lot number and legal acreage of the affected parcels. The letters "Ac" will be used if the acreage is found on the plans (unless area is indicated by Square Footage, then "SF" will be used).

Since this process will be repeated by Town staff to make future updates we will also document the processes and workflows used.

12. FINAL HARD COPY TAX MAPS

After all phases of the parcel data conversion, alignment and updating have been completed and final comments from the town have been incorporated into the data and maps, AppGeo will develop and provide final hard copy tax maps to the Town. These will be produced on high-quality bond paper. We will also provide the Town with a digital version of each final plot in Adobe PDF format.

13. EACH TOWN'S RESPONSIBILITIES

Each Town will be responsible for providing the following source information or support for this aspect of the project:

1. Current Tax Assessor's maps
2. Index map

3. Any existing digital mapping data
4. Surveys and deeds if updates are required
5. Export or back up of municipal CAMA database
6. Timely review of check plots, errata and mismatch reports
7. Participation in kick-off and pilot review meetings
8. A list of the parcel map updates required and the source plans and materials needed for the parcel updates

14. DIGITAL PARCEL DATA DELIVERABLES

This aspect of the project will create a number of different products for the Town. Some of these outputs will be delivered during the course of the project as a part of AppGeo's collaboration with the Agency, such as check plots, Errata Point report and a CAMA mismatch report for each pilot, 50% and 100% delivery.

The final deliverables for this task will be a CD/DVD containing the digital data in ESRI Geodatabase (version 10) format in the CT State plane NAD83 feet coordinate system:

1. Town-wide parcel line feature class
2. Town-wide parcel polygon feature class, attributed to link to current Assessor's Data extract
3. Town-wide Annotation layers, Map Grid layer for tax map production set up
4. 1 final CAMA reconciliation report
5. 1 set of final tax maps (full sized on high-quality bond paper)
6. 1 digital file for each tax map in Adobe PDF file format
7. 1 hard copy and digital index map (PDF)
8. ArcMap MXD files depicting this data in a format suitable for producing copies of the Town's Tax Maps and the Index Map in ArcGIS Desktop version 10.

IMPLEMENTATION OF THE REGIONAL WEBSITE

AppGeo proposes to create a multi-jurisdictional implementation of its modern hosted web mapping application, MapGeo. In fact, this process is currently underway in our SCCOG regional web site contract where we are replacing their current site with this latest web mapping technology.

The advantages of this approach are:

- Speed of the application
- Support for modern browsers and mobile tablet devices
- Streamlined CAMA Uploader function
- More intuitive interface for the general public

BASE SUBSCRIPTION DETAILS

- ✓ 24 x 7 access to a single instance of MapGeo hosted in AppGeo's production hosting environment
- ✓ One (**1**) annual update of customer's property attribute data. (*NOTE: Additional services may be required if the customer changes the data format from the version used during initial site setup and configuration. These services will be provided on a time and material basis under a separate agreement.)*
- ✓ One (**1**) annual update of client's parcel geometry and thematic data layers managed by the customer. This includes regeneration of all cached map tiles for base maps using parcels and other customer layers.
- ✓ System management and application support to monitor and maintain site to ensure optimal performance.
- ✓ A detailed monthly web statistics report on site utilization emailed to the customer.
- ✓ Periodic updates to maintain the currency of federal and state thematic overlays, including regeneration of cached map tiles.
- ✓ Ongoing enhancements and version upgrades to MapGeo's functionality
- ✓ Maintenance of MapGeo compatibility and performance on the following minimum web browser versions: Mozilla Firefox 3.5; Microsoft Internet Explorer 8.0; Google Chrome 8.0; and Safari version 4.

IMPLEMENTATION STEPS

The following provides a detailed description of the main steps that will be completed to establish the MapGeo multi-jurisdictional site:

Step 1. Data Intake:

- AppGeo and customer finalize the layers to be included in each of the overlay themes
- AppGeo receives spatial and CAMA data provided by customer
- AppGeo receives thematic representation of how client wants their custom map themes to look or selects from AppGeo's default styles
- AppGeo technical review of data acceptability and report back to customer

Step 2. Data Processing and MapGeo Configuration:

- AppGeo ETL (Extract, Transform, and Load) of data into MapGeo data model
- AppGeo prepares layers and themes into map services
- AppGeo builds tiles
- AppGeo configures website based on customer preferences
- Customer Beta Site review (for potential errors introduced during data processing)

Step 3. Deployment

- AppGeo deploys website to host environment

Additional details concerning these steps include the following:

STEP 1. DATA INTAKE

The delivery of correct, current and complete data to AppGeo is critical to MapGeo deployment. The following guidelines will ensure the smooth integration of your data for MapGeo.

Data Requirements:

- Customer Data to be hosted on MapGeo will be provided to AppGeo in either an ESRI Personal Geodatabase, File-based Geodatabase, or in a Shapefile format *with the spatial reference properly defined.* A number of formats for imagery are acceptable (including GeoTIFF, ECW, JPEG2000, JP2K (MrSID), MrSID, among others) and AppGeo will advise the client on the range of choices.
- CAMA data to be delivered as either a comma separated values (.csv) file, dBase (.dbf), Access (.mdb), MS Excell (.xls), or database backup files such as an Oracle dmp file.
- Data Integrity is such that CAMA linking works and attributes are consistent in both the parcel layer and the CAMA database:
    - All Parcel polygons must have a parcel ID
    - CAMA Property ID values are formatted the same as the parcel ID
    - Relationships between condominiums and parcels are properly handled such that a one-to-many relationship can be established without any data editing or reformatting

Data Review and Acceptance:

Upon receipt, AppGeo will conduct a technical review of the customer data to ensure that it is (a) complete with respect to the themes and base layers identified in this SOW, and (b) that it meets the above requirements. Any critical issues will be reported back to the Client for resolution prior to starting the next stages of loading and configuration of the site.

Completion of this Step*: Receipt of the initial set of data identified in this SOW and its technical review will mark the completion of this first step. AppGeo will keep a record of the data received from the customer and its acceptability.*

The need for subsequent iterations with the customer to incorporate revised data, correct poor quality data, or update data sets will slow down deployment, increase the cost of deployment, and be subject to additional time and materials fees.

Extra Help Available*: If the data does not meet the criteria described above, additional data transformation, development, quality control, and updating services are available. AppGeo can*

bring your data up to these minimum requirements for a fee to be determined based on review of the data and agreement with the customer.

STEP 2. DATA PROCESSING AND CONFIGURATION

Once the customer provided data has passed the technical review, AppGeo will process the data for the MapGeo application. This involves ETL (Extract, Transform, and Load) of the data into MapGeo data model, preparing the layers and themes into map services with appropriate cartography, and building map tiles at various scales. The end result of this processing is a set of high performance (tiled) base and overlay map themes suitable for display at a variety of scales through the MapGeo application.

In addition to the flexibility of thematic map presentation, MapGeo is built to allow for configuration of the application during the setup. AppGeo staff will discuss the various configuration options with the customer during the implementation of the site. Configuration details include but are not limited to the following types of choices:

- Edit/replace sample customer contact information
- Edit/replace sample welcome/disclaimer text
- Turn on/off welcome/disclaimer display
- Turn on/off user acknowledgement of disclaimer information
- Default on/off for on-demand overview map
- Turn on/off search and display of property owner names
- Set default abutter search distance
- Establish logins to the site and configuration of features by login
- Enable protection of suppressed accounts

Customer Review

At this point a Beta Site will be made available for review by the customer. The customer will have two weeks to review the website and provide feedback to AppGeo. Through this review period the customer will be able to provide comments on the following areas/issues:

- Features that are missing from the data loading and tiling process
- Inconsistencies between styling of **thematic overlays from customer data** that was requested by the customer prior to tiling (the remainder of MapGeo base map and thematic layers contain AppGeo provided styling which is not reviewable)

If errors created through the data processing are discovered, these will be remedied by AppGeo at no cost to the customer.

***Completion of this Step**: AppGeo will notify the customer of the completion of the data processing and configuration step.*

Other changes to the site after initial tiling and before deployment such as any change that requires additional data processing at the request of the customer will slow down and increase the cost of deployment. Additional charges will apply if the following incidents occur:

- *Additional layers are provided to AppGeo that need to be added to a theme after initial tiling is complete.*
- *Wrong or obsolete dataset(s) were provided to AppGeo for initial tiling and tiling needs to be reprocessed.*
- *Data editing is required to improve cartographic representations (e.g., quality of labeling, completeness of polygon shading, etc.)*

STEP 3. DEPLOYMENT

If no comments are received from the customer, deployment of the final hosted MapGeo site will automatically occur after the two week review period is completed. AppGeo will deploy the MapGeo site and provide the URL to the customer on this schedule unless the customer identifies an issue that requires attention before deployment. While the site will be live and available, it is up to the client when this availability is advertised to their user base.

6. INSURANCE

On the following pages we include our certificate of insurance.

OP ID: GD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 03/27/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Poole Professional Ltd.
107 Audubon Rd. #2, Ste. 305
Wakefield, MA 01880
Christopher A. Poole

Phone: 781-245-5400
Fax: 781-245-5463

CONTACT NAME:
PHONE (A/C, No, Ext):
FAX (A/C, No):
E-MAIL ADDRESS:
PRODUCER CUSTOMER ID #: APPLI-8

INSURED
Applied Geographics, Inc.
24 School Street, Suite 500
Boston, MA 02108

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : XL Specialty Insurance Company	37885
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY						EACH OCCURRENCE	$
	COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
	CLAIMS-MADE / OCCUR						MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
							GENERAL AGGREGATE	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$
	POLICY / PRO-JECT / LOC							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS						BODILY INJURY (Per accident)	$
	SCHEDULED AUTOS						PROPERTY DAMAGE (Per accident)	$
	HIRED AUTOS							$
	NON-OWNED AUTOS							$
	UMBRELLA LIAB / OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB / CLAIMS-MADE						AGGREGATE	$
	DEDUCTIBLE							$
	RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						WC STATU-TORY LIMITS / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N (Mandatory in NH)	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	AEEO			DPR9705785	12/08/2012	12/08/2013	PER CLAIM	2,000,000
				DEDUCTIBLE $5,000			AGGREGATE	2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

For professional liability coverage, the aggregate limit is the total insurance available for all covered claims presented within the policy period. The limit will be reduced by payments of indemnity and expense.

CERTIFICATE HOLDER

CCRPA-1

Central Connecticut Regional
Planning Agency (CCRPA)
225 N. Main Street, Suite 304
Bristol, CT 06010-4993

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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OP ID: GD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 03/27/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Poole Professional Ltd.
107 Audubon Rd. #2, Ste. 305
Wakefield, MA 01880
Christopher A. Poole

Phone: 781-245-5400
Fax: 781-245-5463

CONTACT NAME:
PHONE (A/C, No, Ext):
FAX (A/C, No):
E-MAIL ADDRESS:
PRODUCER CUSTOMER ID #: APPLI-8

INSURED
Applied Geographics, Inc.
24 School Street, Suite 500
Boston, MA 02108

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Northern Ins. Co. of New York	
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE / X OCCUR X Business Owners GEN'L AGGREGATE LIMIT APPLIES PER: POLICY / X PRO-JECT / LOC			PAS04089555	04/25/2012	04/25/2013	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 1,000,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $
A	AUTOMOBILE LIABILITY ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS			PAS04089555	04/25/2012	04/25/2013	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $ $ $
A	X UMBRELLA LIAB / X OCCUR EXCESS LIAB / CLAIMS-MADE DEDUCTIBLE X RETENTION $ 10,000			PAS04089555	04/25/2012	04/25/2013	EACH OCCURRENCE AGGREGATE	$ 3,000,000 $ 3,000,000 $ $
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		WC04114429-02	06/20/2012	06/20/2013	X WC STATU-TORY LIMITS / OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000
A	Business Owners Package			PAS04089555	04/25/2012	04/25/2013	PROPERTY	424,360

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER

CCRPA-1

Central Connecticut Regional
Planning Agency (CCRPA)
225 N. Main Street, Suite 304
Bristol, CT 06010-4993

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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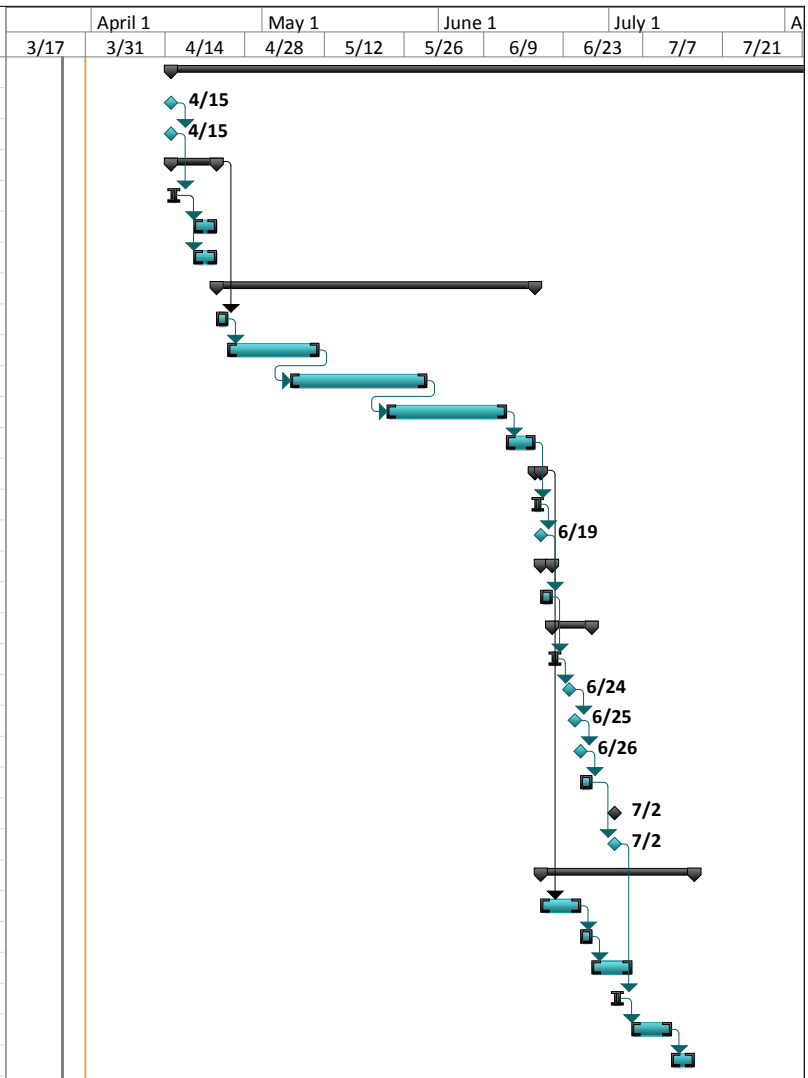
7. SCHEDULE

ID	Task Name
1	**CCRPA Regional GIS**
2	Notice to Proceed
3	Kick off meeting
4	**Task 1 - Contact Towns**
5	Notify Towns of Project Data Needs
6	Collect Source Documents and/or Existing Digital Data
7	Obtain CAMA data
8	**Task 2 - Create digital parcels**
9	Assess source maps and/or data as well as CAMA data
10	Convert Burlington
11	Convert Plainville
12	Convert Plymouth
13	Perform QC
14	**Task 3 - Review with CCRPA**
15	Prepare meeting maps and status
16	Meet with CCRPA with Draft Data
17	**Task4 - Perform Updates based on CCRPA Meeting**
18	Document changes and perform updates
19	**Task 5 - Meet with each of the three towns**
20	Prepare meeting maps and status
21	Meet with Burlington
22	Meet with Plainville
23	Meet with Plymouth
24	Incorporate Town Comments
25	**Task 6 - Deliver GIS data to CCRPA**
26	Deliver Data
27	**Task 7 - Develop Regional GIS Web Site**
28	Collect Data from 4 Towns
29	Load data into regional GIS data model
30	Configure Web Site
31	Load converted Town data into regional GIS data model
32	Draft Web Site for Review
33	Incorporate Draft Web Site Comments
34	**Task 8 - Perform Map Updates**
35	**Fall Updates**
36	Fall Updates 1
37	Fall Updates 2
38	Fall Updates 3
39	Fall Updates 4
40	Fall Updates 5
41	**Spring Updates**
42	Spring Updates 1
43	Spring Updates 2
44	Spring Updates 3
45	Spring Updates 4
46	Spring Updates 5
47	**Task 9 - Updates to Web Site**
48	**Fall Web Site Refresh**
49	Fall Web Site Refresh 1
50	Fall Web Site Refresh 2
51	Fall Web Site Refresh 3
52	Fall Web Site Refresh 4
53	Fall Web Site Refresh 5
54	**Spring Web Site Refresh**
55	Spring Web Site Refresh 1
56	Spring Web Site Refresh 2
57	Spring Web Site Refresh 3
58	Spring Web Site Refresh 4
59	Spring Web Site Refresh 5



8. TOTAL COST OF SERVICES

The following table presents our total cost of service by line item in the Attachment A to the RFQ.

Line Item, Attachment A, RFQ	Cost of Service
Esri ArcGIS File Geodatabase v10 for Burlington	$10,317
Esri ArcGIS File Geodatabase v10 for Plainville	$15,117
Esri ArcGIS File Geodatabase v10 for Plymouth	$12,517
5 year prepaid maintenance contract for Burlington	$13,000
5 year prepaid maintenance contract for Plainville	$13,000
5 year prepaid maintenance contract for Plymouth	$13,000
Regional GIS Website for all municipalities in CCRPA region	$14,070
5 year maintenance contract for hosting and maintenance of regional website, including updates to platform, software, regional data, and inclusion of updates by other third party data providers	$33,750
Total	**$124,820**

9. COST OF SERVICES A LA CARTE

The following table presents a la carte pricing for the line items in Attachment A, RFQ. Note that the hosting and website line items are the same.

Line Item, Attachment A, RFQ	Cost of Service
Esri ArcGIS File Geodatabase v10 for Burlington	$10,317
Esri ArcGIS File Geodatabase v10 for Plainville	$15,117
Esri ArcGIS File Geodatabase v10 for Plymouth	$12,517
5 year prepaid maintenance contract for Burlington	$13,000
5 year prepaid maintenance contract for Plainville	$13,000
5 year prepaid maintenance contract for Plymouth	$13,000
Regional GIS Website for all municipalities in CCRPA region	$14,070
5 year maintenance contract for hosting and maintenance of regional website, including updates to platform, software, regional data, and inclusion of updates by other third party data providers	$33,750
Total	**$124,820**

Optional Conversion of Lot Dimensions	Cost of Service
Esri ArcGIS File Geodatabase v10 for Burlington	$4,765
Esri ArcGIS File Geodatabase v10 for Plainville	$9,260
Esri ArcGIS File Geodatabase v10 for Plymouth	$6,575
Total	**$20,600**

10. NOTIFICATION TO BIDDERS FORM

In this section we include the Attachment B Notification to Bidders form.

APPENDIX A. RESUMES

Resumes for the proposed staff are included on the following pages.

STEVE ANDERSON, Senior Vice President (GISP)

Mr. Anderson has more than twenty-five years experience in applying Geographic Information Systems (GIS), Information Systems (IS), Global Positioning Systems (GPS) and Computer Aided Design and Drafting (CADD) to state, regional, and local government, civil, environmental, utility, transportation and business planning and management needs.

Mr. Anderson's comprehensive GIS experience includes conducting needs assessments, developing strategic and business plans, performing data assessments and gap analysis, overseeing large-scale data development projects, designing databases, managing the development of web and desktop based applications, programming user-interface applications, and implementing and managing systems.

Mr. Anderson is AppGeo's Program Manager for the seven states we are performing broadband data and application development work in supporting various needs for a comprehensive 5-year program. All of these projects are funded as part of the ARRA and are in direct support of the NTIA's State Broadband Initiative.

Mr. Anderson was also member of the AppGeo Project Team that produced the GIS strategic and business plan templates for the National States Geographic Information Council (NSGIC) in 2006, he worked on the refinement of this templates in 2008, and has been a consistent presenter and facilitator at the annual training session held at the NSGIC mid-year conference. In additon he has participated or led several state GIS strategic or business planning projects.

Mr. Anderson also has extensive experience around the country and has designed or implemented permitting, Computer Aided Dispatch, High Speed Notification, and/or document management systems in many state and local government agencies.

Mr. Anderson coauthored a book published by John Wiley & Sons, Inc. entitled "The Design and Implementation of Geographic Information Systems."

EDUCATION

- University of Hartford, BS in Civil Engineering (Minor in Mathematics), 1991. Recipient of the Gates / Scarpo Civil Engineering Award.

WORK HISTORY

- **2011 to Present:** Applied Geographics, Inc., Senior Vice President.
- **2001 to 2011:** Applied Geographics, Inc., Vice President.
- **2000 to 2001:** Convergent Group, Vice President and Executive Consultant.
- **1999 to 2001:** DLMS, Vice President.
- **1989 to 1999:** Fuss & O'Neill, Inc., Associate Partner and Director of GIS Services.

SELECTED & RELEVANT PROJECT EXPERIENCE

- **State of Connecticut, Department of Public Utility Control (2009, Ongoing)** – Broadband Planning, Broadband Availability Mapping, Data Collection, Data Conversion and Standardization, Web Application Design and Development.

  Applied Geographics is working directly with the State of Connecticut, Department of Public Utility Control on their Broadband Mapping project as well as supporting some of the Broadband Planning programs. These projects and programs are a part of the larger nationwide effort funded though the National Telecommunications and Information Administration (NTIA), State Broadband Data and Development (SBDD) grants. Requirements for the Broadband Mapping project include gathering broadband availability, speed and technology information from all providers that operate within Connecticut. AppGeo is also gathering information from the public as well as designated community anchor institutions to try to understand what broadband services they actually have and use today. This information is then compiled and processed into a standard data model that supports delivery both to the NTIA, as well as to the DPUC and CT's Office of Consumer Council for monitoring and planning activities. As part of this initiative, Applied Geographics has worked with the Departments of Public Utility Control and Information Technology, respectively, to develop a suite of web based applications: (1) secure reporting and data review by providers and Community Anchor Institutions (CAI), (2) secure access for state staff to monitor data delivery, and (3) for general public access to information about broadband availability, speed tests, and broadband programs, including an interactive mapping capability.

  Mr. Anderson is responsible for the overall AppGeo effort, supervising all task assignments, scope of service, scope of web application design, data collection processes and progress, major technology decisions, project performance and progress, customer relationships and communication.

- **West Hartfort, Connecticut (2001 to Present, multiple projects)** – GIS Needs Assessment, Implementation Services, Custom Web Mapping Applications, GIS Management.

  AppGeo began working for the Town of West Hartford in 1999 performing a needs assessment and developing a GIS strategic plan for the Town, followed by assistance with hiring the Town's first GIS Manager. AppGeo developed a first generation Internet/Intranet based application to provide controlled access to the Town's Computer Assisted Mass Appraisal (CAMA) database as well as the Town's GIS parcel mapping data. In subsequent years and projects from 2003 to 2008, AppGeo assisted the Town to update and improve the initial website, to update data layers and migrate them to a Geodatabase format, and to upgrade all desktop software licenses and tools leading to a structured GIS maintenance program. Since 2009, AppGeo has further evolved the Town's website, including developing a web-based workflow for address point data creation and maintenance that meets the needs of multiple departments. AppGeo continues to provide day-to-day management support for the Town's GIS involving a variety of data update and mapping activities.

  Mr. Anderson has been the leader for directing and managing GIS support and consulting services to West Hartford since 2001.

- **Other Areas of Experience** – Mr. Anderson has led or supported statewide and state agency GIS Strategic Planning, Business Analysis, Implementation Planning, System Architecture projects (2006-2008) for Connecticut, Hawai'i, Kansas, Maine, Massachusetts – involving facilitation of workshops and stakeholder meetings, departmental interviews, case study development, system architecture recommendations, budget and cost analysis, benefit analysis, governance and organizational change assessment, applications and data assessment and requirements analysis, workflow analysis, recommendations and report preparation.

  Mr. Anderson provides project leadership for statewide Broadband Availability Data Development and Web Mapping application projects for the states of Washington, Connecticut, Massachusetts, Oklahoma, Vermont, Georgia, and the District of Columbia (2009-present) – involving providing leadership and direction to the AppGeo application design and programming team, and coordinating data acquisition, standardization and integration efforts. These projects and programs are a part of the larger nationwide effort funded though the National Telecommunications and Information Administration (NTIA), State Broadband Data and Development (SBDD) grants, now known as the State Broadband Initiative (SBI).

  Other statewide project work that Mr. Anderson has overseen and provided leadership for includes: Enterprise GIS implementation and Web Mapping Application Development for the Connecticut Housing Finance Authority (2006-08) and functional requirements, data inventory, and application design and development for the Connecticut Department of Information Technology and the Department of Homeland Security (2005-2009).

  Mr. Anderson oversaw AppGeo Local Government GIS Consulting in southern New England – Since joining AppGeo in 1991, led dozens of application development and GIS data development projects with focus on applications and data development, including the following selected projects:

  - *Connecticut Capitol Region Council of Governments (2007 to 2008*) – Needs Assessment, Data Development, Web Mapping Application, including migration from Geomedia to Esri software.

  - *Southeastern Connecticut Council of Governments (2007 to 2008)* – Regional GIS implementation, parcel data development.

  - *Windham Region Council of Governments, CT (2008)* – Technical support and training, website development.

  - *City of Middletown, CT (2002 to 2006)* – Storm utility automation, various projects for data development and implementation, web application.

  - *City of Pittsfield, MA* – Geodatabase designs, parcels, storm, sanitary, and storm sewer automation. Web Mapping Application design, development and hosting, training and support.

  - *Town of West Hartford, CT* – Web Mapping Application design and development, system audit, data modeling, migration, automation and maintenance. Training and support.

Management of AppGeo Connecticut Office and GIS Project Management, involving oversight and participation in GIS consulting projects for municipal and state government:

- Town of Bolton
- Town of Colchester
- Town of Columbia
- Town of Coventry
- Town of Darien
- Town of Ellington
- Town of Enfield
- Town of Essex
- Town of Glastonbury
- Town of Greenwich
- Town of Hamden
- Town of Hebron
- Town of Manchester
- City of Middletown
- City of New Haven
- Town of Old Lyme
- Town of Old Saybrook
- Town of Prospect
- Town of Putnam
- Town of South Windsor
- Town of Stratford
- Town of Thompson
- Town of West Hartford
- Town of Wilton
- Town of Woodbury
- CRCOG
- COGCNV
- State of CT DOIT
- State of CT DEP
- State of CT DEMHS
- CHFA

MICHAEL BLAKE, Senior Project Director, PMP

Mr. Blake has more than twenty years experience in applying Geographic Information Systems (GIS), Information Technology (IT), and Computer Aided Design and Drafting (CAD) to federal, regional, local government and utility clients.

EDUCATION

- Project Management Professional, Project Management Institute, 2013
- Strayer University, MS in Information Systems, in progress.
- San Diego State University, BS Information Systems, 1986. Graduated Summa Cum Laude.

WORK HISTORY

- **2011 to Present:** Applied Geographics, Inc., Director of Local Government Services.
- **2009 to 2011:** Applied Geographics, Inc., Senior Project Manager.
- **2007 to 2009:** Greater New Haven Water Pollution control Authority (GNHWPCA), GIS/IT Administrator.
- **2002 to 2007:** Tighe & Bond, Inc, Director of GIS Services.
- **1998 to 2002:** Marin Environmental, GIS Division Director.
- **1992 to1998:** EMA, Inc, GIS Manager.

SELECTED & RELEVANT PROJECT EXPERIENCE

- **Washington DC, Office of the Chief Technology Officer (2011)** – Leadership for broadband usage and access project, including design of survey instrument, workplan development, progress reporting and contributions to web application design, documentation, connection speed application testing, data collection, data input verification, and application installation.

- **State of Connecticut, Office of Legislative Management, Connecticut General Assembly (2011)** – Oversight, project workflow definition, resolution of data issues, quality control, and data packaging for project to revise and digitize statewide voting districts.

- **Cook County, IL (2011 to Present)** – Manager for Workflow Management Application for permitting being developed by AppGeo, including database design and beta testing. The application goal is to facilitate Building and Zoning (BZ) access to and automation of workflows associated with their permit tracking system (PTS) related to permitting buildings and structures within designated zoning districts of unincorporated Cook County as part of their workflow. The BZ requires that this workflow seamlessly share the information with the Zoning Board of Appeals (ZBA).

- **State of Georgia (2010) –** AppGeo Project Manager for Broadband Web Application development and Interactive Mapping.

- **State of Connecticut (2010) –** Project Management for statewide Broadband Availability Mapping project, involving oversight and direction and quality control for state parcel data layer compilation.

- **State of Florida (2010) –** Project Support for statewide Broadband Availability Mapping project, involving oversight and direction and quality control for data processing operations.

- **Greater New Haven Water Pollution Control Authority (GNHWPCA) (2010)** – Onsite support for geospatial data integration and quality control support, and desktop and web application support.

- **Norwalk First Taxing District (2010)** –Support for water utility customer data configuration and matching.

- **NAVTEQ (2009 to 2010) –** AppGeo Project Manager for Enterprise GIS (EGIS) System Development.

- **State of Connecticut (2009 to 2010) –** AppGeo Project Manager for Development of the State of Connecticut GIS Clearinghouse.

- **Various Municipalities (2009 to 2011)** – Management of geospatial data update projects, including parcels, storm and sanitary sewer, water, septic systems, and voting districts delineation:

  - Cromwell, CT
  - Cumberland, RI
  - Dartmouth, MA
  - Essex, CT
  - Gloucester, MA
  - Lime, CT
  - Natick, MA
  - Stafford Township, NJ
  - Westbrook, CT

MICHELE GIORGIANNI, Project Manager (GISP)

Ms. Giorgianni has 11 years of professional experience as a GIS analyst and consultant. Her expertise covers the application of GIS to municipal government, including providing training and technical support, data development, GIS implementation, project management, geographic analysis, image interpretation and processing, conservation planning, environmental research, commercial development, drafting, and demographic analysis.

EDUCATION

- University of Rhode Island, MS in Environmental Science and Management (Concentration in GIS / RS), 2007.
- New Mexico State University, BS in Geography, 2001.

WORK HISTORY

- **2007 to Present:** Applied Geographics, Inc., Project Manager / GIS Analyst.
- **2006 to 2007:** Rhode Island Department of Environmental Management (RIDEM), GIS Intern.
- **2005 to 2006:** Town of Cumberland, RI, GIS Consultant.
- **2001 to 2005:** Coast Realty LLC, GIS Specialist (East Providence, RI).

SELECTED & RELEVANT PROJECT EXPERIENCE

- **Stratford, CT** – Live link, desktop and license manager installs & upgrades, abutter tool configurations, management of storm and sanitary sewer systems data development project including coordination of large scanning task and linking of documents**,** address points development, linking sewer billing.

- **Town of East Hampton, CT** – Managed Town-wide parcel automation project including QA/QC of data, map creation, linking to CAMA and training Town staff on CAMA mismatch resolution process, as well as incorporating parcel updates and subdivisions. Managed GIS website development project including organization and symbolization of data layers, loading data to SDE, testing, data layer creation and management including zoning, address points, sanitary sewer and storm drainage system networks, developed data dictionary, street conditions inventory, town-wide street map, PA-490 Farm and Forest map, Public Lands map, historic district data and map development, sewer permit inventorying and integration into GIS website and ArcReader, trained Town staff on web application, published and trained WPCA staff on use of ArcReader desktop application.

- **City of North Adams,** MA – Needs Assessment, Analysis and Recommendations, Implementation Plan development

- **Town of Cumberland, RI** - Needs Assessment, Analysis and Recommendations, Implementation Plan development

- **Town of Easton, MA Department of Public Works** - Needs Assessment, Analysis and Recommendations

- **Town of Richmond, RI** - Needs Assessment, Analysis and Recommendations, Implementation Plan development

- **State of Connecticut, Department of Utility and Control (DPUC)** – Data integration and collection support for municipal parcel data collection process, migrated existing Cadastral GIS data layers in various database schemas for several CT Towns into a standardized production model, developed address locator from standardized statewide address points, parcels, and TeleAtlas street data to support the Statewide Broadband Mapping project.

- **Pitney Bowes Group 1** – Data integration and collection support for municipal parcel data collection process covering the states of Connecticut, Massachusetts, and Rhode Island.

- **Connecticut Economic Resource Center (CERC)** – Manage, and often perform, as-needed mapping requests to support CERC's daily operations and support to their clients. Utilize Microsoft SharePoint portal website for task request management and document transfers.

- **State of Connecticut General Assembly (CGA)** – Managed support to CGA with 2011 redistricting project involving development, and alignment to 2010 census geography, of multiple years worth of local voting district boundaries from all towns in the state, development of statewide address locator and geocoding of registered voters, analysis and improvements to geocoding results, provided various other as-needed analysis and mapping support requests throughout project timeframe.

- **Town of West Hartford, CT –**

  - Worked with Emergency Operations Center to design and develop ArcGIS RunTime portable mapping application for emergency responders

  - Performed parcel data updates, cleaned up old coverage data containing regions and converted to standardized parcel geodatabase schema, resolved CAMA mismatches and developed intersection table.

  - Trained Town staff on CAMA mismatch resolution process

  - Created/updated data layers and maps at town request including address points layer, snow plow routes, trash pickup zones, flood zone and properties analysis, Assessment Neighborhood maps, assessment revaluation change maps, various school district maps, Tax Assessor Maps, Zoning Maps, Wetland Maps, Flood Plain Maps, Engineering Department Maps, Health Department case address and census tract mapping and analysis

  - Developed maps in support of Tropical Storms Irene and Lee flooding and wire hazards assessment and cleanup

- Assisted Public Works with CarteGraph integration with GIS, developed maps in support of town center parking study, provided mapping/analysis to local registrars for redistricting.

- Oversaw development of advanced GIS property viewer including integration of address maintenance application and integration with Town's CityView permitting application.

- Trained Town staff, manage day-to-day GIS related requests from town staff, installed and configured ArcGIS desktop throughout various departments.

- **City of Pittsfield, MA**

  - Developed Pittsfield's parcel data layer to conform to MassGIS digital parcel standards, identified and helped to resolve CAMA mismatches, created zoning data and maps as well as provided updates to City's utility data layers and creation of map atlases.

  - Supported data integration for City Web mapping application, including adding utility layers, orthophotography, modifying symbology, loading data into ArcSDE and file geodatabases, and publishing map service documents. Integrated extracts from City's utility customers database with desktop GIS.

  - Managed custom application enhancement development projects for Abutter's Tool, Flow, and GIS Website including uploader application for various database extracts, trained City staff to use applications, and Electronic File Cabinet application development, document conversion and organization. Managed development of Capital Projects web application integration with municipal GIS website.

  - Providing support to other Project Managers for MassGIS parcel standard level III conformance project.

- **City of Providence, RI** – Provided on-site training for parcel update procedures for client's staff.

- **Town of Thompson, CT** – Managed parcel automation project, integrated CAMA and parcel data, reviewed data development and check plots, trained town staff on CAMA resolution process, set up live link to Vision CAMA system from desktop GIS and trained staff on use of parcel search/abutter's tool, created zoning layers and map and providing as-needed updates, conversion of GIS data to CAD format for Engineering support for outfall inventory.

- **Town of Woodstock, CT** – Managed parcel realignment and update project, created maps, integrated CAMA and parcel data, trained Towns staff on CAMA mismatch resolution process.

- **Town of Smithfield, RI** – Provided training to Town staff on web mapping application, resolved tax map links on website, testing and review of Beta site, currently managing conversion of several CAD layers to Geodatabase, including annotation layers for tax maps, conversion and realignment of zoning data, development of new tax map layout, mismatch analysis & reporting, overseeing new web mapping application implementation (MapGeo).

- **Town of South Windsor, CT** – Created spatial indexes, data layers and map compilations, and loaded data onto server for Town's web-mapping application. Managed website enhancements.

- **Town of Tiverton, RI** – Managed Town-wide parcel automation project including QA/QC of data, map creation, linking to CAMA and training Town staff on CAMA mismatch resolution process, performed various zoning data analysis in support of planning departments zoning conformance determinations, developed contour layer from RI DEP Digital Elevation Model, overseeing new web mapping application implementation (MapGeo).

- **Town of Lincoln, RI** – Managed projects consisting of parcel, zoning, and sewer data conversion from CAD to GIS, created new town-wide tax and zoning maps, integrated CAMA and parcels, trained Town staff on CAMA mismatch resolution process. Managed GIS website development project including organization and symbolization of data layers, loading data to SDE, testing, trained Town staff to use application. Management and QA/QC of annual parcel/zoning data updates, creation of new Historic District overlay and map, conversion of town's GIS to CAD for Engineering department use, provides onsite and remote support to town staff, development of sewer manhole inventory database and data entry form, historic cemetery layer development support, overseeing new web mapping application implementation (MapGeo).

- **Town of Hatfield, MA** – Prepared hard copy maps and assisted with annotation for parcel updates.

- **Town of Prospect, CT** – Performed and manage annual parcel data updates, downloaded, clipped and integrated thematic data layers from State and Federal agencies, created new zoning layer to align with newest parcel data, resolved CAMA mismatches, trained Town staff on CAMA mismatch resolution process, created ArcReader map for Town's internal use and trained staff on its use, managed GIS website development project including organization and symbolization of data layers, loading data to SDE, testing, trained Town staff to use application, manages website application enhancements including addition of CAMA data uploader application and enhanced measurement tools, overseeing new web mapping application implementation (MapGeo).

- **Old Lyme, CT** – Annual zoning and parcel data and map updates, building footprint data development and QA/QC, oversaw new web mapping application implementation (MapGeo), set up live link to Vision CAMA database from desktop GIS.

- **Johnston and Exeter RI** – Provided support, language, budgeting for RI Statewide Planning Challenge Grant applications.

- **Greenwich, CT** – Provided custom ArcGIS training to Wetlands, Planning and Zoning, and Assessing Departments.

- **Hebron, CT** – Manage annual GIS data updates, tax map updates and production, updates of floodplain and wetland tables used in custom reporting database, installation of all annual data update projects on town server, configuration of abutters toolbar, as-needed onsite and remote desktop GIS assistance to staff.

- **Seekonk, MA** – Provided onsite training to DPW staff, oversaw new web mapping application implementation (MapGeo), supported annual parcel data and tax map update project.

- **Glastonbury, CT** – Migrated town's cadastral, planimetric, sanitary and storm data into standardized geodatabase schemas, created full FGDC metadata for all feature classes and datasets, developed model builder scripts to improve efficiency to town staff on repetive tasks, trained town staff on parcel data update procedures using CAD data, managed development of new contour data and terrain dataset from LiDAR, oversaw, tested and documented development of python scripts and tools to automate process of determining characteristics of drainiage outfalls for EPA reporting, managed creation of address point layer and performed QA/QC, importing of various sources of water system data into geodatabase schema, improved quality of street centerline data by merging various source data and providing QA/QC, managed update of custom scripts to ArcGIS 10 which convert CAD data to GIS and vice versa, provide as needed on-site and remote support and training to Engineering Department staff.

- **Westport, MA** – Performed link of parcels to CAMA and mismatch analysis, overseeing new web mapping application implementation (MapGeo), providing support to other Project Managers for MassGIS parcel standard level III conformance project.

- **Rye, NY** – Overseeing new web mapping application implementation (MapGeo).

KRISTEN LABRIE, Project Manager

Kristen LaBrie is a Project Manager for the Municipal Team in AppGeo's East Hartford office. Ms. LaBrie has over eight years of professional experience in GIS, most recently within the Operations and Facilities divisions of the Virginia National Guard and also has experience in Cultural Resource Management and Archaeology. Her GIS experience includes project management, data development and analysis, field collection, and data reconciliation and has worked extensively with SDSFIE (Spatial Data Standards for Facilities, Infrastructure and Environment).

EDUCATION

- University of South Carolina, MA in Anthropology (Graduate level GIS, Urban Geography), 2003.
- University of North Carolina, BA in Anthropology, 2000.
- University of Connecticut, BFA in Theatre Administration, 1992.

WORK HISTORY

- **2012 to Present:** Applied Geographics, Inc., Project Manager.
- **2009 to 2012:** Virginia National Guard, Facilities Management Office, GIS Manager.
- **2005 to 2009:** Virginia National Guard, Operations Office, GIS Specialist.
- **2004 to 2005:** James Madison's Montpelier, The Montpelier Foundation, Field Technician.

SELECTED & RELEVANT PROJECT EXPERIENCE

- **Spatial data development** (tax maps, street maps, utility, parcel updates, and in some cases utility data layers) and GIS consulting for the following municipalities:
  - MassGIS Level III parcel conformance projects
  - Barkhamsted, CT
  - Cromwell, CT
  - Darien, CT
  - Ellington, CT
  - Johnston, RI
  - Lincoln, RI
  - Marlborough, CT
  - Seekonk, MA
  - Westbrook, CT
  - Wallingford, CT
  - Smithfield, RI
  - Westport, MA
  - Old Lyme, CT
  - Saybrook, CT
  - Plainfield, CT

- **Support for MapGeo implementations -** spatial data quality control, data extraction and loading into database, and thematic layer development for Town web mapping on the MapGeo™ platform offered by AppGeo:
  - Barkhamsted, CT
  - Holyoke, CT
  - Taunton, MA
  - Lincoln, RI
  - Marlborough, MA
  - Natick, MA
  - Norwich, CT
  - Wethersfield, CT
  - Cromwell, CT
  - Darien, CT
  - North Attleborough, MA
  - Old Lyme, CT

- Seekonk, MA
- Smithfield, RI
- Tiverton, RI
- Tolland, CT
- Westport, MA
- Plainfield, CT
- Sandwich, MA
- Prospect, CT
- Westbrook, CT
- Yarmouth, ME

- **State of Connecticut, Office of Legislative Management, Connecticut General Assembly (2011)** – quality control for street data development.

- **State of Connecticut, Department of Public Utility Control (2012)** - Statewide Broadband availability data development and compilation support, involving standardizing parcel data.

MICHAEL THOMPSON, GIS Analyst

Mr. Thompson is a GIS Analyst with three years of experience with spatial data development, analysis, and map production. His technical skills and areas of expertise include: Arc GIS mapping and analysis, Geodatabase development, data conversion, data development, and GPS data collection and quality control. He has worked on data development projects involving parcels, streets and utilities.

EDUCATION

- Westfield State University, BA in Business Management and Regional Planner, 2010.

WORK HISTORY

- **2010 to Present:** Applied Geographics, Inc., GIS Analyst.
- **2009 to 2010:** Pioneer Valley Planning Commission, GIS Intern.

SELECTED & RELEVANT PROJECT EXPERIENCE

- **Spatial data development** (tax maps, street maps, utility, parcel updates) and GIS consulting for the following municipalities:
  - Columbia, CT
  - Cromwell, CT
  - Cumberland, RI
  - East Hampton, CT
  - Ellington, CT
  - Essex, CT
  - Glastonbury, CT
  - Gloucester, MA (sewer)
  - Hebron, CT
  - Lincoln, RI
  - Lyme, CT
  - Norwalk, CT
  - Norwich, CT
  - Old Lyme, CT
  - Pioneer Valley Transit Authority
  - Smithfield, RI
  - Springfield, MA
  - South Hadley, MA
  - Westbrook, CT
  - West Hartford, CT

- **Town of Cromwell, CT (2010 to 2011)** – Mr. Thompson has digitized the storm water system in Cromwell, complete with catch basins, drain lines, headwalls, and other storm water features, through the use of utility and subdivision plans as well as GPS field data collection and verification. This data shows the direction of the flow of storm water through the system and the location of outfalls where it enters a body of water such as a stream, lake, or river.

- **State of Connecticut, Office of Legislative Management, Connecticut General Assembly (2011)** – Geocoding and data development.

- **Town of Northborough, MA (2011)** – GPS field work and data editing for stormwater system.

- **Norwalk First Taxing District (2010 to 2011)** – Water utility system geospatial data automation including data collection with Trimble GPS technology.

- **Statewide Broadband** availability data intake, data quality checking, data integration and standardization for:

    - State of Connecticut
    - Commonwealth of Massachusetts
    - State of Oklahoma
    - State of Washington

AMY DUQUESNOY, GIS Analyst

Ms. Duquesnoy is a GIS Analyst with five years of experience involving spatial data development, map design and production, GIS analysis and modeling. She has knowledge of ArcGIS, Idrisi, and MapInfo software, combined with experience with HTML coding and website development and design, and field data collection with GPS technology.

EDUCATION

- Harvard Extension School, GIS & Web Mapping courses.
- Salem State College, BS in Cartography / GIS, 2009.

WORK HISTORY

- **2009 to Present:** Applied Geographics, Inc., GIS Analyst.
- **2007 to 2009:** Metcalf & Eddy, GIS Technician / Intern.

SELECTED & RELEVANT PROJECT EXPERIENCE

- **Spatial data development** (tax maps, street maps, utility, parcel updates, and in some cases utility data layers) and GIS consulting for the following municipalities:
  - Blackstone, MA
  - Columbia, CT
  - Cromwell, CT (sewer)
  - Cumberland, RI
  - Dartmouth, MA
  - East Hampton, CT (storm and sewer)
  - Ellington, CT
  - Essex, CT
  - Glastonbury, CT (address points)
  - Gloucester, MA (sewer)
  - Hebron, CT
  - Hopkinton, MA
  - Lincoln, RI
  - Lyme, CT
  - Milford, CT
  - Natick, MA
  - Norwich, CT
  - Old Lyme, CT
  - Prospect, CT
  - Smithfield, RI
  - Southbridge, MA
  - Thompson, CT
  - Wallingford, CT
  - Westbrook, CT
  - West Hartford, CT
  - Westport, MA
- **Greater New Haven Water Pollution Control Authority (GNHWPCA) (2010)** – Sewer system data updates.
- **Norwalk First Taxing District (2010 to 2011)** – Water utility system geospatial data automation.
- **Spatial data quality control, data extraction and loading into database,** and thematic layer development for Town web mapping on the MapGeo™ platform offered by AppGeo:
  - Cromwell, CT
  - Darien, CT
  - Dartmouth, MA
  - Millbury, MA
  - Natick, MA
  - Norwich, CT

- Hopkinton, MA
- Lincoln, RI
- Raynham, MA
- Tiverton, RI
- Westport, MA

- **State of Connecticut, Office of Legislative Management, Connecticut General Assembly (2011)** – Geocoding and data development.

- **Statewide Broadband availability data development and compilation support,** involving data intake, quality control, data standardization, and data integration, for:

  - State of Florida
  - State of Georgia
  - State of Washington
  - State of Oklahoma

LAURA DOTY, Project Manager / GIS Analyst

Laura Doty is a GIS Analyst with five years of experience in GIS analysis, map design and data production, including working for the City of Cambridge, MA as a GIS technician. She holds Masters degrees in Geographic Information Technology and in Environmental Studies. She has experience in ESRI ArcGIS, Geoserver, Open Layers, PostGIS and SafeSoftware FME.

EDUCATION

- Northeastern University, MPS in Geographic Information Technology, 2010.
- Antioch New England Graduate School, MS in Environmental Studies, 1997.
- Kalamazoo College, BA in English, 1988.

WORK HISTORY

- **2011 to Present:** Applied Geographics, Inc., Project Manager / GIS Analyst.
- **2010 to 2011:** Applied Geographics, Inc., GIS Analyst.
- **2008 to 2010:** City of Cambridge, GIS Technician.
- **2009:** CDM, Masters Intern.
- **1999 to 2008:** EarthWorks, Outdoor Classroom Program Director.
- **1997 to 1998:** New Canaan Nature Center, Assistant Director of Summer Nature Programs & Teacher/Naturalist.
- **1992 to 1994:** The Environmental Schools, Teacher.
- **1993:** National Audubon Society (Puffin Project), Research Assistant & Tour Boat Naturalist.
- **1992:** Whitefish Point Bird Observatory, Raptor Banding Intern.
- **1991 to 1992:** Sutton Avian Research Center, Avian Technician.

SELECTED & RELEVANT PROJECT EXPERIENCE

- **Commonwealth of Massachusetts, Office of Geographic Information (MassGIS) (2011, Ongoing)** – MA Digital Parcel File Level III Compliance for Massachusetts Municipalities.

  AppGeo is assisting the Commonwealth of Massachusetts, MassGIS (the Commonwealth's Office of GIS) to bring municipal parcel data up to the State Digital Parcel File Level III Standard. Since the beginning of 2011, AppGeo has managed the creation or updating of digital parcel data for 34 Massachusetts' municipalities including more than 260,000 parcels, with more municipalities in the queue. For each municipality, AppGeo first assessed the status of digital parcel data (digital, mylar, etc.) and assessor's property data records with respect to the Level III standard. AppGeo then managed and guided a process of data development or updating for the geographic feature data, followed by the linking of the CAMA and geographic data, and resulting in submittal of conforming data for review and acceptance by MassGIS.

Ms. Doty reviews and provides quality control for deliverables, including spatial data quality and parcel polygon matching to assessor data records.

- **Massachusetts Broadband Institute (MBI), Massachusetts Technology Collaborative (MTC) (2010, Ongoing)** – Broadband Availability Mapping Web Application.

  AppGeo is currently under contract with the Massachusetts Broadband Institute (MBI) to design and develop a Broadband Mapping Application for the Commonwealth of Massachusetts. The project, funded by the National Telecommunications and Information Administration (NTIA), involves the development of several web components including a broadband information portal, public survey, broadband speed test, and interactive map. The project also includes an on-site evaluation of MBI's hosting infrastructure and recommendations for short and long term hosting of the application. MBI prioritized ease of use and simplicity in their design requirements, allowing the user to focus on a limited set of map and query tools. The site performs complex overlay analysis and geocoding while presenting the user with a very simple and intuitively understood interface. The site also takes advantage of map caches (both Google basemap tiles and custom caches built using Massachusetts data), and open source technology, allowing for a flexible, cloud-based hosting option.

  Ms. Doty researched data sources, uploaded data, processed data, created cartographic styles, provided quality control on data, and managed data tiling and loading onto the cloud hosting environment.

- **State of Connecticut, Department of Public Utility Control (2009, Ongoing)** – Broadband Planning, Broadband Availability Mapping, Data Collection, Data Conversion and Standardization, Web Application Design and Development.

  Applied Geographics is working directly with the State of Connecticut, Department of Public Utility Control on their Broadband Mapping project as well as supporting some of the Broadband Planning programs. These projects and programs are a part of the larger nationwide effort funded though the National Telecommunications and Information Administration (NTIA), State Broadband Data and Development (SBDD) grants. Requirements for the Broadband Mapping project include gathering broadband availability, speed and technology information from all providers that operate within Connecticut. AppGeo is also gathering information from the public as well as designated community anchor institutions to try to understand what broadband services they actually have and use today. This information is then compiled and processed into a standard data model that supports delivery both to the NTIA, as well as to the DPUC and CT's Office of Consumer Council for monitoring and planning activities. As part of this initiative, Applied Geographics has worked with the Departments of Public Utility Control and Information Technology, respectively, to develop a suite of web based applications. for (1) secure reporting and data review by providers and Community Anchor Institutions (CAI), (2) secure access for state staff to monitor data delivery, and (3) for general public access to information about broadband availability, speed tests, and broadband programs, including an interactive mapping capability.

Ms. Doty provided data conversion and loading for the application including scripting, ETL routines, data modeling, data processing, and documentation.

- **Other Areas of Experience**

  - *Data processing, tile creation, cartographic styling* for map themes, data loading, testing and quality control for multiple municipalities using AppGeo's MapGeo™ web mapping subscription service.

  - *Statewide Broadband Mapping Projects* – Spatial data integration quality control, process automation, and mapping for Vermont, Connecticut, Georgia, Oklahoma, Washington and Massachusetts.

  - *Municipal GIS consulting, data automation, quality control, georeferencing, digitizing, and processing* for municipal GIS data layers, including parcels, storm, sewer and water systems, groundwater recharge zones, pavement management, voting districts, and utilities.

  - *USGS GAP Analysis* – Assisted in development of ETL conversion process for translating state data from across the nation to standardized schema.

  - *State of NY, CSCIC* – Data quality control for statewide street centerline database.

ISHMAEL SMYRNOW, Application Developer

Ishmael Smyrnow is an Application Developer with over five years of experience developing for the modern web stack. His experience encompasses project requirements gathering, website design, and enterprise web application development.

EDUCATION

- University of Connecticut, BS in Computer Science, 2010. Named a New England Scholar.
- University of Toledo, BS in Computer Science and Engineering, 2007.

TECHNICAL

- .NET, Android (4), iOS (5), Win32PostGIS, GeoServer
- ASP.NET (MVC, WebForms), HTML5 (HTML, Javascript, CSS), jQuery, Node.jsAGS JavaScript, REST, and SOAP APIs
- CouchDB, SQL Server (2000-2008), PostgreSQL (8.4)(PostGIS), Oracle 11g (XE)
- C, C++, C#, CSS (3), HTML (5), Java (6), Javascript (1.5), Objective C, Python (3), SQL (TSQL,PLSQL,PLPGSQL), VB.NET
- ArcGIS Server 10.x (REST APIs)

WORK HISTORY

- **2011 to Present:** Applied Geographics, Inc., Application Developer.
- **2010 to 2011:** Data Based Development Systems, Web Developer.
- **2009 to 2010:** University of Connecticut – School of Engineering, Student Web Developer.
- **2009**: Northeast Utilities, Web Development Intern.
- **2007 to 2010:** Ideas Unleashed, Web Designer / Developer.

SELECTED & RELEVANT PROJECT EXPERIENCE

GIS mapping application programming experience:

- **New Jersey Department of Transportation** (2012) – custom mobile and web mapping applications for statewide marinas
- **Cape Cod Commission (2012)** – development of custom Watershed multi-variant planner application that incorporates custom algorithms from the Commission to calculate wastewater generation scenarios and present charts and interactive maps
- **Cook County, IL (2012-13) –** custom workflow management application for permit tracking
- **National Association of Olmsted Parks (2012-13)** – custom online web mapping application for overlaying archival landscape architecture plans on current base maps for research and analysis

Programming for broadband mapping applications for NTIA-funded state broadband data development programs for:

- **Connecticut Department of Public Utility Control**
- **Massachusetts Technology Council, Massachusetts Broadband Institute –** Broadband mapping application and address maintenance application, dashboard and data tracker
- **Oklahoma Office of State Finance**
- **Washington DC Office of the Chief Technology Officer**

These projects and programs are a part of the larger nationwide effort funded though the National Telecommunications and Information Administration (NTIA), State Broadband Data and Development (SBDD) grants. Requirements for the Broadband Mapping project include gathering broadband availability, speed and technology information from all providers that operate within each state or jurisdiction. This information is then compiled and processed into a standard data model that supports delivery both to the NTIA, as well as to the entities themselves for monitoring and planning activities. As part of this initiative, Applied Geographics has developed a suite of web based applications for (1) secure reporting and data review by providers and Community Anchor Institutions (CAI), (2) secure access for state staff to monitor data delivery, and (3) for general public access to information about broadband availability, speed tests, and broadband programs, including an interactive mapping capability.

Central Connecticut Regional Planning Agency

GIS CONSULTING SERVICES
Request for Qualifications

April 1, 2013

Submitted & Prepared By:

NEW ENGLAND
GEOSYSTEMS
GEOGRAPHIC INFORMATION SYSTEM CONSULTANTS

mapXpress
local.regional.national

Authorized ESRI ArcGIS Server Application Service Provider

1200 Boston Post Road - Suite 206 Guilford CT, 06437 | ph 203.404.7129 | email info@ne-geo.com | www.ne-geo.com

NEW ENGLAND GEOSYSTEMS
GEOGRAPHIC INFORMATION SYSTEM CONSULTANTS

1200 Boston Post Road - Suite 206
Guilford, CT, 06437
203.404.7129
info@ne-geo.com

April 1st, 2013

Francis Pickering, Deputy Director
Central Connecticut Regional Planning Agency
225 North Main Street
Suite 304
Bristol, CT 06010-4933

RE: **Regional Geographic Information Consulting Services - Request for Qualifications**

Dear Mr. Pickering,

On behalf of New England GeoSystems, I am pleased to submit our company's proposal for consideration as a qualified consultant to assist in the development of a parcel base for Plymouth, Plainville and Burlington and the implementation of a regional GIS Web application. We believe our qualifications; experience and references more than satisfy your requirements for a GIS consultant.

New England GeoSystems specializes in planning, implementing and supporting municipal GIS programs. GIS consulting ***is*** our business rather than a support service to engineering, planning or IT consulting practices. Over the past several years, we have implemented numerous Geographic Information Systems for large and small municipalities including two of the more mature and advanced systems in the state being for your member municipalities of Berlin and Southington. We strive for complete satisfaction and take pride in the success of our clients. We encourage you to contact our references listed in the included proposal and ask them how their experience has been working with our team during and after their initial GIS development projects.

New England GeoSystems is also an ESRI Authorized Commercial ArcGIS Server Application Service Provider. Our online hosted GIS application is called MapXpress. NEGEO has developed and are hosting MapXpress ArcGIS Server applications for over 32 municipalities, counties and regional council of governments. We are 100% sure that MapXpress will not only satisfy your requirements for online mapping but exceed them while maintaining a fair price.

We are confident that New England GeoSystems' commitment to success and our ability to develop and adapt to our clients way of doing business will result in a successful GIS implementation as well as establish a beneficial and positive long-term relationship. I feel that not only will we provide you with excellent service, unmatched quality, and competitive and flexible pricing but I believe that we will establish the relationship you are looking for in a GIS Mapping & Internet consultant.

Thank you for providing us with the opportunity to earn your business. I am looking forward to meeting with you and the rest of your selection committee to demonstrate and explain our products and services and give a tour of our MapXpress online GIS application.

All of us at New England GeoSystems look forward to being of service to CCRPA and your member municipalities. If you have any questions, please feel free to contact us and as always we are available at any time to discuss our proposal, refine cost and scope estimates and to demonstrate our abilities.

Sincerely,

Brian Dooley, PE - President

New England GeoSystems, LLC

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PROJECT GOALS & UNDERSTANDING

New England GeoSystems is pleased to offer the services of our team of GIS professionals to Central Connecticut Regional Planning Association. It is our expectations to meet and exceed the requirements of your Request for Qualifications for Parcel Mapping and Web GIS Development.

We understand the two primary goals of this project to be the following:

- To obtain the services of a professional GIS Consultant to create a new parcel base for **Burlington, Plainville and Plymouth (BPP).**
- Create and host a regional GIS web site featuring GIS data from all CCRPA member municipalities.

We understand additional details and goals of this project are to:

- Create accurate parcel base from existing scanned tax maps for BPP
- Parcels will meeting CDA Level II standards with several of the Level II criteria being met
- Create parcel dimensions for BPP
- Create tax map purposed street name, water body and other basic text labels
- Create a tax map layout and town wide grid tax map index for BPP
- Realign and label street centerline and create parcel ROW layers for BPP
- Analyze, identify and resolve mismatched parcels and CAMA records for BPP
- Develop and analyze CAMA GIS mismatch report for New Britain & Bristol
- NEGEO feels that zoning layer improvements should be included in the parcel development for BPP
- Mismatch parcels have been addressed in Berlin and Southington
- Produce digital (PDF) and optional printed versions of tax maps
- Design, configure and activate MapXpress hosted online GIS
- Training & demonstration on new data and GIS website to CCRPA and all member towns
- Five years of parcel updates for BPP, including all changes, CAMA link and new tax maps
- Five years of MapXpress GIS web site hosting, maintenance and licensing

General Project Considerations

- ✓ There are approximately 16,000 parcels in three municipalities which need to be created and upgraded to Level II parcel standards. Those towns are Burlington, Plainville and Plymouth.

- ✓ NEGEO will primarily utilize scanned paper tax maps as the primary resource for the initial parcel layer.

- ✓ There are several digital sources of data for the three towns which need to be reviewed and evaluated as source data for this project.

- ✓ Town clerks maps, surveys and deeds may be used to supplement scanned maps.

- ✓ All pending parcel updates not reflected on the paper maps will be delivered with the initial map delivery and is assumed to represent the 2012 Grand List.
- ✓
- ✓ NEGEO will attempt to obtain the 2012 color photography as an excellent control layer for this project.
- ✓ NEGEO will integrate road centerlines, edge of roads, road ROW, attributed ownership and street names into the GIS
- ✓ The existing town zoning maps for Burlington, Plymouth and Plainville will be integrated into GIS and a professional zoning map produced.
- ✓ NEGEO follows newly adopted CT state parcel standards Level II and Level III where possible when creating parcel layers.
- ✓ NEGEO will produce several mismatch reports throughout the project and at the end of the parcel updates.
- ✓ NEGEO will research and address as many mismatches as possible.
- ✓ NEGEO will provide a solution to incorporate all condominium, trailer and multi owner accounts into the MapXpress online GIS.
- ✓ Parcel dimensions will be created and displayed in the MapXpress on-line GIS.
- ✓ Street names, water bodies, easements and other labels will be created for display on the tax maps.
- ✓ NEGEO will deliver a complete set of draft and final assessor maps in paper and PDF format for Plymouth, Burlington and Plymouth.
- ✓ NEGEO will configure and activate a regional MapXpress GIS Internet web site, including both interactive and portal modules.
- ✓ NEGEO will implement MapXpress Mobile as part of this project when development is complete fall 2013
- ✓ Annual MapXpress licensing, hosting and maintenance fees will not begin until July 2014 and will be in effect until June 2019.
- ✓ NEGEO will collect, reprocess and integrate as many aerial photography layers as are available from State of CT agencies, USGS and other governmental agencies and deliver in a much easier to use format as well as make available on the MapXpress web site.

- ✓ NEGEO will deliver all data in a seamless ESRI version 10.x geodatabase format. Alternate formats (AutoCAD) are available on request for no additional charge.
- ✓ NEGEO will not bill extra for travel or printing expenses during the course of the initial scope of work.
- ✓ NEGEO promises that all work shall be performed in the United States by U.S. citizens. The team is prepared to perform all work in their Guilford, CT office as well as onsite at each municipal town or city hall.
- ✓ NEGEO is prepared to hold as many project planning meeting, interim progress meetings and a final presentations as CCRPA staff feels is necessary to adequately inform and train CCRPA and municipal staff.
- ✓ NEGEO will provide monthly progress reports submitted with each invoice.
- ✓ NEGEO understands CCRPA and each municipalities right to complete ownership of the data and all derived products.
- ✓ NEGEO has read and understands all insurance requirements

NEW ENGLAND GEOSYSTEMS' ADVANTAGES

NEGEO has worked with the majority of the municipalities in the CCRPA region over the years and has a very close relationship with two of the larger municipalities. NEGEO has a vested interest in seeing a quality GIS being developed in the region.

The general public in this region and staff of both Southington and Berlin have become used to having access to a high performance ArcGIS Server web based GIS for several years. NEGEO plans on leveraging the existing MapXpress web sites of Berlin and Southington as the foundation of the regional GIS web site.

NEGEO has the ability to create a consolidated GIS presence in the CCRPA region without the confusion of competing and duplicate municipal GIS web sites.

The ability of NEGEO to use and expand existing web based GIS assets in the region will allow NEGEO to save time and money and be able to provide more functionality and automation in the web GIS product development.

NEGEO will provide a mobile (tablet & phone) compatible version of the regional MapXpress website when available in the fall of 2013.

As a benefit to Berlin and Southington who stand to benefit the least from this project as they already have a public GIS web site and have parcels which meet Level III standards, NEGEO will implement the mobile version of MapXpress to their specifications and use their GIS data as the standard to test functionality.

Southington and Berlin transfer CAMA data nightly from their municipal CAMA servers to their hosted MapXpress GIS web sites. We will offer the same nighty CAMA update functionality to every municipality in the CCRPA region. NEGEO will not limit CAMA & parcel updates to twice per year. It is our goal to have the CCRPA web site contain data which is as up-to-date as possible.

NEGEO updates Southington and Berlin's parcels several times per year and often provide updates on demand for important developments. Southington and Berlin will require that their publically viewable CAMA and parcel data be as up-to-date as what is currently being offered.

The CCRPA web site will contain the latest frequently updated data from Southington and Berlin because NEGEO will utilize the same ArcGIS services feeding their current public sites and intranet sites to populate the regional GIS web site.

NEGEO will also provide the ability for New Britain & Bristol to upload their own parcel updates on their own schedule. Again, NEGEO does not want to limit spatial data updates to twice per year if some municipalities update more frequently.

Anytime NEGEO updates or creates any layers for Berlin, Southington, Plymouth, Burlington or Plainville, these layers will be uploaded to the MapXpress GIS website as part of the annual maintenance fees.

NEGEO will use ArcGIS Server to host the CCRPA web sites and will make the services publically available like the CTECO web site does. Only ArcGIS Server is able to provide direct GIS data feeds to ArcMap users wherever they may be.

NEGEO will be developing this regional MapXpress GIS web site on remote a cloud hosted GIS server as opposed to hosting the data in Guilford CT as has been the way for the past several years. This will provide failsafe operation during storm events like Sandy & Irene.

Only NEGEO has regularly offered a GIS portal to its customers with the ability to do fast search, download PDF maps and native ESRI formatted databases.

NEGEO has worked with the assessor in Plymouth on other GIS projects and have consulted with the town on planning to implement GIS.

NEGEO has worked with the previous assessor and first selectwoman in Burlington and has had discussions with them on how to plan and fund a GIS implementation.

NEGEO has had discussions several times with Plainville staff over the past few years on how to plan and fund a GIS implementation.

NEGEO will integrate & update the existing GIS zoning maps for Plymouth, Plainville and Burlington as part of the parcel creation. It will be quite efficient and a benefit to the towns to improve this layer at the time of parcel creation & improvement. A final report comparing CAMA zone and GIS zone will be delivered to each town in order to assist in final QA/QC.

NEGEO develops regional GIS web projects, such as the ones for WINCOG, VCOG & COGCNV, with consideration for minimizing competition among existing GIS resources and plans the sites so that each town could take over their data and web site when/if regional funding runs out.

NEGEO wants to assure that the CCRPA regional web site does not end up as an out-of-date and little used web site as the regional GIS sites of CRCOG and SECCOG have become. These regional sites have become unmaintained and out-of-date secondary regional resources as they can't compete to the majority of the member towns within those regions who have developed better, faster and more up to date GIS web sites.

NEW ENGLAND GEOSYSTEMS BACKGROUND

Company Info

New England GeoSystems, founded in April 2005, assumed operations for Brodie Group Atlantic, a company providing GIS services in Connecticut since 1996. New England GeoSystems is continuing to expand our specialization in the development and implementation of Geographic Information Systems for municipal governments. Our main office is in the shoreline town of **Guilford, Connecticut**. New England GeoSystems is a **100% Connecticut owned and staffed**.

NEGEO specializes in using ESRI's ArcGIS suite, AutoCAD other technical software in designing and implementing GIS solutions for municipal clients. Our core services include parcel mapping and maintenance, GIS data development, ArcGIS Server internet development and hosting, GIS training, GPS data collection, GIS needs assessment & implementation, and custom GIS application development.

The New England GeoSystems' effort on this project will be led by Brian Dooley, P.E. Brian is the owner and president and oversees all phases of work. Brian has been working with GIS and mapping as a licensed Civil Engineer since 1992. Assisting Brian in managing this project will be New England GeoSystems' principle parcel project manager Jason Courter, GISP and MapXpress Implementation Coordinator, Marwin Gonzalez, M.S.

All work on this project will be performed in the Guilford, CT office, but in order to provide better service to CCRPA and the member towns, we may place a staff member on-site to work directly with town and CCRPA staff during the initial data gathering phases and final QA/QC process. Our staff will come fully equipped with all necessary software and hardware. We never sub-contract work to companies outside the United States or employ the services of non U.S. Citizens.

Project Team

New England GeoSystems is planning on involving at least five full time employees, two part time technicians and possibly local CCSU interns to servicing CCRPA's GIS development needs during the course of this project. The remaining NEGEO team, working from our Guilford office, will be familiar with the project and will always be available to the CCRPA and the member towns at any time to answer questions and provide information.

Brian Dooley, PE

The New England GeoSystems' effort is led by Brian Dooley, P.E. Brian is the President of New England GeoSystems and will be responsible for overall project managementand be held responsible for all work performed. Brian will also provide feedback and direction as to the development and integration of all data products from the gathering phases, through production and after the final formatting and delivery to CCRPA and the member towns.

Brian has been working with GIS and mapping as a licensed Civil Engineer since 1992. Mr. Dooley has been part of many parcel conversion and internet development projects over his 20 years of experience and will assure that the implementation of a regional GIS through the CCRPA becomes a project NEGEO will use as proud reference.

Brian, with assistance from Jason Courter, Marwin Gonzalez, Alfredo Herrera and Kevin Daley will be conducting the majority of the work on this project.

Marwin Gonzalez , M.S

Marwin, a local resident of Plymouth, will act as assistant project manager and will be responsible for the implementation of the regional MapXpress web site and coordinate data collection and integration among the member towns. Marwin is also currently on the staff of CCSU as a GIS instructor. Marwin would be able to pick and choose from among the best students candidates for summer internships with NEGEO which may help distribute the workload for this large data creation project.

Jason Courter, GISP

Technical supervisor for a majority of New England GeoSystems' parcel conversion & update projects is Mr. Jason Courter. Jason has been involved with parcel mapping on a daily basis for over 10 years. Jason has managed countless parcel development projects ranging from hand drawn linen map conversion to pre-existing high quality AutoCAD and ArcInfo conversions. Jason was an original member of the State of Connecticut Geospatial Council's Parcel Mapping Standards Committee during the development of the draft parcel standards and is a member of the CT Association of Assessing Officials (CAAO), New Haven County Association of Assessing Officials (NHAAO) and the North East Regional Association of Assessing Officials (NRAAO).

Kevin Daley

NEGEO's Senior GIS Analyst, a local resident of New Britain, will be assisting in managing day to day operations of our technicians and performing more advanced technical work when needed. Kevin has over 4 years of experience working with GIS, including MapXpress data configuration and parcel creation and maintenance.

Alfredo Herrera

Alfredo Herrera will be the full time staff GIS technician assigned to complete the tax map creation and annotation creation. Alfredo has a degree in urban planning and GIS and has been involved with several projects of this exact with tenure with New England GeoSystems.

*Complete resumes of all principles and key support staff are presented in **Appendix A.***

Existing Work Load

NEGEO has experienced a growth in business over the past two years which has seen the hiring of additional staff. It is our business plan to continue to grow and add qualified staff as needed. NEGEO is conservative in our hiring practices and such has never laid off any personnel due to a slowdown.

NEGEO promises to commit the necessary resources to this important project and to meet the production deadlines of this project. Depending on our growth projections this year, we hire additional technicians and/or student interns. NEGEO has received a lot of interest from well qualified candidates with CT municipal GIS backgrounds and will draw upon this talent pool to continue to grow as the largest CT owned GIS consulting firm.

Contractor Information

Place of Primary Business:

New England GeoSystems, LLC

1200 Boston Post Road, Suites 204-206

Guilford, CT 06437

203-404-7129

brian@ne-geo.com / info@ne-geo.com

Primary Business Registration is as a Connecticut LLC

FEIN #: 20-2535086

Authorized Contacts:

Brian Dooley, PE – President

203-404-7129 (office)

203-824-3657 (cell)

brian@ne-geo.com

Available 24/7

Marwin Gonzalez, M.S. – Project Manager

203-404-7129 (office)

860-681-1509

marwin@ne-geo.com

Available M-F 8:30 – 5:00

Emergencies 24/7 via cell

Financial Disclosure:

Financial information can available via direct delivery via confidential methods. New England GeoSystems is a private company and does not release this information in the context of potentially public documents. We hope you can understand this policy as there have been incidents with this information being used by aggressive competitors in the past and we try to minimize our exposure to these unfortunate situations.

NEGEO is awaiting a fresh batch of financial reports due with our 2012 tax filings. NEGEO will be more than happy to provide these documents for review should CCRPA feel them necessary to further evaluate our ability to successfully execute this project.

We can assure you that NEGEO is a health company which has been profitable for the eight years' operating as New England GeoSystems. By focusing on our core services, providing unmatched customer service and reducing unnecessary overhead has managed to expand our services throughout this persistent economic downturn.

QUALIFICATIONS, EXPERIENCE and REFERENCES

New England GeoSystems (NEGEO) is qualified to assist CCRPA as they embark on this GIS development and implementation project. NEGEO specializes in parcel creation, improvement and maintenance and is a demonstrated leader in ArcGIS Server implementation, municipal GIS web site development and is currently one of the largest, if not the largest single ArcGIS Server host in New England. NEGEO is also the largest Connecticut owned GIS consulting firm.

New England GeoSystems' staff is comprised of responsible and committed individuals who blend together to form a project team rarely seen these days. Because of our modest size, team structure and continual cross training; knowledge is constantly being exchanged between team members who consist of skilled cartographers, field technicians, GIS analysts and programmers.

NEGEO is constantly evaluating the dynamic field of GIS. It is our responsibility to be aware of changes in GIS technology and what benefits it can bring to our clients. NEGEO is an advocate for constant training and all of our staff members are encouraged to improve themselves through study. Our clients can be assured that our staff is current with best practices in GIS technology and are active participants in the local and regional GIS community.

KEY REFERENCES

We highly encourage you to contact our municipal and regional clients, including your member towns of Berlin and Southington, direct municipal neighbors such as New Hartford, Thomaston, Wolcott, and Cheshire. Other excellent references can include the towns of East Windsor, Suffield, South Windsor, and Simsbury.

Just last month NEGEO beat out 16 other GIS consultants, including most if not all of those submitting on this job, to win a competitive RFP for the Town of Somers. NEGEO was chosen because of our combination of skills, experience, references and quality of deliverables.

Other notable references would include the Council of Governments of the Naugatuck Valley. Our job with them included developing parcels from scratch for the towns of Beacon Falls, Bethlehem, Cheshire, Middlebury, Oxford, Thomaston, Woodbury, and Wolcott. NEGEO then developed municipal websites for all towns with new parcels plus the towns of Woodbury and Southbury, which already had GIS. Again, NEGEO was chosen for this job out of a field of competitors which certainly include those consultants submitting on this job.

Other Council of Governments clients include Windham Regional Council of Governments. NEGEO was chosen through a competitive RFP process to develop their regional GIS website. This project was completed on a very tight budget, far less than what is available on this project. In spite of this budget limitation, a regional site was developed which continues to this day to be one of the more used and up-to-date regional websites developed in recent years.

Our last Council of Governments client is the Valley Regional COG. NEGEO first developed parcels for all the member towns and through the last RPIP grant, created MapXpress GIS municipal web sites.

Although not in CT nor a regional council of government, Otsego County in upstate New York is New England GeoSystems' first entry into the New York market. Otsego chose NEGEO to develop and host the county wide GIS web site consisting of over 36,000 parcels. Although a single county, each member municipality is able to choose

their own town and manipulate their area of interest. Otsego County's MapXpress site features nightly CAMA updates and self-service spatial data uploads by Otsego's in-house GIS technicians.

Other long term clients, all at least 8 years some over 10 years, can provide insight as is what it is like working with New England GeoSystems in a long term relationship. These long term clients include municipalities as Stonington, Berlin, North Stonington, Preston, Hamden, West Haven, Guilford, Branford and others. All of these clients can attest to our professional approach to municipal GIS and the unique experience we bring to consultant / client relationships.

Parcel Mapping References

New England GeoSystems has the depth of talent, the experience and ability to efficiently and economically turn Burlington, Plainville and Plymouth's existing mapping and data resources into a solid foundation for the expansion of GIS within the member town and throughout the CCRPA region.

NEGEO's Connecticut client list is a testament to our abilities. The following is a list of municipalities where NEGEO and its staff have created, converted, cleaned and/or updated parcels.

- Southington
- Berlin
- Hamden
- Branford
- Guilford
- Goshen
- New Haven*
- Milford*
- New Hartford
- East Windsor
- Stonington
- North Stonington
- Ledyard
- Preston
- West Haven
- Greenwich
- Naugatuck
- Middlebury
- Beacon Falls
- Cheshire
- Woodbury
- Southbury
- Wolcott
- Bethlehem
- Thomaston
- Stamford*
- Central Naugatuck COG
- Valley COG
- Seymour
- Derby
- Ansonia
- Colchester
- Shelton
- Simsbury
- Suffield
- Somers
- Vernon*
- Housatonic Valley COG*
- Granby, MA*
- Narragansett, RI*

Within the past few years, NEGEO has completed several large GIS parcel & MapXpress online GIS application development projects. They include but are not limited to the following:

<u>Town of Suffield – GIS Parcel Conversion Project</u>

NEGEO was awarded this project over competition from several other GIS consulting firms from across New England. This project is ongoing and the deliverables included new composite parcel mapping, multiple years of parcel updates, extensive mismatch work, new assessor maps and MapXpress online GIS application.

<u>Contact:</u>

Helen Totz, Assessor – *(htotz@SuffieldTownHall.com)*

Town of Suffield – 83 Mountain Road – Suffield, CT 06078 – 806-668-3866

Town of Southington – Parcel Maintenance & MapXpress Online GIS Development - Ongoing

New England GeoSystems has been maintaining Southington's GIS resources for the past twelve years, including twice annual parcel updates (14,800 parcels). NEGEO has recently completed the development an in-house installation of ArcGIS Server and MapXpress intranet application to satisfy the heavy demand on GIS resources. Southington is also deploying the MapXpress Lasefiche and storm /sewer asset modules.

Please Contact:

Richard Lopatosky, IT Director (*Lopatosky@southington.org*)

93 Main Street – PO Box 610--- Southington, CT 06489 --- 860-276-6228

Central Naugatuck Valley Council of Governments – Parcel Mapping Project

New England GeoSystems was hired to produce a regional parcel base (35,000+) and web sites for the 13 towns making up the Central Naugatuck Valley Council of Governments. Their GIS web site can be visited at http://www.cogcnvgis.com

Contact:

Glenda Prentiss, GIS Coordinator *(gprentiss@cogcnv.org)*

60 North Main Street -- Waterbury, CT 06702 --- 203-757-3540

Town of Guilford – Town Wide Dimension & Tax Maps

New England GeoSystems has been maintaining a bare parcel layer and providing general GIS services for many years in Guilford. Recently, funding became available to create town wide parcel dimensions. NEGEO created dimensions for over 9,000 parcels, designed new tax maps and hosts all the town's GIS data online using the MapXpress application.

Contact:

Kevin Magee, GIS Coordinator *(mageek@ci.guilford.ct.us)*

31 Park Street, Guilford, CT 06437 – 203-453-8039

New England GeoSystems is proud of the long term relationships it builds with clients. NEGEO actively works with all of the clients listed on this page and has performed billable parcel and GIS services for all references within the past 12 months. Please refer to Appendix B for several of NEGEO's signature GIS projects.

Additional Municipal GIS References

Town of Southington	**Town of East Windsor**	**Town of Preston**
Brian Lastra	Caroline Madore	Kathy Nichols
Town Assessor	Town Assessor	Town Planner
860-276-6205	860-623-8878	860-887-5581 x118
Lastrab@southington.org	cmadore@eastwindsorct.com	nichols@preston-ct.org

City of West Haven
Anne Marie Gradoia
City Assessor
203-937-3515
annmariegradoia@cityofwesthaven.com

Town of Branford
Barbara Neal
Town Assessor
203-488-2039
assessor@branford-ct.gov

Town of Stonington
Marsha Standish
Town Assessor
860-535-5098
Mstandish@Stonington-ct.gov

Town of Cheshire
Mario Panagrosso
Town Assessor
203-271-6620
mpanagrosso@cheshirect.org

Town of Berlin
Barbara Sagan
IT Director
860-828-7095
bsagan@town.berlin.ct.us

Town of Bethlehem
Carolyn Nadeau
Town Assessor
203-266-5479
Assessorbethlehem@snet.net

Town of Seymour
Joe Kusiak
Town Assessor
860-881-5013
jkusiak@seymourct.org

Town of North Stonington
Marc Tate
GIS & IT Director
860-535-2877 ext 33
GIS@northStonington-ct.gov

Town of Simsbury
Richard Sawitzke
Town Engineer
860-658-3260
rsawitzke@simsbury-ct.gov

Town of Simsbury
Hiram Peck
Director of Planning
860-658-3245
hpeck@simsbury-ct.gov

Town of Southbury
Nancy vanNorden
Land Use/GIS Coordinator
203-262-0634
landuse2@southbury-ct.gov

City of Stamford
Cindy Barber
GIS Coordinator
203-977-5360
CBarber@ci.stamford.ct.us

Town of New Hartford
Beth Paul
Town Assessor
860-379-5235
bethpaul@town.newhartford.ct.us

Town of Wolcott
Pam Diesel
Assessor
203-879-8100
PDeziel@wolcottct.org

Town of Thomaston
Dave Ambrose
Town Assessor
860-283-0305
dambrose@thomastonct.org

MAPXPRESS INTERNET GIS EXPERIENCE & REFERENCES

New England GeoSystems (NEGEO) is also very to assist CCRPA in the development and deployment of a web based GIS. NEGEO specializes in hosted and installed ArcGIS Server applications and one of very few Authorized ESRI ArcGIS Server Application Service Providers. Our core ArcGIS Server product is MapXpress Interactive and MapXpress Portal. Please visit **http://www.mapxpress.net** for complete information.

New England GeoSystems currently hosts 32+ municipalities using our ArcGIS Server based MapXpress application, a entire county in NY State and three CT Regional Council of Governments. Within the past two years, NEGEO has completed several MapXpress ArcGIS Server implementation projects. Four of the most recent and notable include:

Town of Southington – On-Site ArcGIS Server Development & Deployment

New England GeoSystems has been maintaining Southington GIS resources for several years, including twice annual parcel updates (14,800 parcels). During the summer of 2011, NEGEO launched in-house installation of ArcGIS Server and MapXpress internet application to satisfy the heavy demand on GIS resources. Southington is also using the MapXpress Lasefiche and storm/sewer asset extensions. Project costs covering extensive customizations, on-site setup excluding maintenance and licensing worth approximately $25,000 with an annual budget allocated to improvements, enhancements and additional data resources.

NEGEO is currently upgrading both the public and internal MapXpress application to ArcGIS Server 10.1 with a new front end, data editing capabilities and mobile deployment.

Please visit - www.SouthingtonGIS.*com* *(operation in flux as application is being migrated to on-site servers)*

Please Contact:
Richard Lopatosky, IT Director (*Lopatosky@southington.org*)
93 Main Street – PO Box 610 --- Southington, CT 06489 --- 860-276-6228

Town of Berlin – MapXpress Hosted ArcGIS Server Development

New England GeoSystems has been maintaining Berlin's GIS resources for many years, including twice annual parcel updates (8,777 parcels). Berlin GIS has recently been upgraded to feature a deeper integration with the VISON database allowing access to multiple account properties including condominiums. BerlinGIS.com features a live link between the hosted site and VISION CAMA. Updates are transmitted nightly from Berlin's CAMA to the MapXpress hosted server. This allows the public access to the same exact information as if they were to go to the assessor's office directly.

Please visit - www.BerlinGIS.com

Please Contact:
Richard Lopatosky, IT Director (*Lopatosky@southington.org*)
93 Main Street – PO Box 610 --- Southington, CT 06489 --- 860-276-6228

South Windsor, CT

Considered a leader in GIS among CT municipalities, South Windsor recently chose MapXpress over several open source and flex/Silverlight based applications. One major factor was the fact that MapXpress is based on ArcGIS Server's JavaScript API, is extremely customizable and offers much more institutional support and future upgrades than open source software products.

South Windsor is a very up and coming town close to Hartford and has over 20,000 parcels. Their web site can be visited at http://southwindsor.mapxpress.net.

Please Contact:
Scott Roberts, IT Director (*scott.roberts@southwindsor.org)*
1540 Sullivan Ave - South Windsor, CT 06074 - 860-644-2511

Town of Stonington – On-Site ArcGIS Server Development & Deployment

New England GeoSystems was approved in 2010 to proceed with the development and installation of a customized in-house version of MapXpress. This in-house deployment is to replace an existing ArcIMS based system which has reached its end of usefulness. Stonington's site went live during the Fall of 2010. Cost of setup, one year of licensing, maintenance and customizations worth approximately $15,000.

Please visit - http://gis.stonington-ct.gov

Please Contact:
Roger Kiser, IT Director – (rkizer@stonington-ct.gov)
152 Elm Street – PO Box 352 --- Stonington, CT 06378 --- 860-535-5011

Otsego County, NY – MapXpress Hosted ArcGIS Server Development

New England GeoSystems was awarded a contract to replace two aging ArcIMS based internet applications with a full implementation of both MapXpress Interactive and MapXpress Portal. The site went live April, 2011. Entire contract worth @ $40,000. This implementation features nightly CAMA updates and a self-serve feature allowing Otsego County staff to update the parcel layer w/o intervention of NEGEO's staff.

Please visit - http://otsegocountygis.mapxpress.net

Please Contact:
Psalm Wyckoff, County Planner –wyckoffp@otsegocounty.com
Otsego County Dept of Planning - 197 Main Street – Cooperstown, NY13326-1129

Town of Newtown, CT

Released in May 2011, Newtown's MapXpress implementation showcases their large collection of GIS data while adapting to their unique MBL / Account issues in their VISION CAMA. Entire hosted setup and one year contract worth @ $9,500.

Please visit – http://Newtown.MapXpress.net – *(application in final stages of development and will be complete by mid may 2011)*

Please Contact:
Scott Sharlow, IT / GIS Coordinator –scott.sharlow@newtown-ct.gov
3 Primrose Street – Newtown, CT 06470

Windham Region Council of Governments – Regional MapXpress Development & Hosting

New England GeoSystems was hired in 2010 to produce a regional GIS website featuring over 24,000 parcels spread over 9 towns. Their GIS web site can be visited at **http://www.wincog-gis.org**. Initial contract $10,000 with continuing annual maintenance & support worth @ $6,000.

NEGEO is now upgrading WINCOG's regional website with new features and data layers including advanced property cards, new aerial photography and developing a mobile version of MapXpress which wil be made available to all MapXpress customers upon completion.

Please Contact:

Jana Butts, Senior Planner *(planner@wincog.org)*

700 Main Street Willimantic, CT --- 860-456-2221

MapXpress References

Town of Southington
Brian Lastra
Town Assessor
860-276-6205
Lastrab@southington.org

Town of East Windsor
Caroline Madore
Town Assessor
860-623-8878
cmadore@eastwindsorct.com

Town of Preston
Kathy Nichols
Town Planner
860-887-5581 x118
nichols@preston-ct.org

City of West Haven
Anne Marie Gradoia
City Assessor
203-937-3515
annmariegradoia@cityofwesthaven.com

Town of Branford
Barbara Neal
Town Assessor
203-488-2039
assessor@branford-ct.gov

Town of Stonington
Marsha Standish
Town Assessor
860-535-5098
Mstandish@Somers-ct.gov

Town of Berlin
Barbara Sagan
IT Director
860-828-7095
bsagan@town.berlin.ct.us

Town of Bethlehem
Carolyn Nadeau
Town Assessor
203-266-5479
Assessorbethlehem@snet.net

Town of North Stonington
Marc Tate
GIS & IT Director
860-535-2877 ext 33
GIS@northSomersct.gov

Town of Suffield
Helen Totz
Assessor
806-668-3866
htotz@SuffieldTownHall.com

Town of Seymour
Joe Kusiak
Town Assessor
860-881-5013
jkusiak@seymourct.org

Town of New Hartford
Beth Paul
Assessor
860-379-5235
bethpaul@town.newhartford.ct.us

Town of Guilford
Kevin McGee
GIS Coordinator
203-453-8039
mageek@ci.guilford.ct.us

Town of Oxford
Eva Lintzer
Town Assessor
203-888-2543 ext 3055
assessors@oxford-ct.gov

Town of Cheshire
Mario Panagrosso
Town Assessor
203-271-6620
mpanagrosso@cheshirect.org

DIGITAL PARCEL CREATION

New England GeoSystems specializes in parcel mapping, parcel updating and digital map preparation. Annually NEGEO updates and maintains over 100,000 parcels across dozens of municipalities.

What sets NEGEO apart from other GIS consulting, engineering and planning firms is the amount of experience our staff has with creating and maintaining parcels. On any given day in NEGEO's office, there is a municipality undergoing a parcel update. Our experience leads to higher quality, faster production and lower cost.

It is clear that the initial development and subsequent distribution of a regional GIS depends on creating a quality foundation parcel layer for all member municipalities. New England GeoSystems has completed several projects of this nature for other towns and regional council of governments of equivalent size and character. We are confident that we have a complete understanding of the requirements of this project and are well qualified to complete this work in a timely and first class manner.

Street Centerline Realignment

Prior to any parcel creation, NEGEO creates the skeleton from which the new parcel base will be built. In addition to aerial photography and any existing digital data, the street centerline is the first layer to be built. Using existing data, State of CT street centerline resources and the new State of CT aerial photography, a new street centerline will be build and aligned to the aerial photos.

Pilot Project

Prior to any large scale development, all techniques, including centerline realignment will be tested in a pilot area consisting of two or three map sheets. Approval of the parcel creation process, including annotation and some aesthetic qualities will be reviewed and approved prior to commencing on the full project.

Parcel Creation Strategy

The primary goal of this phase is to develop an accurate and integrated parcel layer using scanned tax maps, any existing digital data, scanned town clerk maps, realigned street centerline and the latest color aerials as provided by the State of CT. Secondary goals include preparing this information to assist Plainville, Burlington and Plymouth in efficiently keeping the new property maps up-to-date, streamlining future mapping operations, providing a better service to the public through the web GIS and developing a resource to assist in planning and managing the CCRPA member municipalities' future.

In aiming to keep costs under control but provide an exceptional quality product, the initial parcel creation task will follow a "skeleton-build" process as opposed to any parcel deed research. Combining BPP's paper resources with any regional base map information available from CCRPA and the State, NEGEO will be able to create an exceptional skeleton from which to build an accurate parcel base. BPP's parcel base skeleton and control layers will be developed by using the following resources:

- State & DEMHS provided street centerline – aligned to latest aerial photo
- BING, GOOGLE, USGS & State of CT aerial photography
- Scanned versions of existing tax maps

- Existing digital parcel data – AutoCAD and ESRI shapefiles
- Town clerk maps for newer subdivisions and corrections of error prone areas

In most cases, the newly created skeleton features based on the realigned street centerline and aerial photography will provide excellent spatial control. As sections from the existing scanned tax maps are digitized and placed block by block into the skeleton, areas of more accurate base mapping will control the placement of parcel lines and allow technicians to modify the digitized lines accordingly.

Digitization, Placement & Alignment

The first major step in creating new parcel lines and the resulting coded polygon layer will be to assure that the skeleton has been properly constructed. NEGEO will visually adjust the street centerline per available aerial photography and "buffer" each street to form an initial street right of way (ROW). Creating the ROW buffer is not a automatic function but it will be created in context and adjusted for each street based on the best approximation of the actual width of the street based on the aerial photo. This ROW will be to guide the placement of the street frontage parcel lines and will also be "rounded" at intersections and cul-de-sacs where applicable.

Once the street centerline has been adjusted and the ROW created, the digitization of each existing tax map can begin. This process involves placing parcel lines within the skeleton made up of the adjusted street centerline and available aerial photography. NEGEO will begin by utilizing each of Somers's scanned tax maps and georeference multiple sections of each map based on the visible tic marks, street centerline, other available digital base mapping and aerial photography.

Portion of a typical scanned tax map

NEGEO usually doesn't georeference the entire tax map as edge matching errors may occur. Each tax map will first be georeferenced using the tic marks, then the aerial photography, adjusted road centerline and any other

available ground control for each “block”. This means a single tax map may be georeferenced multiple times in order to reduce distributed spatial errors. This provides good level of visual control over the digitizing processresulting in much better final parcel placement.

Scanned tax map overlaid onto aerial photo in ArcGIS at beginning of digitizing phase

All parcel, easement and right of way lines will be digitized for each map. An automated connection or rubber-sheeting of maps <u>will not be attempted.</u> Rubber sheeting and edge matching is very inaccurate and is not recommended. Our method removes each block or neighborhood from the digitized layer and carefully places within the new parcel layer controlled by the skeleton. Less accurate parcels will be improved as each block is placed onto the skeleton and the surrounding tax map based parcels are fit into place.

Parcel Lines in ArcGIS after digitizing from scanned tax map

Any minor dimensional discrepancies will be spread across each block while preserving parallel and perpendicular lines. An attempt will be made to keep the original scale and accuracy from the drafted tax maps as the parcel lines on these maps are, in most cases, appear to be drawn to scale. Minimal artistic license or rubber sheeting will then be used where it is obvious and necessary that parcel boundaries inappropriately overlap onto an adjacent map sheet or onto known right-of-way areas such as roads or water ways. Polygons will not be built until the entire parcel layer has been constructed with lines, parcel identification links have been placed and topology has been verified.

Please view **appendix C** for samples of New England GeoSystems' tax map conversion work.

PARCEL IDENTIFICATION, ANNOTATION CREATION & CAMA LINK

Parcel Identification Links

Parcel identification links will be placed at the time of initial digitization. Parcel identification points will initially consist of map, block (if used), Lot, Sub-Lot and if possible CAMA unique id number (VISION or CLT PID). The geodatabase design will be in place at this time and through the use of automated database functions, a large portion of the data entry will be automated. The operator simply has to change the default value when the need arises. Additional data to be contained in the geodatabase (owner name, deeded acreage, etc.) will be entered during the annotation phase and linked in from the VISION or CLT database.

Digitized parcel lines in ArcGIS with placed parcel identifier

Data sheets will be kept for each tax map containing a running log of issues including identifying problem parcels, areas of interest concerning accuracy, duplicate parcel identifiers, alignment problems and any other issues encountered. These data sheets will be delivered for review as part of the first submission to CCRPA and each town's GIS review committee along with the required check plots.

As mentioned before, a working set of topology rules will be used during the entire construction process. Combined with an initial level of quality control by georeferencing the scanned tax maps and viewing aerial photo and other base data during the digitizing process, the entire QA/QC process will be in place from the beginning of the project.

Parcel Dimension Creation

The creation of annotation is a labor intensive activity, but NEGEO has developed several tools which will allow for fast and efficient annotation placement. It has become common to have the tedious task of annotation creation to be sent overseas or to rely on automated feature labeling. The annotation creation and all other phases of this project WILL NOT be sub-contracted and/or performed outside the State of Connecticut.

NEGEO's experience has shown that parcel dimensions created by automated labeling and placement are often lacking in cartographic quality and accuracy. NEGEO does not use automated labels for parcel dimensions. Each parcel is inspected for proper placement and the dimension value will be captured as it appears on the original tax map, unless parameters are used which allow for corrections or substitutions, for example adding and combining dimensions along a long traverse.

We propose that lot dimensions initially be created directly in the geodatabase at such a size and reference scale to produce useful and attractive assessor maps at the designated output scales of 1 inch equals 100, 200 and 400 feet. As mentioned, dimension values will be captured as they appear on the original tax maps.

Lot numbers, lot area and street address will be generated and linked in from the VISION or CLT CAMA database after completion of the mismatch list reconciliation. Lot numbers will be generated from the parcel identification points created during the digitizing process.

Because the QA/QC process involving reconciling the VISION or CLT CAMA database and actual mapped parcel polygons will be ongoing during the entire project; lot area (acreage) and street address annotation will not be generated until this process is complete.We want to assure that all parcels are **linked** to the appropriate record in the VISION or CLT CAMA database before generating the labels, this avoids researching and hand labeling the "mismatched" parcels.

Street names, water features and other text labels features will be created as they appear on existing tax maps. CCRPA and town staff will have a chance to verify all these labels for correctness and completeness during the review of the draft tax maps.

Text Scale

Initial text size usually is created at a scale of 1" = 100' and/or 200' as a reference scale. This will allow the text to be visible at the original assessor map scale as well as any other scale the user wishes while viewing the data in

ArcMap. Through the use of annotation properties such as font substitutions, most annotation can be sized to suit a wide variety of map scales. Often time's cartographic placement will dictate to what degree size substitutions can be used.

Digitized parcel lines with adjusted dimension annotation

Property Information Database – VISION/CLT CAMA LINK

The design of the parcel lines is only half of the GIS picture. The parcel lines are of little value without a way to link to the assessor's database. This is the most important aspect of GIS parcel design and without a quality link, the entire GIS will suffer.

The initial parcel geodatabase design will be directed first by criteria NEGEO and the Town feels is important to a quality parcel layer, second by any specific requirements of the assessor and lastly by the recommendations for parcel standards put forth by the Connecticut Geospatial Council.

Regardless of additional information which may be desired to be linked to the parcel layer, the parcel layer will be constructed to meet CT State parcel standards Level III.

The initial database design used in the actual construction phase of parcel projects, not final delivery usually consist of the following primary basic data fields:

- PLAT, BLOCK & LOT ID
- UNIQUE ID
- CREATION SOURCE
- GISAREA (sq/ft)
- DATE
- OPERATOR
- COMMENT

These fields are derived from their appropriate source and will be added to the parcel polygons as described in the following sections. Additional fields related to ownership and property description will be added once the link between the VISION or CLT and GIS is complete.

NEGEO has in-depth, hands on experience with all versions and types of CAMA software and are skilled in the interface with GIS. Because of this experience, we have developed several tools and scripts which will streamline the interface between VISION and the CLT CAMA databases and GIS. We are confident in our ability to interface deeply with all tables inside both VISION and CLT's databases and can utilize every piece of information available.

NEGEO has often been referred to as having one of the best interfaces with VISON software available. Our MapXpress product fully incorporates multiple card properties, condominium and trailer park parcels and accounts.

We also recommend that a process be developed to keep the online and in-house GIS layers up-to-date with changes in the VISION and CLT CAMA system such as ownership name and the addition of new accounts. This functionality is part of our deliverable and can be discussed as to the technical requirements for each town.

CAMA – GIS Database Reconciliation (MISMATCH)

Upon completion of the parcel polygon layer for each of Burlington, Plymouth and Plainville and internal NEGEO's QA/QC review, NEGEO will run a comparison (mismatch) between the parcel layer and the composite CAMA database. This comparison will give a look at the relationship between the CAMA records and parcels as well as between parcels and CAMA records.

The resulting list of mismatched CAMA accounts and parcels will be initially reviewed by NEGEO for patterns such as condominium developments, new subdivisions and other broad brush errors including non standard hyphens, spaces or other punctuation oddities in the way the parcel identification is stored in CAMA`.

NEGEO will correct as many errors as possible in the parcel layer, note all the changes which may need to be made in CAMA and submit a report along with the first series of check plots identifying the mismatched parcels.

BPP staff members will research this first submittal and transmit back to NEGEO any changes, comments or corrections. NEGEO will incorporate these adjustments, re-run the mismatch report and notify the municipal assessors of any remaining mismatches. Parcels with known irregularities will have a notation made in the comment field in the GIS layer for future reference.

CAMA – GIS Acre Mismatch

After a solid link is established between the parcels and CAMA has been developed and reconciled with the parcel lines, NEGEO will run another mismatch report comparing CAMA acres vs. GIS acres. This simple report will point out gross errors in acreage calculations and possibly point to issues inside the CAMA database itself.

Parcel Mapping QA/QC

The most important QA/QC measures for parcel mapping should be in place right from the start by utilizing the most accurate base features and aerial photographs to guide placement of less accurate parcels. NEGEO will create a series of topology rules which will be in place from the beginning to tightly control the placement of the new parcel lines. A final topology check will be completed before a conversion to polygons to assure proper construction has taken place.

Traditional best practice QA/QC methods will also be utilized including extensive peer, management and client review. Utilizing the check plots developed as the project proceeds, CCRPA and municipal staff will be called upon to assist in the QA/QC process by focusing their efforts on the areas of each town needing the most review.

NEGEO has completed countless parcel projects and considering the pride we take in our work, our clients should rest assured that the delivered project will be first class. If anything is felt to be unsatisfactory, we will make sure that the situation is corrected as future work depends on the quality of our past work and satisfaction of our clients.

CT PARCEL STANDARDS – Level II vs. Level III

NEGEO fully understands and agrees with the premise of the State's attempt to establish a standard of quality for parcel development. This will go a long way in assuring that parcels are developed based on a minimum level of quality and that users can understand the uses and limitations of such datasets.

NEGEO will deliver parcels which will meet the Level II standard. NEGEO utilized a hybrid of techniques discussed in all three level classifications which produce a higher quality parcel base without incurring the astronomical cost and intensive time commitment of Level III deed research and utilization of COGO (coordinate geometry) drafting techniques on individual parcels. This is called our skeleton build process, which is previously discussed above.

Several criteria of the Level III standard will be met or approached, including data format, structure and mismatch rate. The parcel base will exceed Level III criteria in the area of CAMA integration. NEGEO's techniques for utilizing parcel & CAMA data in MapXpress are far more advanced than what is expected in Level III and beyond what is available using common GIS software.

The major characteristic of Level III which will not be able to be implemented is that the 75% of the parcels will not be sourced from filed subdivision maps, deeds and surveys. The cost to utilize these resources in producing the 16,000+ parcels would far exceed any available funding the CCRPA and its member municipalities could obtain at this time. For comparative purposes, a rural CT COG attempted a Level III implementation of approximately 24,000 parcels while undertaking a rigorous municipal boundary reconciliation. Close to $800,000 was spent on those tasks without the inclusion of the development of municipal tax maps or creation of parcel dimensions which are an essential component for the use of a parcel base in a municipal setting.

Level III sources including subdivision maps, town clerk maps and surveys will be utilized to some degree, especially in areas which are difficult to interpret from the tax maps alone. The limiting factor in utilizing these Level III resources will be the ability of the CCRPA and municipalities to provide this information in a timely and efficient manner and the financial implications of having to integrate and process the detail contained in these data sources..

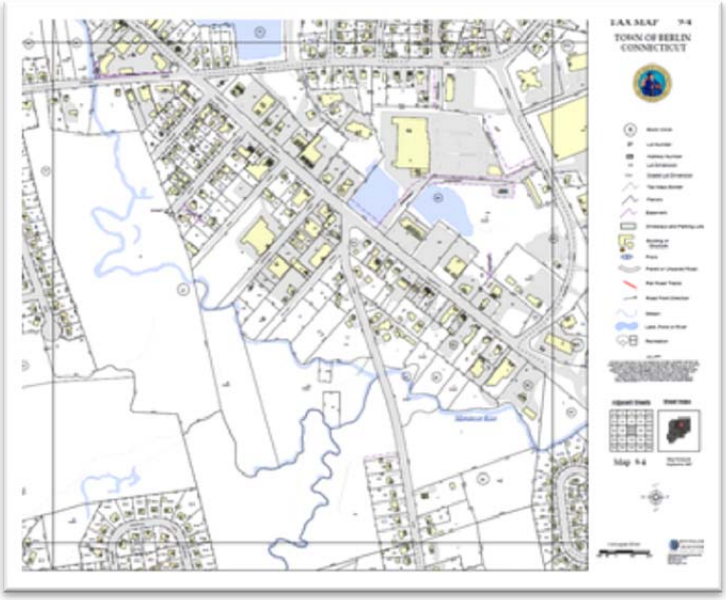
We do want to stress that NEGEO does conduct all subsequent parcel updates following Level III criteria, relying primarily on surveys, deed research and subdivision maps. Since all new parcels created as part of annual updates will be at Level III quality, older surveys, deeds and subdivision submittals can be retrieved and included for preexisting parcels as part of annual updates with the intent of slowly improving the entire dataset towards Level III quality.

We always recommend to our clients that Level III quality should be a long term goal but needs to be guided by common sense and fiscal responsibility.

TAX MAP DESIGN & PRINTING

Tax Map Layout Design & Printing

At the completion of the parcel creation and subsequent updates, NEGEO will design a new professional tax map layout directly in GIS for Burlington, Plainville and Plymouth guided on their individual needs and requests.



There are several different styles to choose. NEGEO will work with each town to pick an appropriate style & design. Things to consider include content, font size, colors, disclaimer language, size and scale. Size and scale will partially depend on the size and extent of the current paper maps.

NEGEO will provide draft hard copy copies for approval of layout and content. PDF versions will then be produced incorporating any changes made to the layout or corrections to the content. Although not called for, after review and approval of these PDF versions, the single final set of maps will be printed for Burlington, Plainville and Plymouth.

Please view **appendix C** for samples of New England GeoSystems' tax map design work.

LOCAL CONSIDERATIONS – PARCEL CREATION & UPDATES

New England GeoSystems has visited the two municipalities with the most parcels to be created and has reviewed the source material. NEGEO has also consulted with the previous assessor in Burlington, who is a client of NEGEO's, as to the state and complexity of the Burlington parcels. What we found is summarized below.

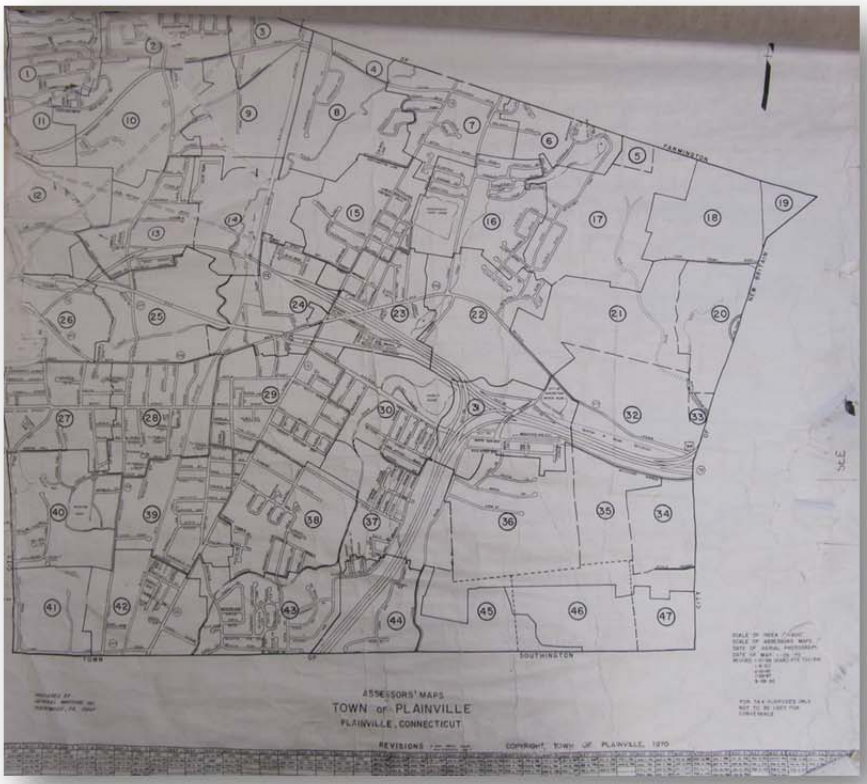
PLAINVILLE

Plainville has approximately 7,200 parcels displayed on some 47 assessor tax maps. NEGEO has obtained all 47 scanned PDF tax maps and has reviewed the quality and understands the content and limitations of these maps. Plainville uses the Univers CAMA software provided by CLT. NEGEO has previously worked with Univers and had developed a quality bridge linking this CAMA to MapXpress.

NEGEO discussed in depth the work completed by another vendor as part of the State's broadband project and determined that this data and the work that was done to assist Plainville was paid for by state funds. Work completed with State funding is in the public domain and will be available to Plainville/CCRPA upon request.

NEGEO also obtained AutoCAD drawings from Plainville's engineer representing recent parcel developments and is confident that the quality of this data most definitely meets Level II if not Level II criteria. The inclusion of this resource will assist in bringing the parcel layer up to date. Digital parcels have been developed by the State's Broadband project and may be useful as a comparative layer.

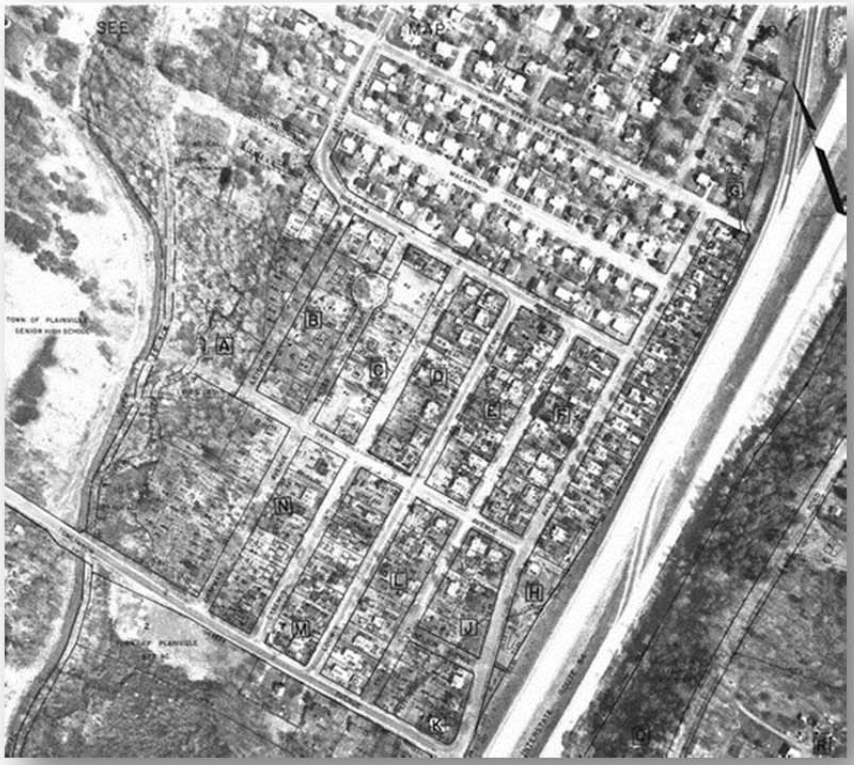
NEGEO understands that maintenance to the parcel maps has been spotty and that most but not all updates are shown as red notations on the back of the maps. By capturing the line work on the scans, comparing to the existing digital parcels, by including the work from the in-house AutoCAD drawings, we are confident a parcel layer can be constructed which will exceed Level II standards for quality and CAMA match rate.



Sample of Plainville's Tax Map Grid

A GIS representation of this grid will be prepared as the guiding feature in developing tax maps created using data driven pages.

These "tax map blobs" will be realigned to the new parcels and updated in areas where parcels along tax map boundaries have changed.



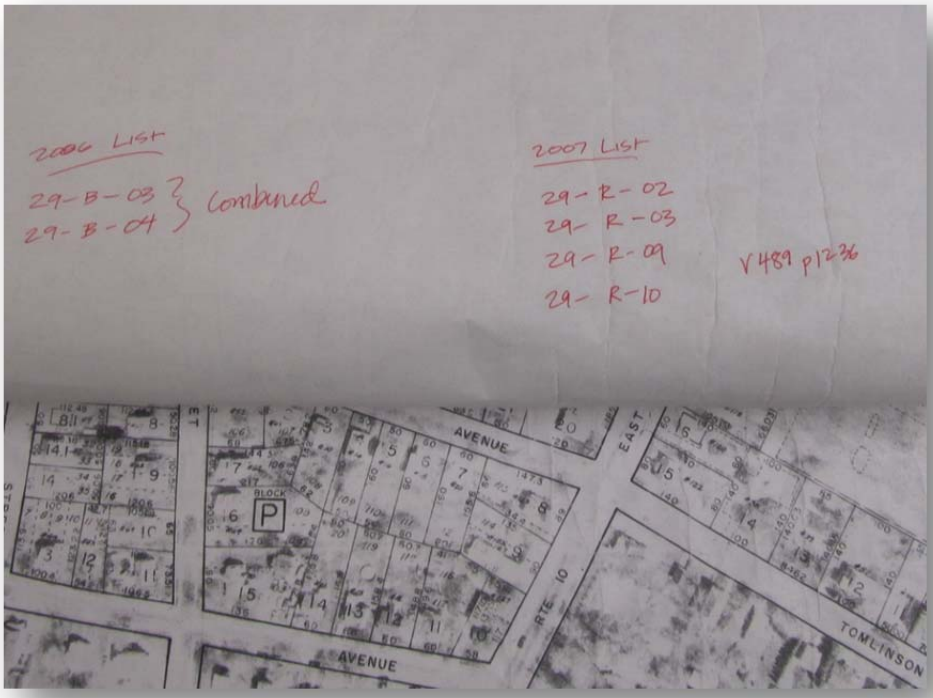
Sample of Plainville Tax Map #37

One can see the parcel lines drafted over aerial photography from the 1970's;. Enhancing the scan using Photoshop will enhance the readability. A quick sample of this is on the next page.

Enhanced Plainville Tax Map

Although done to a low resolution sample, enhancing the contrast and exposure will allow the technicians to accurately read the dimensions on the parcel.

The clip below shows more detail of what the technicians will be looking at as they transcribe the parcel lines and dimensions.

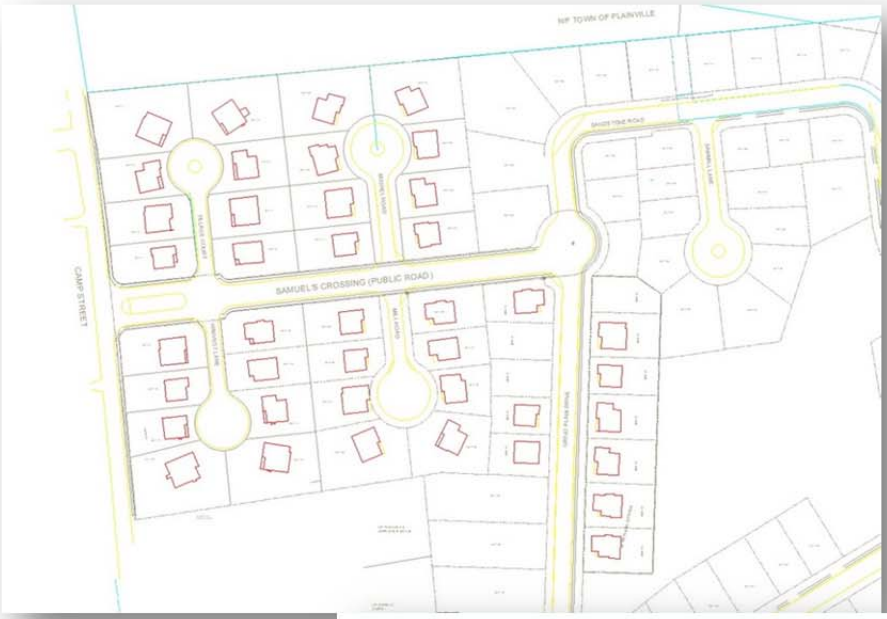


Sample of parcel update notation on backside of tax map

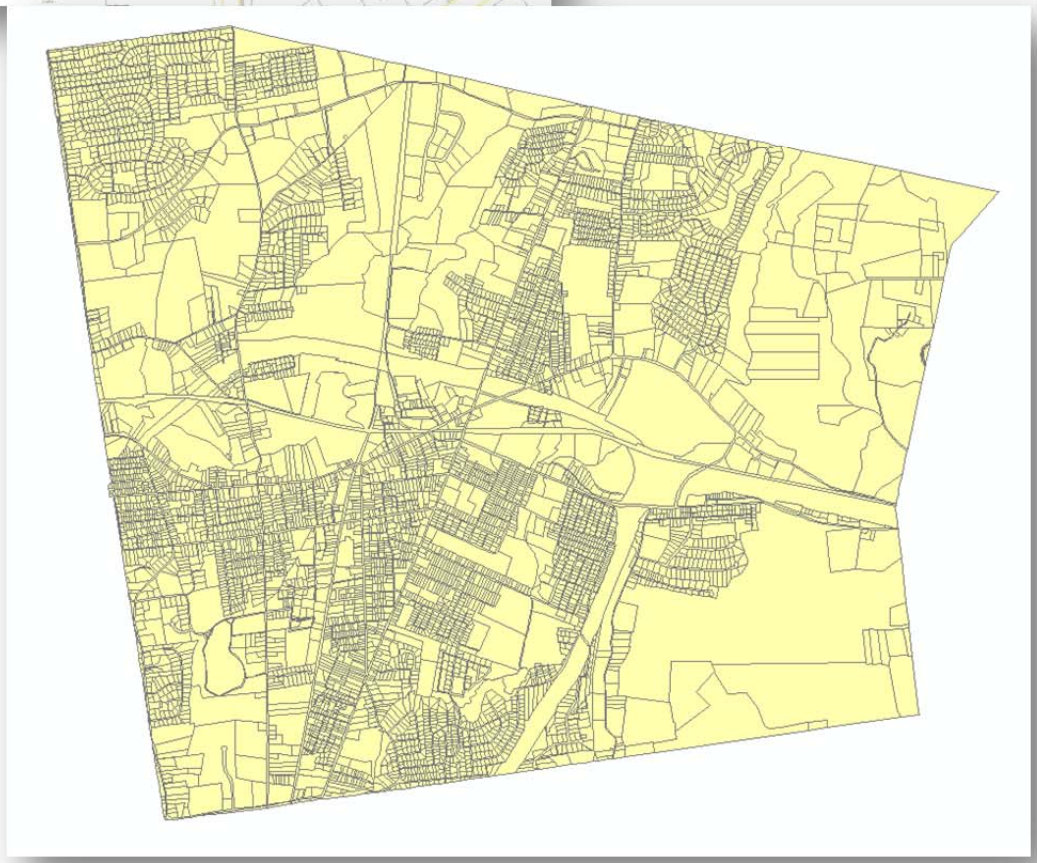
Plainville's Zoning Map

To be updated and included in parcel creation project.

Most recent aquifer protection (level A & Level B) areas will also be added to the map.



Extract of AutoCAD drawing containing recent parcel updates



Plainville's Existing GIS Parcel Layer

The quality of this layer is worth investigating as a preliminary topology review indicated only minor errors.

Summary

Plainville has a lot of resources at its disposal to facilitate the development of a quality GIS parcel layer. Care must be taken in the coordination of these resources as the origin and quality is able to be verified 100%.

NEGEO has many years' experience in dealing with the coordination of disparate data sources and producing a definitive collection of data with which to move forward. We look forward to creating a resource Plainville will be excited to use an NEGEO will be proud to use as a reference.

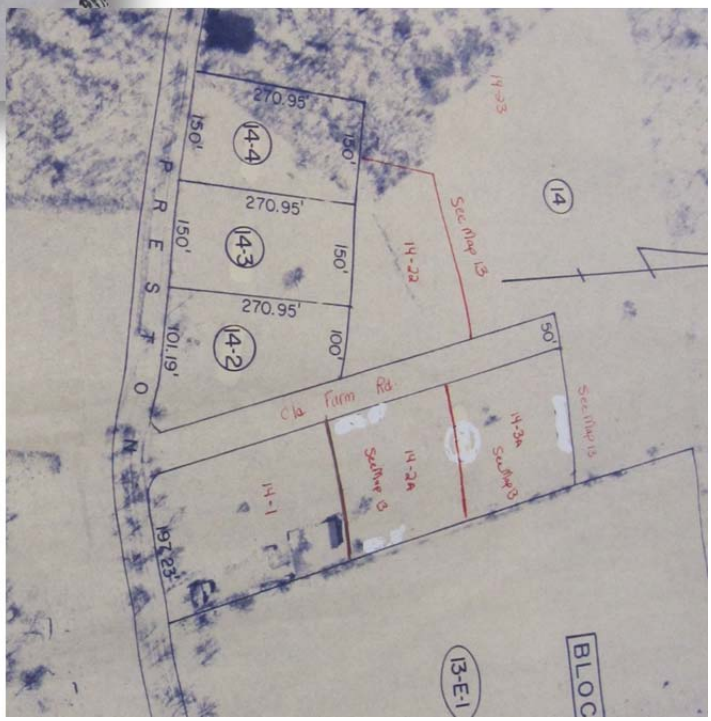
PLYMOUTH

Plainville has approximately 5,300 parcels displayed on a couple dozen assessor tax maps. NEGEO obtained samples of these maps has reviewed the quality and understands the content and limitations of these maps. Plymouth uses the Univers CAMA software provided by CLT. NEGEO has previously worked with Univers and had developed a quality bridge linking this CAMA to MapXpress.

A sample of one of Plymouth's tax maps is on the left. It shows the expected collection of subdivisions scattered amongst the larger rural properties.

Plymouth appears to have accounted for parcel updates by noting directly on the map in ink. (see photo below). Unfortunately there is not enough detail in these manual markings to adequately draft these parcels with any level of accuracy.

NEGEO will have to be provided the filed town clerk maps for these red areas across town in order to integrate these updates into the parcel base. A positive note is that using the filed town clerk maps for these updates will allow these parcels to meet Level III standards.



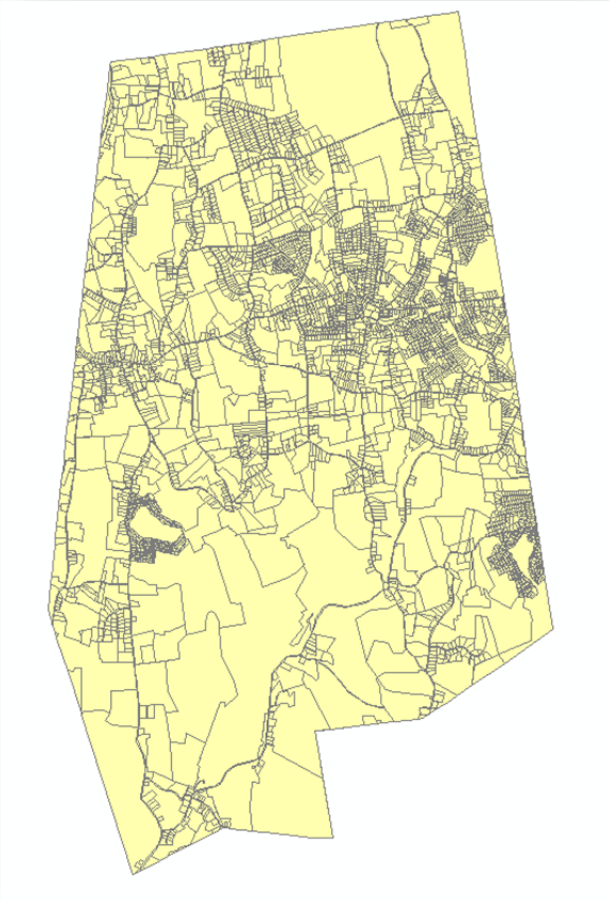
An existing parcel base exists for Plymouth. This layer was created by CCSU students and may be of some use in evaluating the completeness of the parcel layers. This layer has no attributes and is incapable of being linked to the CAMA database. A cursory examination of the topology shows numerous gaps, slivers and poor use of curves. It is doubtful the layer will have a useful role in the building of the new parcel layer.

Adopted Zoning Map for Plymouth

NEGEO will import, realign and update the zoning for Plymouth as part of the parcel creation and improvement project.

It appears that the zoning layer has already been created in GIS and aligned to the parcel layer created for Plymouth by CCSU students several years ago.

This layer will be very beneficial to the town and would be considered on of the more important layers to be added to the MapXpress regional GIS web site.



Current GIS Parcel Base for Plymouth

The quality of this layer is questionable as a preliminary review of basic topology has revealed several gaps, slivers and other basic drafting errors.

MapXpress Internet Application - Summary

NEGEO offers a completely hosted online GIS solution to municipal governments called **MapXpress.** This application is tailored towards distributing municipal GIS information to the general public and municipal staff alike. MapXpress is a complete solution focusing on the efficient delivery of information people need most; assessment information, printable property cards, abutters and mailing lists, photos, documents and maps. NEGEO is currently one of the leading providers of GIS solutions to Connecticut municipalities and hosts more than thirty municipal sites from our data center in Guilford, Connecticut. **MapXpress** is a fully functional, ever expanding, ready-to-go, commercial ArcGIS Server solution.

MapXpress is designed to replace standalone ArcMap, ArcReader and outdated ArcIMS applications currently in use by leveraging the power of ArcGIS Server and the Internet. Anyone with an internet connection can access the CCRPA's regional towns' GIS resources and property information.

Another advantage of the MapXpress application is automated data transfers. CCRPA's member towns CAMA data will be transmitted to the MapXpress application server located in NEGEO's offices in Guilford, CT as frequently as every night. This transfer procedure will assure that information available in **MapXpress** is as current as the information in the CAMA system located at each municipalities assessor's office computer.

Self-serve updates for GIS data layers will also be available for the individuals responsible for maintain Bristol's and New Britain's GIS layers. Both New Britain & Bristol will be given access to the MapXpress FTP site which will accept uploads of predetermined GIS layers. These can be any layers and usually include ones such as parcels, dimension annotation, centerline, address points and such. MapXpress is automated behind the scenes to accept these layers and have them available on the live site within 24 hours.

NEGEO also offers a **MapXpress GIS Portal**. This web based portal provides a starting point for users to locate property information and maps. Users can access assessment information, additional static map resources and download each municipalities GIS data on demand. These functions are best served outside the context of the interactive MapXpress application.

MapXpress Implementation - Interactive Application

The main purpose of **MapXpress Interactive** is to allow users to pan and zoom throughout the CCRPA region, turn on and off various layers like flood zones and zoning classifications and search for specific addresses. Users will have access to downloadable property summary sheets and parcel maps. Users can reference the actual tax map sheet used in the each municipal assessor's office and/or print custom maps right from their browser.

The major effort of a **MapXpress** implementation will be in configuring the base ArcGIS Server map services and interface to the CAMA database information. Secondary efforts focus on the activation of property cards, search functions and various personalization aspects such as regional colors themes, logos and disclaimer language.

Additional customizations will include the implementation of the **MapXpress GIS Portal,** vector and raster base data customizations, automated CAMA data transfer and automated GIS spatial data uploads.

MapXpress Interactive Application

Data Collection

NEGEO will meet with CCRPA and interested municipal staff to discuss the implementation process and to collect copies of as much spatial data as possible, including raster data sets (aerial photography). NEGEO will collect a manual extract from each municipalities CAMA server. All but two CCRPA municipalities are VISION clients. For these municipalities, a workstation or server must be available with the VISON client or Oracle drivers loaded and Microsoft Access (any version) or SQL server available to facilitate the extract. Plainville and Plymouth are using Univers, a CLT provided CAMA database. These CMA databases are easier to access and need to specialized database tools to facilitate an extract.

CAMA photos and sketches can also be collected at this time. Photos will be copied directly from the IMAGES folder on the VISION & Univers servers and a test will be made at each VISON installation to determine if the sketches can be extracted.

NEGEO would like to collect the entire geodatabase collections from all the member towns containing all layers to be accessible through MapXpress as soon as possible, however, the parcel base layer and CAMA extracts are the minimum data pieces needed to begin an implementation. The parcel layer developed for the state broadband project for Plymouth and Plainville can be used to prototype the MapXpress installation.

Any customizations which need design decisions will be discussed during these initial meetings. NEGEO will leave printed copies of property cards and all map products generated from MapXpress for review. CCRPA and municipal staff will comment and return the samples to NEGEO for inclusion in the MapXpress prototype.

Since NEGEO is local and has existing business relationships with member towns and two key staff members are local residents, there is no reasonable limit to the number of site visits NEGEO can provide during this project. NEGEO is more than happy to provide as frequent on-site progress demonstrations as CCRPA and member towns would like.

Design & Configure

The first step in the implementation process will be to activate a beta test version of MapXpress utilizing the data collected during the initial on-site meetings. This beta version will be customized and tailored to CCRPA's needs and allow for rapid development of the user interface and database components.

NEGEO will create the initial collection of ArcGIS Server map services and interface MapXpress with the CAMA property information database we have collected. This beta MapXpress application will be subject to periodic staff review and final approval before any release.

Customizations to the application are usually limited to colors, button and dialog box text, basic text changes to the property card and quick map and most aspects of the actual GIS map services. Design changes in map services which alter the functionality of MapXpress beyond predetermined changes will incur extra fees. This web site will be starting off with the advanced property card and any content customizations of the property card product required by a specific municipality may incur an extra charge to that municipality. The property card will include sketches and pages for accounts with multiple cards. Sketches will be included if NEGEO's extraction routine is successful. Newer versions of the VISION database have been problematic in exporting the sketches.

Test, Troubleshoot and Adjust

Once the objective of configuring the MapXpress application is complete, CCRPA and municipal staff will be asked to approve the design of the Property Summary Card, the accuracy of the assessor's CAMA information being presented, the look and feel of the dynamic mapping layers and other aspects of the application.

After users have had some time to use the system, a punch list will be compiled detailing unresolved issues and changes to existing features. Another list will be developed outlining any desired new features and enhancements. NEGEO will work with CCRPA's staff to prioritize the punch list and feature requests. NEGEO will identify the changes which are planned and those which would be unique to the CCRPA implementation.

Planned MapXpress feature improvements will be available to CCRPA as part of the annual maintenance fee. Additional and extensive customizations will be subject to additional fees to be determined at the time of the request. NEGEO will always responsible for fixing errors resulting from programming errors and design flaws.

We anticipate being at a point where CCRPA staff can begin reviewing MapXpress functionality by the fall of 2013. Additional features and datasets will follow quickly with the month of January and February 2013 being the time to fix any data quality concerns, refine any operational issues and provide training to CCRPA and municipal staff prior to any public release. If progresses is better than expected, MapXpress may be available sooner.

Training

NEGEO will perform a demonstration and training to CCRPA staff first after internal release, then a demonstration and training to staff in each municipality and prior to any public release. It will then be up to each municipality and CCRPA to provide links from their respective web site's to the hosted MapXpress web site and to provide any press releases or publicity in order to notify the regions residents.

Select staff with each municipality and CCRPA staff will be instructed how to monitor the automated CAMA data transfer routines and will be shown how to access the MapXpress FTP site which will be used to facilitate the transfer of the GIS layers (parcels) to MapXpress application.

CUSTOMIZATION AND ADDITIONAL FEATURES

External Database Integration

MapXpress relies on MS SQL Server as a backend relational database. MapXpress retrieves a majority of the data presented to users from the database as opposed to GIS features. Because of this, it is very easy to connect other data resources to MapXpress, especially if this additional data contains references to a parcel identification field such as MBL or CAMA account number.

Additional data related to parcels can be made available on the property card, the parcel detail page and in the informational pop up seen in interactive MapXpress.

Popular external data resources linked to MapXpress include:

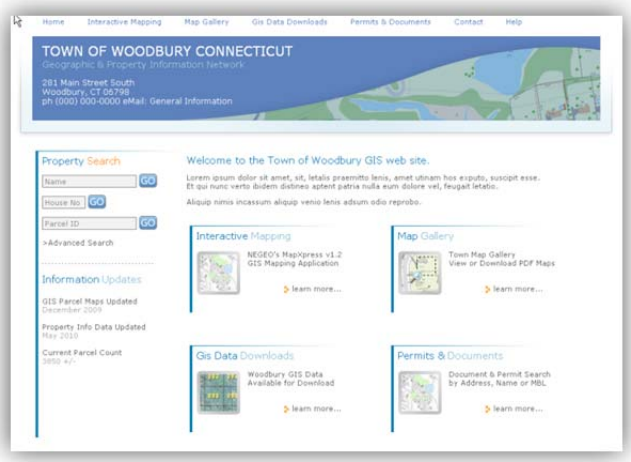
- School district
- Polling place
- Trash Day
- Congressional & State representatives
- Town/City Clerk Map Number – link to document
- Leaf pickup / street sweeping days
- Permit management informational link
- CLP utility pole database

Each municipality wishing to implementing these resources as usable MapXpress data sources will require an evaluation of each database and or GIS layer and recommendations as to the amount of customization needed and associated cost to integrate the data layer or database. These options can be further discussed as the project gets underway.

MapXpress Implementation – GIS PORTAL

The **MapXpress Portal** allows quick and easy access to different forms of information which doesn't lend itself to being delivered in an interactive map format. MapXpress Portal allows users to search and return a property card and map faster than it takes MapXpress Interactive to initialize and load. A GIS portal also allows a proper presentation of static PDF based maps, and a download section for map packages, shapefiles and CAMA database extracts.

The **MapXpress Portal** is where users land after clicking on a link from a municipality's home page. Here users can find help, approve a disclaimer and begin their information search. NEGEO will work with CCRPA to develop the content, choose appropriate colors and language found on the portal. NEGEO can also offer unique portals for each municipality.



MapXpress GIS Portal – new style

MapXpress GIS Portal – traditional style

The setup of the MapXpress Portal section includes configuration of the quick search functions, addition of links to help documents, providing a section for contact information, downloadable assessment forms and reports and inclusion of the new Advanced Search.

Setup of the Map Gallery will require CCRPA & municipal staff to collect all of the "static maps" such as zoning, open space, street index and voting district maps in PDF format for inclusion in the Map Gallery section of the MapXpress Portal. These sections can be expanded and changed as new maps and documents are developed. An additional feature of the Map Gallery will be the addition of an sub section for downloading the new FEMA DFIRM maps and a section to download the actual assessor tax map PDF's.

Here is an example of the grid functionality for the new FEMA data: http://gis.stonington-ct.gov/mapxpress/ Go into the map gallery and/or the data download section and scroll down a bit and click on the FEMA link. It will take you to another subpage where users can download the georeferenced PNG file (*GIS data download*) or PDF of the actual DFIRM *(Map Gallery).*

An example of a grid which facilitates the download the actual assessor maps would be to: http://www.northstoningtongis.com/ and click on the Grid Maps link. The assessor map PDF files will be provided for Bristol & New Britain by CCRPA or municipal staff. NEGEO will supply PDF maps for everyone else.

Please visit the sample MapXpress sites listed below to experience various MapXpress Interactive and Portal applications.

- Southington, CT: http://www.southingtongis.com
- Newtown, CT: http://maps.newBorough-ct,gov
- Stonington, CT: http://gis.stonington-ct.gov
- East Windsor, CT: http://southwindsor.mapxpress.net

MapXpress Mobile – Coming Late 2013

Beginning this spring New England GeoSystems is beginning the development of the new MapXpress Mobile application. These new expansions to the traditional MapXpress will allow users to access all of the MapXpress property information on their tablets and mobile phone. Because MapXpress is developed using ESRI's ArcGIS Server JavaScript API as opposed to Flex or Silverlight, a seamless transition is possible without major modifications.

The MapXpress Mobile Portal will be designed for both the tablet and mobile phone platforms. Users will be able to search by owner, address and MBL and retrieve property information, structure photos and view send property cards via email. The portal will simple in design and be compatible with all mobile platforms.

MapXpress Mobile Interactive will feature a streamlined map interface more suitable for use on a tablet and allow access to almost all current MapXpress Interactive features. Final design is being directed by several of New England GeoSystems clients including Southington. CCRPA will be kept informed of the progress of the development and will have the opportunity to work with the products before finalization.

It has been New England's intent to roll the mobile platform out to both Berlin & Southington as part of their annual maintenance agreement and will also include CCRPA regional web site as one of the priority implementations.

MapXpress Mobile Interactive Prototype

MapXpress Mobile Portal Prototype

FINAL DATA DELIVERABLES, PRESENTATION & TRAINING

NEGEO is prepared to meet and exceed CCRPA's required deliverables. NEGEO understands and will deliver the following products and services as outlined in the RFP.

Phase I:

- Town-wide topologically correct seamless parcel base, linked to the Assessor's VISION database in ESRI geodatabase 10.0 format for Burlington.
- Town-wide topologically correct seamless parcel base, linked to the Assessor's Univers database in ESRI geodatabase 10.0 format for Plymouth & Plainville.
- PDF and hard copy tax maps for each of Burlington, Plymouth and Plainville.
- Updated zoning layers & maps for Burlington, Plymouth and Plainville with layers added to MapXpress
- Interim and final mismatch reports and mismatch maps for all member CCPRA municipalities.
- Five year parcel maintenance agreement for each of Burlington, Plymouth and Plainville.

Phase II:

- Fully functional MapXpress web-based GIS application customized to the regional needs of CCRPA member municipalities – includes interactive and newly designed portal.
- Automated CAMA link between all willing member CCRPA municipalities.
- Self-Serve GIS data uploads for Bristol & New Britain.
- Open to the public ArcGIS Server 10.x map services
- Demonstration and training on the use of MapXpress and GIS.
- Upgrade to MapXpress Mobile when available later in FY 2014.
- Five year maintenance/ hosting and licensing agreement for MapXpress Interactive, Portal & Mobile.

Final Delivery, Presentation and Training

At the completion of the project, New England GeoSystems will come onsite for a rollout / training session for CCRPA staff and each of the member municipalities to present & discuss the deliverables. This session will include a presentation of the new parcel & tax mapping and a demonstration of the MapXpress on-line GIS applications.

Continued training and support will be provided for the length of the maintenance & hosting agreement to any CCRPA or municipal staff member. This will include unlimited phone & email support as periodic onsite assistance as required. It is our goal to have as many people trained and successfully using the software and data as possible.

PROJECT SCHEDULE

NEGEO proposes the following schedule. Based on a notice to proceed and final contract negotiations being completed by May 1st 2013, we anticipate work can be completed in the 10-11 month time frame as outlined below, finishing before the March 2014 deadline. Many features of the project will be complete and ready for and testing use before the March deadline and with any luck NEGEO thinks this deadline can be beat.

Completion of the parcel work is anticipated to be complete by Thanksgiving will require timely feedback from CCRPA and the member municipalities in response to requests for information and requests to review and approve work products. Some issues may require research and CCRPA and the municipalities must be able to allocate staff resources for this activity in order to keep to schedule. NEGEO will also pledge to allocate necessary resources to this project in order to keep to the agreed schedule.

Late April – June 2013:

- Contract design, project planning and on-site kick off meeting
- Collect & scan tax maps (if necessary)
- Collect CAMA extracts and all digital data from Towns, CCRPA, State & Federal sources
- Begin creating map skeleton, street centerline alignment and parcel creation

July – August 2013:

- Begin large scale parcel digitizing & dimension creation

September – October 2013:

- Complete parcel digitization and dimension creation
- Produce initial mismatch reports
- Develop and deliver initial tax map layout to towns for review and approve
- Deliver check plots of approved final tax map design w/ parcel dimensions for CCRPA & towns to review

November 2013

- On-site progress meeting to review parcels, resolve any map issues and discuss MapXpress design
- Begin design of MapXpress Web GIS framework
- Collect post Grand List 2013 CAMA extract, install and test automated MapXpress link to CAMA
- Present secondary mismatch for town review and correct errors found through mismatch research

December 2013 – January 2014

- Activation and review of preliminary MapXpress Internet GIS application
- Issue final mismatch report – if necessary
- Make corrections based on town review of draft maps
- Print and deliver final tax maps and digital data

February & March 2014

- Load final corrected GIS data into MapXpress and develop final punch list
- Custom training sessions, final on-site wrap up meeting and presentations to towns and CCRPA

COST SUMMARY

New England GeoSystems proposes to complete the required options as outlined in the request for qualifications for a fixed fee of **$144,500**.

This scope of work and associated cost estimates presented in this proposal are based on the knowledge we have gained by working with the regional members over the past several year, discussing the regional needs and reviewing source material from the towns requiring parcel development.

If during the execution of this project, issues are identified with any data resources which would affect the scope of work or the cost estimates, CCRPA will be notified prior to continuing any work on the task in question. NEGEO and CCRPA will develop a mutually acceptable solution which will contain costs and keep the project moving forward based.

We would like to stress that our existing work with Southington and Berlin and the cost savings by utilizing the MapXpress framework already developed for these two towns will allow us to implement a far more robust web product and integrate yet to be released public upgrades for all CCPRA members.

Project Costs

PHASE I

- Create Integrated Parcel Layer, Zoning, Dims & Tax Map Layouts - Burlington.....$ 18,000
- Create Integrated Parcel Layer, Zoning, Dims & Tax Map Layouts - Plainville.....$ 35,000
- Create Integrated Parcel Layer, Zoning, Dims & Tax Map Layouts - Plymouth.....$ 26,000
- PDF & Hard Copy Tax Maps – Burlington, Plainville & Plymouth ..... Included
- Mismatch Reports and Maps - All Municipalities ..... Included

- Five Year Maintenance - Burlington .....$ 2,000/yr - $10,000
- Five Year Maintenance - Plainville .....$ 2,000/yr - $10,000
- Five Year Maintenance - Plymouth.....$ 2,000/yr - $10,000

PHASE II

- Regional MapXpress Interactive & Portal Configuration and Setup .....$ 8,000
- Mobile MapXpress Implementation ..... Included
  (when available in FY 2014)
- Regional Automated CAMA Data Updates & Self-Serve Spatial Data Updates ..... Included
- Five Year MapXpress Licensing, Maintenance & Hosting *(FY 2015-2019)*.....$ 5,500/yr - $ 27,500

PROPOSED TOTAL: .....$ 144,500

2013 -2014 New England GeoSystems Discounted Hourly Rates

Professional Staff	Hourly Rate
Principle Consultant	$95
Sr. Analyst - Project Manager	$75
GIS Analyst - Specialist	$55
GIS/CAD Technician & GPS Field Tech.	$45
GIS Intern / Trainee	$35

Direct Expenses

Excessive plotter paper & ink charges.....at cost
(normal use included but requests for specialized paper or several runs of check plots require additional funds)

Excessive project mileage $0.50/mile

GPS rental (monthly) $600

Approved expenses .....at cost

Insurance

NEGEO carries all standard insurance generally required by clients in our professional service area. Additional specialized insurance is available as needed.

NEGEO carries $2,000,000 aggregate general liability, required workers compensation insurance auto and property damage coverage.

Insurance certificate naming client as additional insured available upon request.

Appendix A

Principal Resumes

BRIAN DOOLEY, PE – PRESIDENT

Summary of Experience

Mr. Dooley is a registered Civil Engineer and president of New England GeoSystems. Brian has been working with GIS and mapping continuously since 1992. Brian coordinates the daily operation of NEGEO operations, participates directly in providing hands-on training to managers and technicians alike and is the primary client contact for contracts, financial and other administrative issues.

His engineering experience is based in civil water resources and land development, while his programming experience focuses on custom GIS solutions using VB, C#.NET, ASP.NET, PHP, JavaScript, ESRI's MapObjects, ArcObjects, Javascript and Python languages. Brian is the primary architect and project director for NEGEO's ArcGIS Server based MapXpress online-GIS application. Brian has extensive experience with the customization and administration of relational database systems such as MS Access, SQL Server, MYSQL, FoxPro, Sybase & Oracle in the desktop and Internet environments.

Mr. Dooley utilizes the entire range of ESRI's GIS software family including ArcGIS, ArcGIS Server, ArcObjects and all extensions to design, build and support GIS for public and private clients nationwide. Mr. Dooley is also active in designing mobile GIS field applications including GPS data collection and information delivery on Windows Mobile, Android and iOS devices. He has provided GIS & GPS training to clients throughout the US. Brian is currently focusing on the use of Open Source GIS solutions as an option to his clients in the hope to find solutions which are more flexible, targeted and save money.

His extensive experience in the development and implementation of GIS solutions for public and private clients has exposed him to a wide variety of real-world GIS solutions. This experience allows him to better serve clients while saving time and money. Mr. Dooley has utilized GIS in support of activities as wide ranging as ground and surface hydrologic modeling, water resource allocation, land use analysis, land surveying, real estate planning, political re-districting, health analysis, power line route planning, property revaluation, golf course design and the full variety of municipal applications.

Education

1997 - University of Colorado - M.S., Civil/Water Resources Engineering

1991 - 1991, University of Vermont - B.S., Civil/Environmental Engineering

1995 - University of Colorado, Certificate Program in GIS Studies

Professional Registrations

Registered Professional Engineer: Colorado - #32076; Wyoming - #8516, Connecticut, Rhode Island and Massachusetts – Applications Pending.

Representative Project Experience:

Council of Govt's of the Central Naugatuck Valley – Coordinated the development of a regional GIS for 8 municipalities including parcel development and ArcGIS Server internet deployment.

Valley Council of Governments, Derby, CT - GIS Parcel Database
Responsible for developing a regional GIS database and developed an ArcGIS Server Internet application. Conducted in-depth needs assessment.

Town of North Stonington, CT - Municipal GIS Implementation
Provides ongoing on-call GIS/IT support for the Town. Coordinates annual parcel map updates.

Jefferson, Chenango, Otsego Counties – Implemented NEGEO's custom application to create a GIS based E911 street address response database for three NY State Counties.

St. Tammany Parish, La & Zephyr Hills, Fl - Implemented NEGEO's custom application to create a GIS based E911 street address response database.

City of West Haven – Asset Inventory & GPS Mapping
Coordinating a city wide field inspection and GPS mapping of all catch basins, manholes, storm water outfalls, street signs, utility poles, street lights and fire hydrants.

Town of Southington Police– 911 Street Database Creation & AVL Mapping Support
Substantially improved address range and positional quality of town wide street centerline. Wrote custom application for the generation of working 911 database files directly from GIS layers. system.

Northeast Utilities - Public Relations Map Kiosk
Assisted in the programming, design and implementation of a public GIS mapping kiosk which assisted the utility company in presenting impacts of a proposed long distance high voltage power line

City of New Haven, CT - Municipal GIS Implementation
Serving as project manager, responsibilities include coordinating GIS parcel update and automated SQL Server based GIS/CAMA link, developing a custom address based street centerline, developing custom GIS applications, supporting City's GIS file server & Microsoft SQL Server database.

Town of Southington, CT - Municipal GIS Implementation
Coordinates development of town-wide enterprise GIS. Responsible for coordinating all GIS work requested from any and all departments needing assistance. Developed and installed town wide ArcGIS Server data viewing software. Coordinating the maintenance of town's storm & sanitary sewer system GIS data using ArcGIS and town's water distribution systems using AutoCAD.

Town of Stonington, CT - Municipal GIS Implementation
Provides ongoing on-call GIS/IT support for the Town. Coordinates annual parcel map updates.

Custom GIS Software Development & Support
Designed and developed a ArcGIS Server /JavaScript based public internet viewing application called MapXpress. This application is the basis for NEGEO's commercial public hosting service. This

application is utilized by a majority of New England GeoSystems clients to distribute GIS data and up-to-date property information to a wider audience than is possible using traditional GIS applications.

Primary GIS Consultant for Multiple Municipal Clients
Project manager for several municipalities in Connecticut. Services include annual parcel map updates, software design and support, budget preparation, GIS and specific project by project assistance. Currently New England GeoSystems' client list exceeds over 35 active billable clients.

Other GIS Project Experience
Development of GIS standards for creation and testing of a GIS mapping module, which was part of the first commercial custom application for use by public health agencies across the country to track the est Nile Virus. Project sponsored by the US Centers for Disease Control.

Developed and programmed a Visual Basic/Map Objects database application designed to manage aerial GPS navigation data. Product targeted at public and private organizations involved with aerial spraying of pesticides.

Developed a prototype system for querying and displaying the National Geodetic Society benchmark monument database in Colorado and initial development of an internal SQL Server/SDE database for the storage and retrieval of in-house generated GPS survey data.

Coordinated production of an GIS based decision support system used to support a proposed county wide annexation analysis. Project included conversion of entire collection of paper county assessor maps and tax assessors property database into a single database and performed various analysis scenarios to select potential annexation proposals.

Other Unique Engineering Project Experience

- Baca Ranch Water Supply Delivery Project, San Luis Valley, Colorado
- Meadow Brook Golf Course Flood Channel Design, Jefferson County, Colorado
- Denver Basin Aquifer Recharge Demonstration Project, Arapahoe County, Colorado
- Fort Knox Gold Mine Groundwater Evaluation, Fairbanks, Alaska
- Carlota Copper Mine Storm Water and Sedimentation Modeling, Gila County, Arizona
- Watershed/stream modeling for Rueter-Hess Reservoir, Douglas County, Colorado
- Water quality monitoring program, Cherry Creek Reservoir, Douglas County Colorado

MARWIN GONZALEZ - PROJECT CONSULTANT / MAP XPRESS ANALYST

Summary of Experience:

Mr. Gonzalez has 5 years of experience working with New England GeoSystems and local municipalities, regional governmental agencies and private companies. Mr. Gonzalez is currently on a partial leave of absence so he can teach several undergraduate and graduate level classes at Central Connecticut State University. Marwin is expected back at full time level in May of 2013.

He has a deep and inherent understanding of theoretical and practical GIS topics plus has mastery over GIS software products including ArcGIS 10.x, and ArcGIS Server. Marwin has a mature understanding of business principles, possess excellent work ethics and is a positive motivating force at New England GeoSystems. Clients and employees alike enjoy and learn from working with Marwin.

Mr. Gonzalez has experience in languages such as VB, HTML, JavaScript, JAVA and Python. This knowledge has been allowed Marwin to be one of the lead developers of the MapXpress online GIS application.

Mr. Gonzalez's devotion for GIS began in his undergraduate studies at Southern Connecticut State University and led to the founding of the Geographic Information Science Club. He is also a member of the elite Gamma Theta Upsilon Honor Society which awarded Marwin with CCSU's geography Student of the Year 2011. He recently achieved a Masters in Science concentrating in Municipal GIS.

Mr. Gonzalez is currently an Adjunct Professor of GIS studies at Central Connecticut State University while working part time with New England GeoSystems as a project manager and MapXpress developer.

Mr. Gonzalez's current primary duties w/ NEGEO include:

- Peer review of technical work
- Assistant project management
- Coordinates design and setup of MapXpress web sites
- Maintenance and monitoring of operating MapXpress web sites
- Client education and tutoring

Marwin is expected back at fulltime status by late May 2012.

Education:

2007 - Southern Connecticut State University – B.S., GIS, minor in Computer Programming.

2012 - Central Connecticut State University – M.S., Municipal GIS

Representative Project Experience:

Town of Southington, CT
Marwin is the project manager for the Town of Southington, CT. He oversees all aspects of GIS implementation and development and maintenance. Responsibilities include coordinating GIS development and cooperation between municipal departments. Engineering, WPCA, Planning and Zoning, Water, Fire and Police department, Economic Development, Assessors, Town Clerk, Tax Office, and Registry of Voters are all department being served by NEGEO.

Town of Berlin, CT
Marwin is coordinating the development and expansion of GIS into all department by initiating projects in the Engineering and Planning departments as well as managing the semi-annual parcel updates. Other departments being serviced include Police, Fire and Economic Development Departments.

Town of Southbury, CT
Marwin was the initial project manager for the Town of Southbury, CT. He oversaw original transition of NEGEO becoming Southbury's primary GIS consultant and subsequently trained other NEGEO staff to assist in the management of Southbury's GIS. Marwin is stil coordinating the development and expansion of Southbury's MapXpress internet application.

WINCOG – Windham Council of Government
Working closely with the Windham Council of Government, Marwin served as the project manager in the implementation of MapXpress as the regional GIS application to deliver parcel and land data for the region. Worked closely with WINCOG GIS analyst to set up policy and procedures to ensure proper data accessibility and reliability.

COGCNV – Central Naugatuck Valley Council of Government
Working closely with the Central Naugatuck Valley Council of Governments, Marwin is serving as the project manager for their large regional in the parcel mapping project. He coordinated the efforts of the municipalities involved and assist in the supervision of junior technician staff. The project goal was to create a GIS parcel database for 8 municipalities within the COG, as well as, delivery of new assessor tax maps and individual MapXpress GIS web sites.

Otsego County, NY
Marwin works closely with Otsego County to manage and maintain their regional MapXpress on-line GIS application and automated CAMA and self-server spatial data transfers.

MapXpress
Coordinates the management, maintenance and development of New England GeoSystems mapping application "MapXpress". Assist with the maintenance and expansion of the ArcGIS Server and related infrastructure. Performs on-site training when needed and is the pro-active force behind keeping clients informed of operational issues and new upgrades.

Various Client Parcel Maintenance
Marwin is responsible for managing several of NEGEO's client parcel databases. Marwin coordinates the collection of source material, assigns responsibility to the technicians and assures the timely delivery of product to the client. Marwin is also responsible for training new employees and provides company-wide QA/QC to assure that anything which gets posted on the internet or gets delivered to a client meets quality standards.

JASON COURTER, GISP - GIS ANALYST

Summary of Experience:

Mr. Courter has been with New England GeoSystems since its founding in 2005. Jason has over 11 years of experience working with municipal organizations in all areas of GIS. He has extensive working knowledge of GIS software including ArcGIS 10.x, Arc/Info Workstation, ArcView 3.x and AutoCAD Map. His excellent interpersonal skills, combined with years of technical expertise have resulted in many long - lasting relationships with clients.

Mr. Courter combines years of AutoCAD training and experience with an equal amount of experience using ArcGIS to develop quality cadastral data sets. This experience and intuition allows Jason to be able to create an maintain parcels at the highest level of quality while avoiding costly errors.

Education:

2000 - Central Connecticut State University – Bachelor of Arts in GIS and Spanish

2002 - GIS Implementation II, CCSU
2002 - GPS -Trimble unit, Pathfinder conversion software, and final product Arc View, *CCSU*
2003 - Intro to Programming - (Visual Basics.Net Programming Language), *TRCC*
2004 - Database I - Concentration on SQL and relational database structure, *TRCC*
2007 – Website Development - Creation of Websites using HTML and MS Front-page
ESRI – What's New in Arc GIS, Topology, Labeling, and Annotation, Model Builder, ArcToolbox, ArcIMS, ArcServer, ArcPad, Versioned Editing Workflows for the Multiuser Geodatabase

Representative Project Experience:

Town of Southington, CT
Jason is responsible for coordinating all updates to the parcel base and production of hard copy maps. This includes necessary deed research, AutoCAD conversion and actual parcel drafting from Surveys. Jason also manages the link between the parcel layer and the CAMA database.

City of West Haven, CT
Coordinated and performed conversion of City's antiquated digital parcel base from ACAD into GIS with the design and production of new assessor maps.

Town of Branford, CT
Acting as project lead, updated the Town's digital parcel layer, including the digitizing of parcel lines and the placement of annotation for approximately 5000 parcels with management of 8,000 assessor records.

Town of Seymour, Preston, Ledyard, Stonington & North Stonington, CT
Coordinated and performed conversion of the Town's antiquated digital parcel base into GIS and design and production of new assessor maps. Performs semi-annual map updates as well as maintains link between the GIS and CAMA database.

KEVIN DALEY - GIS SPECIALIST

Summary of Experience:

Mr. Daley is a new addition to the NEGEO team, having come on board in August 2012. Kevin has experience working in civil and environmental engineering consulting for local governments. Projects included: the development and maintenance of storm and sanitary sewer infrastructure databases, flood analysis and watershed mapping.

Since joining NEGEO, Mr. Daley is responsible for assisting with project management aspects of municipal GIS projects and performing day to day technical tasks on a wide variety of projects.

His GIS software knowledge includes ArcGIS 10, 9.x, spatial, 3D and network analyst as well as Photoshop, MS Access and SQL Server database platforms.

Education:

2008 - Central Connecticut State University - B.A., Geography

Representative Project Experience:

Town of Simsbury, CT
Responsible for the creation and update of storm & sanitary sewer maps using ArcGIS software. Data utilized included record drawings, tabulated data, and GPS data. Linked permit system billing records, scanned connection cards and as-built drawings to GIS features for easy viewing in field.

Town of Berlin, CT
Responsible for maintaining water & sanitary sewer GIS assets. Responsibilities include scanning and lining of new permit cards, integrating new construction into GIS database and deploying data on remote detached workstations and on departmental server.

Town of Bethany

Responsible for parcel updates, design of new tax maps, development of open space mapping and preparing all data for utilization in Bethany's new MapXpress online GIS application.

Town of Branford

Responsible for development of town's master address database and integration with E911 operations. Maintains and updates town's planning & zoning layers including adopted zoning map. Performs updates to the town's storm & sanitary sewer GIS databases.

Town of Southington
Responsible for servicing NEGEO's biggest client. Departments serviced include engineering, planning & zoning, police and fire, highway and assessor. Tasks have included support of E911 datasets, extensive work with storm & sanitary sewer datasets, zoning updates and development of mobile data products for use on tablets.

Matthew Longyear – GIS Analyst

Summary of Experience:

Mr. Longyear has experienced working with local municipalities, regional governmental agencies and local independent businesses. He has considerable working knowledge of GIS software including ArcGIS Server as well as ArcGIS 10.x. His skills also include the installation and management of ArcGIS software on workstations and servers.

Through past training and previous employment, Mr. Longyear has developed extensive computer knowledge. His skills range from basic hardware configuration and installation, various windows OS installations and management including server and database management. He is currently working on becoming Microsoft Certified.

Mr. Longyear also works with and maintains NEGEO's GPS equipment and field instruments. He has extensive knowledge in the use of this equipment as well as the software including ArcPad 6 – 10, Trimble's TerraSync and GPS Correct software. Mr. Longyear is familiar with designing and implementing forms for easy data collection and trained in post processing field data.

Mr. Longyear has several years of experience working with E911 data setup and configuration. Tasks have included the creation of quality address based and routing quality street centerline layers, master address point layers including creation of intersection points.

Matt is also responsible for updating and managing several clients parcel bases and tax maps. Matt is skilled in COGO drafting techniques and is proficient in meeting Level II and Level III CT parcel standards. Matt is also responsible for seeing parcel updated through the maintenance cycle through posting on the clients MapXpress on-line GIS application

Education:

2007 - Southern Connecticut State University – BS Geography

ESRI Workshops

- What's new in ArcGIS Desktop 10
- ArcGIS in the Cloud
- Editing in ArcGIS Desktop 10
- Managing Imagery with ArcGIS 10
- Increase Productivity with ArcGIS 10

Representative Project Experience:

Town of Groton, CT

Maintained and updated street data, address points and emergency services layers for the town, as well as, out of town emergency dispatchers. A process of data maintenance and integration into the E911 addressing model was created.

For the town of Groton, Mr. Longyear also developed custom scripting to develop more accurate intersection points for the E911 routing system. The use of intersection points has made it possible to correctly route to every intersection in town and to roads on the town border including out of town streets.

Chenango County, NY
Maintained and updated street data, address points and emergency services layers to be used in the E911 routing application.

Mr. Longyear was responsible for the creation and continual updating of a sex offender database for sex offender mapping services. This database contains an updated list of county daycares, schools and parks, as well as, current sex offenders. Buffer layers are constantly recreated to reflect the changes in safe zone maps for the county.

Otsego County, NY
Maintained and updated street data, address points and emergency services layers to be used in the E911 routing application. Matt served as the lead GIS Analyst in the creation of the new intersection point layer to be implemented into the E911 routing application.

Town of Goshen, CT
A full GIS was created using Town of Goshen's paper maps. Using new aerial imagery, updated existing town centerline. Geo-referenced all town scans and created a new GIS parcel layer. For lot dimensions, acreage, addresses and lot numbers, created town wide annotation.

New Town Assessor Tax Maps were created. Assisted with the creation of NEGEO's web based GIS application, MapXpress.

Town of Seymour, CT
Creation of street index maps, police, school, daycare, crime, flood zone and wetland soils maps.

Creation of new police zones coordinated for better town coverage and response time. Implementation of police zones and fire districts into police/fire books used for fire hydrant, street, house, daycare, and hazardous sites locations. Books are used by on duty officers and firemen for faster response time, locations and general area knowledge.

Utilized Arc GIS software editing tools and aerial photographs to digitize all town buildings into a layer to be included on new tax maps. Also, corrected all hydrology layers using newly acquired color aerial photography.

Town of Derby, CT
Digitized all town buildings and created hydrology layers using ArcGIS editing software and aerial photography. Using new aerial imagery, updated existing town centerline. Geo-referenced all town scans and created a new GIS parcel layer from scratch including lot dimensions, acreage, addresses and lot numbers. New town assessor tax maps were created. Assisted in the creation of NEGEO's web based GIS application, MapXpress.

United Illuminating
ArcGIS software was used to merge old state wide aerial and planimetric data coverages into a new geodatabase format. Model builder was used to automate planimetric data conversion.

Town of Southbury
Matt is the primary contact ad assistant project manager for one of NEGEO's newest and largest clients. Matt is responsible for evaluating and meeting the GIS needs of all departments. Services include parcel maintenance, MapXpress implementation, public works mapping, E911 layer development and Planning and Zoning map maintenance and creation which include zoning maps, open space, vacant lane and town easement mapping.

Alfredo Herrerra - GIS SPECIALIST

Summary of Experience:

Mr. Herrerra is a new addition to the NEGEO team, having come on board in January 2013. Alfredo previously worked for Sightlines, LLS, an asset management consultant, in their IT Department. He was responsible for the rollout of facilities management software and training for university facilities management departments throughout the country. He also was responsible for on sight client training sessions. With Sightlines, LLC, Alfredo conducted GIS seminars for company leadership on how to integrate GIS into the software products the company developed. Alfredo also utilized GIS to perform zoning analysis within airport controlled airspace for the City of Phoenix Aviation Planning Department.

Since joining NEGEO, Mr. Herrerra has been responsible for assisting project management with all aspects of municipal GIS projects including parcel updates, zoning map design and voter redistricting.

His GIS software knowledge includes ArcGIS 10, 9.x, SQL Server database management and extensive knowledge of Windows Server, network administration and the Adobe suite of software products.

Education:

2010 - Arizona State University. – B.S. Urban Planning

Representative Project Experience:

Town of Madison

Finalized new zoning map design and integrated 2012 annual zoning changes. Completed the 2012 Grand List Parcel updates, produced new tax maps and configured data on NEGEO's MapXpress software.

City of West Haven

Responsible for the redesign of the city voting district due to realignment of state redistricting. This project utilized the census 2010 and West Haven specific data to create population based districts.

Town of Wolcott & Town of Suffield

Perform parcel updates using deed and survey information as per Level III CT parcel standards, completed extensive mismatch research, prepared new tax map layouts prepared data for inclusion in each client's MapXpress online-GIS

Appendix B

NEGEO Project Sheets

NEW ENGLAND

GEOSYSTEMS

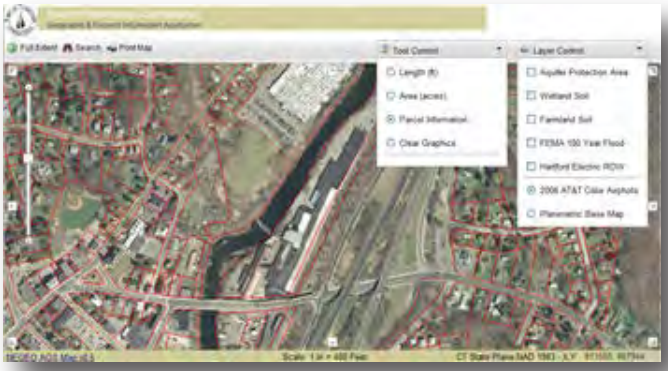
Project Briefs

Geographic Information System Consultants

Council of Governments of the Central Naugatuck Valley, CT

Large scale parcel production & ArcGIS Server Internet GIS Implementation

New England GeoSystems was hired inm the spring of 2008 to complete a regional parcel base and design an ArcGIS Server enterprise GIS Internet application.



NEGEO created over 36,000 parcels, printed over 250 new assessor map sheets and deployed an ArcGIServer based regional internet application

Created new parcel base for 8 towns using a wide assortment of original documents, aerial photos, property deeds, and CAMA databases.

Integrated additional 5 towns into a regional parcel base available on the internet at www.cogcnvgis.com.

Standardized three different CAMA database vendors into one composite SQL Server database.

Provided technical assistance, budgeting guidance, one-on-one training and held informational demonstrations for each of the towns receiving their first ever GIS databases and applications.

Compiled over 250 GB of color aerial photography into townwide and single regional MRSID mosaic images.

Compiled a multi-homed ArcGIS Server based tile cache in order to provide outstanding viewing performance on the Internet.

Provided new GIS based Property Assessment Mapping to eight towns which were previously using out-dated paper/mylar mapping.

CONTACT

Peter Dorpalen - Executive Director
Council of Governments of the Central Naugatuck Valley
60 North Main Street
Waterbury, CT 06702
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pdorpalen@cogcnv.org

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NEW ENGLAND

GEOSYSTEMS

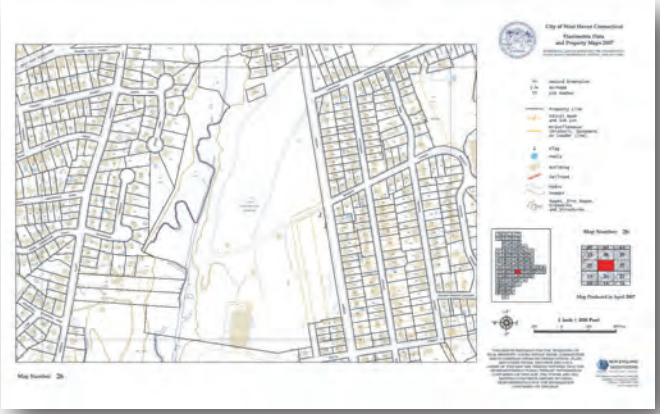
Project Briefs

Geographic Information System Consultants

CITY of WEST HAVEN, CONNECTICUT - GIS Implementation

New England GeoSystems has been the primary GIS consultant for West Haven since 2001.

NEGEO is responsible for developing, maintaining and distributing West Haven's GIS information and providing general GIS consulting and analysis services to departments which request assistance.



NEGEO has been involved with several GIS initiatives in West Haven including the following:

- Performed initial conversion from AutoCAD to GIS and Arc/Info coverages to geodatabase
- Field located all catch basins, street signs, utility poles and fire hydrants
- Created detailed address based street centerline for use with Police crime analysis program
- Created crime analysis template maps for PD
- Deployed custom MapObjects GIS Parcel Viewer
- Developed and host www.WestHavenGIS.com
- Perform annual parcel and planimetric base updates
- Plot all hard copy products following data updates
- Distribute updated base data to all users
- Recreated GIS versions of zoning, floodplain, contour, slope, soils and coastal resources maps
- Update and distribute several PDF based map collections
- Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates
- Provides GIS training to new employees and/or entire departments
- Provided additional GIS analysis services to planning, police, economic development, assessor and engineering departments

CONTACT

Alan Olenick - IT Manager
City of West Haven
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NEW ENGLAND

GEOSYSTEMS

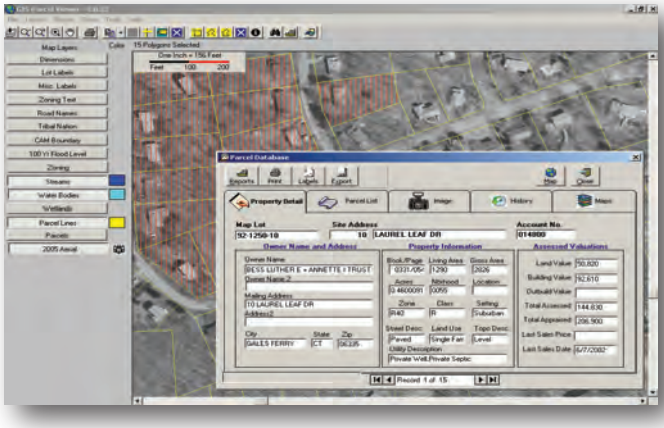
Project Briefs

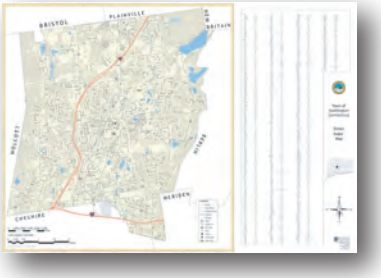
Geographic Information System Consultants

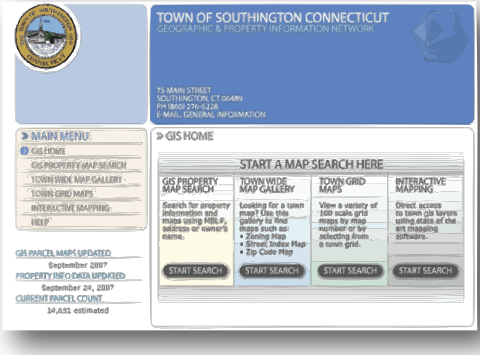
TOWN OF SOUTHINGTON, CONNECTICUT - Enterprise GIS Implementation

New England GeoSystems is and has been the professional GIS consultant for Southington since 2001.

NEGEO assists all departments in determining needs and creates solutions benefiting both staff and the general public.







NEGEO has completed several GIS initiatives including the following:

- Converted original AutoCAD based mapping into GIS
- Digitized, scanned and designed town wide storm & sanitary sewer GIS network
- Field located all catch basins, outfalls, street signs, utility poles and fire hydrants
- Field locate new assets as features are created or removed
- Created both digital and physical mapping products for Town's emergency/first responders
- Created detailed street centerline and integrated data into E911 dispatch system
- Developed custom MapObjects GIS Parcel Viewer
- Developed and support town-wide ArcReader applications
- Provide GIS - AutoCAD support services
- Perform quarterly parcel and planimetric base updates
- Plot all hard copy products following data updates
- Distribute updated base data to all central and remote users
- Update and distribute several PDF based map collections
- Developed, maintain and host www.SouthingtonGIS.com
- Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates
- Provides GIS training to new employees and/or entire departments
- Provided additional GIS services to health, town clerk, economic development, registrar of voters, highway, board of education, assessor, engineering, public works and sewer departments.

CONTACT

Richard Lopatosky - IT Manager
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www.SouthingtonGIS.com
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NEW ENGLAND

GEOSYSTEMS

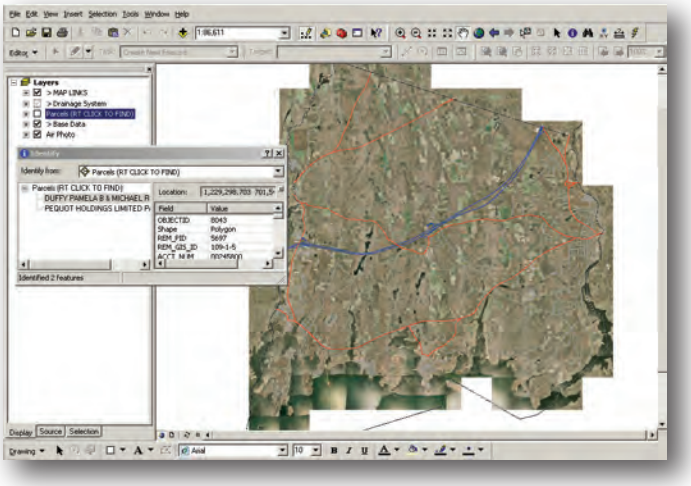
Project Briefs

Geographic Information System Consultants

TOWN OF STONINGTON, CONNECTICUT - Enterprise GIS Implementation

New England GeoSystems has been the primary GIS consultant for Stonington since the initial mapping effort in 2001.

NEGEO has played a major role in developing and maintaining Stonington's GIS base data and has provided software and database programming services which are being used daily by both the general public and internal staff



NEGEO has been involved with several GIS initiatives in Stonington including the following:

- Performed initial GIS Needs Assessment
- Project manager for initial parcel and planimetric mapping project
- Digitized, scanned and designed town wide storm & sanitary sewer GIS network
- Field located all catch basins, outfalls,manholes, light poles and fire hydrants
- Created detailed address based street centerline
- Developed detailed multi-family maps and annotation
- Developed custom MapObjects GIS Parcel Viewer
- Perform annual parcel and planimetric base updates
- Update and distribute several PDF based map collections
- Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates
- Provides GIS training to new employees and/or entire departments

CONTACT

Town of Stonington
Jason Jones - IT Manager, Joe Bragaw - Public Works Director
Marsha Standish - Assessor
152 Elm Street
Stonington, CT 06378
860-535-5011, 5055 & 5098

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NEW ENGLAND

GEOSYSTEMS

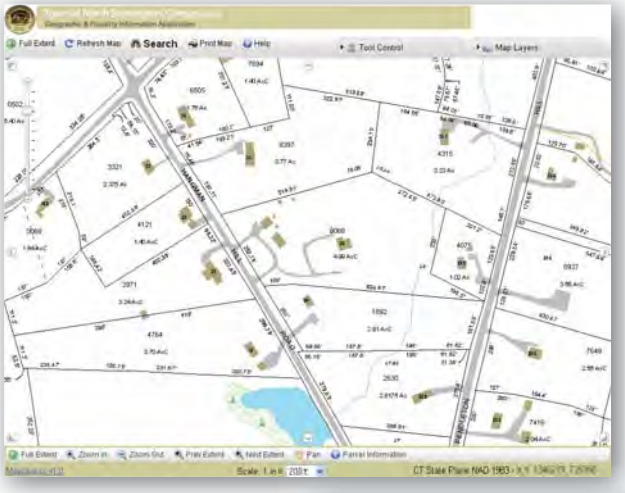
Project Briefs

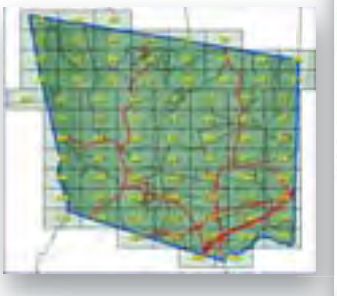
Geographic Information System Consultants

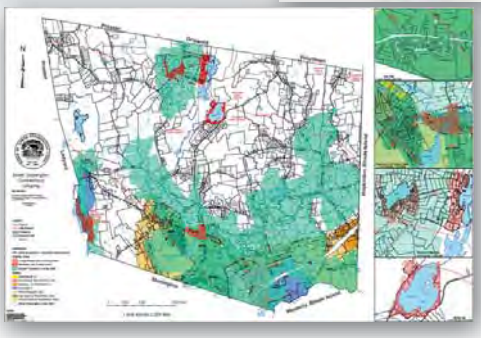
TOWN OF NORTH STONINGTON, CONNECTICUT - GIS Implementation

New England GeoSystems is and has been the professional GIS consultant for North Stonington since 2004.

NEGEO assists all departments in determining needs and creates solutions benefiting both staff and the general public.







NEGEO has completed several GIS initiatives including the following:

- Converted original AutoCAD to GIS conversion of Parcel Mapping
- Development and maintenance of spatial data into geodatabase format
- Perform periodic parcel and planimetric base updates
- Update tax assessor maps as new updates to spatial layers are developed
- Re-aligned town's road centerline based on aerial photograhy and added new street
- Provide GIS - AutoCAD support services
- Distribute updated base data to all central and remote users
- Update and distribute several PDF based map collections
- Provide on-call services for development of additional data and mapping products
- Developed an array of maps as to cater the needs of all departments of the town
- Developed, maintain and host ArcGIS Server Based website www.NorthStoningtonGIS.com
- Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates
- Provides GIS training to new employees and/or entire departments
- Provided additional GIS services to all departments within North Stonington's municipal setting.

CONTACT

Darryl DelGrosso
Town of North Stonington
40 Main Street
North Stonington, CT 06539
860-535-2877 ext 24
www.NorthStoningtonGIS.com
assessor@northstoningtonct.gov

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NEW ENGLAND

GEOSYSTEMS

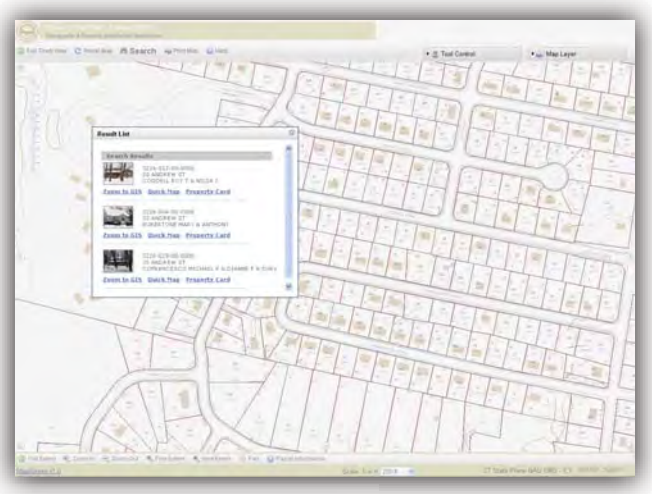
Project Briefs

Geographic Information System Consultants

TOWN OF HAMDEN, CONNECTICUT - Enterprise GIS Implementation

New England GeoSystems is and has been the professional GIS consultant for Hamden since 2000.

NEGEO assists all departments in determining needs and creates solutions benefiting both staff and the general public.



NEGEO has completed several GIS initiatives including the following:

- Perform periodic parcel and planimetric base updates
- Develop and Update tax assessor maps as new updates to spatial layers are developed
- Re-aligned town's road centerline based on aerial photograhy and added new street
- Provide GIS - AutoCAD support services
- Distribute updated base data to all central and remote users
- Update and distribute several PDF based map collections
- Provide on-call services for development of additional data and mapping products
- Developed an array of maps as to cater the needs of all departments of the town
- Developed, maintain and host ArcGIS Server Based website www.HamdenGIS.com
- Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates
- Provides GIS training to new employees and/or entire departments
- Provided additional GIS services to all departments within Hamden's municipal setting.
- Created numerous additional maps including Zoning, Acquifer protection areas, FEMA flood zones, Digital Elevation Models, Shaded relief and Wetalnd soils.

CONTACT

Linda Kasinoff
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www.HamdenGIS.com
LKasinoff@hamden.com

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NEW ENGLAND

GEOSYSTEMS

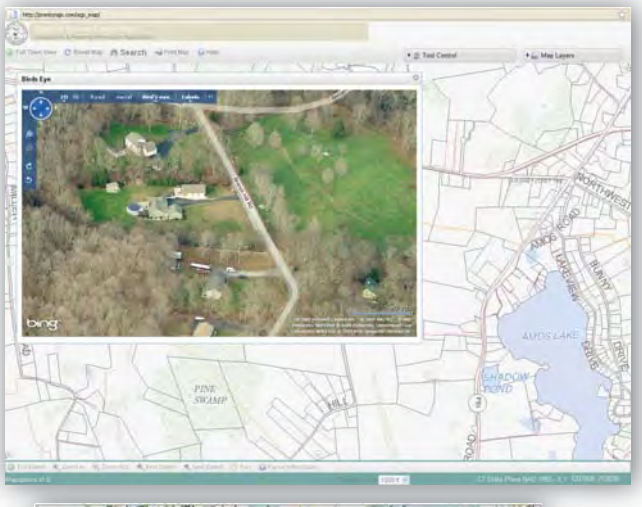
Project Briefs

Geographic Information System Consultants

TOWN OF SEYMOUR, CONNECTICUT - Enterprise GIS Implementation

New England GeoSystems is and has been the professional GIS consultant for Seymour since 2000.

NEGEO assists all departments in determining needs and creates solutions benefiting both staff and the general public.



NEGEO has completed several GIS initiatives including the following:

Convertion of Existing AutoCAD based planimetric and parcel mapping into parcel mapping into geodatabase format

Developed GIS/CAMA scripts for nighly updates to present current Vision Data, downloadable property cards and Abutters lists.

Develop and Update tax assessor maps as new updates to spatial layers are developed

Re-aligned town's road centerline based on aerial photograhy and added new street

Provide GIS - AutoCAD support services

Distribute updated base data to all central and remote users

Provide on-call services for development of additional data and mapping products

Developed, maintain and host ArcGIS Server Based website www.SeymourGIS.com

Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates

Provides GIS training to new employees and/or entire departments

Provided additional GIS services to all departments within Seymour's municipal setting.

Created numerous additional maps including Zoning, Acquifer protection areas, FEMA flood zones, Digital Elevation Models, Shaded relief and Wetland soils.

CONTACT

Joe Kusiak
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www.SeymourGIS.com
jkusiak@seymourct.org

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NEW ENGLAND

GEOSYSTEMS

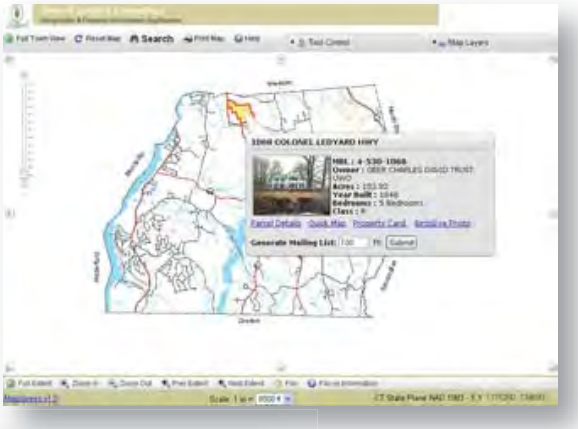
Project Briefs

Geographic Information System Consultants

TOWN OF LEDYARD, CONNECTICUT - Enterprise GIS Implementation

New England GeoSystems is and has been the professional GIS consultant for Ledyard since 2003.

NEGEO assists all departments in determining needs and creates solutions benefiting both staff and the general public.



NEGEO has completed several GIS initiatives including the following:

- Converted original AutoCAD based mapping into GIS
- Scanned and Digitized original town parcel basemap and Assessor Tax maps
- Field locate new assets as features are created or removed
- Re-aligned town's road centerline based on aerial photograhy and added new street
- Designed Quality Assurance/ Quality Control plan for new aerial photography and planimetric data
- Provide GIS - AutoCAD support services
- Perform quarterly parcel and planimetric base updates and Plot all hard copy products following data updates
- Distribute updated base data to all central and remote users
- Update and distribute several PDF based map collections
- Developed, maintain and host ArcGIS Server based website. (www.LedyardGIS.com)
- Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates
- Provides GIS training to new employees and/or entire departments
- Provided additional GIS services to all departments within Ledyard's municipal setting.

CONTACT

Paul Hopkins, Assessor
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Regina Brulotte, MIS
Town of Ledyard
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www.LedyardGIS.com
rmbru@town.ledyard.ct.us

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NEW ENGLAND

GEOSYSTEMS

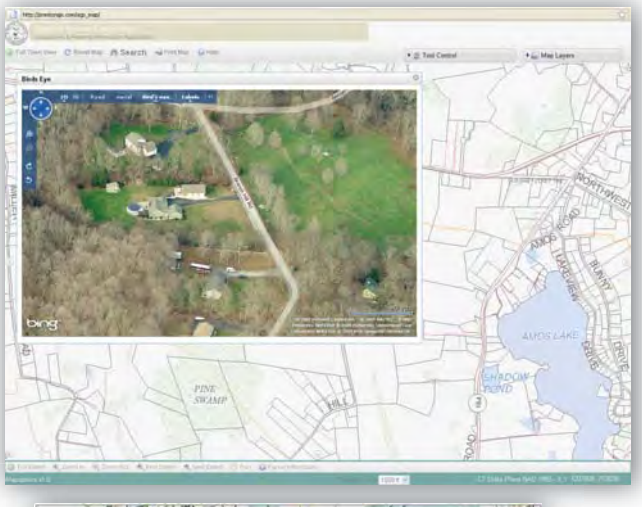
Project Briefs

Geographic Information System Consultants

TOWN OF PRESTON, CONNECTICUT - Enterprise GIS Implementation

New England GeoSystems is and has been the professional GIS consultant for Preston since 2005.

NEGEO assists all departments in determining needs and creates solutions benefiting both staff and the general public.



NEGEO has completed several GIS initiatives including the following:

- Perform periodic parcel and planimetric base updates
- Develop and Update tax assessor maps as new updates to spatial layers are developed
- Re-aligned town's road centerline based on aerial photograhy and added new street
- Provide GIS - AutoCAD support services
- Distribute updated base data to all central and remote users
- Update and distribute several PDF based map collections
- Provide on-call services for development of additional data and mapping products
- Developed an array of maps as to cater the needs of all departments of the town
- Developed, maintain and host ArcGIS Server Based website www.PrestonGIS.com
- Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates
- Provides GIS training to new employees and/or entire departments
- Provided additional GIS services to all departments within Preston's municipal setting.
- Created numerous additional maps including Zoning, Acquifer protection areas, FEMA flood zones, Digital Elevation Models, Shaded relief and Wetalnd soils.

CONTACT

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NEW ENGLAND

GEOSYSTEMS

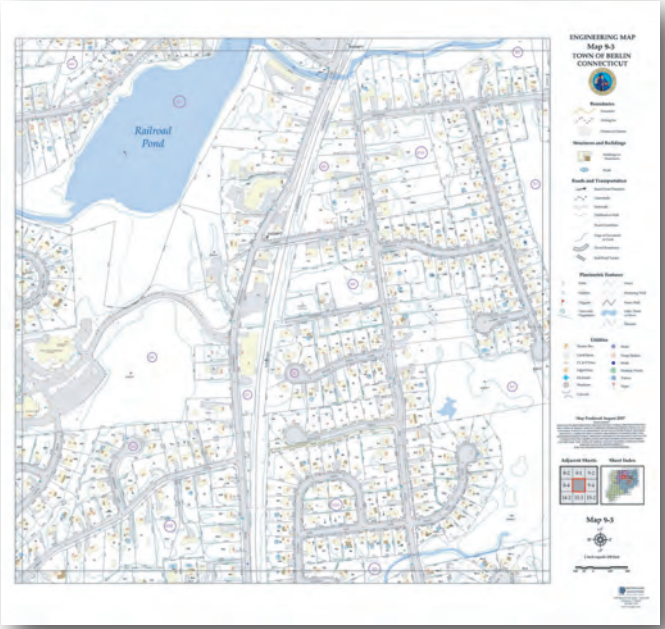
Project Briefs

Geographic Information System Consultants

TOWN OF BERLIN, CONNECTICUT - Enterprise GIS Implementation

New England GeoSystems has been the primary GIS consultant for Berlin since 2003.

NEGEO is responsible for developing and maintaining Berlin's GIS base data, providing software and database programming services and in directing the Town toward a successful implementation of an enterprise Geographic Informtion System.



NEGEO has been involved with several GIS initiatives in Berlin including the following:

- Performed initial conversion from AutoCAD to GIS and Arc/Info coverages to geodatabase
- Digitized, scanned and designed town wide storm & sanitary sewer and water distribution GIS network
- Created both digital and physical mapping products for Town's emergency/first responders
- Created detailed address based street centerline for use with Police crime analysis program
- Developed detailed multi-family maps and annotation
- Developed custom MapObjects GIS Parcel Viewer
- Developed, maintain and host www.BerlinGIS.com
- Perform annual parcel and planimetric base updates
- Plot all hard copy products following data updates
- Distribute updated base data to all users
- Update and distribute several PDF based map collections
- Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates
- Provides GIS training to new employees and/or entire departments
- Provided additional GIS services to planning, police, economic development, assessor, engineering and sewer departments.

CONTACT

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NEW ENGLAND

GEOSYSTEMS

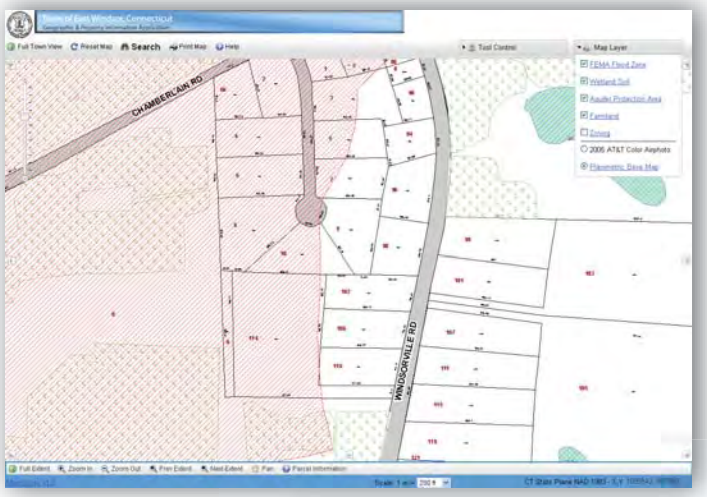
Project Briefs

Geographic Information System Consultants

TOWN OF EAST WINDSOR CONNECTICUT - Enterprise GIS Implementation

New England GeoSystems is and has been the professional GIS consultant for East Windsor since 2004.

NEGEO assists all departments in determining needs and creates solutions benefiting both staff and the general public.



NEGEO has completed several GIS initiatives including the following:

Perform periodic parcel and planimetric base updates

Developed GIS/CAMA scripts for nighly updates to present current Vision Data, downloadable property cards and Abutters lists.

Develop and Update tax assessor maps as new updates to spatial layers are developed

Re-aligned town's road centerline based on aerial photograhy and added new street

Provide GIS - AutoCAD support services

Distribute updated base data to all central and remote users

Provide on-call services for development of additional data and mapping products

Developed, maintain and host ArcGIS Server Based website www.EastWindsorGIS.com

Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates

Provides GIS training to new employees and/or entire departments

Provided additional GIS services to all departments within East Windsor's municipal setting.

Created numerous additional maps including Zoning, Acquifer protection areas, FEMA flood zones, Digital Elevation Models, Shaded relief and Wetland soils.

CONTACT

Caroline Madore
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cmadore@eastwindsorct.org

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NEW ENGLAND

GEOSYSTEMS

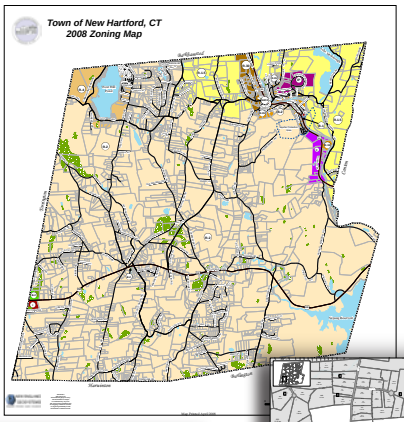
Project Briefs

Geographic Information System Consultants

Town of New Hartford, CT - Parcel Creation & GIS Implementation

New England GeoSystems has been a GIS consultant for New Hartford since 2004.

NEGEO is responsible for developing, maintaining and distributing New Hartford's GIS information and providing general GIS consulting and analysis services to departments which request assistance.



Before

After

NEGEO has been involved with several GIS initiatives in New Hartford including the following:

Created GIS parcels from original, hand drawn assessor maps.

Added lot numbers, acreage, address, and lot dimensions to each parcel.

Completed yearly parcel updates to reflect new developments and other changes.

Created numerous additional maps including zoning, aquifer protection areas, FEMA flood plains, shaded relief, and wetland soils.

Delivered all GIS base data for use in ESRI's ArcMap and ArcReader applications.

Provided on-call services to correct problems and develop additional data.

CONTACT

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NEW ENGLAND

GEOSYSTEMS

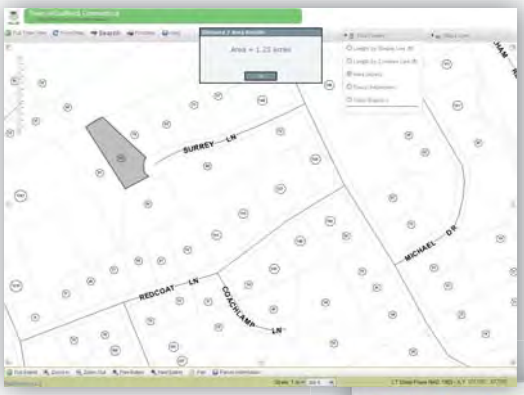
Project Briefs

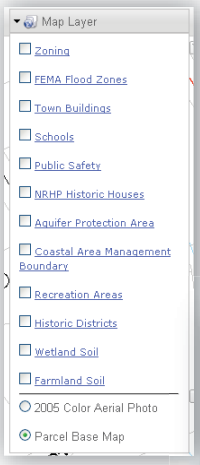
Geographic Information System Consultants

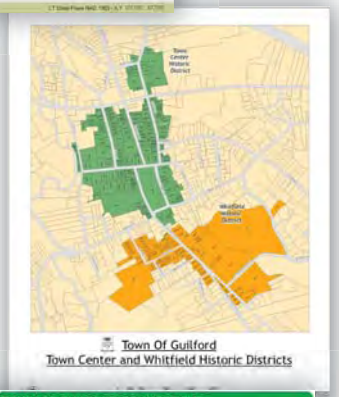
TOWN OF GUILFORD CONNECTICUT - Enterprise GIS Implementation

New England GeoSystems is and has been the professional GIS consultant for Guilford since 2000.

NEGEO assists all departments in determining needs and creates solutions benefiting both staff and the general public.







NEGEO has completed several GIS initiatives including the following:

Perform periodic parcel and planimetric base updates

Developed GIS/CAMA scripts for nighly updates to present current Vision Data, downloadable property cards and Abutters lists.

Develop and Update tax assessor maps as new updates to spatial layers are developed

Re-aligned town's road centerline based on aerial photograhy and added new street

Distribute updated base data to all central and remote users

Provide on-call services for development of additional data and mapping products

Developed Customized map layers to give users an option to view other spatial data

Developed, maintain and host ArcGIS Server Based website www.GuilfordGIS.com

Developed and maintain automated Oracle - MS SQL Server CAMA - GIS database updates

Provides GIS training to new employees and/or entire departments

Provided additional GIS services to all departments within Guilford's municipal setting.

Created numerous additional maps including Zoning, Acquifer protection areas, FEMA flood zones, Digital Elevation Models, Shaded relief and Wetland soils.

CONTACT

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NEW ENGLAND

GEOSYSTEMS

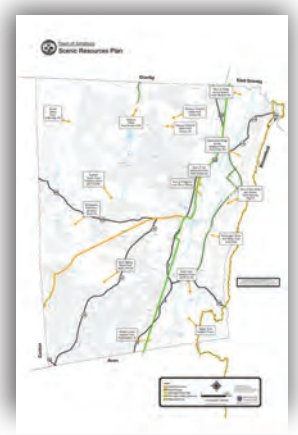
Project Briefs

Geographic Information System Consultants

Town of Simsbury, CT - Plan of Conservation and Development Mapping & GIS Services

New England GeoSystems has been a GIS consultant for Simsbury since 2006.

NEGEO is responsible for developing, maintaining and distributing Simsbury's GIS information and providing general GIS consulting and analysis services to departments which request assistance.



NEGEO has been involved with several GIS initiatives in Simsbury including the following:

Aided in the town's Plan of Conservation and Development by creating a wide range of maps including:
-Zoning, Land Use, Future Land Use, and Open Space Plan
-Character Places- historic buildings, aesthetic places, farms, waterways, and parks
-Community Facilities- schools, parks, fire stations, and town buildings
-Economic Development- commercial and industrial areas as well as the Simsbury Center Zone
-Natural Resources Plan- wetlands, slopes, and FEMA flood zones
-Pedestrian Resources- bus routes, bike routes, hiking trails, and canoe trails
-Water Resources- town aquifers, aquifer protection areas, and public watersheds

Created a GIS parcel layer from original AutoCAD drawings and updated layer with new developments when necessary.

Re-aligned town's road centerline based on aerial photography and added new streets.

Delivered all GIS base data for use in ESRI's ArcReader application.

CONTACT

Richard Sawitzke- Town Engineer / Hiram Peck - Town Planner
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NEW ENGLAND

GEOSYSTEMS

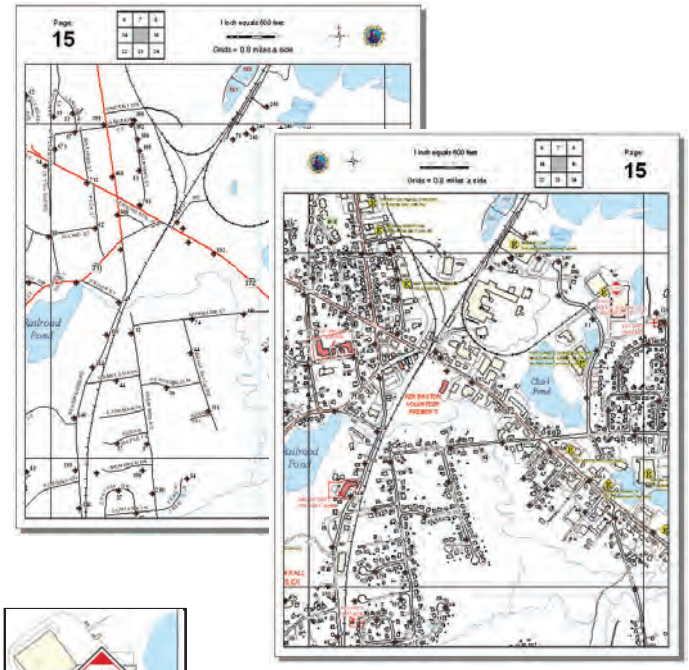
Project Briefs

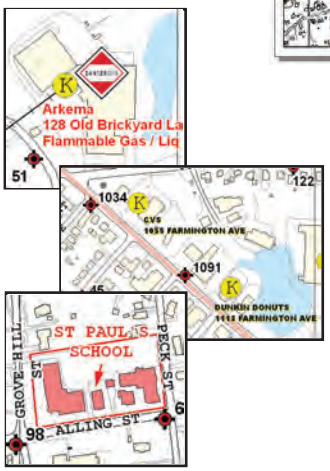
Geographic Information System Consultants

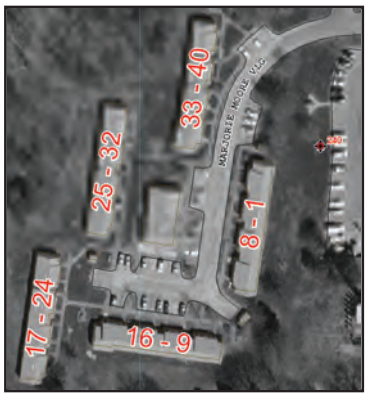
Berlin Fire Department Run Books - Town of Berlin, Connecticut

New England GeoSystems has been the primary GIS consultant for Berlin since 2003.

The goal of the Berlin Fire Department Run Book project was to utilize Berlin's GIS base data to create a townwide Run Book highlighting hydrants, haz-mat and knox box locations and properties of interest.







The Berlin Fire Department Run Books include the following information:

A Navigation page on the left depicts the streets and hydrant location by street address. This page is used as a road map and helps to locate the nearest fire hydrant.

A Detail page on the right takes the Navigation page one step further by bringing in additional information. This includes information about haz-mat and knox box locations, as well as, highlighted properties of interest.

Hazardous Materials are shown on the map as a "Dangerous" symbol and accompained by the associated address and a list of the chemicals on site.

Knox Box locations are displayed as yellow circles with the letter "K", along with, the associated address.

Properties of interest are outlined in red and their buildings colored in a shade of red. Included in these areas are Schools, Daycares (private or public), Town Properties and the Fire Departments.

Properties that require additional detail , such as, a Condo or Apartment complex, are given their own page at the end of the Run Book. The Detail page will display an icon at the property location to let the viewer know additional information can be found in the Complex Detail section of the Run Book.

The Town of Berlin Fire Department currently deploys these Run Books in all of their Fire Vehicles and in the Fire Vehicles of their neighboring municipalities. They also provided copies of the Run Book to the regional private ambulance companies.

CONTACT

Barbara Sagan - IT Manager
Town of Berlin
240 Kensington Rd
Berlin, CT 06037
860-828-7095
bsagan@town.berlin.ct.us

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NEW ENGLAND

GEOSYSTEMS

Project Briefs

Geographic Information System Consultants

Chenango County Sheriff's Office, New York - E911 Data Development & GIS Implementation

New England GeoSystems has been a GIS consultant for Chenango County Sheriff's Office since 2006.

NEGEO is responsible for developing, maintaining and distributing Chenango County Sheriff's Office GIS information to support the operation of the county's E911 system.

NEGEO has implemented several GIS initiatives for Chenango County Sheriff's Office including the following:

Created a base map for dispatchers and responders which includes town, police, and fire boundaries, water features, railroads, points of interest and color aerial photography.

Integrated centerline data for bordering counties to assist with mutual aid situations.

Delivered all GIS base data for use in ESRI's ArcMap and ArcReader applications.

Created detailed address-based street centerline for use with computer aided dispatch program. This included:
-Resolving any discrepencies between the centerline and the county's "alpha table"
-Examining segments which cross town or ESN boundaries for correct address breaks
-Inspecting segments for directional inconsistencies
-Verifying that all cross streets in the centerline are correct
-Consolidating all unnecessary street segments in order to reduce complexity
-Adding 90% of private lanes to the road centerline. Each segment contains police, fire, town, and address range data.

Provided on-call services to correct problems, create new streets, and develop additional data.

Trained Chenango County employees in order to move centerline maintenance & geofile creation in-house.

CONTACT

A. Wesley Jones - 911 Addressing Coordinator
Chenango County Sheriff's Office
279 County Road 46
Norwich, NY 13815
607.337.1859
ajones@co.chenango.ny.us

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NEW ENGLAND

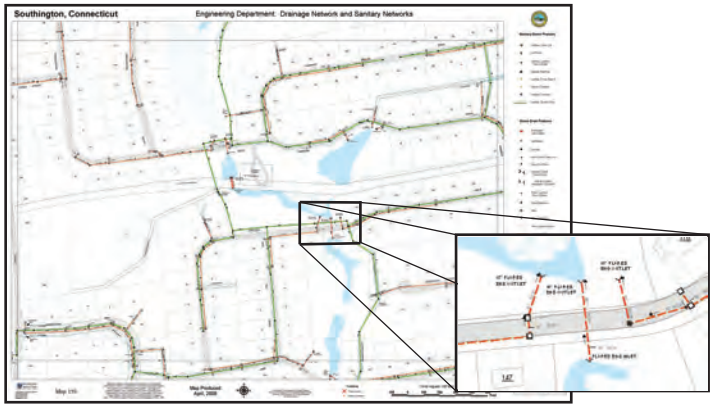
GEOSYSTEMS

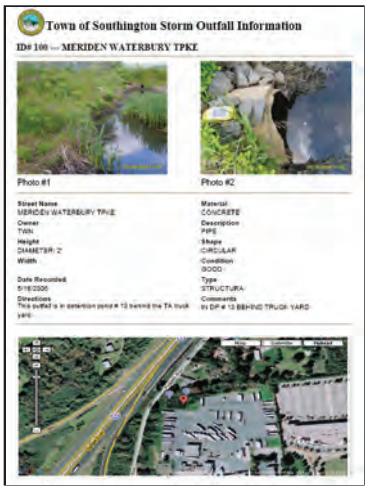
Engineering GIS Services

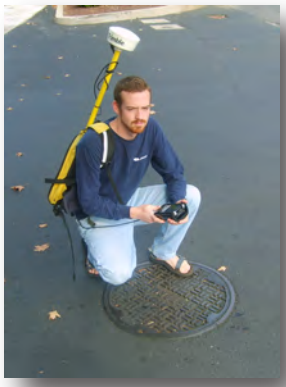
Geographic Information System Consultants

Storm Sewer System GIS Design & Implementation

New England GeoSystems is an expert in the design, creation, implementation and maintenance of municipal Storm Sewer Geographic Information Systems.







New England Geosystems' Storm Sewer System services include the following:

Field Data Inventory (GPS)
- catch basins
- detention ponds
- manholes
- outfalls
- georeferenced photos of system features
- georeferences videos of system features
- field attribute collection
  - flow direction
  - pipe size, material & condition

Map Scanning and/or Digitizing
- Complete scanning services
- Manual digitizing, data interpretation & database population
- Georeferenceing source drawings (scans & AutoCAD)

Database Design
- Custom database design
- Standard ESRI sewer data model
- SQL Server (2005 & 2008), MSAccess, MYSQL, PostGIS, SDE

Data Deployment
- ArcMap, ArcReader & ArcExplorer
- Google Earth & Map
- ArcGIS Server custom applications
- Hard copy production & atlas development

Data Maintenance
- Annual field inventory - new subdivisions etc.
- GIS Updates from AutoCAD as-builts
- Records research

CONTACT

Brian Dooley, PE
New England GeoSystems, LLC
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Guilford, CT 06437
203-404-7129
www.ne-geo.com
brian@ne-geo.com

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NEW ENGLAND

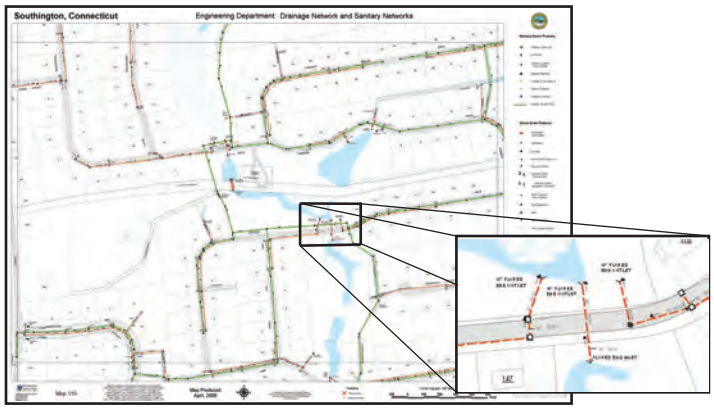
GEOSYSTEMS

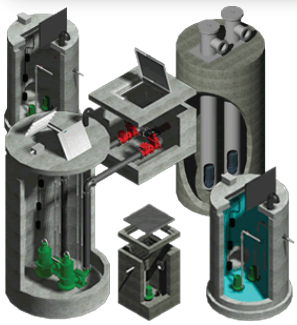
Engineering GIS Services

Geographic Information System Consultants

Sanitary Sewer System GIS Design & Implementation

New England GeoSystems is an expert in the design, creation, implementation and maintenance of municipal Sanitary Sewer Geographic Information Systems.





New England Geosystems' Sanitary Sewer System services include the following:

Field Data Inventory (GPS)
- Locate manholes & pump stations
- Map sanitary easements
- georeferenced photos of system features
- georeferences videos of system features
- field attribute collection
  - flow direction
  - pipe size, material & condition

Map Scanning and/or Digitizing
- Complete scanning services
- Manual digitizing, data interpretation & database population
- Georeferenceing source drawings (scans & AutoCAD)

Database Design
- Custom database design
- Standard ESRI sanitary sewer model
- SQL Server (2005 & 2008), MSAccess, MYSQL, PostGIS, SDE
- Link to sewer billing database

Data Deployment
- ArcMap, ArcReader & ArcExplorer
- Google Earth & Map
- ArcGIS Server custom applications
- Hard copy production & atlas development

Data Maintenance
- Annual field inventory - new subdivisions etc.
- GIS Updates from AutoCAD as-builts
- Records research

CONTACT

Brian Dooley, PE
New England GeoSystems, LLC
1200 Boston Post Road, Suites 204-206
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brian@ne-geo.com

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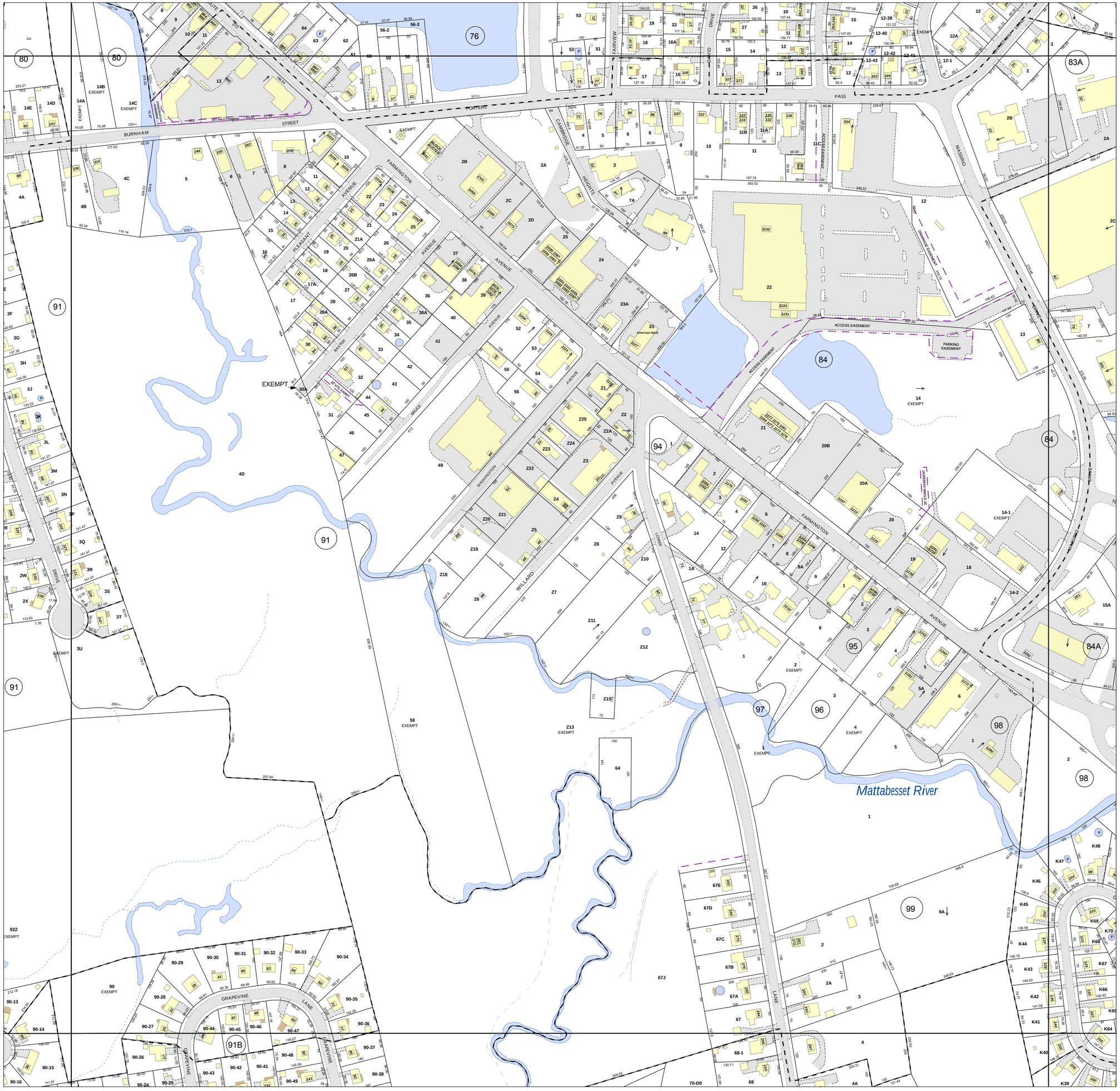
Appendix C

Map Samples

TAX MAP 9-4

TOWN OF BERLIN CONNECTICUT



5	Block Circle
27	Lot Number
235	Address Number
546	Lot Dimension
123+/-	Scaled Lot Dimension
	Tax Maps Border
	Parcels
	Easement
	Driveways and Parking Lots
	Building or Structure
P	Pools
	Paved or Unpaved Road
	Rail Road Tracks
	Road Front Direction
	Stream
	Lake ,Pond or River
	Recreation

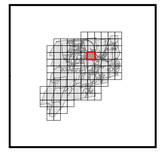
DISCLAIMER:

THIS MAP IS PREPARED FOR THE INVENTORY OF REAL PROPERTY WITHIN THE TOWN OF BERLIN AND IS COMPILED FROM RECORDED DEEDS, PLATS, TAX MAPS, SURVEYS, PLANIMETRIC MAPS AND OTHER PUBLIC RECORDS AND DATA. USERS OF THIS TAXMAP ARE HEREBY NOTIFIED THAT THE AFOREMENTIONED PUBLIC PRIMARY INFORMATION SOURCES SHOULD BE CONSULTED FOR VERIFICATION OF THE INFORMATION CONTAINED ON THIS MAP. THE TOWN OF BERLIN AND ITS MAPPING CONTRACTORS ASSUME NO LEGAL RESPONSIBILITY FOR THE INFORMATION CONTAINED HEREIN.

Adjacent Sheets

2-4	3-3	3-4	4-3	4-4
8-2	9-1	9-2	10-1	10-2
8-4	9-3		10-3	10-4
14-2	15-1	15-2	16-1	16-2
14-4	15-3	15-4	16-3	16-4

Sheet Index



Map 9-4

Map Produced September 2007

8

1 inch equals 100 feet

100' 50' 0 100' 200'

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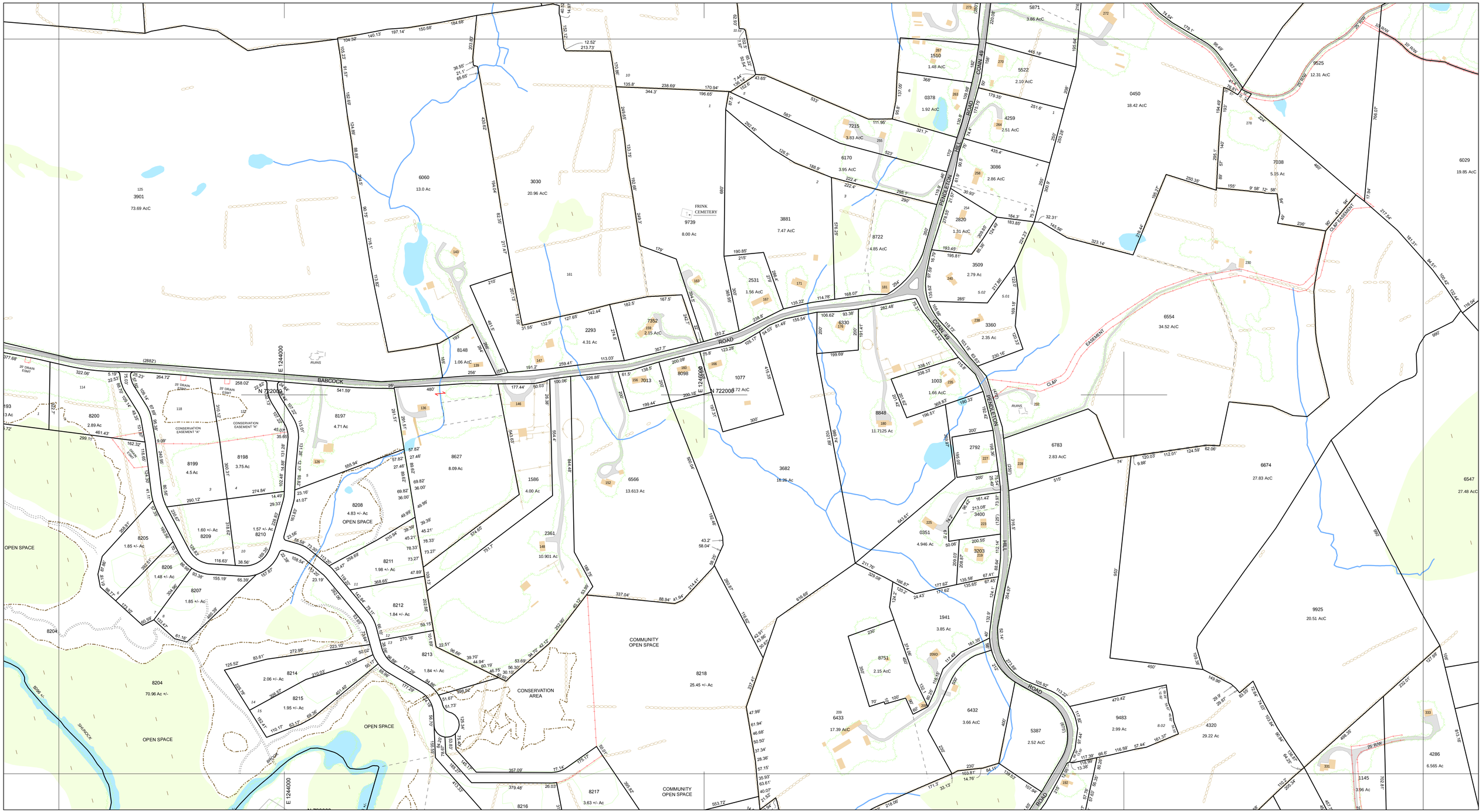

Map Number: 110

THIS MAP IS PREPARED FOR THE INVENTORY OF REAL PROPERTY FOUND WITHIN THESE JURISDICTION AND IS COMPILED FROM RECORDED DEEDS, PLATS, AND OTHER PUBLIC RECORDS AND DATA. USERS OF THIS MAP ARE HEREBY NOTIFIED THAT THE AFOREMENTIONED PUBLIC PRIMARY INFORMATION CONTAINED ON THIS MAP. THE TOWNS AND THE MAPPING COMPANIES ASSUME NO LEGAL RESPONSIBILITIES FOR THE INFORMATION CONTAINED ON THIS MAP.

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Guilford, Connecticut 06437
Phone: 1.203.404.7129
www.ne-geo.com

Photography Dates:
March 24, 1996 (120 Series)
April 29, 1997 (449 Series)
December 16, 1997
(449 Series, 5-1, 5-3, 5-5)

Completion Date: April 28, 2000

Revised Date: January 1, 2008

HORIZONTAL DATUM BASED ON THE CONNECTICUT STATE PLANE COORDINATE SYSTEM, NAD 83 (1986)

Town of North Stonington Connecticut

Planimetric Data and Property Maps 2008

1 inch = 200 Feet

0 100 200 400 600 800 1,000 Feet

0.1 0.05 0 0.1 Miles

8

Property Line
Property Line Along Water
Parcel in Dispute
Town Line
State Line
ROW / Easement
Surveyed Wetland
Parcel Hook and Sub Lot

57 Building / Street No.
E Exempt Property
100' Record Dimension
(100') Surveyed Dimension
2 Ac Surveyed Acreage
2 AcC Computed Acreage
Wall / Fence

Deciduous Tree
Evergreen Tree
Vegetation
Water
Swamps
Roads, Driveways, Trails, Flat Areas and Structures

Map Number: 110

102	103	104
109	110	111
116	117	118

Map Produced: January 2008

Map: 159

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Guilford, CT. 06437
Tel: 203.404.7129
www.ne-geo.com
info@ne-geo.com

1 inch equals 100 feet

100 0 100 200 300 400 500 600 Feet

50 0 50 100 150 200 Meters

Town of Southington, Connecticut 2004 Assessment Parcel Map

Map Coordinates based on NAD 83 Connecticut State Plane Feet.
Original planimetric features based on aerial photography dated April 1997. Planimetric features updated using aerial photography dated April 2004.

Map Produced October 2004

N W E S

Disclaimer:
This map is for informational purposes only.All information is subject to verification by any user. The Town of Southington and its mapping contractors assume no legal responsibility for the information contained herein.

Property Boundaries

- Easement
- Town Boundary
- Tax Maps
- Parcels

Structures and Buildings

- Stone Wall
- Fence or Gate
- Wall or Barrier
- Pools
- Building or Structure
- Greenhouse
- Decks, Wharf or Pier

Natural Features

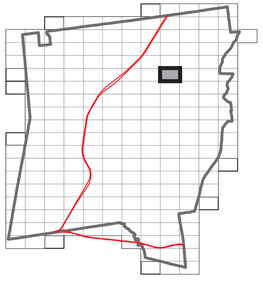
- Trees
- Streams
- Path or Trail
- Lake or Pond
- River
- Swamp
- Vegetation / Treeline
- Recreational / Sportfield

Roads and Transportation

- Rail Road Tracks
- Bridges
- Paved
- DriveWays and Parking Lots

170	171	172
158		160
146	147	148

Map: 159



ZONING MAP
Town of Guilford
State of Connecticut

*Effective Date :*_____

*Approved By :*_____

Zoning Legend and Classifications

Commercial
- C-1
- C-2
- C-2M
- C-4
- C-4W
- CD

Shopping Center
- SC

Service Center West
- SCW

Transitional and Service District
- TS
- TS2

Industrial
- I-1
- I-2

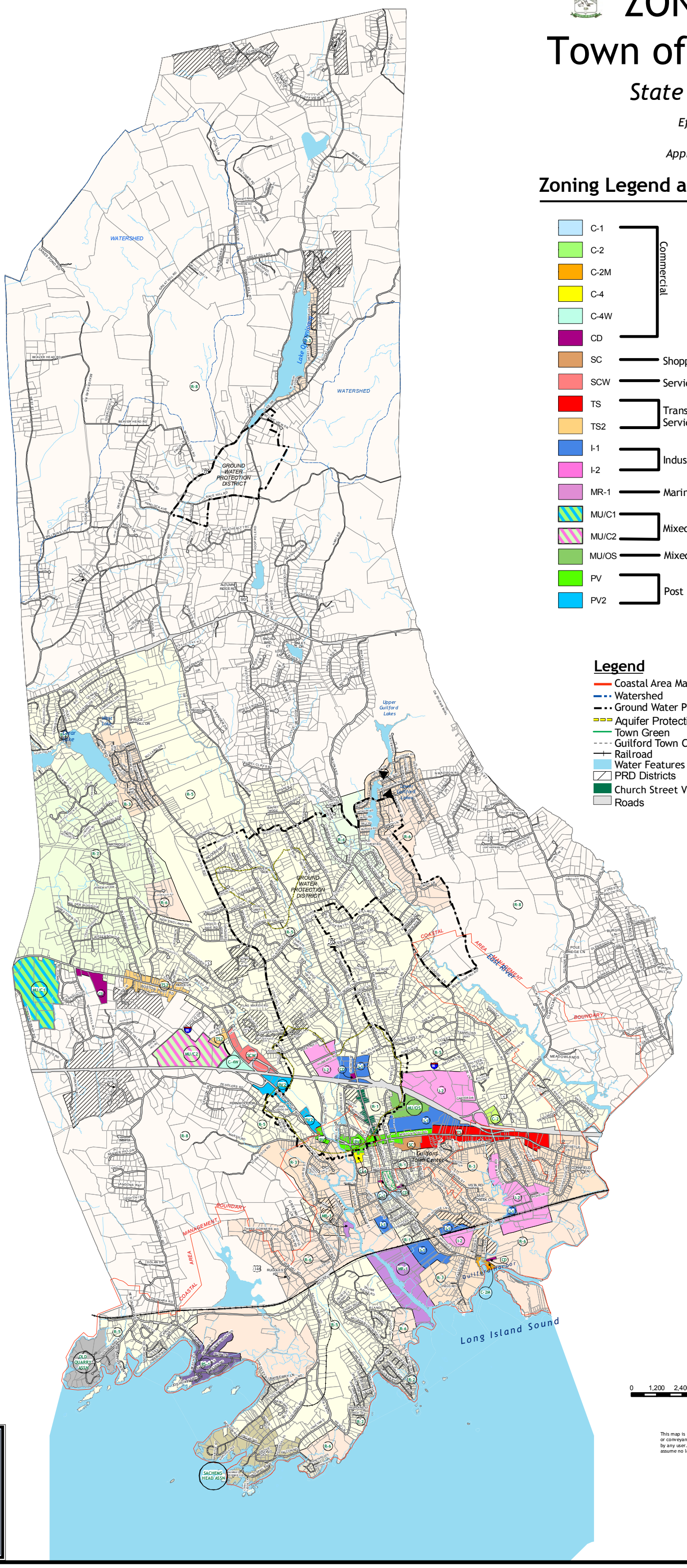
Marine Recreational
- MR-1

Mixed Use/Conservation
- MU/C1
- MU/C2

Mixed Use/Open Space
- MU/OS

Post Road Village Districts
- PV
- PV2

Residential
- R-1
- R-2
- R-3
- R-4
- R-5
- R-6
- R-7
- R-8
- RS-1
- SACHEMS HEAD ASSN
- OLD QUARRY ASSN



Legend
- Coastal Area Management Boundary
- Watershed
- Ground Water Protection District
- Aquifer Protection Area
- Town Green
- Guilford Town Center
- Railroad
- Water Features
- PRD Districts
- Church Street Village District
- Roads

N W E S

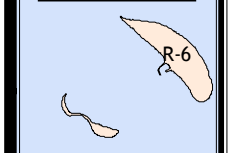
0 1,200 2,400 4,800 7,200 9,600 Feet

1 inch equals 4,500 feet

This map is for planning purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The Town of Guilford and its mapping contractors assume no legal responsibility for the information contained herein."

Map Printed October 2007

Faulkner Island



3.75 Miles South of Guilford Point

0 450 900 Feet

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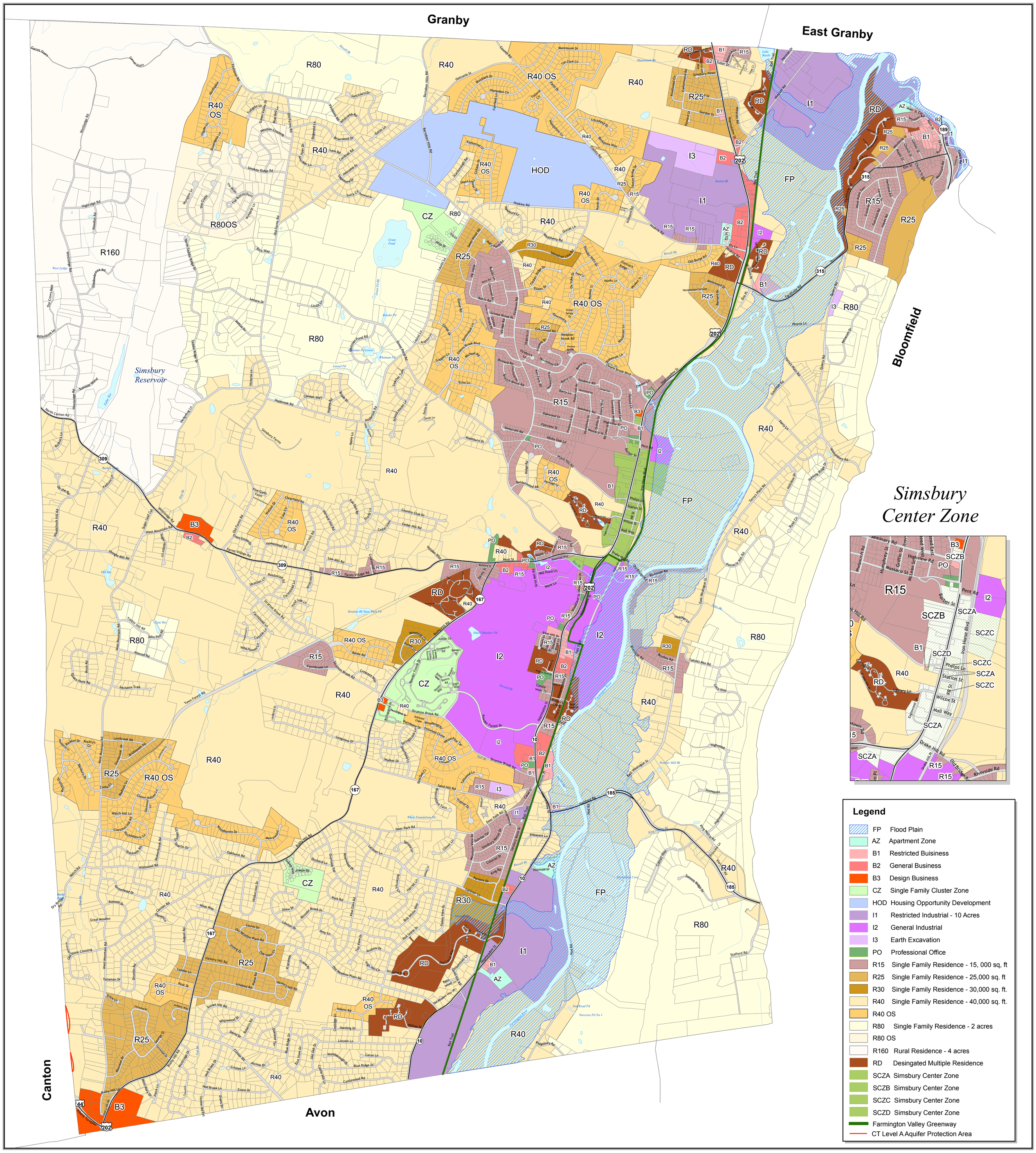


0 1,000 2,000 3,000 Feet

1 inch equals 1,000 feet

Map Effective 11/03/07

Signed: _____

Adopted: _____

Ammended: _____

Town of Simsbury
Zoning Map

DISCLAIMER

This map is for informational purposes only. For details regarding any specific parcel or zone, consult the Simsbury Land Records and Department of Community Planning and Development official records.

N W E S

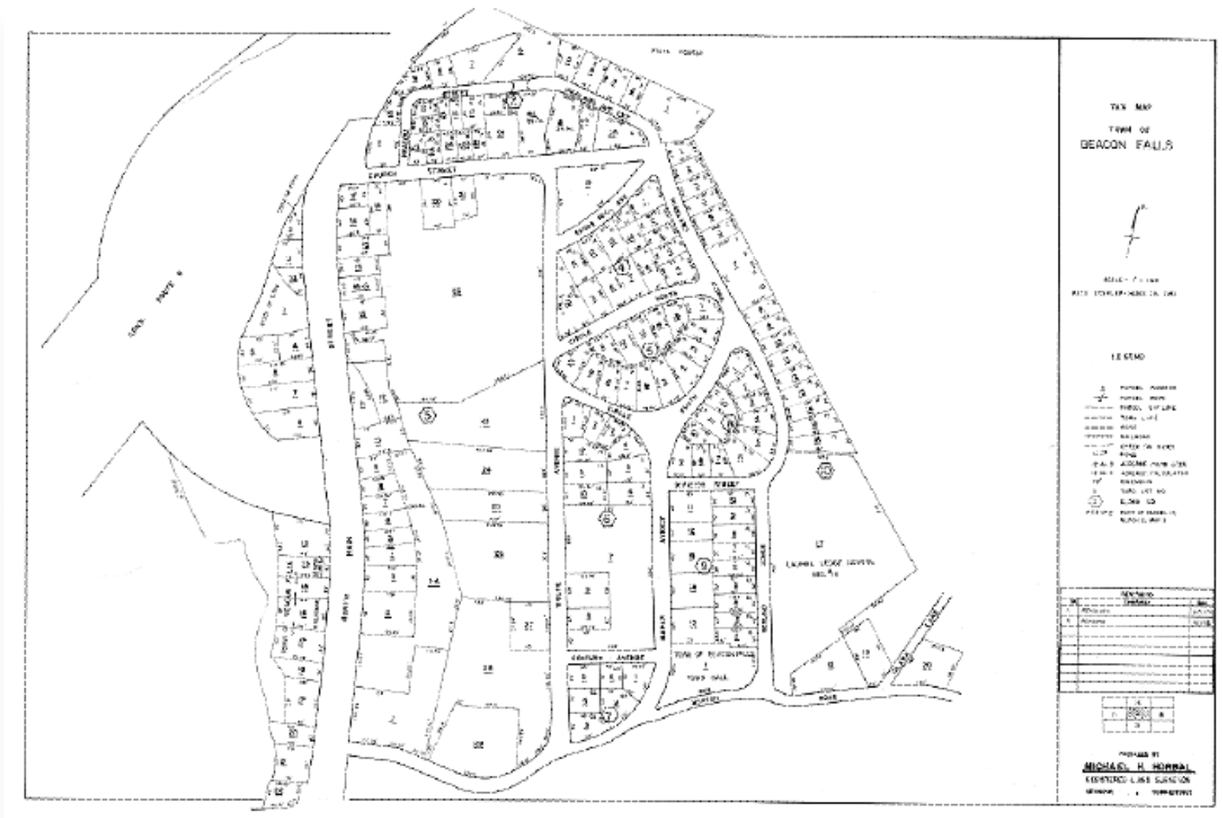
PREPARED BY THE TOWN OF SIMSBURY IN CONJUNCTION WITH:

NEW ENGLAND GEOSYSTEMS
Geographic Information System Consultants
1200 Boston Post Road - Suite 206
Guilford, CT 06437 - 203.404.7129 - www.ne-geo.com

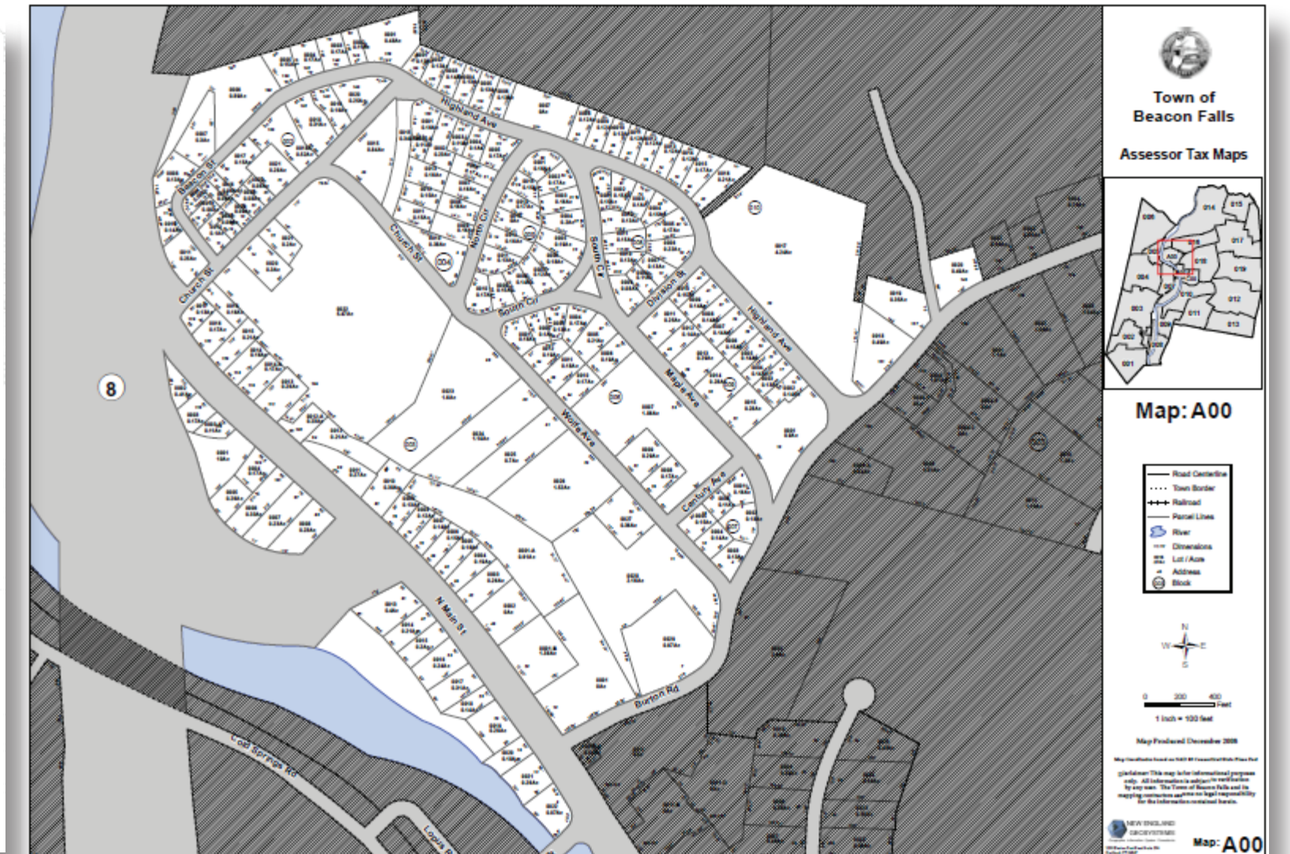
Map Printed March 2008

Tax Map GIS conversion

Before



After



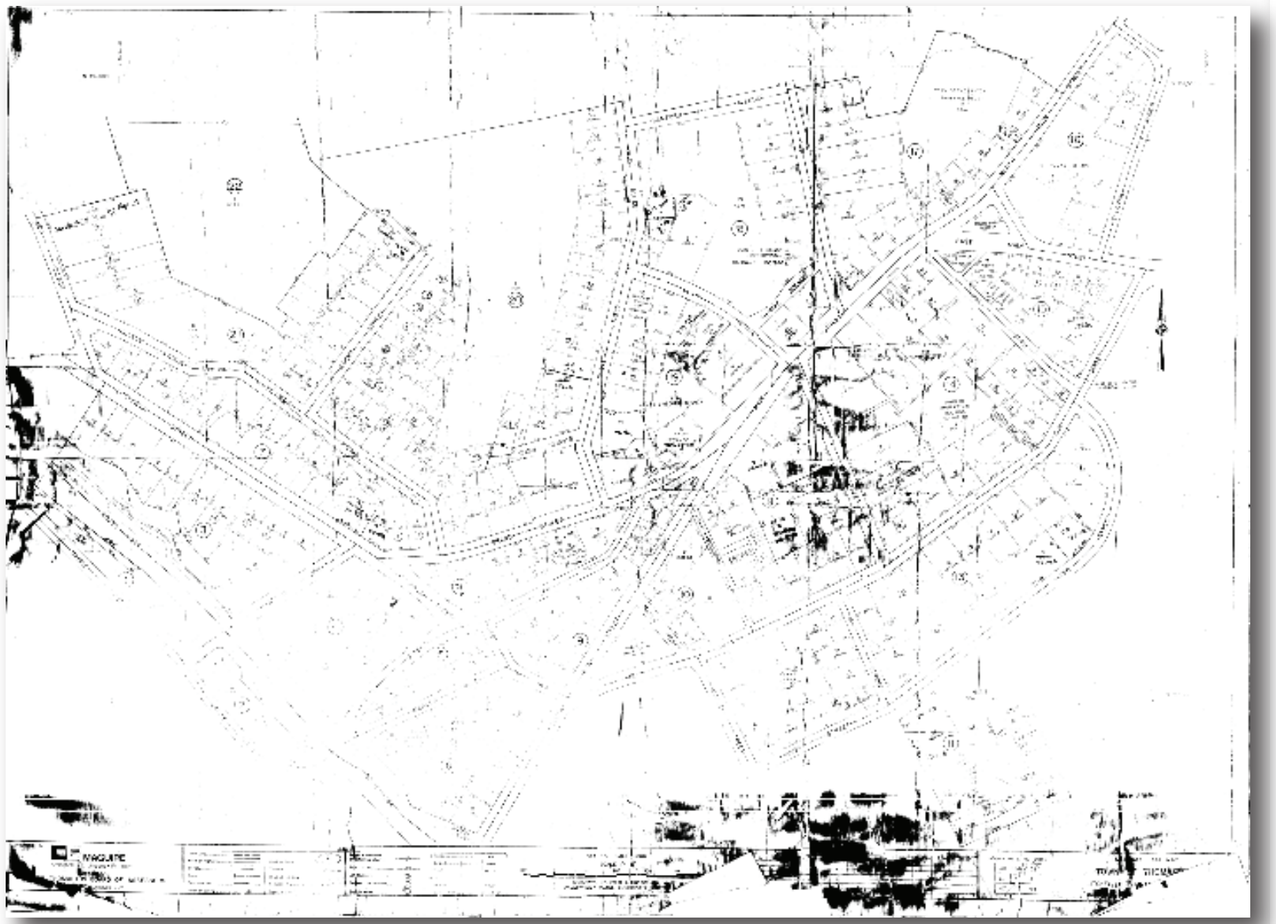
An example of Beacon Falls, CT original scanned paper maps converted into a workable tax map.

August 2009

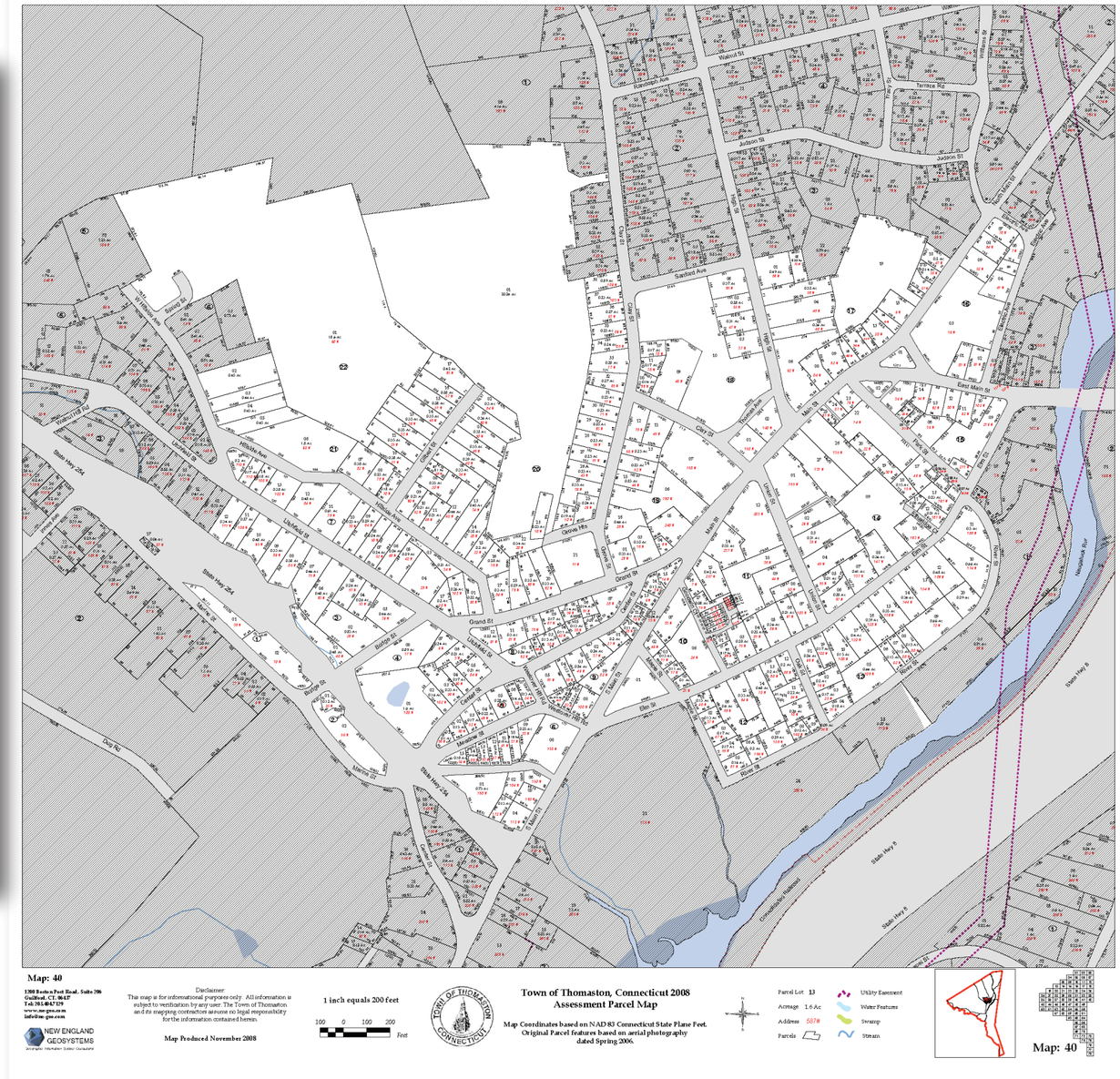
NEW ENGLAND GEOSYSTEMS
Geographic Information System Consultants

Tax Map GIS conversion

Before



After

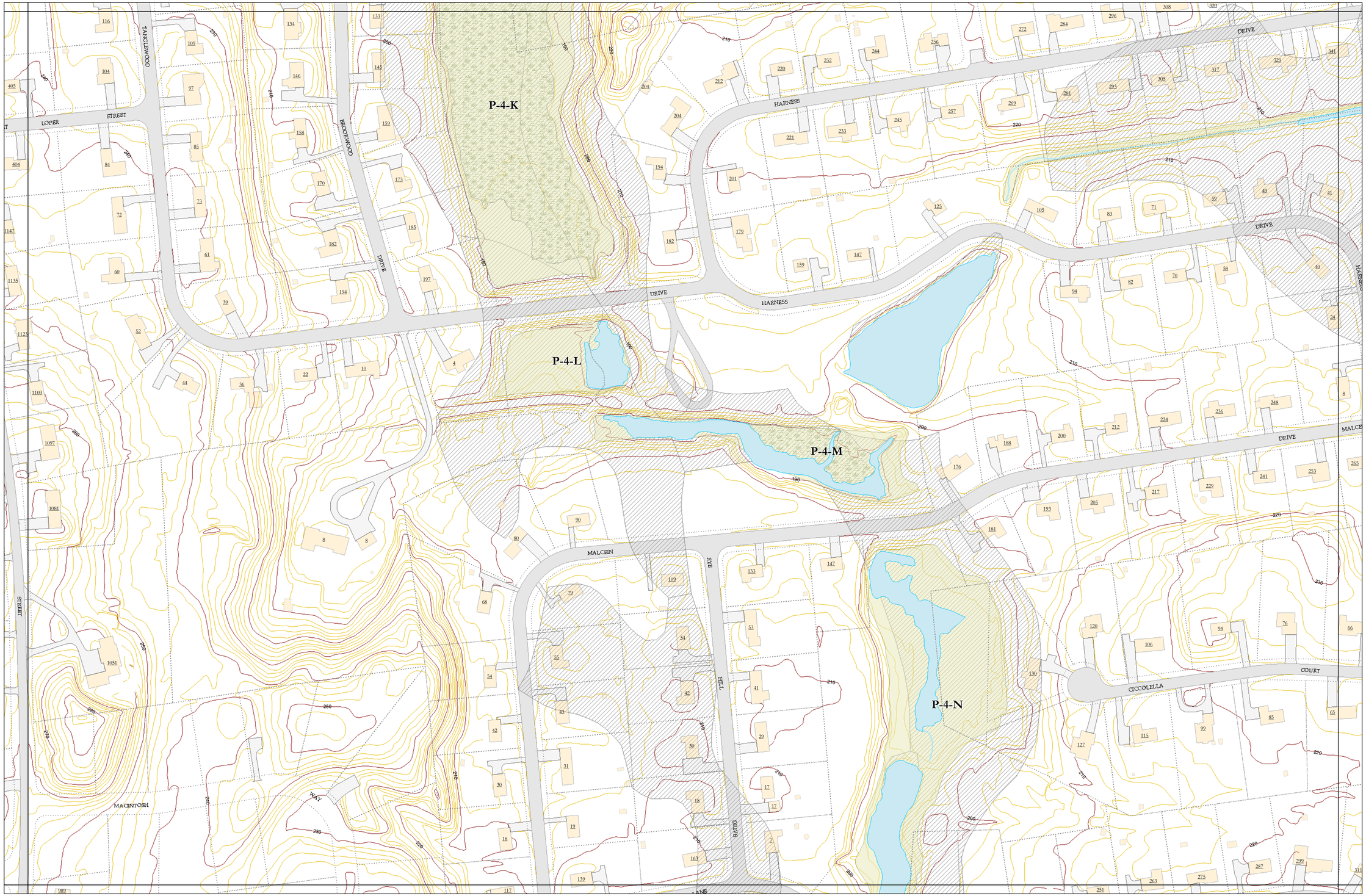


An example of Thomaston, CT original scanned paper maps converted into a workable tax map.

June 2010

NEW ENGLAND GEOSYSTEMS
Geographic Information System Consultants

Southington, Connecticut: 2006 INLAND WETLANDS



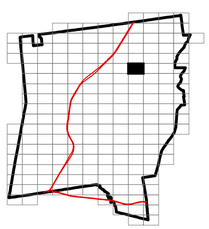
Planimetrics

- 23 — Buildings
- Town Border
- Parcel Boundary

Natural Features

- Stream
- River & Lake
- Surveyed Wetland
- Inland Wetland Boundary
  * Digitized from Inland Wetland town maps Year 2000
- Marshland
  * Digitized from aerial photographs Year 1998
- Intermediate Contour
  * 2 ft
- Index Contour
  * 10 ft
- Wetland Soil
  * National Cooperative Soil Survey 1985-2001

SHEET 159



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Tel: 203.404.7129
www.ne-geo.com
info@ne-geo.com

SHEET 159

Planimetric features complied and controlled by New England GeoSystems, Guilford, Connecticut. Planimetric features developed through the use of 2002 areial photographs.

N W E S

Map Printed February 2006

The location of Hydrological and Planimetric features shown on this map are to be considered approximate. The Town of Southington will not be responsible for their accuracy

1 inch equals 100 feet

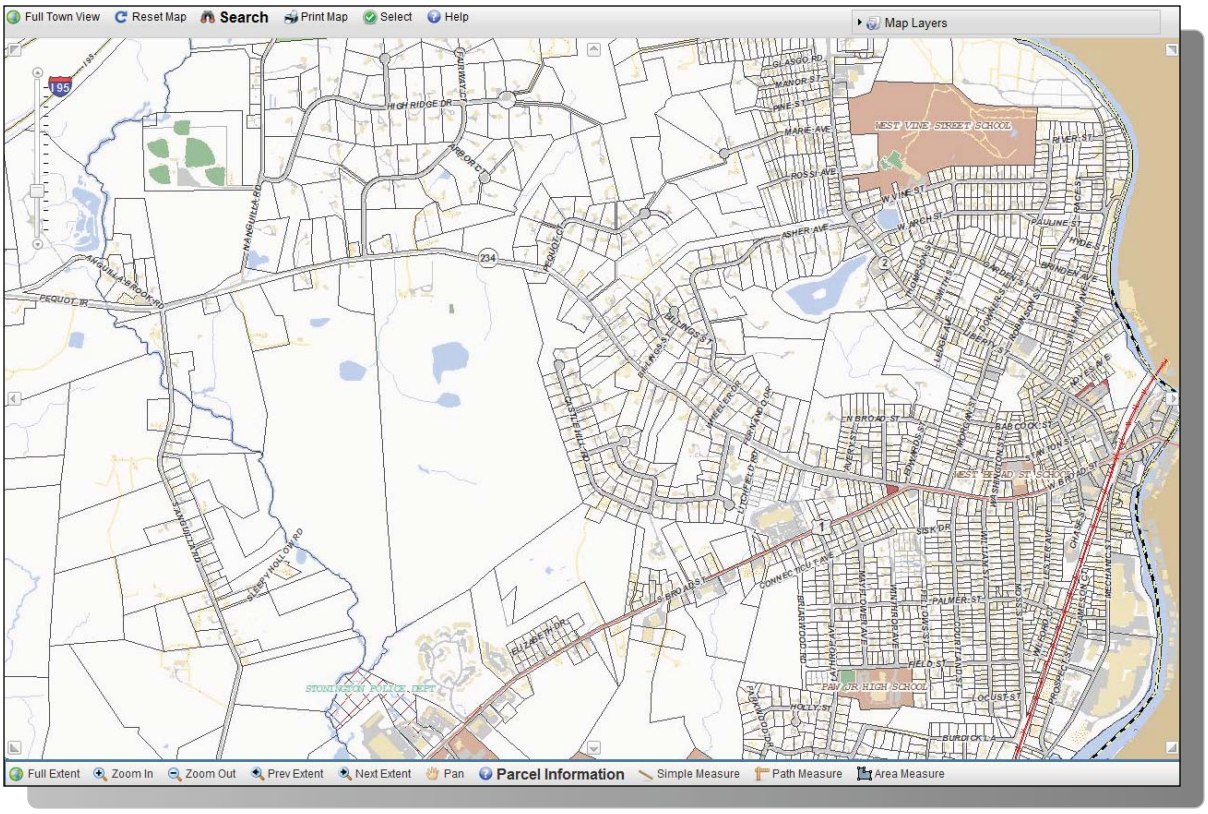
100 0 100 200 300 400 Feet

Appendix D

MapXpress Help

mapXpress

MapXpress Help Guide



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Guilford, CT 06437
203 404 - 7129

NEW ENGLAND GEOSYSTEMS
GEOGRAPHIC INFORMATION SYSTEM CONSULTANTS

Table of Contents

1... Navigation Tools

2... Map Layers: Turning On and Off Data Layers

3... Searching By Name, Address, Unique ID or Theme

4... Search Results

5... Identifying Properties on a Map

6... Multi-Owner & Multi-Property Tools

7... Creating Abutters Lists, Printable Mailing Labels & Exporting Excel Spreadsheets

8... Printing a Custom Map at a Set Scale

9... Tools for Measuring Distance & Area

Navigation Tools -

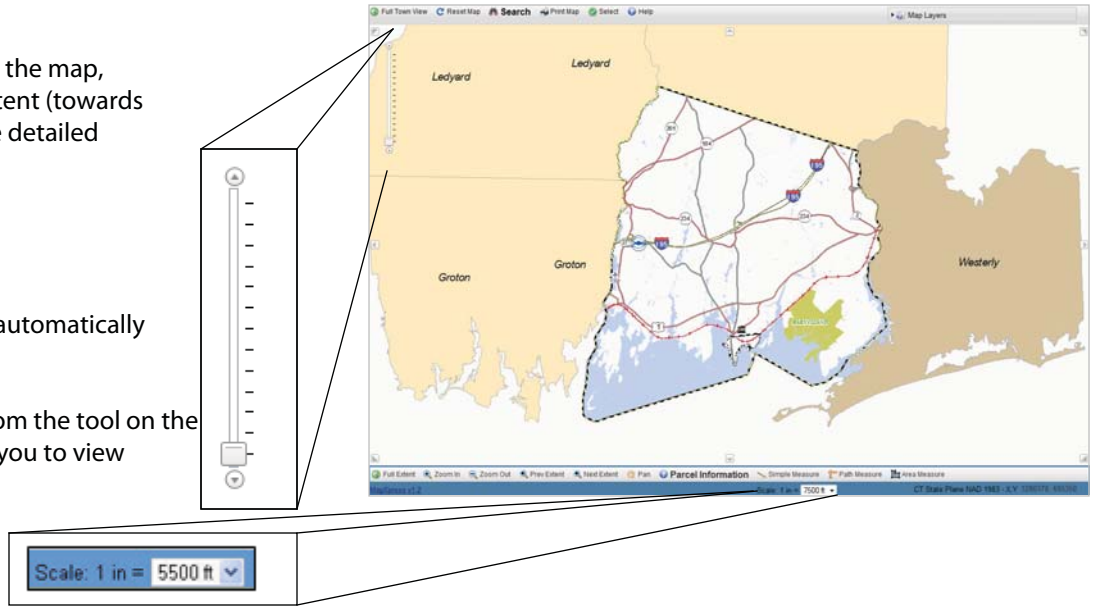
MapXpress's navigation was designed to be incredibly client friendly and uses the same functionality of Google Maps.

The zoom bar allows to you to scale the map, smoothly flowing between a full extent (towards the bottom of the scale) and a more detailed view (towards the top of the scale).

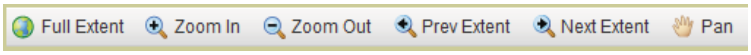
Additional Methods:

Double-Clicking a specific area will automatically zoom-in on the targeted location.

Selecting a pre-determined scale from the tool on the the bottom of the screen will allow you to view all maps equal distances.



A variety of traditional viewing tools are always available on the tool bar to users who are more familiar with online map navigation.



- ***Full Extent***: Returns the map to its Full View

- ***Zoom In***: By drawing a box around the desired area, the map will close in on the targeted space

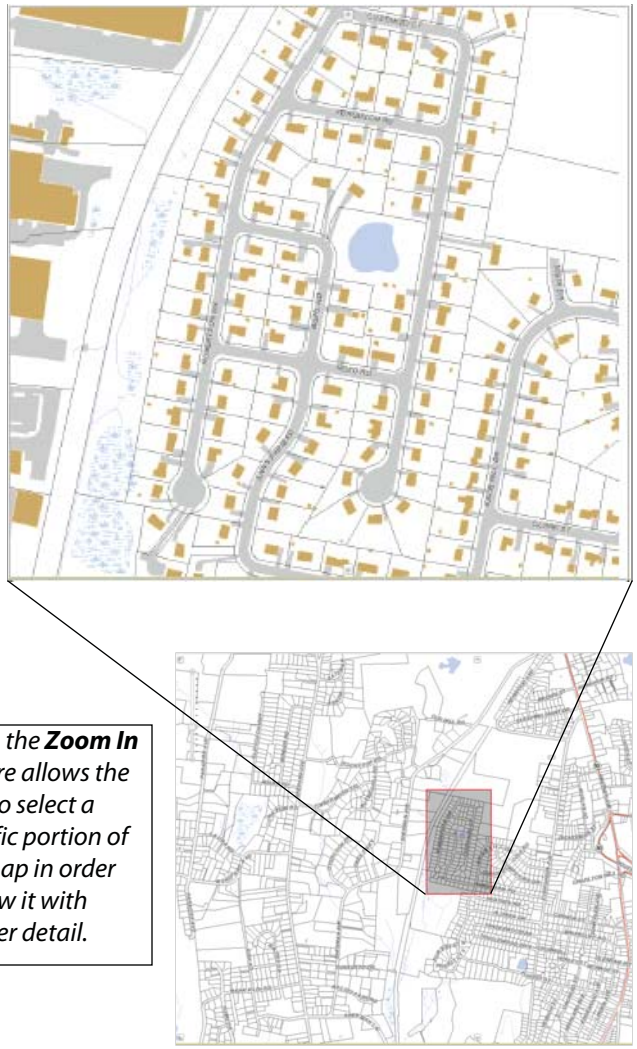
- ***Zoom out***: By drawing a box around the desired area, the map will open out to the targeted space

- ***Prev Extent***: Brings the map back to the last area viewed by the user

- ***Next Extent***: Allows the user to return to the area which was left from the previous extent

- ***Pan***: By left-clicking and holding down the mouse button, allows for free-form movement around the entire map at one scale.

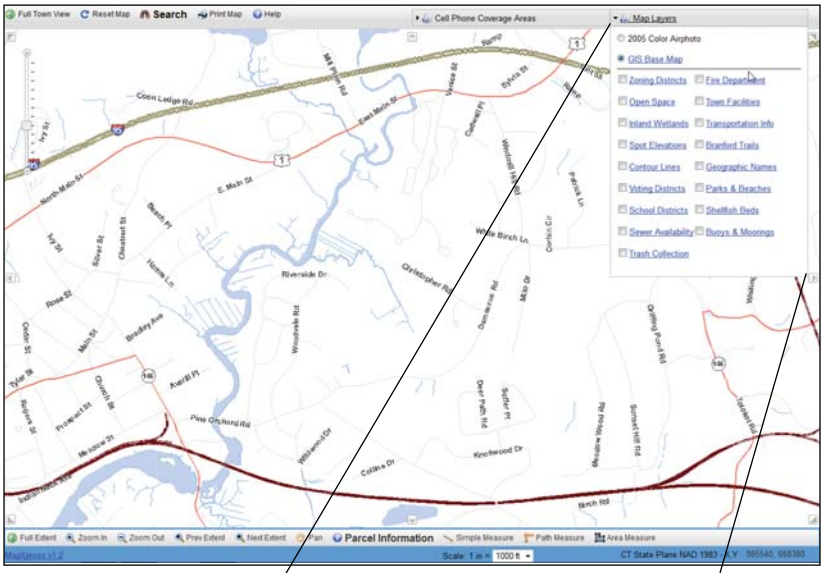
* If you cannot select a specific parcel after using one of the above tools, you can select the "Parcel Information" button to the right of the tool bar.



*Using the **Zoom In** feature allows the user to select a specific portion of the map in order to view it with greater detail.*

Map Layers: Turning on and off Data Layers -

MapXpress's map layer control was designed to make the mapping experience as user friendly as possible



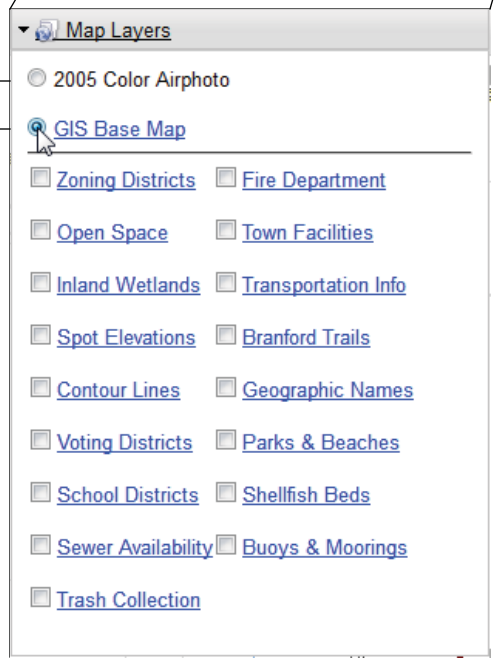
Layer Selection:

By selecting the checkbox to the left of the layer name you will be able to toggle the layers on or off. Because the layer list is designed to be customized to your needs, you can turn as many layers as you need on or off, as well as set defaults for which layers will always need or for those you may never.

If a layer does not exist that is vital to your departmental needs, please contact the person in charge of GIS requests.

Preset Views:

In addition to selecting individual layers, you can also choose from preset scenarios (seen here, the "2005 Color Airphoto" and the "GIS Base Map"). These presets have all necessary layers turned on and extraneous layers turned off to optimize the view.



Hovering your mouse over any layer in the Map Layers drop-down will return an image of the legend

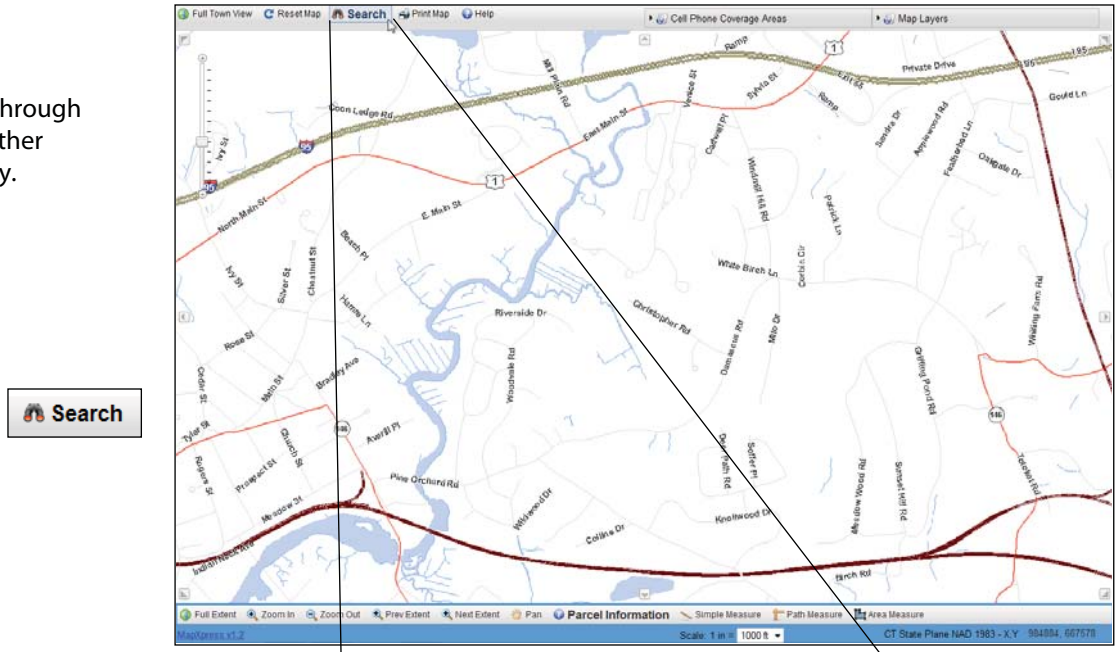
Searching by Name, Address, Unique ID or Theme-

Allows the user to easily find specific properties by a variety of options.

Basic searching:

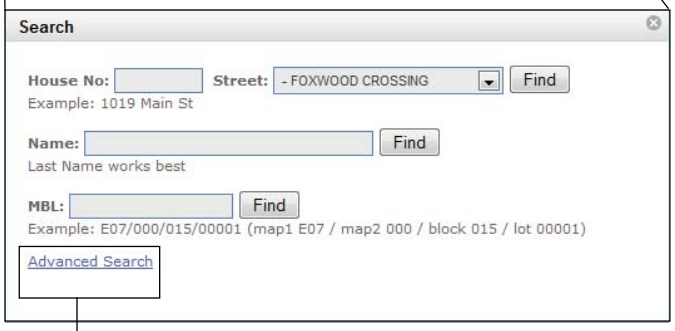
MapXpress can be searched through Name, Address, MBL or any other identifier unique to a property.

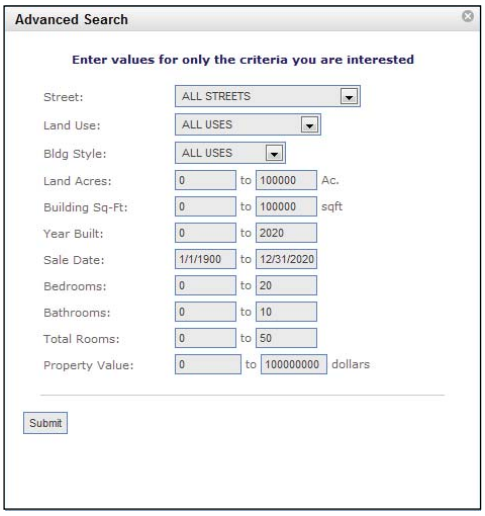
Clicking on the search icon in the top left corner opens the Search Dialog box.



Search Box:

The street drop down list is generated directly from the Assessor database, which is updated on a schedule to determined by the assessor's department to ensure that all streets are current.



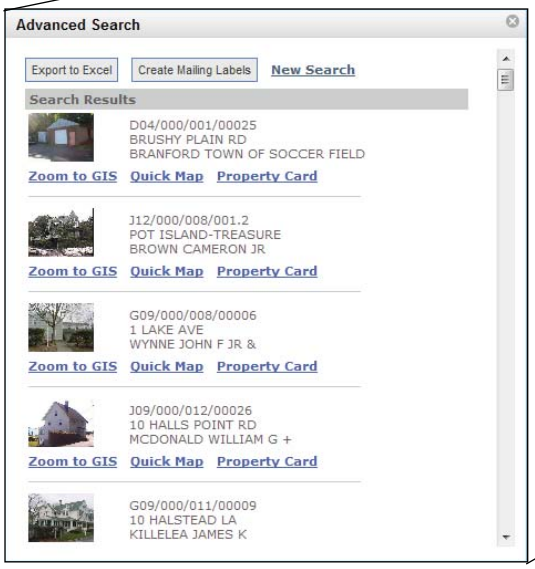


Advanced Searching:

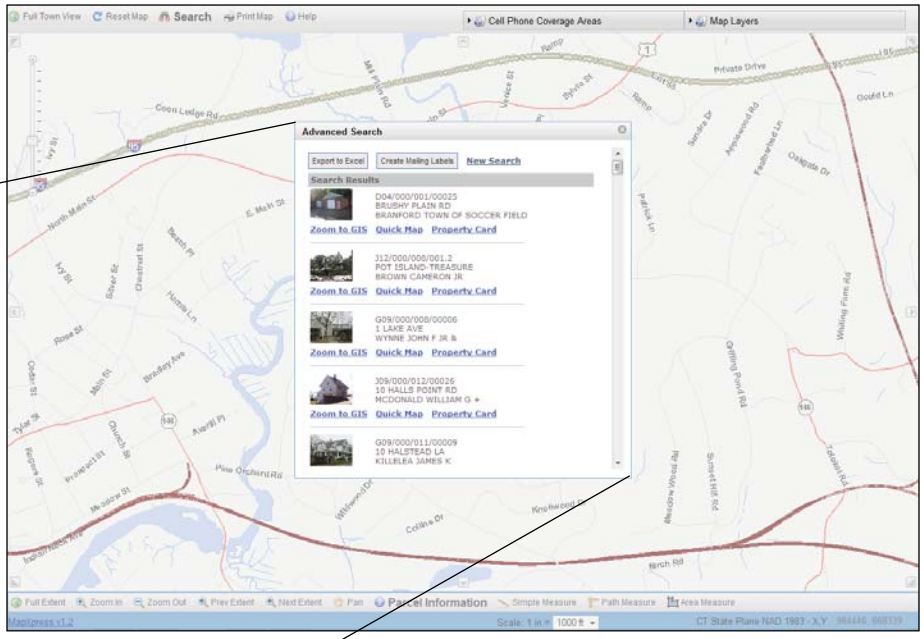
The Advanced Search can be used to find properties based on criteria that may not be unique to a single property. For example, a search can be performed to return all vacant properties with over 10 acres or all properties with five bedrooms over 3,000 square feet sold since 2005.

The default Advanced Search categories are: Street, Land Use, Building Style, Land Acres. Building Square Feet, Year Built, Sale Date, Bedrooms, Bathrooms, Total Rooms, and Property Value. These search criteria are fully customizable and can be can be changed to any searchable fields within the Assessor's or other joined databases.

Search Results -

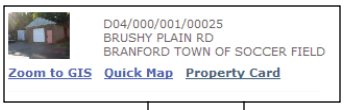


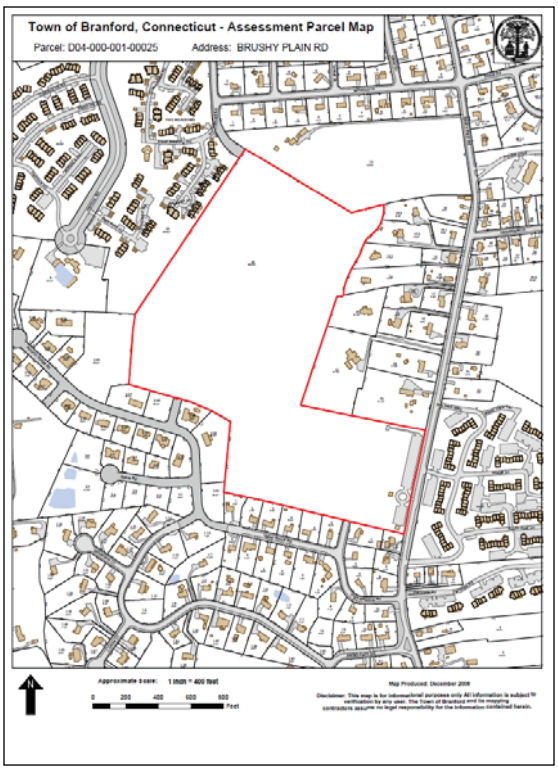
The standard search results list.

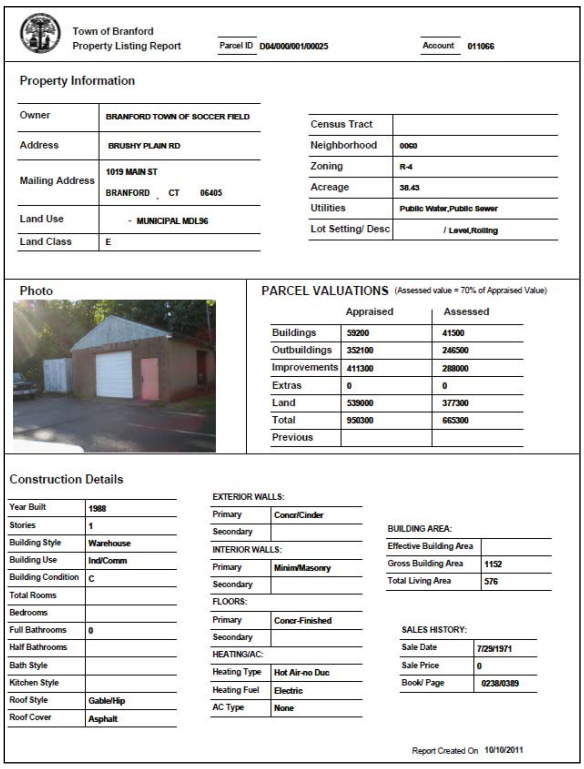


Search Results options:

MapXpress search results are designed to quickly provide information. If a user only needs a Property Card or Quick Map they can access it from the search results window. If more information is required, clicking on the "Zoom to GIS" button will center the map to the selected property.







Town of Branford
Property Listing Report

Parcel ID D04/000/001/00025 Account 011066

Property Information

Owner	BRANFORD TOWN OF SOCCER FIELD
Address	BRUSHY PLAIN RD
Mailing Address	1019 MAIN ST BRANFORD CT 06405
Land Use	- MUNICIPAL MDL96
Land Class	E

Census Tract	
Neighborhood	0060
Zoning	R-4
Acreage	38.43
Utilities	Public Water,Public Sewer
Lot Setting/ Desc	/ Level,Rolling

Photo

PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings	59200	41500
Outbuildings	352100	246500
Improvements	411300	288000
Extras	0	0
Land	539000	377300
Total	950300	665300
Previous		

Construction Details

Year Built	1988
Stories	1
Building Style	Warehouse
Building Use	Ind/Comm
Building Condition	C
Total Rooms	
Bedrooms	
Full Bathrooms	0
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Gable/Hip
Roof Cover	Asphalt

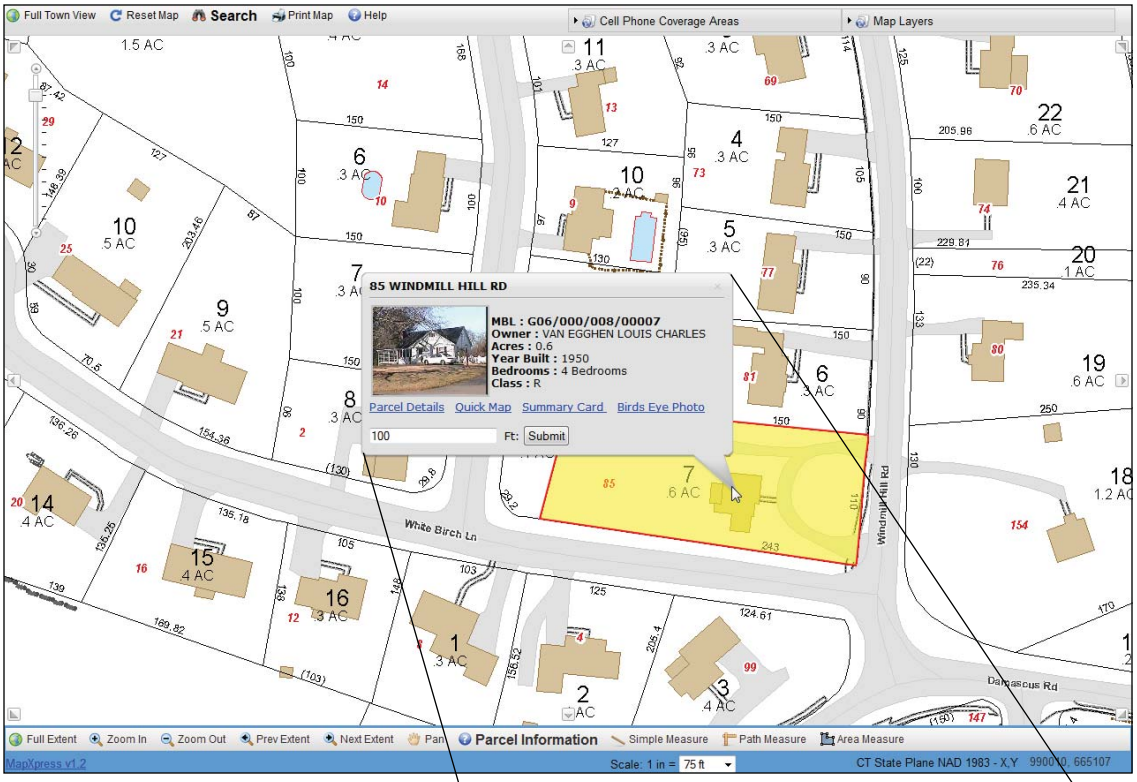
EXTERIOR WALLS:	
Primary	Concr/Cinder
Secondary	
INTERIOR WALLS:	
Primary	Minim/Masonry
Secondary	
FLOORS:	
Primary	Concr-Finished
Secondary	
HEATING/AC:	
Heating Type	Hot Air-no Duc
Heating Fuel	Electric
AC Type	None

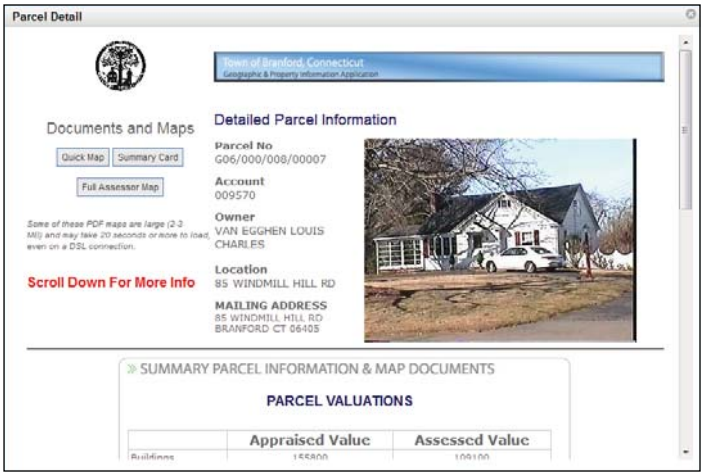
BUILDING AREA:	
Effective Building Area	
Gross Building Area	1152
Total Living Area	576

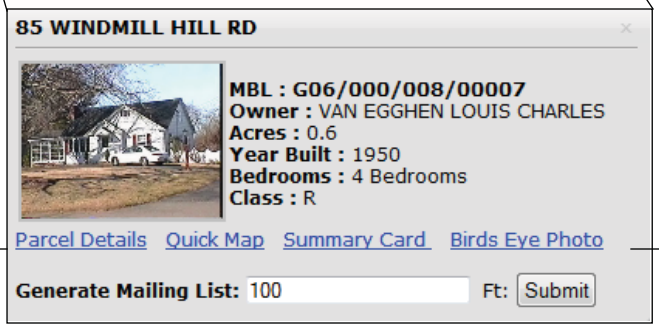
SALES HISTORY:	
Sale Date	7/29/1971
Sale Price	0
Book/ Page	0238/0389

Report Created On 10/10/2011

Identifying Properties on a Map -







Building Photo: From the road Point-of-View image of the property, which can be enlarged by clicking on it

Property Info: A customizable text display showing any cama features of the property

Parcel Details: Detailed page with all property information listed which is directly derived from the cama database

Quick Map: Static PDF of selected property highlighted in red

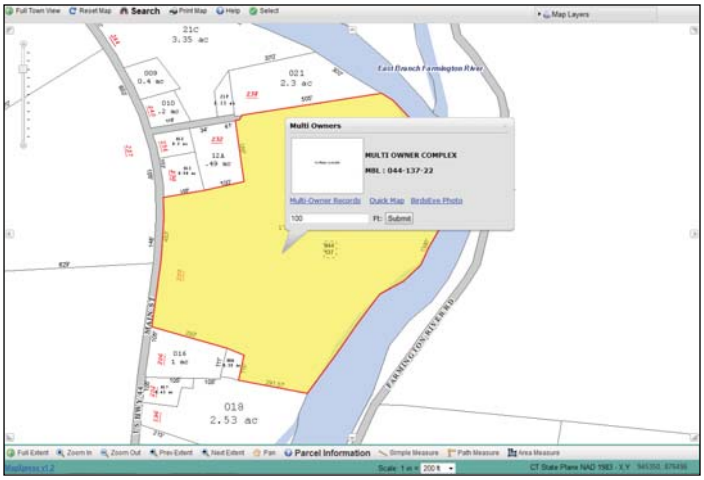
Summary Card: Dynamic PDF with up to date property information

Birds Eye Photo: Live link to Microsoft Live Maps Birds-eye view

Generate Mailing List: Tool for creating abutters lists

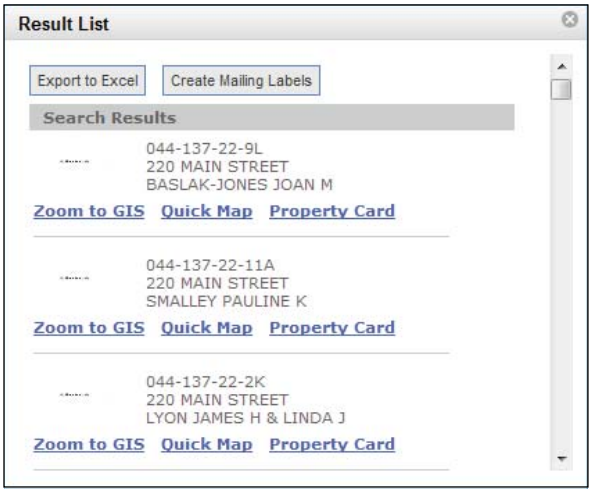
Multi-Owner & Multi-Property Tools -

Multi-Owner Selection:



Selecting a parcel that has multiple owners will prompt you with the "Multi Owners" dialog box

Selecting the "Multi-Owner Records" button to view the entire results list

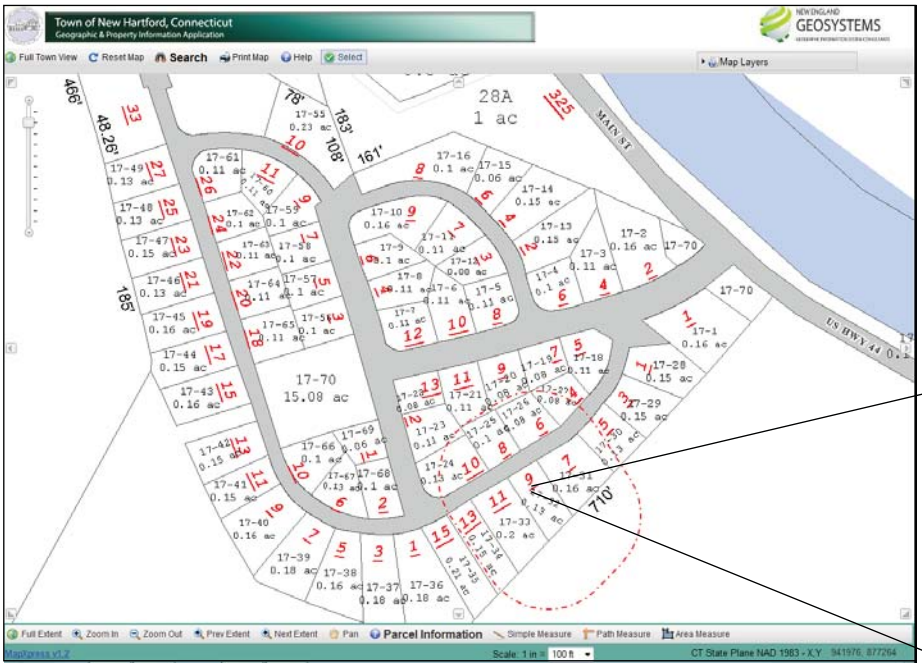


All property owners within a condo complex, on a property with more than one cama record.

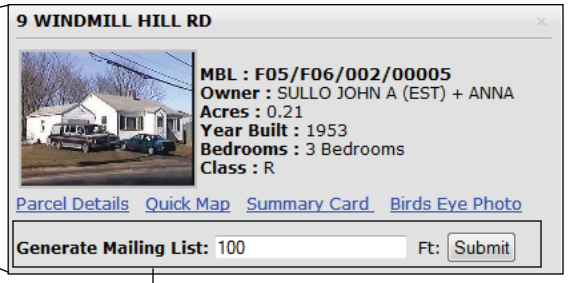
Multi-Property Selection:

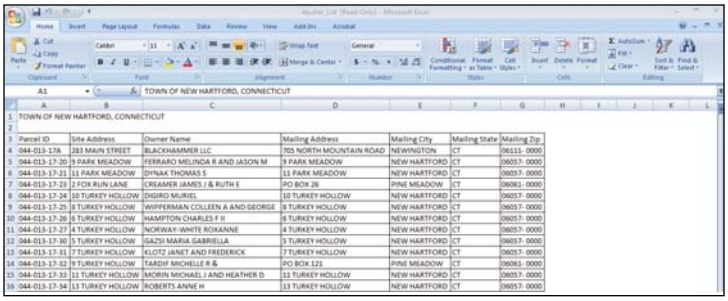
Using the select button will allow you to choose multiple properties. Once you have selected the final property, double-click on it again to bring up the results list

Creating Abutters Lists, Printable Mailing Labels & Exporting Excel Spreadsheets -

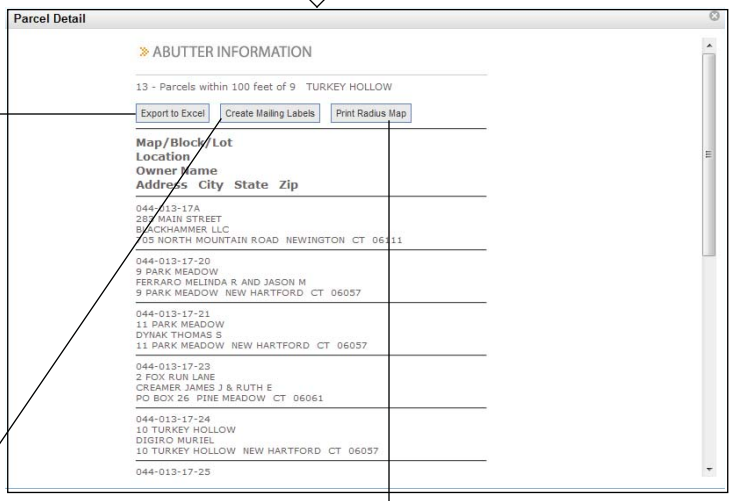


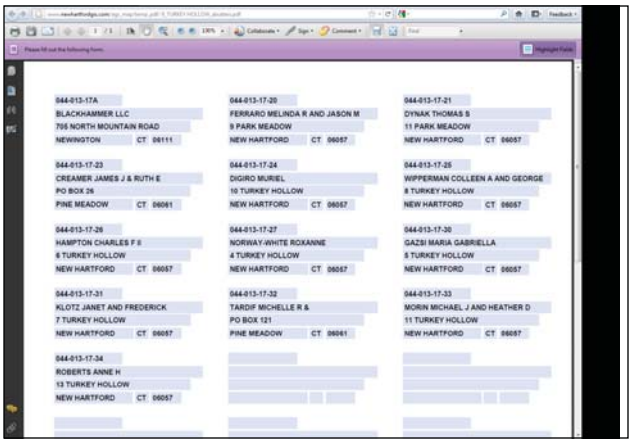
MapXpress's Abutters feature allows the user to define the desire buffering distance (i.e - adjacent, 50- feet, 100- feet, etc.) to create an Abutters list.



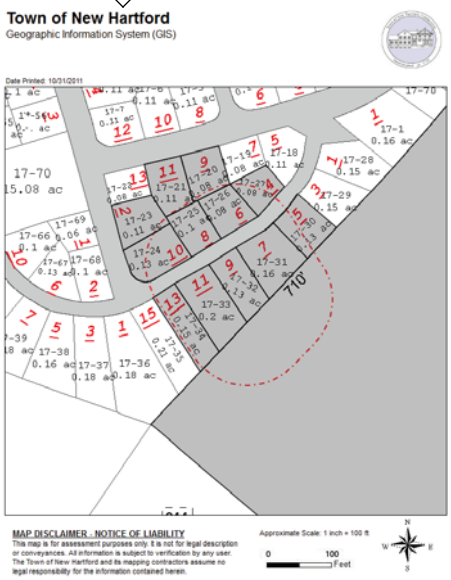


Parcel ID	Site Address	Owner Name	Mailing Address	Mailing City	Mailing State	Mailing Zip
044-013-17A	283 MAIN STREET	BLACKHAMMER LLC	705 NORTH MOUNTAIN ROAD	NEWINGTON	CT	06111- 0000
044-013-17-20	9 PARK MEADOW	FERRARO MELINDA R AND JASON M	9 PARK MEADOW	NEW HARTFORD	CT	06057- 0000
044-013-17-21	11 PARK MEADOW	DYNAK THOMAS S	11 PARK MEADOW	NEW HARTFORD	CT	06057- 0000
044-013-17-23	2 FOX RUN LANE	CREAMER JAMES J & RUTH E	PO BOX 26	PINE MEADOW	CT	06061- 0000
044-013-17-24	10 TURKEY HOLLOW	DIGIRO MURIEL	10 TURKEY HOLLOW	NEW HARTFORD	CT	06057- 0000
044-013-17-25	8 TURKEY HOLLOW	WIPPERMAN COLLEEN A AND GEORGE	8 TURKEY HOLLOW	NEW HARTFORD	CT	06057- 0000
044-013-17-26	6 TURKEY HOLLOW	HAMPTON CHARLES F II	6 TURKEY HOLLOW	NEW HARTFORD	CT	06057- 0000
044-013-17-27	4 TURKEY HOLLOW	NORWAY-WHITE ROXANNE	4 TURKEY HOLLOW	NEW HARTFORD	CT	06057- 0000
044-013-17-30	5 TURKEY HOLLOW	GAZSI MARIA GABRIELLA	5 TURKEY HOLLOW	NEW HARTFORD	CT	06057- 0000
044-013-17-31	7 TURKEY HOLLOW	KLOTZ JANET AND FREDERICK	7 TURKEY HOLLOW	NEW HARTFORD	CT	06057- 0000
044-013-17-32	9 TURKEY HOLLOW	TARDIF MICHELLE R &	PO BOX 121	PINE MEADOW	CT	06061- 0000
044-013-17-33	11 TURKEY HOLLOW	MORIN MICHAEL J AND HEATHER D	11 TURKEY HOLLOW	NEW HARTFORD	CT	06057- 0000
044-013-17-34	13 TURKEY HOLLOW	ROBERTS ANNE H	13 TURKEY HOLLOW	NEW HARTFORD	CT	06057- 0000





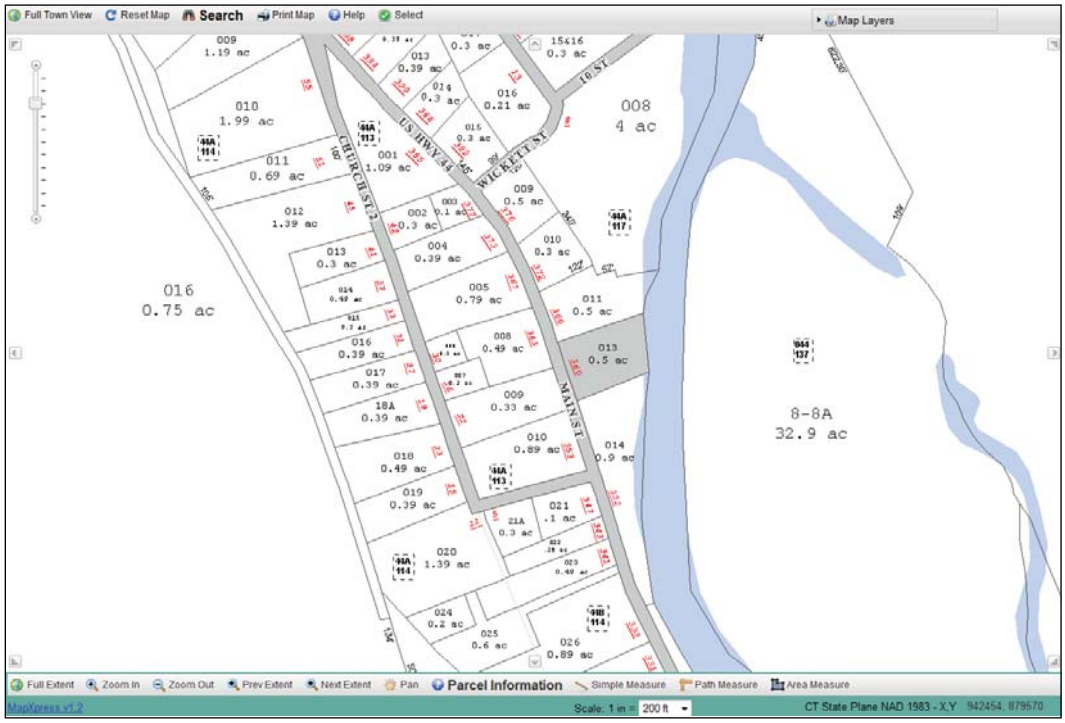
Once the Abutters List has been created, the user has the option of exporting the list to an Excel Document or exporting it as a PDF from which you can easily print Mailing Labels. Both files have the option to be saved on the users computer.

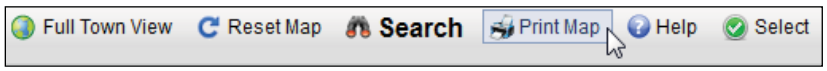


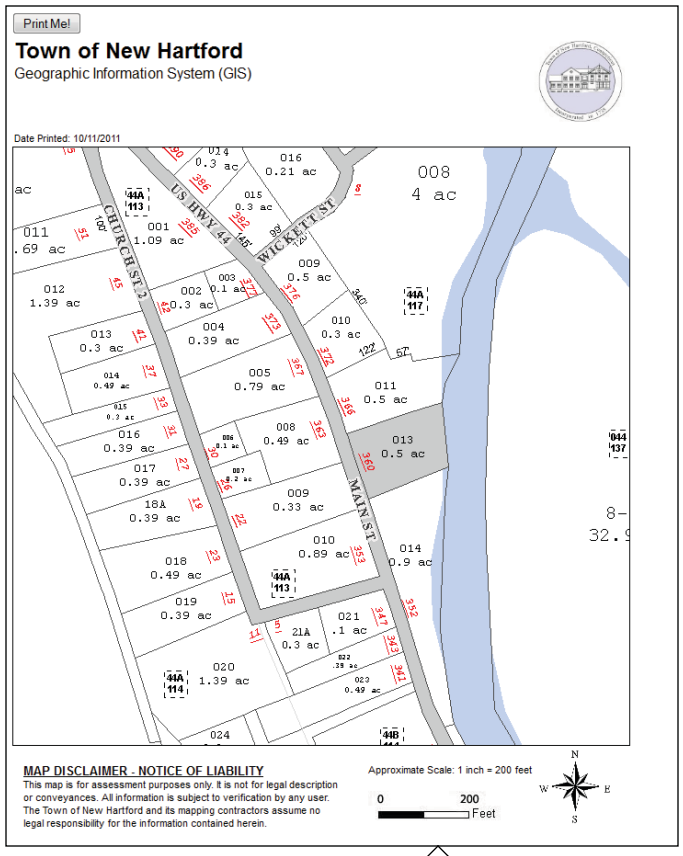
Printing a Custom Map at a Set Scale -

Printing:

To print a specific area of map, the user must only have their map showing it on screen and select the "Print Map" button towards the top-left of the screen. A variety of printing styles are available depending on the type of printer you have.

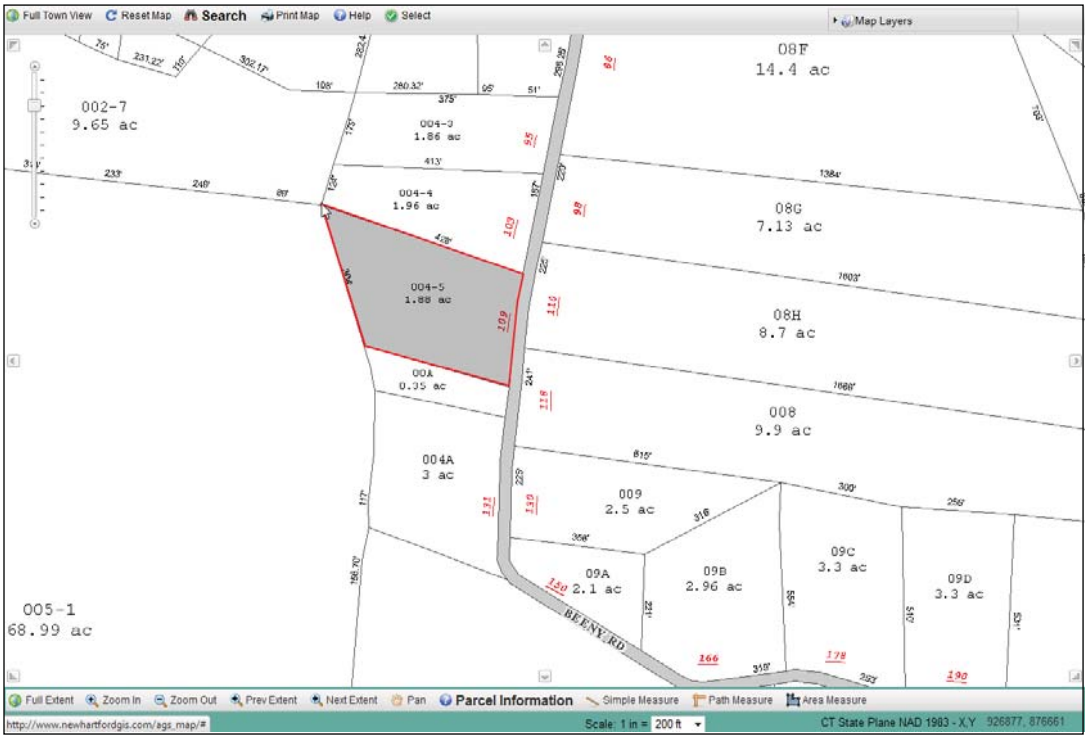


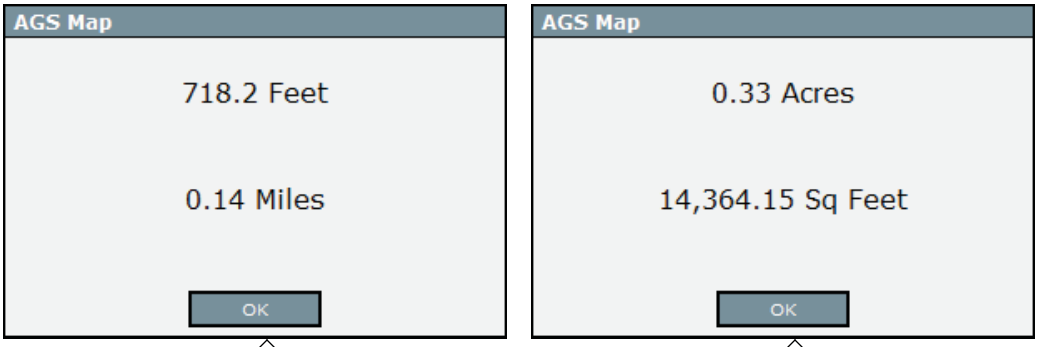




If multiple maps need to be printed, you can use the preset scale bar at the bottom of the screen (discussed in the **Navigation Tools** page) to ensure that all maps are at the same fixed extent. This can be verified by the scale bar at the bottom-right corner of the printed map.

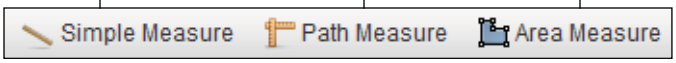
Tools for Measuring Distance & Area -





Simple Measure:

After selecting the "Simple Measure" tool, left-click where you would like to begin and left-click again on where you would like the line. The resultant distance will appear automatically on the screen.



Simple Measure: Used to measure a single, straight line

Path Measure: Used to measure a series of lines(i.e. - the length of a winding road)

Area Measure: Used to measure the approximate area (in acres) of a highlighted area

Measuring an area or path:

After selecting either the "Path Measure" or the "Area Measure" tool, left-click on the map where you would like to begin, and continue to left-click on all points to create the desired shape. Once the shape or line has been completed, double-click on the final point for the resultant "Distance / Area Results" dialog box to appear on the screen. "Path Measure" is displayed in feet and miles while "Area Measure" in acreage and square feet.

Tighe&Bond

SECTION 8

Section 8 Total Cost of Services

Tighe & Bond will perform all services proposed above for a total cost of:

$190,100 - for tasks as requested in RFQ.
$213,590 - for tasks as requested in RFQ plus optional services discussed in responses to RFQ questions.

* A **$9,000 reduction** in either option above will be offered if Tasks 1-3 commence in October 2013 and GL 2013 parcel updates are included in the initial GIS data development.

Task	Deliverables	Base Bid	Optional Services
1	Develop ESRI topologically correct ArcGIS Parcel Geodatabase version 10.x for Burlington Tax map text, lot dimensions, etc.	$16,300	$5,840
2	ESRI topologically correct ArcGIS Parcel Geodatabase version 10.x for Plainville Tax map text, lot dimensions, etc.	$30,300	$9,950
3	ESRI topologically correct ArcGIS Parcel Geodatabase version 10.x for Plymouth Tax map text, lot dimensions, etc.	$22,700	$7,720
4	Five year update and maintenance services for the Town of Burlington's parcel database (including 500 updates) * Include 2013 updates with initial GIS data development	$15,200 *($12,450)	
5	Five year update and maintenance services for the Town of Plainville's parcel database (including 500 updates) * Include 2013 updates with initial GIS data development	$17,950 *($14,700)	
6	Five year update and maintenance services for the Town of Plymouth's parcel database (including 500 updates) * Include 2013 updates with initial GIS data development	$16,600 *($13,575)	
7	Implement Regional GIS Website for 5-7 communities	$5,000	
8	Website hosting and maintenance for 5-7 communities.	$66,050	

Section 8 Cost Proposal

Fees

Please note that this is a fee-for-service endeavor. Fuss & O'Neill proposes to provide the professional services described above on a lump-sum basis for a fee of **$171,000**. Our policy is to invoice on a monthly basis using a percent complete for this phase of the design project.

This price assumes that we will be able to take plans and tax maps off site (to 146 Hartford Rd, Manchester, CT) for scanning, and that those plans are organized and ready for our removal. This price also assumes that at least 4 of the 7 communities will independently sign on with us for internet mapping sites at $3,600/year.

In the next section you will find four separate options, broken out by task for your review. The price quoted here, coincides with our first option—Level 2 parcels without annotation. We would strongly urge you to accept option 2—Level 2 parcels with dimensions, as the loss of dimension text will be detrimental to the conversion and may result in towns not accepting this data.

Deliverables	Schedule
5. Five year prepaid maintenance contract for Plainville (including 500 updates)	Semi-annually, within 30 days receipt of final data to be processed and incorporated.
6. Five year prepaid maintenance contract for Plymouth (including 500 updates)	Semi-annually, within 30 days receipt of final data to be processed and incorporated.
7. Regional GIS website that integrates data created in items 1-6 as well as equivalent data supplied by Berlin, Bristol, New Britain, and Southington. The website should include mapping, assessor-linked query, and basic analysis capabilities; integration with other freely-available layers; and download links for raw data.	Within 180 days receipt of fully executed contract.
8. Five year maintenance contract for hosting and maintenance of regional GIS website, including updates to the user interface and underlying software platform; integration of new and changed parcels; and inclusion of updates to other freely-available layers.	Semi-annually in coordination with parcel maintenance services.

8. Cost of Services (All Inclusive)

The CCRPA shall pay $265,815.00 for all Tasks and Deliverables as outlined in Section 7, which represents a 10% discount, assuming all services are contract at the same time.

9. Cost of Services (A La Carte)

If the CCRPA chooses to contract for any Deliverables as separate items, the associated costs shall be as outlined below:

Deliverables	Cost
1. ESRI ArcGIS File Geodatabase version 10 or above for Burlington (estimated number of parcels: 3,700)	$20,350.00
2. ESRI ArcGIS File Geodatabase version 10 or above for Plainville (estimated number of parcels: 7,200)	$39,600.00