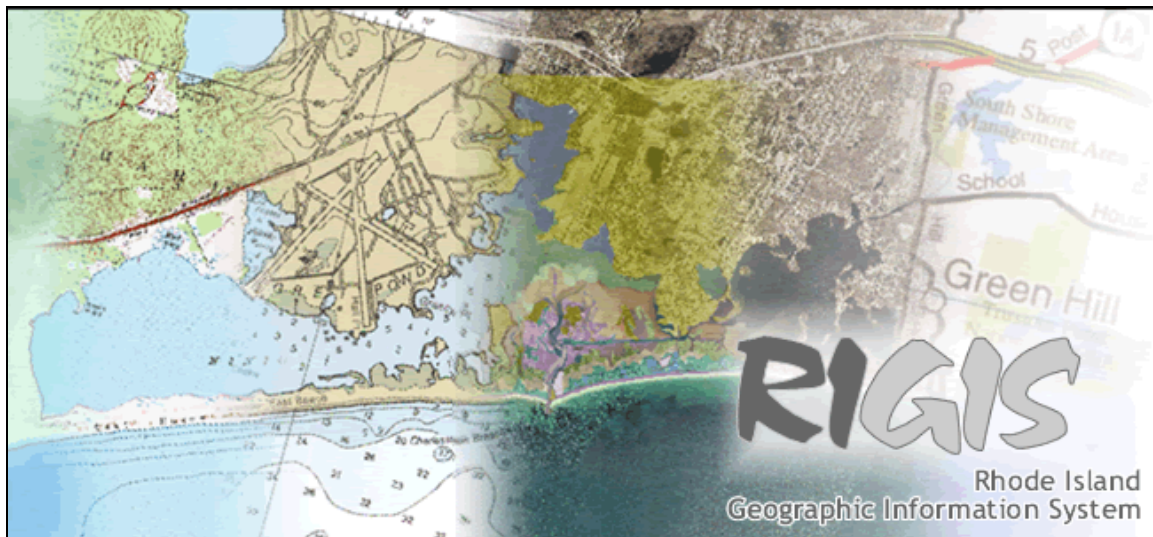


The Rhode Island Geographic Information System

2006 Annual Report



**The Rhode Island Department of Administration
Division of Information Technology-RIGIS Coordinator
One Capitol Hill
Providence, Rhode Island 02908-5872**

April 15, 2007

This document can be found on line in an electronic format (Adobe pdf)

at:

www.edc.uri.edu/rigis



The Rhode Island Geographic Information System

PURPOSE: This report provides a synopsis of GIS activities associated with or affecting those organizations participating in the Rhode Island Geographic Information System (RIGIS) during the calendar year 2006. It highlights milestones for the year denoting progress outlined in the “2005-2010 Strategic Management Plan for the RIGIS as adopted by the RIGIS Executive Committee in December of 2004 and reaffirmed by that body in March of 2006. The RIGIS 2006 annual report will become a part of a continuous record of GIS activity in the state for corporate retention and further review.

INTRODUCTION: A geographic information system (GIS) is an organizational structure, a suite of technical tools, and a geographically related database used to assimilate, analyze and depict location related or geospatial information. The Rhode Island Geographic Information System (RIGIS) is a consortium of government entities, academic institutions and private organizations that employ GIS technology and use geospatial information.

VISION: The Rhode Island Geographic Information System will be the acknowledged leader for the implementation and employment of GIS technology throughout the state and the accepted source for quality geospatial information in Rhode Island.

MISSION: To monitor, coordinate, and provide leadership for activities related to the use of geographic information system technology in Rhode Island, to support initiatives to implement or use this technology, and to manage and provide access to a common and comprehensive database of geographically referenced information that conform to RIGIS-accepted minimum standards for accuracy, completeness and metadata documentation.

VALUES: The RIGIS and its participants will preserve and rely upon an open and honest exchange of knowledge related to the use of geospatial information in Rhode Island.

SUMMARY OF ACTIVITIES AND ACCOMPLISHMENTS IN 2006:

1. Leadership, Policy Formulation and Liaison Activities:

Quarterly RIGIS Executive Committee meetings were held throughout the year. Membership of the committee as appointed by the Rhode Island State Planning Council is included in Appendix A. of this annual report. Minutes of the quarterly meetings can be found in Appendix B.

a. The 2005-2010 Strategic Management Plan for the RIGIS was reviewed and reaffirmed on March 30, 2006. The strategic plan is available on line at www.edc.uri.edu/rigis.

b. Rhode Islanders participated in the spring and fall Northeast Arc Users (NEARC) conferences held respectively in May in North Hampton, MA and in November in Mystic, CT. RIGIS participants served on conference committees and presentations were given by several Rhode Islanders at both events. Gregory Bonyngne the Geospatial Extension Specialist at the University of Rhode Island was elected to the NEARC Board of Directors at the fall annual meeting.

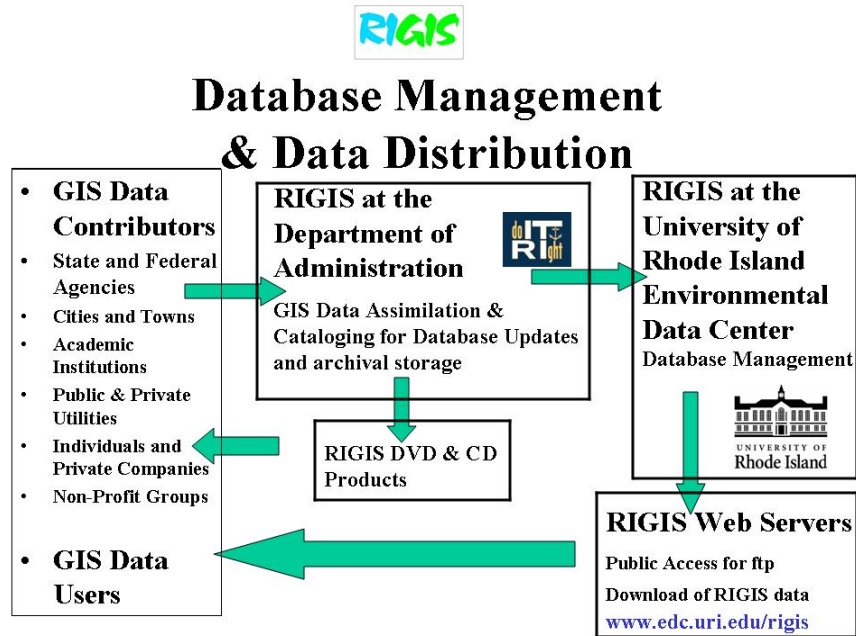


c. RIGIS members participated in the biannual New England Geospatial Information Summit (NEGIS) held in May in Danvers, Massachusetts. RIGIS members served on the conference program committee, joined in panel discussions, and offered several technical presentations during the conference.



d. The RIGIS Executive Committee submitted a letter of endorsement supporting the National States Geographic Information Council (NSGIC) "Imagery for the Nation" initiative to create a national program for the regular acquisition of aerial photography for the entire country. The RIGIS Coordinator represented Rhode Island at the (NSGIC) annual conference in Little Rock, Arkansas in September. He was appointed to a NSGIC subcommittee initiating efforts to develop a national database for building, property and geographic feature street addresses.





2. The RIGIS Database

The Geospatial Extension Specialist at URI:

- a. Redesigned the **RIGIS web site** and established a beta test site at <http://www.edc.uri.edu/rigis.html>. The site has adopted ISO metadata categories for cataloging RIGIS metadata. It is expected to replace the existing RIGIS web site in the spring of 2007. (March 2007)
- b. Continued to develop the **Rhode Island Geodata Gateway** site for general and complete on line access to geospatially related information in the state. The RI Gateway is a new statewide geospatial data portal scheduled for beta release in Spring 2007. When completed this site will complement the federal geospatial one-stop site being developed for the Federal Geographic Data Committee, (FGDC), effort for coordinating geospatial information nation wide.
- c. Maintained a node on the **FGDC metadata clearinghouse** network on behalf of RIGIS. In support of the National Spatial Data Infrastructure (NSDI), RIGIS data holdings were published to the National Geospatial One-Stop.
- d. Lead a successful 2006 **NSDI Cooperative Agreement Program** project to create and host three web feature services that serve framework compliant data for Transportation, Governmental Units, and Hydrography. These framework services are the first of their kind in Rhode Island and have been published to the National Geospatial One-Stop.
- e. Continued administration and maintenance of **RIGIS-L**, a statewide email listserv and the RSS feed for geospatial technology users.

3. RIGIS Database Additions and Updates

- a. RIDOA/RIGIS– TIGER roads 2004 from US Census
- b. RIDEM – Updates for statewide groundwater classification and revised shellfish closure zones in Narragansett Bay and coastal waters
- c. Narragansett Bay Estuary Program - Narragansett Bay and estuarine trend analysis.
- d. RIPTA – Updates of winter, summer and fall RIPTA bus stops and bus routes
- e. RI E911 – Updates of esite building points with attribute codings for addresses and building use type for several additional cities and towns. (completed in 2005/6 - WWK, WK, CR, PA, WO)
- f. RIDOT –Update of statewide road centerlines

4. Database Enhancement Projects In Progress

- a. Development of **Rhode Island's Geodata Gateway** continued. The Gateway is a new statewide geospatial data portal scheduled for beta release in the Spring of 2007.



- b. A Beta version of new online **Rhode Island Atlas** created by the Geospatial Extension Specialist at URI. It will serve as the base map for the Rhode Island Geodata Gateway and as the flagship for the upcoming RIMAP network. Cutting-edge software is being implemented to serve the Atlas in a variety of formats to the general public, to be released in Summer 2007.



- c. RIDOA/RIGIS – Flood Zones with RI EMA and FEMA – The FEMA Map Modernization Project for Digital Flood Insurance Rate Maps (DFIRMS) is currently in progress for all Rhode Island counties. Bristol County is expected to be accepted in 2007.
- d. RIDEM –Conservation open space lands protected by RIDEM and municipal government, local Land Trusts and non government organizations. The data set is approximately 95% complete.
- RIDOT- Continued maintenance of statewide RIDOT road center line data. Hurricane Evacuation Routes – With RIEMA.
- e. RI –E911 Statewide Addressing Project – Field work in progress (JO, WE, CF)
- f. URI/Environmental Data Center – RI EMA Emergency Evacuation Plans.

- g. The Providence Plan – IMS for Economic Development – With the RI Economic Development Corporation
- h. Providence Water Supply Board - Development of a complete Geodatabase for the Providence service area.

RIGIS Data Distribution



RIGIS Web Site at the Environmental Data Center at URI Summary Statistics 1/1/06 to 12/27/06

RIGIS experienced its highest number of requests for data ever this past year. RIGIS vector and raster data were downloaded 489,000 times over the course of 2006, for a total of 697 GB. The scanned historical aerial photographs were by far the most popular with 419,000 individual downloads. Users are clearly not deterred by the fact that most of these images are not georeferenced for easy incorporation into a GIS. However, it would be a boon to Rhode Island if a project were undertaken to georeference, mosaic, and serve these images through a web-based map service.

The RIDOT 2003-04 and USDA 2003 NAIP orthophotographs constituted 66% of the total bandwidth of the site. Despite that, only 33,600 images were downloaded. The larger GeoTIFF images have proven to be popular despite the availability of the compressed MrSID images.



The most popular RIGIS vector datasets in 2006 were: 1) 1:5,000 State, Coastline, and Town boundaries (469 downloads); 2) wetlands (420 downloads); 3) 10-meter contour lines extracted from 1:100,000 USGS Digital Line Graphs (328 downloads); 4) 1:24,000 Rhode Island state boundaries (325 downloads); and 5) 1:24,000 State and municipal boundaries (321 download). A new design for the RIGIS website was released in a public beta testing phase in 2006 to positive reviews by its users. The website will be permanently transitioned to the new, database-driven design in spring of 2007 once supporting back-office database work and related ASP.NET programming are completed.



RI Geospatial Extension Specialist <http://geospatial.uri.edu>
University of Rhode Island Cooperative Extension
Department of Natural Resources Science
The Coastal Institute at Kingston
Kingston, Rhode Island 02886

b. Data Distribution on Optical Media (CDROM) 01/01/06-12/31/06)



Orthophotos = 20.5 GB
DEM/DRGs = 2.5 GB
Historical Aerial Images = 7.2 GB

Total 30.2 Gb

19 Total Requests

All data distribution on CDROM media consisted of either high volume orthophoto image data in a compressed MrSid format or statewide elevation data consisting of digital elevation models (DEMs) with accompanying TINs. Data requests for CD products have been greatly reduced with the inclusion of additional imagery data available for download from the RIGIS web site.

5. Financial – URI Foundation RIGIS License Account

(Proceeds from Data Distribution License Fees)

Starting Account Balance: \$5434

Out – Lizardtech License Maintenance - \$599

DVD+RW Drive (DVD Data Distribution)- \$89

RI League Conference Display Registration - \$450

URI Foundation Service Charge - \$31

In - URI Foundation RIGIS Account in License Fees + \$2350

Ending Balance: \$6015





6. EDUCATION, TRAINING AND OUTREACH

- a. Formal Courses in the use and application of GIS continued at Colleges and Universities at URI: -within the Natural Resources Sciences curriculum (2 courses), and within the Landscape Architecture Program (1 course), at Brown: -within the Department of Planetary Geology (1 course) and at Rhode Island College:- within the Political Science/Geography Department (1 course).
- b. Training sessions in the use of GIS software were offered through the Cooperative Extension Service at URI. ESRI and Fuss and O'Neil Inc. offering training courses in GIS during the year including courses offered to state and municipal government.
- c. Internships supporting GIS programs were offered by RIDOT (5), RIDOA (1), RI EMA (1) and the Providence Plan (1).
- d. RI GIS practitioners supported and attended specialized training sessions, workshops and seminars offered throughout the year.
 1. RIGIS /URI cosponsored - GIS Internet Mapping Tools Workshop at URI - March
 2. ESRI International Users Conference Training Sessions –San Diego - July
 3. RI E911 Pictometry Software Refresher Training – Providence - July
 4. RIDOH – ESRI GIS Web Portal Software Training – URI/Providence - August
 5. Northeast Arc Users Group – Fall Conference Workshops – Mystic CT – November New England Geographic Information Summit - Danvers MA – May
 6. Expanded GIS training courses offered at URI through partnerships with ESRI. ESRI taught 2 advanced training programs in the CELS computer lab during this reporting period. These included an advanced cartography course and a parcel editing course in June 2006. A total of 17 people attended these courses. These offerings will continue in 2007.
 7. Designed and hosted the Introduction to GPS for Stormwater Managers seminar in partnership with the URI Nonpoint Education for Municipal Officials (NEMO) Program and the Rhode Island Department of Environmental Management. June 15, 2006.


9. Hosted and assisted with the instruction of Pictures, Points, and Places, and innovative new course designed by the University of New Hampshire Geospatial Technologies Training Center. This highly acclaimed class was taught by UNH Extension staff in partnership with the URI Geospatial Extension Program and the UConn Geospatial Technology Program. July 25, 2006.
10. Successfully applied to the Institute for the Application of Geospatial Technology at Cayuga Community College for funds to run an introductory remote sensing workshop in Fall 2007.
11. Hosted a seminar sponsored by ESRI - Introducing ArcGIS 9.2 on Sept 27, 2006.

7. FEDERAL GOVERNMENT SUPPORT OF GIS ACTIVITIES

a. The United States Geological Survey  of the Department of the Interior provides guidance through the activities of the Federal Geographic Data Committee (FGDC) in the establishment and promulgation of standards for geospatial data. USGS offered financial grant assistance through the NSDI Cooperative Agreements Program enabling RIGIS participants to move forward with GIS activities. In Rhode Island grant awards included metadata training at the URI and the development of strategic/business plans for state government agencies. <http://www.fgdc.gov>

b. The Natural Resource Conservation Service  of the Department of Agriculture working with the University of Rhode Island and other federal and state agencies continued in an extensive project to map sub-aqueous soils in coastal Rhode Island. A conference was held in February of this year during which Rhode Island's congressional delegation (Senators Reed and Chaffee) jointly announced the awarding of federal grants supporting this effort. <http://www.Mapcoast.org>

8. STATE GOVERNMENT GIS ACTIVITIES

- a. **RIDOA/DoIT**  Four state agencies actively using GIS consisting of the Departments of Administration, Environmental Management, Health and Transportation (RIDOA, RIDEM, RIDOH, and RIDOT) continued toward a common goal to establish a consolidated enterprise wide system. A federal grant was awarded by the U.S. Geological Survey in September of 2006 for enhancements to state government GIS systems under the FGDC "Fifty States Initiative". It is being used to create a business plan for a state agency GIS enterprise architecture. A contract was awarded to Applied Geographics Inc. of Boston Mass to assist DoIT and state agencies in developing this plan in 2007.

The master price agreement for state and municipal government for ESRI software products and services was updated

and renewed. This MPA allows state and municipal government entities to purchase technical support services and GIS software from ESRI at standardized pricing. www.purchasing.ri.gov (MPA183)



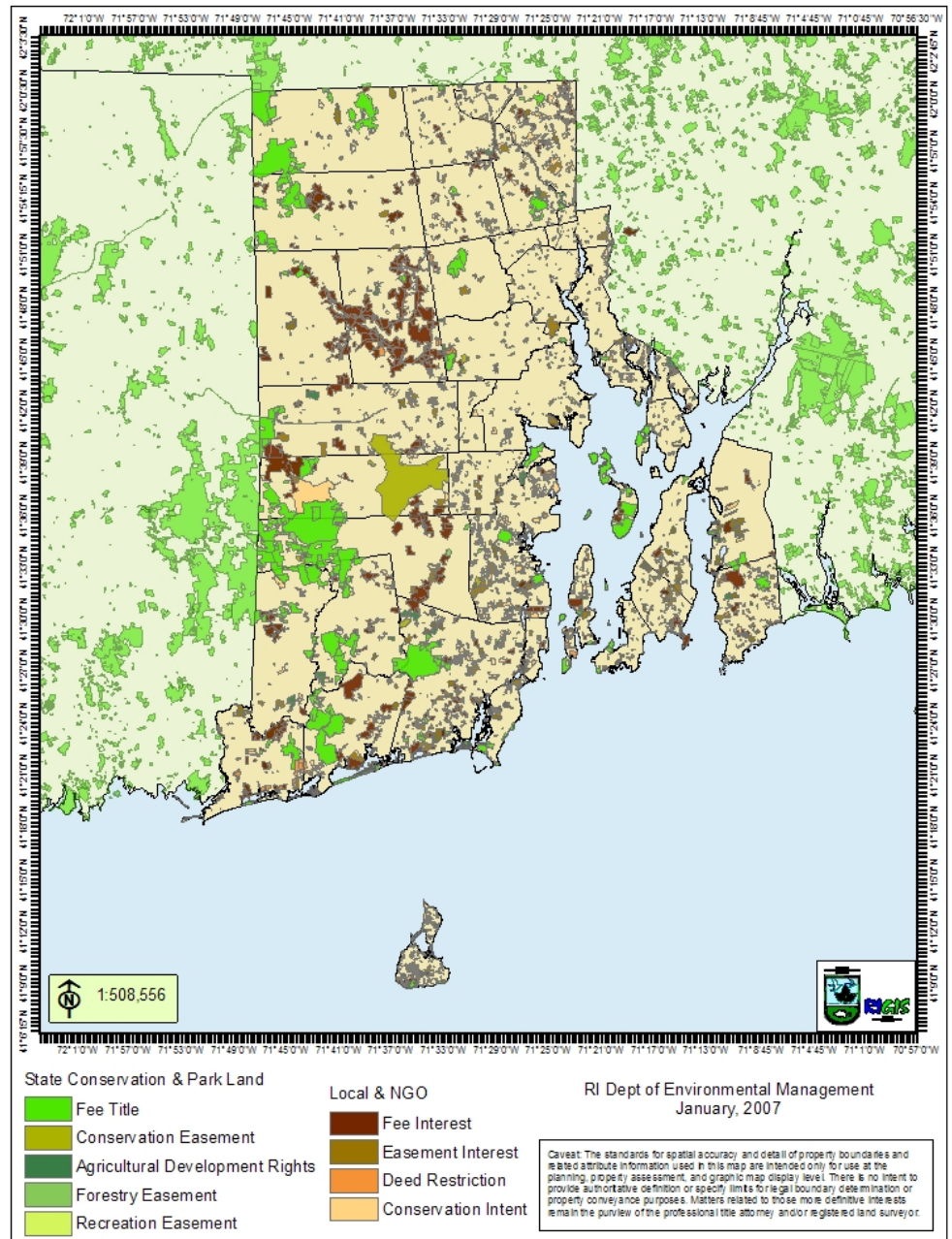
- b. **RIDOT** acquired ESRI ArcGIS Server software to better enable interoperability among its various GIS applications. RIDOT is implementing “PlanGIS” to enable the use of GIS technology within all operating units throughout the agency. RIDOT, working with the RI Emergency Management Agency (RIEMA), developed and mapped evacuation routes for residents living in coastal areas for potential hurricane disasters. Maps were posted on the RIEMA website and mailed to all residents in affected areas by the Governor’s office. <http://www.riema.ri.gov>



Hurricane Storm Surge Zones & Evacuation Routes in Bristol



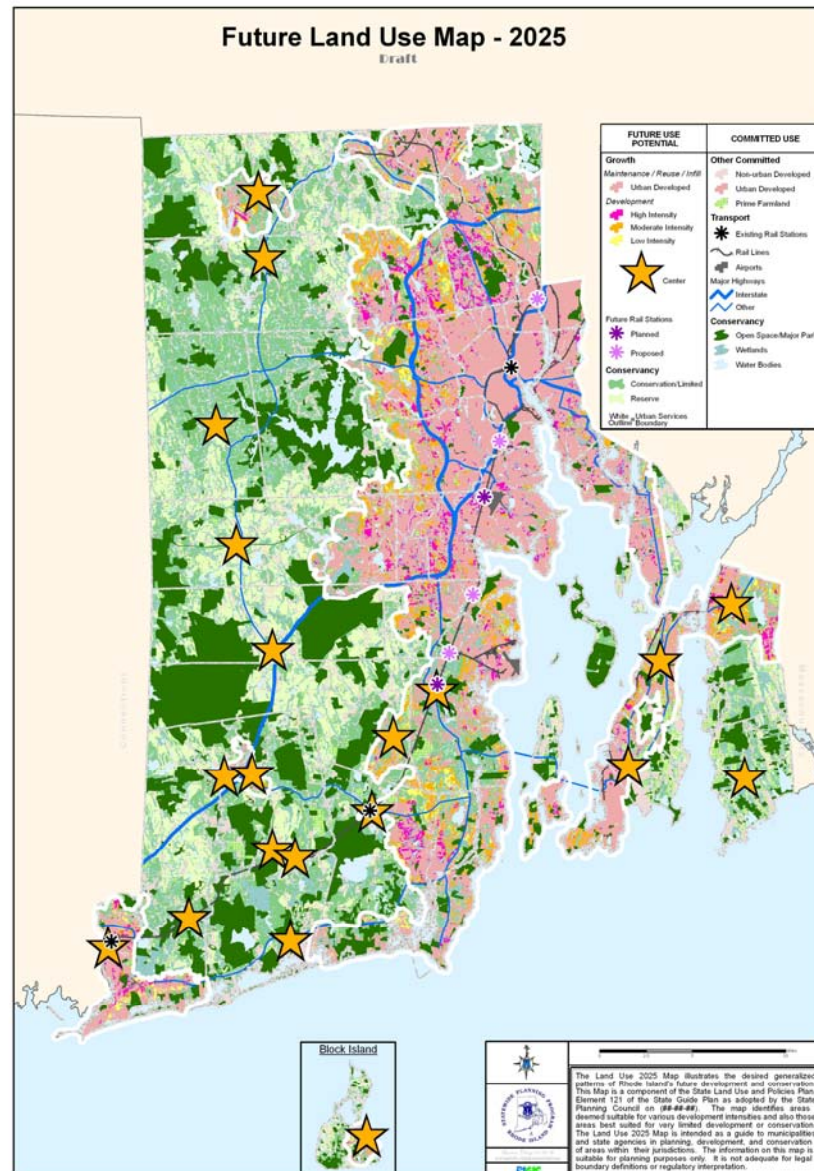
- c. **RIDEM** completed an extensive project for mapping all state, municipal and non-government conservation lands in the state. Training was offered by the RIDEM GIS specialist to city and town conservation land managers in using digital maps of these data on viewing software (ArcReader).



Conservation Lands in Rhode Island



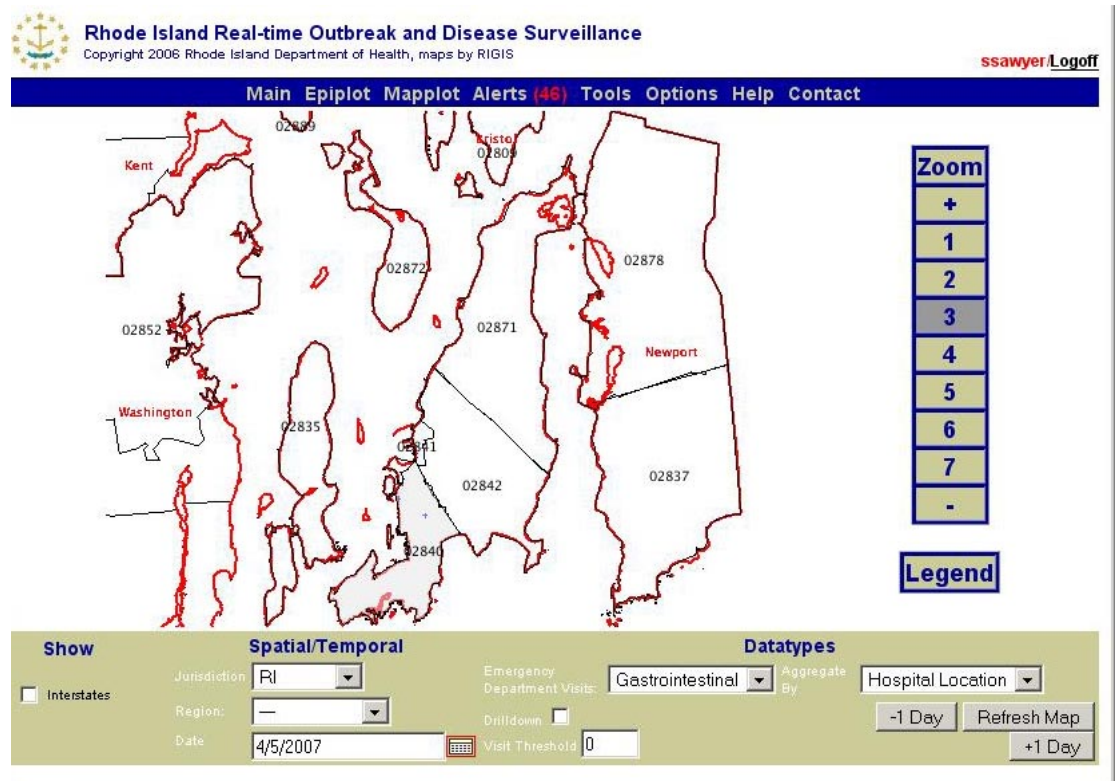
d. The **Statewide Planning Program** within the Department of Administration completed a broad GIS study of natural resource and land related infrastructure utilization conditions within the state to support a land use policy and plans program for the future. (Landuse 2025)



Statewide Planning Program 2025 Land Use Map



e. RIDOH The RIDOH implemented Phase I of a pilot electronic Syndromic Surveillance system called the Rhode Island Real-time Outbreak and Disease Surveillance (RI RODS) system. RI RODS was implemented for the early detection and situational awareness of public health emergencies. RI RODS monitors syndrome categories and performs aberration detection algorithms to identify unusual trends in real-time. The system generates automated alert notification to key personnel in the event of a system alert. The pilot implementation involved three hospitals (Rhode Island, Miriam and Newport) that transfer real-time emergency department registration information. Hospital infection control practitioners and emergency department personnel, state epidemiologist, and public health nurses are able to access RI RODS via a secure web-based user interface, which displays data as time-series graphs, and spatially embeds its map graphics. More recently, Phase II of the RI RODS added 4 additional hospitals. Phase III is expected to complete the project and include Rhode Island's 4 remaining hospitals in the Summer of 2007.

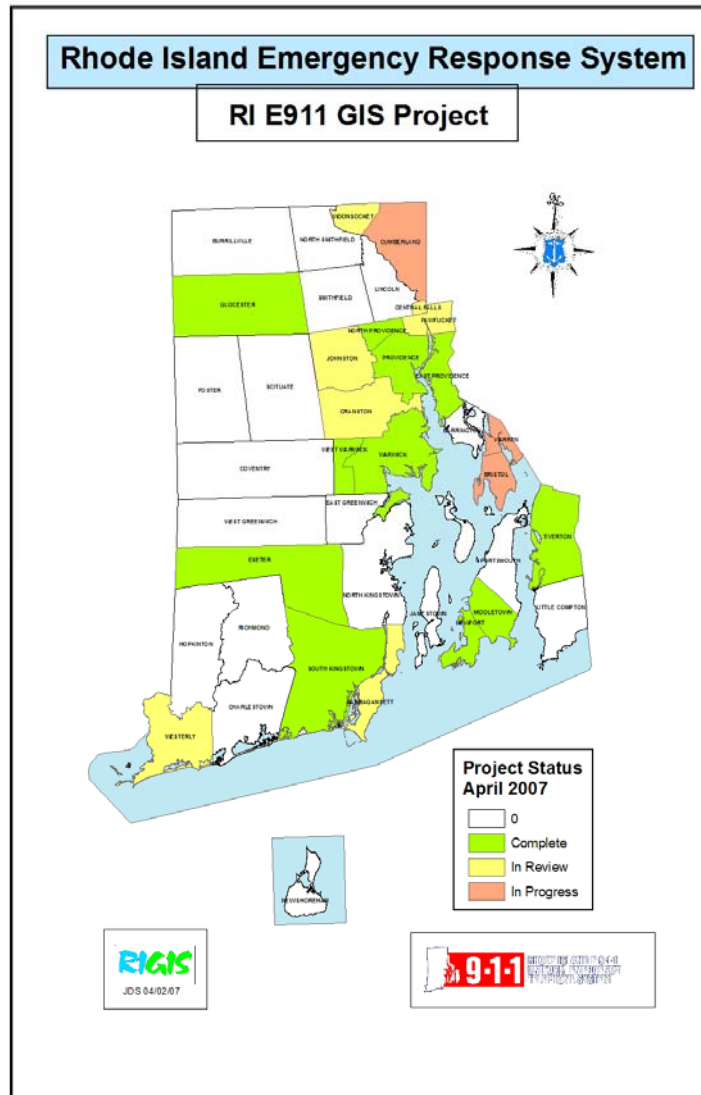


RI RODS On-Line Application Utility (RIDOH Internal IMS)

f. The RI Emergency Response – RI E911

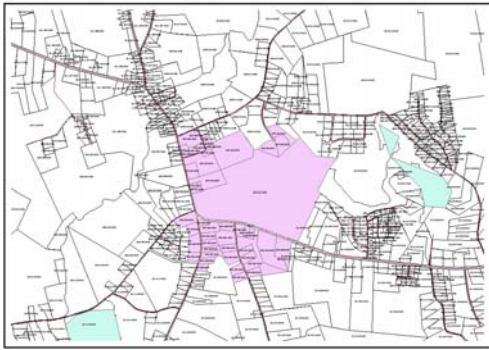


Continued with an overall statewide effort to geolocate all buildings in the state and verify their addresses and related attribute information. During 2006, field work was completed for the communities of Central Falls, Pawtucket, and Johnston. Verification of field data gathered in 2005 for Cranston, Narragansett, Woonsocket, Middletown and Newport were in progress. At the close of the year, 16 of Rhode Island's 39 cities and towns were being entered into the RI E911 system. This includes all cities and towns in the Providence urban area.

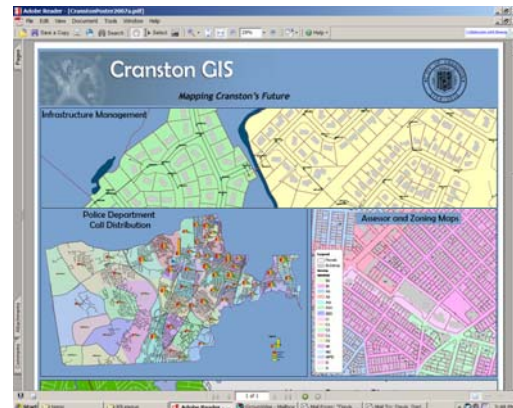


RI E911 Status Map-2006

MUNICIPAL GOVERNMENT GIS ACTIVITIES:

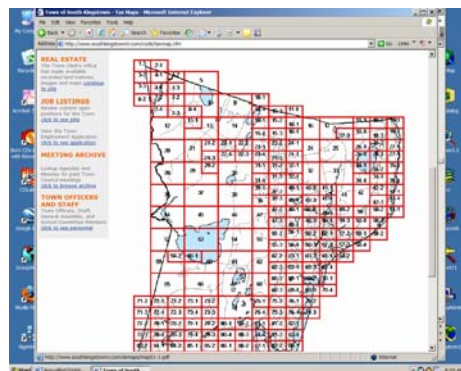


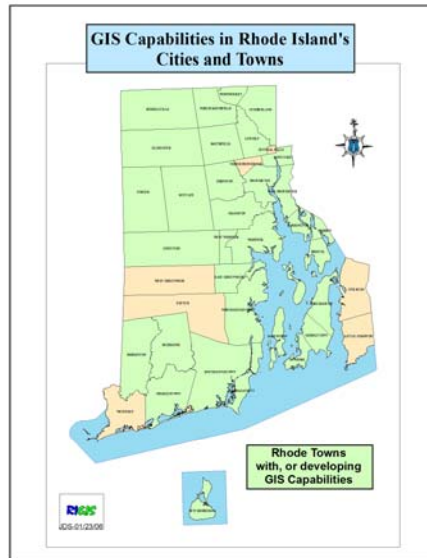
Gloucester Parcel Map



Multiple uses of GIS in Cranston

Interest and growth in the use of GIS technology in cities and towns continued to rapidly increase throughout the year. Approximately 80% of Rhode Island's municipalities now have some level of GIS capability and are using the technology in one or more departments in city or town hall. Expansion of municipal GIS into Tax Assessment and Public Safety (police and fire) departments in several towns has led the way. Many Rhode Island municipal towns are creating or enhancing their GIS databases with new material. The town of Bristol is completing the development of a parcel level data set for use within a town GIS. The town of Middletown is in the process of producing new parcel and infrastructure data sets based on high resolution imagery acquired last year. The towns of Charlestown and South Kingstown have acquired high-resolution color orthophotography (6" pixel) and are enhancing their GIS vector data based on these sources. Several cities and towns including Cranston, North Kingstown, Providence, Smithfield and South Kingstown are developing internal Internet Map Service (IMS) sites to share GIS data within town governments. They will be studying the future use of this technology for all their citizens. Many towns including Gloucester, New Shoreham and South Kingstown are providing mapping information produced through their internal GIS capabilities to the public through on-line static map displays and at computer kiosk desks within town halls.





RI Municipal GIS and Parcel Data Status – December, 2006

Town Name	Contact Department	Status
Barrington	DPW/Eng	Functional GIS /No Parcels
Bristol	Planning	GIS & Parcels Under Devel.
Burrillville	MIS/IT	Functional GIS/Parcel Data
Central Falls	Unknown	No GIS/No Parcel Data
Charlestown	Assessor	Functional GIS/Parcel Data
Coventry	Planning	Functional GIS/Parcel Data
Cranston	MIS/IT/GIS	Functional GIS/Parcel Data
Cumberland	Planner	Functional GIS/Parcel Data
East Greenwich	Planning	GIS & Parcels Under Devel
East Providence	Planning	Functional GIS/Parcel Data
Exeter	Planning Board	No GIS/No Parcel Data
Foster	Assessment	Dormant GIS/Parcel Data
Glocester	Planning	Functional GIS/Parcel Data
Hopkinton	GIS	Functional GIS/Parcel Data
Jamestown	Planning	GIS & Parcels Under Devel
Johnston	Building	No GIS/CAD Parcel Data
Lincoln	Planning	Functional GIS/Parcel Data
Little Compton	Planning Board	No GIS/No Parcel Data
Middletown	Planning	Functional GIS/Parcel Data
Narragansett	GIS	Functional GIS/Parcel Data
Newport	AdminServices	GIS & Parcels Under Devel
New Shoreham	GIS/Planning	Functional GIS/Parcel Data
North Kingstown	GIS/MIS	Functional GIS/Parcel Data
North Providence	Unknown	No GIS/No Parcel Data
North Smithfield	Planning	Functional GIS/Parcel Data
Pawtucket	Planning	GIS & Parcels Under Devel
Portsmouth	Planning	GIS & Older Parcel Data
Providence	Planning	Functional GIS/Parcel Data
Richmond	Planning	Functional GIS/Parcel Data
Scituate	Assessor	Functional GIS/Parcel Data
Smithfield	Assessor	Functional GIS/Parcel Data
South Kingstown	GIS	Functional GIS/Parcel Data
Tiverton	Planner	No GIS/No Parcel Data
Warren	Planner	Functional GIS/Parcel Data
Warwick	Planning	Functional GIS/Parcel Data
Westerly	Planning	No GIS/No Parcel Data
West Greenwich	Unknown	No GIS/No Parcel Data
West Warwick	GIS	Functional GIS/Parcel Data
Woonsocket	DPW/Eng	Functional GIS/Parcel Data

d. PRIVATE SECTOR SUPPORT



Regional and Rhode Island based private businesses assisted municipalities developing or enhancing city and town GIS capabilities throughout the year. This included the creation or maintenance of digital parcel level data sets in several cities and towns. Notable advancements were also attained in the development of Internet Map Services (IMS) for internal use by town government.

The Providence Plan working for the Rhode Island Economic Development Corp. has developed, (with the assistance of Applied Geographics), an IMS that includes municipal parcel level data for a large portion of the state now available for public use.

Private sector enterprises also assisted state agencies through the fulfillment of contract obligations for Rhode Island state government agencies. This included database development at RIDOH and applications for highway asset management at RIDOT.



Appendix A –The RIGIS Executive Committee – December 2006



State Government

RI Department of Administration, Statewide Planning
and Division of Information Technology -Secretary

RI Department of Environmental Management
Vice Chairperson

RI Department of Health

RI Department of Transportation

Municipal Government

Town of South Kingstown

Town of New Shoreham

City of Providence

City of Cranston

Town of Charlestown

Town of East Greenwich

Town of Smithfield

State Offices, Boards, Commissions, Authorities

Office of the State Geologist

RI Water Resources Board

RI Board of Registration for Professional Land Surveyors

RI E911 Emergency Response System

RI Public Transit Authority

The Narragansett Bay Commission

Federal Government

Natural Resource Conservation Service
Warwick Office (US Dept. of Agriculture)

US Geol. Survey, Geospatial Programs Office
New England Liaison–Northboro, MA Regional Office
(US Dept. of the Interior)

Private Sector Organizations & Enterprises

The Providence Plan
Providence, RI

Mapping & Planning Services
Jamestown, RI

Beta Group Inc.
Lincoln, RI

Applied Science Associates
Narragansett, RI

EcoTones Inc. (Committee Chair)
East Greenwich, RI

Fuss and O'Neil Inc. – Providence, RI

Educational Institutions

University of Rhode Island
Department of Natural Resources Sciences
Environmental Data Center

Brown University
Department of Planetary Geology

Appendix B

Minutes of Quarterly Meetings of the RIGIS Executive Committee

RIGIS Executive Committee Meeting **Thursday March 30th 2006** **USDA/NRCS Conference Room** **Quaker Lane - Warwick**

Attendees: Joe Klinger- Ecotones Inc.-Chair; Greg Bonyng- URI; Jon Boothroyd – State Geologist; Steve Sawyer-RIDOH; Paul Jordan-RIDEM; Maria Giarrusso-City of Cranston; Suzanne Kogut – Town of Smithfield; Janice Peixinho-Town of East Greenwich; Jim Turenne – USDA/NRCS; Lynn Bjorklund-USGS/NGPO; Carol Baker-Towns of South Kingstown and New Shoreham; Eben Dowell-The Providence Plan; Tom Grala-Narragansett Bay Commission; Lynn Carlson- Brown University; Thomas McCarthy- RI National Guard (observer); Charles Sapcoe-City of Warwick (observer), John Stachelhaus- RIDOA/DoIT-RIGIS Executive Secretary

Review of Minutes of December 14th 2005 - John Stachelhaus presented the minutes from the past December 14, 2005 meeting. Jim Turenne made a motion to accept them and Paul Jordan seconded. The motion was unanimously passed by voice vote.

Announcements: John noted the Spring NEARC meeting would occur on April 12th at Smith College, Northampton, MA and NEGIS2006 was scheduled for May 9-10th in Danvers, MA.

Carol Baker reminded the group that the annual NEARC Conference to be held in Mystic/Groton, CT in November was now accepting applications for presentations.

Greg Bonyng announced that he is organizing a day long GPS field session for September 2006. Cooperative Extension at both URI and Uconn will offer classroom and field training in the use of GPS.

RIGIS Strategic Plan and Annual Report - John Stachelhaus

John outlined the Strategic Plan noting that only a few notable changes were included for this year. These were the insertion of vision and values statements, and an updated list of Executive Committee members. He requested consideration of reaffirmation of the Strategic Plan. Carol Baker made a motion for acceptance and Jon Boothroyd seconded.

The motion unanimously was accepted by voice vote.

John explained the Annual Report for 2005 and its requirement in the Strategic Plan. He pointed out the statistics on data distribution provided by Greg Bonyng and the remarkably heavy demand for historic aerial photography. Carol Baker made a motion for acceptance and Jon Boothroyd seconded. The motion was unanimously accepted by voice vote.

Carol made a motion that the minutes reflect a thank you to John from the committee for work preparing the Strategic Plan and Annual Report. The motion carried.

GPS Virtual Reference Stations - Jim Turenne - USDA/NRCS

Jim outlined activities of interests with respect to setting up a network for GPS Virtual Reference Stations (VRS) in Rhode Island. He explained that at this time to use survey grade GPS in the field each user must establish and operate a fixed reference station to provide base level information to a roving remote GPS unit in order to obtain high quality locational information (cm level accuracy). This is also essential when using GPS for Real Time Kinematic (RTK) operations such as the NRCS is presently using for soils mapping in and near coastal ponds. The need for a fixed reference or base station increases cost since two GPS units are needed, and presents a need for additional personnel to man the base station for security reasons. It also includes an operational limit since the remote unit must remain within 5-15 km of the base station to ensure accuracy. The VRS concept is to have several permanently installed base stations operating continuously around the state. If these stations can communicate with each other, and with remote field units the operating areas enclosed within a polygon of bordering base stations can be as large

as 50 km from a base station. In investigating possibilities for establishing a VRS, there is a potential to utilize some existing base stations for such a network in and around Rhode Island. There are GPS base station facilities operated by RIDOT in Providence, URI in South Kingstown, the Navy in Newport, and ConnDOT in nearby Putnam and Avery Point, CT. Jim displayed a map of these locations along with the local 15 km radius and implied network capabilities. He explained that meetings have been held with Trimble GPS, RIDOT, URI and several private engineering firms over the past winter. RIDOT is presently studying options for up dating and augmenting their existing suite of GPS hardware and software in their engineering, construction and survey section. Tom Grala from the Narragansett Bay Commission noted that his organization is interested in this venture. John Stachelhaus had spoken earlier with Al DiOrio about involvement with the community of professional land surveyors, and they too are interested in this subject.

RI Geodata Web Portal - Greg Bonyne – URI

Greg demonstrated the progress on the Rhode Island Geodata Gateway web portal site that he is establishing at URI. He showed some of the search capabilities for using map theme, location, area, or established IMS site for finding GIS related information or data. Greg pointed out that content does not necessarily have to be only GIS data itself, but can be used to find such things as printed documents, reports or even graphic posters on conditions related to locations. Basically the concept behind the portal technology relies on metadata in an XML format. Most GIS information such as RIGIS metadata is already in XML, and a variety of tools are available for moving other metadata into XML. The portal itself has its own tool that allows participants to create and enter abbreviated standardized metadata on their own work. The portal also has a facility to allow users with a specific area of interest to create a “data channel” or section within the site related to their field of work. In the future it is envisioned that this site will be used to interact with the FGDC (federal) geodata.gov site through uploading and downloading metadata between sites. For more information or to participate in the geodata portal Greg is inviting all to contact him via email (greg@edc.uri.edu).

Greg also mentioned that he is working on improvements to the RIGIS data download site at URI (www.edc.uri.edu/rigis). This site has remained relatively unchanged since it went on line in 1994, but is still successfully fulfilling its purpose in providing RIGIS data to all comers. Future improvements to the site can include better thumbnail graphic sketches and search functions.

The ortho server site (<http://ortho.edc.uri.edu>) operated by URI for image data is also receiving some attention. This site built on technology developed by the EDC at URI with assistance from MIT will be redesigned for better ease of use in displaying and downloading orthophotography.

NSGIC - Imagery for the Nation Initiative www.nsgic.org (Imagery for the Nation Brochure) - Lynn Bjorklund – USGS

Lynn attended the National States Information Council (NSGIC) mid-year conference the previous week and informed the committee on agenda items at that event.

Connecticut and New Hampshire were awarded grants from the USGS CCAP program to develop Strategic/Business Plans under the FGDC 50 States Initiative Program.

The RAMONA web portal software developed by NSGIC for inventorying geospatial capabilities for states and regional organizations were demonstrated. RAMONA works similarly to Geospatial One-Stop (and the above RI Geospatial Gateway) but centers more on system and organizational geospatial policy and management capabilities. RAMONA also operates on an XML metadata format. NSGIC is working with the FGDC on standards being developed at a national level for cadastral data (property parcel information).

Imagery for the Nation is a NSGIC sponsored initiative to institute a program to have orthophotography developed on a nation wide basis at regular intervals. The initiative envisions color aerial photography for the entire nation to be obtained on a one year basis at one meter pixel resolution (leaves on) as is currently being attempted by the USDA under their NAIP program, and on a three year basis at 1 foot resolution east of the Mississippi or 1 meter west of the Mississippi. The cost of these basic products would be funded by federal agencies. Increased resolution and/or enhancements such as 6-inch pixel resolution or infrared imagery requiring additional costs would be shared with others desiring those products through a “buy-up” program on a percentage of cost basis. As presented, the USGS would manage the program. Arguments supporting this program include more compatible and comprehensive

nationwide imagery, reductions in redundant spending for the same or similar products by federal, state and local organizations, and an overall reduction in costs to all participants due to pooling resources for a common effort. If successful, NSGIC with support from the federal government hopes to have a program in place in the federal fiscal year 2009 time frame. A brochure with more detailed information can be found at http://www.nsgic.org/hottopics/imagery_forthe_nation.pdf.

Joe Klinger suggested that a letter of support for the Imagery for the Nation initiative be drafted for submission to the RI congressional delegation. A motion was made by Paul Jordan and seconded by Suzanne Kogut to do so. John Stachelhaus will contact NSGIC for guidance and draft a letter for review and submission by the RIGIS Executive Committee. *(In later correspondence with NSGIS, John was informed that letters to Congressional delegations recommending support are premature at this time.)*

FEMA MapMod (Flood Plain) Project – John Stachelhaus

John Stachelhaus noted that FEMA with several of their consultants held workshops in February for Kent, Newport and Washington counties for the FEMA Map Modernization program (MapMod) being conducted nationally and in Rhode Island. The intent of this program is to update the FEMA Flood Insurance Rate Map series (FIRMs) by editing the flood plain map data and producing Digital Flood Insurance Rate Maps (DFIRMs). This program was discussed at a RIGIS meeting last year by Pamela Pogue from RI EMA. Members of the RIGIS committee and representatives from most of the towns in those counties attended the FEMA workshops. The workshops consisted of presentations by FEMA and their consultants outlining the program followed by one-on-one sessions with representatives of the participating towns. It was explained that current tasks included scoping for the project to gather data and input from effected parties. RIGIS is encouraging FEMA to use its 1:5000 base map material as source data. We have already provided FEMA consultants with town boundaries and coastline, road centerline, hydrography, digital elevation models, and orthophoto data. FEMA is using digital flood plain data obtained by scanning the existing paper FIRM panels. These features will then be edited to fit them to the new base map material (RIGIS 1:5000) and updated in areas where better material is available and/or where local input indicates changes are necessary. At the completion of the project FEMA will supply the DFIRMS with viewing software both on line and on CD/DVDROM to all interested parties.

Carol Baker who attended the Washington County session questioned why the paper map panels were being scanned since RIGIS had them digitized years ago and they were already available from FEMA as Q3 data. Jon Boothroyd said that without obtaining better elevation data to start with or without at least doing field transects, the whole effort was a total waste of money. John Stachelhaus commented that even though FEMA has repeatedly stated at national meetings that involvement with state GIS coordinating groups such as RIGIS would be stressed, he has had very little contact with FEMA or its consultants other than requests for data. In separate correspondence, Mary Hutchinson, (not at this meeting), who attended the Newport Co. session had mentioned that she had earlier seen products developed for Bristol Co. and was impressed. Bristol County has already been completed based on earlier work, and Providence County is in progress, but apparently being done as a separate effort. Committee members were encouraged to advise towns in their areas of interest that the project is in progress and any cooperation between them and FEMA would be helpful in the long run.

Participant Activity Reports

Town of South Kingstown – Carol Baker announced that EarthData will be obtaining 6” pixel orthophotography for South Kingstown (and Charlestown) in April. *(Actual flight date was 04/10/06)* The imagery will form the base for new mapping in town including two-foot elevation contours. The project is being funded with USDHS support.

The Providence Plan – Eban Dowell noted that the Providence Plan has developed and is hosting several IMS sites for a variety of users at provplan.org. Paul Jordan commended the Providence Plan on the breadth and quality of the site(s).

USDA/NRCS - Jim Turrene mentioned the very successful MapCoast conference held at URI earlier in the month. He also announced that the 2005 b&w NAIP orthos (1 meter) were available. Jim pointed out the soil survey and related information now available at www.soils.usda.gov site.

City of Cranston – Maria Giarrusso reported that Cranston recently upgraded software from ArcGIS 8.3 to 9.1. She is now successfully using ArcPublisher/ArcReader for getting map information to non-GIS users in City government.

RI Dept. of Health - Steve Sawyer from the HEALTHgis Program is heavily involved in using ArcGIS in the Incident Command System -ICS structure in response to a recently reported threat to the public water supply in the Blackstone, MA and nearby Rhode Island areas. HEALTH Staff are utilizing the Enterprise ArcGIS 9.1 concurrent licenses and it's infrastructure ie. GIS Portal Toolkit internal website for this purpose. The HEALTH is also using ArcGIS extensively in developing statewide plans to aide Hospitals in responding to a potential Avian Flu or Pandemic Flu public health threat. Also, the vendor Fuss & O'Neill -Providence, has been contracted to provide continued training for HEALTH Staff in the use of ESRI ArcGIS 9.1 Desktop software.

Town of Coventry – Lynn Carlson has developed a suite of maps in Adobe Acrobat (pdf) format which have been incorporated into the town's web site (www.town.coventry.ri.us). These maps include zoning, voting districts, and mobile home evacuation route maps among others.

RI Dept. Of Administration - John Stachelhaus announced that there were two bidders for the new Land Cover/Land Use data set to be developed for Statewide Planning. A review committee consisting of several member of the Executive Committee is now evaluating the proposals. Award of a contract will be announced in April. He also pointed out the new TIGER roads (2005) based on RI 1:5000 geography (has been) posted on the RIGIS website for download.

Narragansett Bay Commission - Tom Grala said that the NBC is involved in an easement location and mapping program using GPS. They are also using GIS as an integrating tool for asset management.

RI Dept. of Environmental Management – Paul Jordan followed up on the presentation he gave at the last meeting by reporting that the RIDEM Open Space Mapping project is progressing well. They have now located and mapped over 110,000 acres of protected open space lands in the state. The project is considering properties owned or managed by RIDEM, RI Audubon Society, the Nature Conservancy, and municipal land trust in their work.

Ecotones Inc. – Joe Klinger noted that his business partner at Ecotones recently received training in ArcGIS software, and is now a big booster of the technology at the company.

City of Warwick – Chuck Sapcoe reported that Warwick DPW, and the Sewer and Water departments are now employing GPS and GIS technologies in their operations.

Town of Smithfield - Suzanne Kogut attended the URISA sponsored GIS and CAMA conference in Florida. Smithfield has contracted Applied Geographics in Boston to complete a needs analysis for the town to enable them to better take advantage of their GIS resources. Sue noted that the Pictometry Imagery products now available for the Providence urban areas (but not Smithfield) would be a tremendous asset for town assessors if available statewide. (John Stachelhaus later suggested a meeting with Ray LaBelle of RI E-911 and representatives of the RIAAO might be beneficial.)

Town of East Greenwich – Janice Piexinho announced that East Greenwich expects to have an operational GIS in April. Fuss & O'Neil has been developing the capability for the town.

Office of the State Geologist/URI Geosciences – Jon Boothroyd is making good use of the recently available 2003/04 orthophotography for studies in Narragansett Bay and the south coast. He is involved in side scan sonar studies in the lower Bay. Jon noted a successful beach sand replenishment project on the south coast using material dredged from inlets and salt ponds by the Corps of Engineers.

RIGIS Executive Committee Meeting
June 21st 2006
Coastal Institute Center – URI Bay Campus

Attendees: Joe Klinger- Ecotones Inc.-Chair; Greg Bonyng, Ann Borwick- URI; Jon Boothroyd – State Geologist; Paul Jordan-RIDEM; Steve Kut-RIDOT, Suzanne Kogut – Town of Smithfield; Janice Peixinho-Town of East Greenwich; Jim Turenne – USDA/NRCS; Carol Baker-Towns of South Kingstown and New Shoreham; Chris Galagan-Applied Sciences Associates; Rob Christina-RIWRB; Steve McCandless-Town of Charlestown; Susan Scanlon-Fuss&O’Neil Technologies; John Stachelhaus- RIDOA/DoIT-RIGIS Executive Secretary

Review of Minutes - John Stachelhaus presented the minutes from the past March 30, 2006 meeting. He noted that a motion passed at that meeting to submit a letter of support to Rhode Island’s congressional delegation for the National States Geospatial Information Council’s (NSGIC) Imagery for the Nation initiative was not acted upon. He explained that he had called the NSGIC member chairing the committee working on that proposal and was advised that letters requesting congressional support would be premature at that time. He will act on this motion at a later date when advised by NSGIC. Janice Peixinho made a motion to accept the March 30 minutes and Rob Christina seconded. The motion was unanimously passed by voice vote.

1. **Review of Spring NEARC and NEGIS06** - www.Northeastarc.org & www.NEGIS.org John Stachelhaus noted that attendance at Spring NEARC at Northhampton, MA in April and at the NEGIS2006 conferences in May was good with several Rhode Islanders present at each event. Carol Baker and Jason Catelli (South Kingstown), Greg Bonyng (URI), Steve Kut (RIDOT), and John Stachelhaus (RIDOA/DoIT) participated by making presentations and moderating sessions.

The annual NEARC conference is scheduled for November 12-15, 2006 in Mystic CT. The call for presentation abstracts closed earlier in June. www.northeastarc.org

2. **RIGIS and Geodata Portal Web Sites.** www.edc.uri.edu/rigis-alpha - Greg Bonyng demonstrated the new look and feel of the RIGIS web site including entry points through International Standards Organization (ISO) categories for better compatibility with others at the state and national levels. He noted the inclusion of thumbnails sketches for most data layers allowing users an opportunity to get a better feel for the data before accessing it. Most data sets now include FGDC compliant metadata due mainly to the hard work of Mark Christiano at the URI/EDC lab. The metadata now points to the RIGIS license agreement along with a hot link button on the opening page notifying users of distribution policies detailed in the agreement. He also pointed out the link to allow users to input their comments so the site managers can get a better idea of user interests in the future. At this time there is also a survey being conducted to select a revised design for the RIGIS logo. Users are encouraged to provide their input by voting for their favorite design. The new site will serve as a beta site for about six months along with the existing RIGIS data distribution web site. Greg also announced the Geospatial Extension Program’s Rhode Island Geodata Gateway is progressing and he hopes to release this as a public test site in a month or so.

3. **Discussion on GIS and Hurricanes** - http://www.riema.ri.gov/hazards/hurricane_evac.php - Steve Kut - RIDOT

<http://www.colorado.edu/hazards/qr/qr180/qr180.html> - John Stachelhaus

Steve Kut outlined the development of the hurricane evacuation route maps being completed by RIDOT for RIEMA. This work started over a year ago with RIDOT and RIEMA working with the towns to determine best routes within and between towns. Although presently it centers upon coastal communities, it will eventually encompass the entire state. Studies for route selection have included input from both Connecticut and Massachusetts for routing through those neighboring states. The maps have been produced in Adobe Acrobat (pdf) format for inclusion on the RIEMA web site <http://riema.ri.gov> allowing access and print capability by towns and their citizens. At present, Vanasse Hangan & Brustlin, a RIDOT consultant is using a traffic demand model used by RIDOT and Statewide Planning to test for

traffic load criteria. Initial results of the model are showing that under test conditions evacuation areas can be cleared of traffic within a 12 hour allowable time span using the designated routes.

Discussion with Committee members included possibilities of one way traffic routing, suitability of the evacuation zones as mapped with respect to changes over time, and placement of signs marking and directing traffic along routes.

John Stachelhaus noted that RIEMA now has a planner designated for GIS support at that agency. Kimberly McLeod, formerly with the RI National Guard, is now on board within the Planning section of RIEMA and will be taking GIS training this summer. Although John had invited her to the RIGIS meeting, she was unable to attend since there was a FEMA sponsored exercise in New London CT at the same time.

John pointed out the high level of participation of the overall GIS community in responding to emergency events dating back to 9/11 in New York, and after the hurricanes that hit the Gulf Coast last year. He pointed out that much of this participation was voluntary in nature, and it could probably be expected that a similar effort would be needed in Rhode Island responding to a major event.

4. Round Robin Participant Review

a. USGS Geospatial Programs Office – Lynn Bjorklund

Lynn was not able to attend the meeting, but had talked to Steve Kut and John Stachelhaus earlier in separate phone calls. Steve reported that USGS was attempting to work with Pictometry International to produce orthophoto and related products through cooperative ventures. At the present time, there appears to be some obstacles with respect to Pictometry accepting USGS specifications for orthophoto products.

John reported that Lynn had announced that the National Geospatial Information Agency (NGA) intends to obtain orthophotography for approximately ½ of the state in the spring of 2007. If completed the resulting images would be 1 foot pixel resolution, true color leaves off. USGS would manage the project. NGA is seeking cooperators to expand the areas to be photographed. For Rhode Island it is estimated (by NGA) that orthophotos for the entire area of the state would cost \$500,000 of which NGA would cover \$250,000 and Rhode Island picking up the remaining \$250,000. John will be investigating possibilities of obtaining the funding for this purpose.

In a somewhat related product item Ray LaBelle the Director of RI E911(not in attendance) is seeking funding to obtain Pictometry imagery for the entire state.

- b. RI Department of Administration** – John Stachelhaus announced that the contract to develop a new land use land cover data set based on the 2003/04 orthophoto series was awarded to the Sanborn Map Company. The technical approach to be used will involve automated interpretation of the imagery using remote sensing techniques. The initial kick-off meeting will be June 27th.
- c. Town of East Greenwich** – Janice Peixinho - East Greenwich is moving forward with developing a town GIS, but recently experienced some network and hardware problems in town hall.
- d. Town of Smithfield** - Suzanne Kogut - Smithfield has hired Applied Geographics Inc of Boston MA to conduct a needs analysis to integrate all town departments into a common GIS.
- e. Fuss & O'Neill Technologies** – Susan Scanlon has been very active providing training courses to state and municipal government in both Connecticut and Rhode Island. The company is also working with Jamestown and Middletown developing parcel databases. They are assisting Woonsocket and Barrington with GPS field work.
- f. USDA/NRCS** – Jim Turenne has been working with some success using a tablet PC to support GPS data collection in the field.
- g. RIDOT** – Steve Kut noted that the project started a few years ago to update historic site data is moving forward. The work involves locating over 15,000 points and district polygons provided by the RIHPC and using address matching, the E911 building point data set, and orthophotos to create the geodatabase.
RIDOT is also mapping storm water outflows and catch basins using their right-of-way imagery and Pictometry oblique photography. RIDOT is developing ArcGIS server web applications supporting road and highway design, construction and maintenance functions within the Department.
- h. Town of Charlestown** – Steve McCandless filling in for Ken Swain reported that they are updating GIS data sets for the town. Steve is also assisting Hopkinton with GIS mapping.
- i. RI Water Resources Board** – Rob Christina has been busy with network and database functions at RIWRB while acquiring more knowledge with the GIS software as well.

- j. **Towns of South Kingstown and New Shoreham** – Carol Baker reported that a communications geodatabase is being developed for South Kingstown. She also noted that National Grid USA has agreed to provide electric utility pole information to the town. A sewer system application using IMS is being developed with As-built CAD drawings and asset inventory cards being scanned into a database system for that purpose. Fuss & O'Neill is assisting her with building a comprehensive parcel geodatabase. The town's internal IMS site is up and running and a study is now underway to establish an external IMS for the public. She noted that in buying new hardware, people should be made aware of potential complications of buying 64 bit systems that may not work with current GIS technology. The Town of New Shoreham will be using ArcPublisher project files and ArcReader viewing software on a town hall kiosk computer for public access of GIS and related data.
- k. **Ecotones Inc.** – Joe Klinger continues to employ both GIS and CAD technology with a primary focus on wetlands delineation. His primary business partner is becoming more aware of GIS capabilities after receiving software training.
- l. **Applied Science Associates** – Chris Galagan announced that ASA's flood modeling capability was featured in "Surfer" magazine and also "Vanity Fair" magazine's May 2006 issue. Dramatic images produced by the modeling tools include New York City, Miami and Washington DC showing effects of potential future sea surface rise resulting from global warming (see also ASA June 2006 newsletter <http://www.appsci.com/news/2006/june2006.htm#vf>). In a related project, ASA is doing storm surge modeling work on several cities for the National Environmental Trust.
- m. **RI Department of Environmental Management** – Paul Jordan reported that RIDEM's open space data set project is nearing completion. When finished, Paul intends to produce CDs with ArcPublisher projects for use with ArcReader viewing software for limited distribution for use by land trusts and various conservation groups. He is starting to work on a "Blueways" dataset for canoe and kayak waterway "trails" within the state. When completed these will appear as an additional IMS map on www.dem.ri.gov for public viewing and use. This will complement the (hiking) trails mapping project that has been in progress at RIDEM for some time.
- n. **URI Geosciences and the State Geologist's Office** – Jon Boothroyd discussed his continued involvement with the dredging projects in Point Judith and the south coast's salt ponds. He is continuing to study effects of dredged sand dispersal through mapping of the Matunuck area using side scan sonar, drop camera systems and existing orthophotography. He noted that if the spring 2007 orthophotography project becomes a reality, he will be one of the first in line for the products. Jon mentioned his concerns that current hurricane storm surge and flooding studies weren't taking into account sea level rise that he has already observed and documented along Rhode Island's coastline.
- o. **URI Geospatial Extension Program** – Greg Bonyngue announced that a course will be offered in July called "Pictures, Points and Places" emphasizing the use of digital cameras and GPS field collection techniques. A "GPS Field Day" will take place in September 8th. Greg noted the important contributions that Ann Borowick had made to the previously discussed RIGIS web site make over. Ann mentioned that at this time she is moving her attentions from the RIGIS site to the Rhode Island Geodata also being developed by URI.

RIGIS Executive Committee

October 11, 2006

USDA/NRCS Conference Room –Warwick RI

Attendees: Suzzane Kogut-Town of Smithfield; Steve Sawyer-RIDOH; Terry Meyer-Observer; Kate Lommen-Applied Geographics (Observer); Lynn Bjorklund-USGS; Chuck LaBash- EDC/URI; Paul Spina- Beta Group Inc.; Steve Kut-RIDOT; Mary Hutchinson-Mapping and Planning Services; Maria Giarrusso-City of Cranston; Janice Peixinho-Town of East Greenwich; Steve McCandless-Town of Charlestown; Jon Boothroyd – State Geologist/URI; Jim Turrenne-NRCS; Lynn Carlson-Brown University; Paul Jordan, Vice Chairman-RIDEM; John Stachelhaus, Secretary -RIDOA/DoIT

The minutes of the June 21, 2006 were accepted by vote of the committee.

Announcements – John Stachelhaus reminded the attendees that NEARC 2006 will be held from November 12 through the 15 in Groton CT. Late registration costs will kick in on November 6th. NEARC is the premier GIS conference in the northeast with participation from all six New England States, New York and New Jersey. Since this year's event is within relatively easy driving distance, it is expected that there will be heavy participation from Rhode Islanders. www.northeastarc.org

The RI League of Cities and Towns annual conference will be held in Warwick on January 25, 2007. This event is attended by many state government and municipal employees from all 39 cities and towns. RIGIS hosts a display booth at the conference and where there has been a heavy interest in GIS by attendees in the past. John Stachelhaus will be requesting maps, graphics or posters with city/town theme applications for display at the RIGIS booth. www.rileague.org

John noted that the annual review of the RIGIS Strategic Plan should start at the next quarterly meeting in December. He requested that members look at the Strategic Plan and be prepared to comment on it.

www.edc.uri.edu/rigis-beta/about/docs/default.html

- 1. NSGIC – “Imagery for the Nation”** The RIGIS Executive Committee passed a motion to write a letter of support for the National States Geographic Information Council (NSGIC) “Imagery for the Nation” initiative (IFTN) at the March 2006 meeting. At that time, there were no clear directions from NSGIC on how to submit supporting documents. John reported that he had attended the (NSGIC) annual conference from October 2-6, 2006 and that instructions from that body on the “IFTN” initiative are to send documents to NSGIC. They will use this and similar letters from other states to support of the initiative in attempts to include the program in the USGS and USDA budgets. A printed resolution and cover letter were approved by the Committee. They will be forwarded to NSGIC and will appear on their web page. (Rhode Island resolution posted on web site as of 10/30/06 <http://www.nsgic.org/hottopics/imageryofnation.cfm>)

John also reported that a second area of interest that he explored at the NSGIC conference was related to building and property addressing projects that will be conducted by the US Census Bureau for the 2010 census. John had hoped that RIGIS participants might be able to work with Census to improve addressing databases in the state and create a Master Address File for Rhode Island in the process. Unfortunately the Census bureau is restricted from sharing information by federal legislation (Title 13). John will be working with a NSGIC committee as part of a national effort to improve addressing databases.

2. GIS Training for Assessors – Exploring Interests/Funding

John Stachelhaus introduced the idea of exploring the interest of a training class in ArcGIS specifically for municipal tax assessors. He noted that classes of this type were held in Massachusetts several years ago and at the time were also attended by some Rhode Islanders. In Massachusetts, the classes were funded by the Mass. Association of Assessing Officers (MAAAO) and Feng Yang, now the GIS manager for Brookline, MA was the instructor. John also mentioned that the RIAAO had Angelo Marino, the tax assessor from Nashua, NH as a guest speaker at their annual summer meeting. Mr. Marino focused on the use of GIS in his office. The

RI assessors present at that meeting seemed quite excited about using GIS technology for their business needs.

John introduced Terry Meyer who also had an interest in this topic. Terry worked for Feng Yang in the past and had talked to her about possibilities of teaching a similar course in Rhode Island. Terry explained that the course was from 4 to 5 days long and concentrated on tax assessment issues as opposed to broader brush municipal applications. The course was described as being well organized with lesson plans, tutorials and documentation and had been given to many Mass. tax assessors over the past years. Cost was estimated at \$400-\$500/student depending upon the number of students. If Feng were to be involved, there was an indication that the Providence area would be preferable due to its relatively easy commute distance from Brookline. Terry mentioned that Brown University appeared interested in hosting such a course at one of their computer lab facilities. Lynn Carlson noted that this might be possible for times when the labs were not in use by Brown such as winter break, or after the school year. Paul Jordan commented that a 4-5 day course seemed long based on the subject matter and the potential for assessors to be away from their jobs for that length of time.

Sue Kogut noted that even at a relatively low cost per student price, municipal tax assessors might find it difficult to obtain funding with tight budgets now limiting city and town activities. The RIAAO as an organization does not have resources to cover these costs as MAAAO did. It was also noted that Vision Appraisal one of the major providers of services to Rhode Island's municipal tax assessors has a GIS software extension that works within ESRI software. The use of this software might lessen the need and interest for a full course in basic ESRI ArcGIS software. John Stachelhaus mentioned that Sue Scanlon at Fuss & O'Neil (not present at this meeting) had also expressed an interest in teaching such a course. The Cooperative Extension Service at URI, a traditional provider of training for the GIS community might also have some alternative ideas.

Sue Kogut will canvas the RIAAO membership to see what the level of interest would be in a course of this type. Terry Meyer will continue to look into other possible aspects of such a program.

3. **Parcel Standards** – Possibilities for State Division of Planning Grant Funding - John commented that Kevin Flynn the Associate Director for Planning at RIDOA is exploring the idea of providing grant money to cities and towns to improve the potential for wider use of digital property parcel data developed and maintained locally. There is an interest in using this information on regional and state scales, but a lack of standardization of the data complicates the issue. MassGIS addressed this in their state by providing grant monies to cities and towns to improve capabilities for wider use through adhering to (MassGIS) accepted standards. <http://www.mass.gov/mgis/standards.htm> John also noted that the RIGIS parcel standards developed in 2003 were primarily based on the Massachusetts standards. He requested that Committee members review the RIGIS standards and determine if they would fit the same purpose. <http://www.edc.uri.edu/rigis-beta/about/docs/RIGISParcStnds.pdf> If the state Division of Planning offers grant money for this purpose, it would probably not be available until state fiscal year 2008 (July 2007).

Steve McCandless commented that Charlestown will be recreating its digital parcel data set based on newly acquired orthophotography (spring 2006). The town will be using some data originating from property land surveys and conducting deed research to resolve differences in source material such as older digital parcel information and paper plat maps on file with the tax assessor's office. The RIGIS parcel standards document contains several references to the requirement to include the services of a licensed professional land surveyor when defining property lines. They will be requesting guidance as to when a licensed surveyor must be included in the development of their parcel data base.

4. **LIDAR/Oblique Imagery** – Discussion on cooperative efforts for statewide coverage

Steve Kut briefed the committee on recent efforts to obtain oblique imagery covering the entire state. Ray LaBelle of RI E911 was mainly responsible for obtaining the imagery and viewing software from Pictometry International for four RI cities in 2005. Until recently the price of a statewide product from Pictometry was cost prohibitive making

procurement efforts very difficult. However, ACA-Multivison, a competitor offering similar images and viewing software recently visited RIDOT and verbally indicated a much lower price for their products. In a more recent quote Pictometry dropped their price making the purchase of statewide oblique imagery more possible from that company as well.

Although RI E911 is still the primary agency involved in obtaining this data, there are several other interested organizations with a high interest as well. Steve said that RIDOT is making good use of the obliques and accompanying high resolution orthogonal images for asset inventory and management. Much of the interest in the oblique images within RIDOT is from non-GIS users. However, he is working with Pictometry to integrate their software with the ESRI software primarily used for GIS applications at RIDOT as well. Although there may be questions as to spatial accuracy on the use of the Pictometry data on a small map scale basis, he has been successful in using the data at the larger scales present at the individual image tile level. Municipal fire and police departments and the public safety community in general were strong supporters of oblique imager in the past. Municipal tax assessors are also interested in these products and the RI Association of Assessing Officers endorsed the effort to obtain statewide oblique imagery last year.

With these interests and factors in mind, RI-E911 will be renewing its effort to obtain products from Pictometry International for statewide use this year.

A brief discussion followed on recent successes and attempts to LIDAR data. The RI National Guard is acquiring LIDAR for selected areas in the state to be used for helicopter training. These are in RIDEM management areas and amount to about 45 square miles of coverage and acquisition is planned for this year. FEMA is planning on obtaining LIDAR data for areas of south coastal Rhode Island to extend about 3 miles shoreward of the coastline in Washington County. The Providence Water Supply Board is expecting delivery of LIDAR for the Scituate reservoir watershed area this fall. Chuck Labash (URI/EDC) explained that these data should prove a valuable data resource for analyzing possibilities for future LIDAR acquisition in the future. Lyn Bjorklund noted that USGS now maintains a web site for finding information on the availability of elevation data including LIDAR and the National Elevation Data Set (NEDS). <http://lidar.cr.usgs.gov>

5. Participant Review

Town of Smithfield – Suzanne Kogut reported that the “Needs Analysis” for townwide GIS was completed by Applied Geographics Inc (AGI) and approved by the Town Council. A three year plan for GIS operations in Smithfield is being implemented. The town is now working with AGI on the development of a municipal IMS site.

RI Department of Health – Steve Sawyer announced that the RIDOH is using GIS and web portal technology for real time syndromic surveillance for as a test bed for three hospitals in the state.

RI Department of Health – Steve Sawyer announced that the RIDOH is currently leveraging the Enterprise ArcGIS ArcSDE v9.1 technology to provide federated Geobatabase *Views* and spatial visualizations; through ArcGIS ArcIMS v9.1, for the pilot electronic Syndromic Surveillance system called Rhode Island Real-time Outbreak and Disease Surveillance (RI RODS) system.

RI RODS was implemented for the purpose of early detection of and situational awareness during public health emergencies. RI RODS monitors syndrome categories and performs aberration detection algorithms to identify unusual trends in real-time. The system generates automated alert notification to key personnel in the event of a system alert. The pilot implementation involved three hospitals (Rhode Island, Miriam and Newport) who transfer real-time emergency department registration information.

Hospital infection control practitioners and emergency department personnel, state epidemiologist, and public health nurses are able to access RI RODS via a secure web-based user interface, which displays data as time-series graphs, and spatially embeds its map graphics. Phase II of the RI RODS will soon implement 4 additional hospitals by December 31, 2006. Phase III, the 4 remaining hospitals by Summer 2007.

Applied Geographic’s Inc. – Kate Lommen related that AGI has been contracted by the States of New Hampshire, California and Colorado to develop strategic plans for GIS in those states. In 2005 AGI was selected by the Federal Geographic Data Committee (FGDC) and the National States Geographic

Information Council (NSGIC) to develop template documents for strategic plans and business plans for use by the FGDC in their "Fifty States Initiative".

USGS/National Geographic Programs Office – Lynn Bjorklund announced that Jim Campbell has left the USGS Water Resources Division office in Providence and his replacement Robert Breault is now on board. Lynn requested that a schedule for RIGIS meetings be investigated for the next year. (John Stachelhaus explained that he'd look into this. A proposed schedule has been emailed to committee members.)

RIDOA - John noted that the Statewide Planning Program project with Sanborn for new Land Cover/Land Use was progressing satisfactorily. The initial pilot area for development of rule sets for land use identification and coding has been completed. Work on the next two sample tiles of East Providence and Block Island is in progress. John also noted the GIS effort within state government under the Division of Information Technology received a grant from USGS/NGPO to develop a business plan leading to the implementation of an enterprise wide GIS for state government agencies.

RIDEM - Paul Jordan is preparing DVDs of information related to the new open space data sets recently completed by RIDEM. There is still and will continue to be a need to track and acquire information on updates, particularly from the municipal land trusts. Peter Grace and Terry Meyer who had been working on the Open Space data have moved on. Terry mentioned that she would be interested in helping set up a web based GIS job site if there was an interest. It was suggested that she might work through Greg Bonyng or the Cooperative Extension Service at URI.

URI/EDC - Chuck LaBash reporting for Greg Bonyng said that the present Beta development web site www.edc.uri.edu/rigis-beta will become the primary access site for RIGIS news and data in November. The existing www.edc.uri.edu/rigis will receive a new URL, but will still be accessible for a period of time through a link. Greg is also working on the RI Geodata Gateway site based on the ESRI GOS portal model. www.edc.uri.edu/gateway Chuck also noted that Mike Bradley has received new 2006 orthophotography for use in eel grass studies in Narragansett Bay. They hope to make these images available through RIGIS in the near future.

Beta Group Inc. – Paul Spina explained that Beta is working in most New England states to develop asset management and pavement management capabilities using GIS and customized database applications. Beta is also contracted with the Town of Bristol, RI to perform CAD and GIS conversions, create a seamless parcels data layer for the entire town, and create an updated parcel-level Zoning map.

RIDOT – Steve Kut explained that work is in progress for using ESRI ArcGIS Server capabilities for overall project management through web applications. When this goes on line in November, it will give DOT staff and consultants the ability to edit the GIS database from remote sites.

Mapping and Planning Services Inc. – Mary Hutchinson noted that she is assisting the town of Middleton wrap up the project for 6" orthos, 2' contours and planimetric mapping being completed by Chas H. Sells Inc. Fuss and O'Neil has a contract to update the parcel data set for the town. A RFP for development of a new sewer infrastructure data set was recently issued. It was noted that the town's sewer system proved to be major problem over the past year due line breaks creating pollution of beaches.

City of Cranston – Maria Giarrusso explained that a property easement database is being developed from base map data from the City. She has been involved with numerous training sessions for city employees using GIS or related tools.

Town of East Greenwich – Janice Piexinho noted that the town's GIS is still being plagued by computer network, hardware and software problems. There has also been some personnel turnover in town hall slowing down correction of some of the problems.

Town of Charlestown – Steve MacCandless announced that sample data for the 2006 orthos (6" pixel) will be available in November. As noted earlier these images will be used to assist in development of a new parcel data set.

State Geologist's Office and RI Geosciences - Jon Boothroyd reported that the new Narragansett Bay shoreline change maps have been delivered to RI CRMC. Jon continues to work on defining elevation datums in tidal areas.

USDA/NRCS – Jim Turenne continues to be involved with the mapping of subaqueous soils in coastal ponds and MapCoast project. The NRCS is scanning older soil survey maps for future display and access on the web.

RIGIS Executive Committee

December 13, 2006

USDA/NRCS Conference Room- Warwick RI

Attendees: Joseph Klinger, Chair-EcoTones Inc.; Suzanne Kogut-Town of Smithfield; Christopher Galagan-ASA Inc.; Thomas Grala- Narragansett Bay Commission; Greg Bonyne- Cooperative Extension, URI; Paul Spina- BETA Group Inc.; Carol Baker-Towns of New Shoreham and South Kingstown; Maria Giarrusso-City of Cranston; Janice Peixinho-Town of East Greenwich; Jon Boothroyd – State Geologist/URI; Jim Turrenne-USDA/NRCS; Lynn Carlson-Brown University and Town of Coventry; Paul Jordan -RIDEM; John Stachelhaus, Secretary-RIDOA; (Observers) Melanie Brenda-Joubert-Town of Hopkinton; Steven Anderson-Applied Geographics, Inc.; Laura Cadmus- ESRI Boston; Lyn Malone-WorldViews

- 1. The minutes of the October 11, 2006** were accepted by vote of the committee.
- 2. Announcements** – John Stachelhaus reminded the attendees that the RI League of Cities and Towns annual conference will be held in Warwick on January 25, 2007. This event is attended by many state government and municipal employees from all 39 cities and towns. There has traditionally been a heavy interest in GIS in the past. There is no cost for admission to this event. RIGIS and the Geospatial Extension Program at URI will host a display booth at the conference. John Stachelhaus will be requesting maps, graphics or posters with city/town theme applications for display at the event. www.rileague.org
- 3. Northeast Arc Users Conference** – Greg Bonyne announced that he was recently elected to the NEARC Board of Directors at the recently held NEARC2006 conference held in Mystic CT in November. The conference itself had over 600 attendees with a heavy participation by Rhode Islanders including presentations by several RIGIS participants. Those with interests in either the Spring NEARC Conference to be held in North Hampton, MA in April/May of 2007 or the NEARC2007 fall conference to be held in Burlington, VT in November 2007 should contact Greg.
- 4. 2007 Rhode Island GIS Conference** – Greg will be initiating an annual Rhode Island GIS conference to be held this spring. This will be a one day affair held on June 1st 2007 at the URI Bay Campus. Volunteers to help were requested. Carol Baker, Chris Galagan, Maria Giarrusso, and John Stachelhaus have volunteered so far. Any others interested in helping out should contact Greg (401) 874-2180 or greg@edc.uri.edu.

5. New RIGIS Database Additions

RIDEM - Municipal and Private Conservation Lands – Paul Jordan announced that two new data sets of conservation lands have recently been released for inclusion in the RIGIS database. This information has been collected and developed at RIDEM over the past two years with the help of Peter Grace and Terry Meyer. The “State Protected Conservation Land” data set contains all state lands protected through Fee Title Ownership, Conservation Easement, or Deed Restriction. Includes: Wildlife Management Areas, Drinking Water Supply Watersheds, State Parks, Beaches, Bike Paths, Fishing Access Areas, Local Parks and Recreation Facilities that have been developed with State Grant Funds. It will replace the data set titled “Protected Public Lands” in the RIGIS database. The second of the two data sets “Muni and NGO Conservation Lands” are non-State conservation lands consisting of real property permanently protected from future development by fee simple ownership, conservation or other restrictive easements, or deed restrictions held or enforceable by recognized land protection organizations other than the State of Rhode Island. These include, but are not limited to, the Audubon Society of Rhode Island, The Nature Conservancy, RI municipal governments, The United States Fish & Wildlife Service, private land trusts and other conservation groups. This data set will replace three data sets; “Audobon Lands”, “Protected Open Space”, and “Private Land Trust Holdings” in the RIGIS database. Paul made a presentation on the properties of the two new data sets, demonstrating their spatial qualities and extensive attribute tables. He explained that these data will also be made available on DVDROM by RIDEM to selected audiences using

the ESRI ArcPublisher/ArcReader viewing software. This is expected to include federal and state agencies with interests in conservation lands as well as city and town organizations including land trusts. Paul demonstrated some of the ArcReader capabilities when viewing the data from DVDROM media.

RIDOA-Statewide Planning – John Stachelhaus made a presentation on the Statewide Planning project to develop new GIS Land Cover/Land Use information for the state. Planning is being assisted in this effort by the URI/EDC, the RIDEM, Mapping and Planning Services Inc. The contract to develop the digital data set was awarded to the Sanborn Mapping Company in June of 2006 and work started in July. Work on an initial pilot area (Wickford) was completed in October and preliminary sample data for Block Island is now being analyzed. Past GIS Land Use data sets developed in 1988 and updated in 1995 utilized traditional hand tracing and tablet digitizing methods of specific land use areas from copies of photo-positive prints onto mylar sheets. The current project is using a new technical approach combining traditional GIS analytical methods with state of the art remote sensing tools to identify land use features on the ground from 2003/04 digital orthophotography.

A new semi-automated technical approach is being used by Sanborn to develop the new land use data. The product will be based on recent 2003 and 2004 digital photography contributed to the RIGIS database by RIDOT. The methodology involves first selecting areas of impervious surfaces such as building roof tops, parking lots and paved roads using remote sensing techniques. The impervious features are then coded for their respective land uses and buffered to specific distances to produce polygon features for developed land use areas. Buffer distances are established based on the land use type, (60' for residential, 10' for commercial etc.) The next step in the process inspects the remaining areas of natural cover and with computer software differentiates between different land cover types (forests, agricultural fields and wetlands). The developed land use and natural land cover features are then combined for and overall digital data set that can be used with computer software for land use analysis in a Geographic Information System.

Limitations of the new digital land use product were pointed out including the fact that wetlands in forested areas are not being identified. This resulted from a technical restriction to do so due to a lack of digital signature data in the source photography (color infra red). This will result in a limited ability to use the final data product for statistical analysis comparisons with prior (1988/1995) land use data.

The final product will be delivered in June of 2007 and is expected to be available for use through the RIGIS distribution system later in the summer. A bonus digital product of statewide impervious features will also be made available for such uses as storm water tracking and non-point pollution studies. In addition, the experience gained and technical mythology developed during the project should allow for decreased costs to develop similar data, and hopefully, an ability to update this important source of information more frequently in the future.

Annual Review of the RIGIS Strategic Plan – John Stachelhaus noted that the RIGIS Strategic Plan states that it is to be reviewed annually. He asked for input from all members. Goals and objectives 4-7 in the plan are specifically related to member interest groups (state, municipal, academic and private sector). John asked that members look at the overall plan and their particular interest areas and provide comments and if needed, suggestions for change prior to the next (March 2007) meeting. www.edc.uri.edu/rigis-beta/about/docs/default.html

John also noted that he will be working on the RIGIS Annual Report, and requested input from all parties on accomplishments by them in using GIS during the past year. (*Input via email on both the Strategic Plan and the Annual Report to rigis@admin.ri.gov by January 15 is requested.*)

Jon Bothroyd suggested that we look into providing more information on training opportunities available for use of GIS software. A general discussion followed on what is generally offered around the state by private companies, and the colleges and universities. Greg Bonyngue will attempt to provide listings of training sessions available through the URI website. Any assistance that can be provided to him will be appreciated.

6. **Update on Interest in GIS Training for Tax Assessors** - Suzanne Kogut reported that the RIAAO had not yet held their fall meeting, and therefore the subject has not yet discussed by that body.
7. **Review of RIGIS Digital Parcel Standards** – www.edc.uri.edu/rigis-beta/about/docs/default.html John Stachelhaus explained that the RIDOA Statewide Planning Program is considering offering grants to cities and towns for use in creating or improving digital parcel data. He asked that all members look at the RIGIS Parcel Standards document and provide him with comments as to whether it was still applicable as a guidance document. He noted that the town of Charlestown still intended to work on their digital parcel base, but probably not to the extent where new mapping would be involved. For that reason a concern of the Charlestown GIS consultant as to when to obtain the services of a licensed land surveyor has been alleviated. The town is presently working with a licensed land surveyor for clarification of some parcel lines in there existing digital parcel data.

A general discussion followed concerning the term “mapping” and the ability to “make maps” as applied to GIS practitioners, local government tax assessors and the body professional land surveyors. The discussion centered on Rhode Island state law as it pertains to the definition of “land surveying” in R.I. General Laws 5-8.1-2(10). For reference, John Stachelhaus commented that this definition was excerpted for inclusion in the RIGIS Parcel Standards document at the request of the RI Board of Registration for Professional Land Surveyors in 2003. Joe Klinger noted that he and his company’s ability to create maps of environmental and ecological features for a client had recently been called into question in a legal dispute. Jon Boothroyd explained that URI Geosciences is and has been for a number of years assisted CRMC with shoreline mapping. A question arose as to how general parcel mapping at the municipal level is addressed. A difference as to when a map or the features represented on a map become definitions with the backing of “legal authority” was pointed out. A caveat statement on page 2 of the RIGIS parcel standard, an additional statement on “New Mapping” on page 6, and a suggested caveat on page 13, attempt to address this issue with respect to parcel mapping. However, situations such as may pertain to mapping applications as are encountered in the delineation of natural or ecological features should warrant additional discussion.

8. Participant Review

RIDEM – Paul Jordan has been working on the RIGIS 1:5000 scale hydrographic data recoding islands in lakes and ponds and other general clean up work on rivers and streams. The National Hydrographic Data (NHD) at 1:24,000 scale is also available for use in Rhode Island, and contains continuous river/stream line work in lakes and ponds.

Town of Smithfield – Suzanne Kogut reported that the town is moving to an ESRI geodatabase format for their parcel data. An internal IMS site is nearing completion with the help of Applied Geographics Inc. New subdivision regulations are being formulated allowing for data in a digital format.

Town of East Greenwich – Janice Piexinho noted that Fuss & O’Neil Inc. will be assisting the town with quality control work on the East Greenwich digital parcel data.

Applied Geographic’s Inc. – Steve Anderson related that AGI has been contracted by the states of New Hampshire, California, Colorado and Massachusetts to develop strategic plans for GIS in those states. In 2005 AGI was selected by the Federal Geographic Data Committee (FGDC) and the National States Geographic Information Council (NSGIC) to develop template documents for strategic plans and business plans for use by the FGDC in their “Fifty States Initiative”.

ESRI - Laura Cadmus introduced herself as the ESRI Boston’s office representative for Southern New England and offered her continuing assistance for ESRI software products being used by most GIS practitioners in Rhode Island.

State Geologist’s Office and URI Geosciences - Jon Boothroyd reported that the new Narragansett Bay shoreline change maps have been delivered to RI CRMC. The new shoreline is expected to replace those on maps in “The CRMC Redbook”. Shoreline data supporting the maps will be offered for inclusion in the RIGIS data.

USDA/NRCS – Jim Turenne reported that with the mild weather, he continues to be involved with general soils mapping field work as well as the mapping of subaqueous soils in coastal ponds.

Applied Science Associates – Chris Galagan explained that ASA is doing a lot of work for world wide clients establishing and hosting Web Mapping Service (WMS) sites and in some hosting the source data itself.

BETA Group Inc. – Paul Spina explained that Beta is completing a seamless digital parcel data set as well as creating a parcel based zoning map for the Town of Bristol, RI. BETA is also finishing up a pilot project for Mutual Aid for public works departments for five cities and towns in southeastern Massachusetts.

EcoTones Inc. – Joe Klinger is also taking advantage of the milder weather to do field work normally not easily done at this time of year. He has been under contract to assist the CRMC with eel grass studies and Special Area Management Plans (SAMPS).

RIDOA - John Stachelhaus noted that he has received shape files from the US Census with new line work for tracts, block groups and blocks based on the RIGIS 1:5000 data. He will be working on bringing in the Census 2000 data attributes for Summary File(s) 1 and 3 for better use with other RIGIS data. He requested that users of the RIGIS Censusf1 and Censusf3 data sets advise him if there are existing problems with the attribute data in those data sets. John also mentioned the GIS effort within state government received a grant from USGS/NGPO to develop a business plan leading to the implementation of an enterprise wide GIS for state government agencies. Purchasing documents are being prepared to bring AGI on board to conduct the study in 2007.

URI/EDC - Greg Bonyng said that the present beta development web site www.edc.uri.edu/rigis-beta will become the primary access site for RIGIS news and data in December. The existing www.edc.uri.edu/rigis will receive a new URL, but will still be accessible for a period of time through a link. Greg is also working on the RI Geodata Gateway site based on the ESRI GOS portal model. www.edc.uri.edu/gateway

WorldViews Inc. - Lyn Malone introduced herself and explained that she has been acting as a GIS consultant for the K-12 Education community in Rhode Island. At this point she is concentrating on educating the teachers in the use of GIS technology. Projects include: Mapping US History, Training in using Census data for educational purposes, and on-line mapping for the Narragansett Bay Coyote Study <http://204.17.79.245/website/coyotestudy/viewer.htm> (with Numi Mitchell and the Providence Plan). One of her next goals is introducing GIS to school administrators. Lyn is presently the Chair of the RI Geography Education Alliance.

Town of Hopkinton – Melanie Benda-Joubert introduced herself as the new GIS manager for the Town of Hopkinton. She has been busy updating parcels and converting the town's shape file data to a geodatabase format.

City of Cranston – Maria Giarrusso is involved in training Cranston city staff in the use of oblique aerial photo imagery data made available by RI E911. She is using both the ESRI extension for ArcGIS and Pictometry ESF software for that purpose.

Narragansett Bay Commission – Tom Grala has been successful in using data from the RI E911 building point files for geocoding with their included addresses. Although there is much work to be done using this method to assist in determining service points related to buildings appears promising. (A new data set **esites05** of confirmed RI E911 building points for selected cities and towns is being loaded on www.edc.uri.edu/rigis)

Town of South Kingstown – Carol Baker has received and is reviewing the initial set of pilot color orthophotos at 6" pixel resolution from the consultant (Earthdata). She is also anticipating delivery of the associated DTM expected to include over 1.2 million points. The DTM will allow for the generation of TIN model and 2 foot vector contour lines.

Town of New Shoreham – Although New Shoreham was the first town in the state to have digital parcels, they still maintain their official parcel map by manual drafting techniques on linen media. Carol Baker is trying to have the town accept the digital data as an official product and allow for automated updates using GIS technology.

Brown University – Lynn Carlson noted that the fall semester at Brown is over, and several students will be looking for experience through internship programs. Those organizations that can offer a position for interns should contact her.

Town of Coventry – Lynn has been using the new ESRI ArcExplorer software and Google Sketch Up to produce 3 dimensional visual renderings for studying commercial cell tower proposed site selections.

