

**Regional Assessment:  
Wetland Geographic Information Systems Data Available  
in the New England States and New York**

**New England Interstate Water Pollution Control Commission**

**August 2006**



## **Executive Summary**

The New England Interstate Water Pollution Control Commission (NEIWPC) has conducted a regional assessment of the New England States and New York to assess the extent and quality of wetland data available in the region. This report summarizes an investigation into the digital wetlands layers available to the NEIWPC member states (New England and New York). NEIWPC conducted this survey at the request of the New England Biological Assessment of Wetlands Workgroup (NEBAWWG). It was noted at various workgroup meetings that the digital wetlands data available to the members is highly variable, inconsistent from state to state, and often inadequate. Members of the workgroup agreed that the digital wetlands data available to the administrators of the state wetland programs, enforcement staff, environmental scientists and all other wetland professionals needs to be improved. The position of wetlands in geographic space has implications on jurisdictional issues as well as the way these resources are managed. The goal of this assessment is to examine the data that state agencies are currently using, highlighting states that have exceptional data quality, as well as those who are lacking proficient data.

State agency Geographic Information System (GIS) staff was surveyed regarding the extent and accuracy of the best wetland data available to them. NEIWPC also coordinated with the USFWS National Wetland Mapper administrator to discern what NWI data is available and unavailable to the common user. This effort was undertaken to provide a comparison of wetland digital data available for the region. This report intends to highlight states where digital NWI coverages are not complete, states that have coverages that are more accurate and complete than NWI, and states that severely lack access to digital wetland data.

The New England States and New York have varying levels of wetland data available to them in digital format. The National Wetlands Inventory Maps are incomplete to varying degrees in all states surveyed except New Hampshire. From this assessment, it is clear that the New England States and New York would greatly benefit from a concerted effort to increase the compatibility of data for interstate comparison purposes, a minimum mapping standard was developed to ensure accuracy, and state agencies receive funding to improve the mapping efforts that are ongoing in their state.

## **Background**

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information to the public on the extent and status of the Nation's wetlands. Through its National Wetlands Inventory, the agency has developed considerable expertise in mapping wetlands and associated habitats. These maps have been used extensively to make resource management decisions at the federal, state and local government levels. Today, the service faces difficult natural management challenges and decisions that did not exist when the Inventory was created<sup>1</sup>.

The National Wetlands Inventory of the U.S. Fish and Wildlife Service was developed to generate information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats. The Emergency Wetland Resources Act (16 U.S.C. 3931), as amended by P.L. 102-440, requires the National Wetlands Inventory to complete maps for the coterminous United States by September 30, 1998; to update the report on wetlands status and trends on a 10-year cycle; to produce wetland maps of Alaska by September 30, 2000; to produce a digital database for the United States by September 30, 2004; and to archive and make final maps and digitized data available for distribution<sup>2</sup>.

Digital databases are currently developed on a user-pay basis. This has led to inconsistencies in the quality of the NWI mapping that has been conducted in New England and New York. Some states have taken it upon themselves to create wetland maps for the state, developing their own standard and classification system. This leads to a greater inconsistency and increased difficulty communicating between states regarding the quality and extent of wetlands in their state. Furthermore, states that have high resolution wetlands data that is of a larger scale than that of NWI have not necessarily transferred this data to the USFWS to be incorporated into NWI maps. This further enhances the inconsistency of the wetland data for region.

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<sup>1</sup> USFWS, January 2002, *National Wetlands Inventory: A Strategy for the 21<sup>st</sup> Century*

<sup>2</sup> Wilen and Smith. 1996, *Assessment of Remote Sensing/GIS Technologies to Improve National Wetland Inventory Maps*

## **Classification**

Wetlands are defined in a variety of ways, depending on the context. The USFWS developed a non-regulatory, technical definition that could have several uses, ranging from wetland protection to scientific investigations. Most States have developed regulator definitions to protect certain wetlands from exploitation. In order to separate the broad category of wetlands into their more specific attributes, USFWS developed a classification system. This system incorporated various components of other classification schemes, primarily Cowardin. Briefly, the USFWS classification system divides wetlands into systems, subsystem and classes. These divisions are based on plant and soil conditions, as well as the periodicity of flooding. The classification scheme places “ecologically similar habitats” into hierarchical systems that permits wetland classification down to dominance types, which are based on dominant plants or substrates. The system provides extraordinary value, because it can be used to identify units for inventory and mapping. This is also the system the FWS uses to determine status and trends.

NEIWPC is suggesting at the request of NBAWWG, that a regional classification system is adopted by the New England States and New York. The most appropriate classification system for the purposes of communicating wetland status between states was chosen by the workgroup at the NEBAWWG Meeting in Bethel, Maine in March of 2006. The workgroup chose the USFWS classification system, which is very similar to the Cowardin system, as mentioned above. This system was chosen due to the large percentage of the workgroup members had already implemented the Cowardin system in their states. States that do not currently use this system will be encouraged to develop a cross walk from their system to the Cowardin system. NEIWPC is tentatively going to be coordinating training for this purpose in the Fall of 2006, which will be provided by the USFWS.

## **The National Wetlands Mapping Standard**

The Federal Geospatial Data Committee is currently developing a National Wetlands Mapping Standard to ensure consistency of all map products used by governmental organizations. The goal of the National Wetland Mapping Standard is to ensure that digital wetlands data will be compatible and located in a central location, as well as having a minimum accuracy that is adequate and comprehensive.

## Background

The Federal Geospatial Data Committee was established by the Office of Management and Budget Circular A-16, promoting the coordinated development, use, sharing, and dissemination of geographic data. The FGDC is broken into subcommittees, which have established Working groups. The Federal Geospatial Data Committee (FGDC) wetlands subcommittee is concurrently undergoing the creation of a Federal Wetlands Mapping Standard. The Standard is intended to 1) streamline mapping efforts for greater consistency and efficiency 2) enable any entity to map using the standard and construct or update the National Wetlands Inventory (NWI) Geodatabase and the National Map 3) Facilitate consistent mapping layers that can be used across geopolitical and watershed boundaries.

There is currently no FGDC approved standard for wetland mapping. The U.S. Fish and Wildlife Service (USFWS) will never have the resources to undertake wetland mapping and updating alone and the continual basis that is necessary. A partnership between the Federal, State, Tribal, Local and other stakeholders can accomplish this.

The Standard is being developed by a variety of different partners including:

- Colleen Charles, USGS
- Bob Pierce, USGS
- Paul Wiese, USGS
- Larry Handley, USGS
- Tom Dahl, FWS
- John Cooper, FWS
- Bill Pearson, FWS
- Ralph Tiner, FWS
- Bill Wilen, FWS, NWI
- Jo Ann Mills, FWS
- Margarete Heber, EPA
- Palmer Hough, EPA
- Chanda Littles, EPA
- Christine Mazzarella, EPA
- Myra Price, EPA
- Kathy Mulder, EPA
- Edmund Miller, OSD
- Pedro Flores, NACO
- Norman Melvin, NRCS
- James Robb, IDEM
- Mark Sudol, COE
- Andy Damasis DHS
- Jeanne Christie, ASWM
- Dawn Browne, Ducks Unlimited
- Marti McGuire, NOAA
- Mark Gernes, MPCA
- Ky Ostergaard, Indus Corp.
- Dave LaBranche, DOD
- Mark Zundel, US Bureau of Indian Affairs
- Stephen Getlein, Army Env. Center
- Jane Awl, TVA
- Randall Gray, USDA

The Timeline for the National Wetland Mapping Standard is as follows:

- **Spring 2006:** Present proposal idea to stakeholder groups (i.e. ASWM, NACo, NSGIC, etc.)
- **Spring 2006:** Begin drafting standard-1 year to proposal
- **Fall/Winter 2006:** Interact with stakeholders
- **Fall/Winter 2006:** Ensure that state and federal agencies and tribes are comfortable with proposal
- **February 2007:** Present draft standard to FGDC
- **February 2007:** Post proposal for comment [Agencies comment formally]
- **July 2007:** Respond to comments
- **August/September 2007:** Finalize proposal to FGDC

The Standard will include the following minimum components:

Functional Requirements Include:

- Wetland Classification
- Deepwater Habitats
- Riparian Habitats
- Metadata
- Geospatial Data Standard
- Standard Map Product
- Targeted Map Unit (1:12 K = 0.5 acres)

Data Quality Components Include:

- Completeness
- Positional Accuracy
- Logistical Consistency

A Data Dictionary and Wetland Unique Identifiers will also be included.

In order to implement the standard, state/tribes will be encouraged to establish mapping funding coalitions. Grant money will likely be awarded to those entities that are willing to adopt the standard. Any entity receiving federal money will be required to use the FGDC standard. For further information about the Standard, please contact Margarate Herber at [Heber.margarete@epa.gov](mailto:Heber.margarete@epa.gov) or 202-566-1189.

## **Wetland GIS Data Assessment: New England and New York**

The assessment contains the following information:

1. State GIS Contact (s)
2. Status of Wetland Coverage
  - a. Is NWI coverage complete for the entire state? (y/n)
    - i. If no, Quad Units not available
    - ii. NWI Scale
  - b. Additional wetlands data available? (y/n)
    - i. Scale (1:24,000, 1:12,000)
    - ii. Projection (NAD 27, NAD 83, State Plane)
    - iii. How was data derived? (digitized on aerial photograph, etc)
    - iv. How are wetlands classified? Cowardin/HGM/ other
    - v. Were hydric soils data used in the interpretation process?
      1. Was field verification done?
    - vi. What format is the data available to the public?

### Regional Wetland GIS Assessment: New England and New York

	<u>MA DEP</u>	<u>MA CZM</u>	<u>CT DEP</u>	<u>CT Municipal</u> Contact Individual Municipality	<u>NH DES</u>
GIS Contacts	Brian Brodeur	Refer to DEP	Howard Sternberg	Gregg Breton Town of Newington	Mike Stanley
Phone	(617) 574-6802		(860) 424-3594	(860)665-8592	(603) 271-1027
Email	<a href="mailto:brian.brodeur@state.ma.us">brian.brodeur@state.ma.us</a>		<a href="mailto:howard.sternberg@po.state.ct.us">howard.sternberg@po.state.ct.us</a>	<a href="mailto:gbreton@ci.newington.ct.us">gbreton@ci.newington.ct.us</a>	<a href="mailto:mstanley@des.state.nh.us">mstanley@des.state.nh.us</a>
GIS Contacts	Charlie Costello			Scott Sharlow Town of Newtown	
Phone	(617) 292-5907			(203) 270-4865	
Email	<a href="mailto:charles.costello@state.ma.us">charles.costello@state.ma.us</a>			<a href="mailto:sharlows@newtown.k12.ct.us">sharlows@newtown.k12.ct.us</a>	
GIS Contacts				Damon Hearne Old Saybrook	
Phone				(860) 510-5057	
Email				<a href="mailto:dhearne@town.old-saybrook.ct.us">dhearne@town.old-saybrook.ct.us</a>	
Website	<a href="http://www.mass.gov/mgis/wetdep.htm">http://www.mass.gov/mgis/wetdep.htm</a>	Refer to DEP	<a href="http://dep.state.ct.us/gis/Data/data.asp">http://dep.state.ct.us/gis/Data/data.asp</a>	Town of Newington: <a href="http://www.ci.newington.ct.us/Public_Documents/NewingtonCT_Planner/maplibrary/mapliblist">http://www.ci.newington.ct.us/Public_Documents/NewingtonCT_Planner/maplibrary/mapliblist</a>	<a href="http://www.granit.sr.unh.edu">http://www.granit.sr.unh.edu</a>

	<u>MA DEP</u>	<u>MA CZM</u>	<u>CT DEP</u>	<u>CT Municipal</u>	<u>NH DES</u>
Notes:	<p>MA DEP Wetlands data layers include polygons and arcs (lines). This is important to note because the National Wetland Mapping Standard is contemplating whether or not to include arcs (lines).</p> <p>Minimum mapping unit is .25 acres.</p>		<p>NOAA Environmental Sensitivity Index (ESI) Wetlands data (based on 1990 tidal wetlands data inventoried/created by CT DEP Office of Long Island Sound Programs)</p>	<p>169 Municipalities- many of them are relying on large scale maps from the 1970s or earlier. CT DEP does not have any state wide compilation of municipal GIS layers. DEP does not collect or store any individual municipal data.</p> <p>USDA Wetland Soils data (5 acre resolution) are generally what is used. Many municipalities that do have GIS do not have a wetlands layer because the original data source is so poor.</p> <p>Damon Hearne, an Environmental Planner for Old Saybrook, CT is working on a vernal pool data layer that was digitized from hi def air photos that they had flown and will be ground truthed by volunteers.</p> <p>Town of Newtown requires digital (DXF/DWG) map submissions from wetland and zoning applicants providing digital field wetland data. We convert this CAD data to line and polygon datasets giving us a legal definition of the wetlands areas on specific parcels.</p>	<p>The NWI maps are complete for the state. The scale is 1:24000/1:25000 and was last updated in 2001.</p>

	<u>MA DEP</u>	<u>MA CZM</u>	<u>CT DEP</u>	<u>CT Municipal</u>	<u>NH DES</u>
NWI Digital Maps for State Complete? (y/n)	NO	Refer to DEP	NO		YES
State Quad Units Not Available	See Appendix A		See Appendix B		See Appendix C NWI Complete for the State
NWI Scale	1:24,000		1:24,000		1:24,000/1:25,000
Additional wetlands data available? (y/n)	YES		YES	YES	YES
Scale (1:24,000, 1:12,000)	1:5,000 - April 2001 Color Ortho-Imagery, April 2003 Elizabeth Islands, Marthas Vineyard, and Nantucket.  1:12,000 - June 2006, this layer is nearly complete statewide. Only tiles 197918 and 197922, which cover parts of the towns of Ayer, Groton, Harvard, and Littleton, are still to be processed.		DOQQ's MrSID 1:12000 University of Connecticut and Connecticut DEP  USGS DOQ 1:12,000  NRCS SSURGO Certified Soils layer 1:12000 statewide	Varies by Municipality:  Town of Newington: Initial Conversion – Digitized from a our Local Wetlands Map at 1" = 400' feet onto base mapping providing by the MDC 1"=100' feet	Costal Wetlands (1988): Hampton, Hampton Falls, New Castle, North Hampton, Portsmouth, Rye, and Seabrook at the 1:24,000 scale  Great Bay (1993): 59 wetland maps 1:24000  USGS DOQ's are available statewide at 1:12,000  NRCS SSURGO soils layer 1:24,000 for limited portion of the state
Projection (NAD 27, NAD 83, State Plane)	Mass. State Plane, NAD 83, meters		CT State Plane Feet, NAD 83		NAD 83, State Plane Feet

	<u>MA DEP</u>	<u>MA CZM</u>	<u>CT DEP</u>	<u>CT Municipal</u>	<u>NH DES</u>
How was data derived? (digitized on aerial photograph, etc)	Wetlands are interpreted from 1:12,000 scale color-infrared (CIR) photography by staff at UMASS Amherst. Photography was captured in 1990, 91, 92, 93, 99, and 2000. The interpretation is field checked by DEP Wetlands Conservancy Program (WCP). Interpretations are then scanned and converted into rectified polygons and lines. Final quality control is performed by WCP GIS staff.		The information was prepared by digitizing maps, by compiling information onto a planimetric correct base and digitizing, or by revising digitized maps using remotely sensed and other information.		Wetland maps developed with the New Hampshire coastal Program funds were automated for the towns of Hampton, Hampton Falls, New Castle, North Hampton, Portsmouth, Rye, and Seabrook. For the towns of Hampton Falls, North Hampton, and Rye the source documents consisted of Normandeau Associates wetlands delineations remapped onto the appropriate town base maps. For the towns of Hampton, New Castle, and Seabrook, the Normandeau maps were remapped onto 1:24,000 orthoquads prior to digitizing. Original mapping for the city of Portsmouth was completed by IEP, Inc. Delineations in this case were transferred onto 1:24,000 orthoquads. Great Bay wetlands were mapped on aerial photo enlargements (1:24000) acquired during the fall 1990, summer 1991, and early summer 1992. The Complex Systems Research Center digitized the maps, and then they were recompiled onto state scale plots of GRANIT base data with a 'best-fit' method.

How are wetlands classified? (Cowardin/ HGM/ other)	MA Specific		Inland Wetlands Watercourses Act		Cowardin
What format is the data available to the public?	CIR: MrSID, regional mosaics ordered on CD-ROM 4x4 km tiles downloaded.		State/County coverages; data download in e00 and MIF format		Data can be downloaded in E00 format

	<u>ME DEP</u>	<u>RI DEM</u>	<u>RI CRM</u>	<u>VT ANR</u>	<u>NY DEC</u>
GIS Contacts	Mike Smith	Paul Jordan	Meghan Higgins	Peter Telep	Ricardo Lopez-Torrijos
Phone	(207) 287-4292	(401) 222-4700	(401) 783-3370		518-402-8259
Email	<a href="mailto:michael.smith@maine.gov">michael.smith@maine.gov</a>	<a href="mailto:paul.jordan@dem.ri.gov">paul.jordan@dem.ri.gov</a>	<a href="mailto:mhiggins@crmc.state.ri.us">mhiggins@crmc.state.ri.us</a>	<a href="mailto:peter.telep@state.vt.us">peter.telep@state.vt.us</a>	<a href="mailto:rxlopez@gw.dec.state.ny.us">rxlopez@gw.dec.state.ny.us</a>
Website	<a href="http://www.megis.maine.gov">www.megis.maine.gov</a>	<a href="http://www.edc.uri.edu/ri-gis">http://www.edc.uri.edu/ri-gis</a> <a href="http://www.edc.uri.edu/ri-gisbeta/data/environment.html">http://www.edc.uri.edu/ri-gisbeta/data/environment.html</a>	<a href="http://www.edc.uri.edu/rigis-beta/data/environment.html">http://www.edc.uri.edu/rigis-beta/data/environment.html</a>	<a href="http://www.vcgi.org/dataware/">http://www.vcgi.org/dataware/</a> <a href="http://geo-vt.uvm.edu/">http://geo-vt.uvm.edu/</a>	<a href="http://www.nysgis.state.ny.us/gisdata/inventories/details.cfm?DSID=928">http://www.nysgis.state.ny.us/gisdata/inventories/details.cfm?DSID=928</a> <a href="http://cugir.mannlib.cornell.edu/datatheme.jsp?id=111">http://cugir.mannlib.cornell.edu/datatheme.jsp?id=111</a> <a href="http://www.nysgis.state.ny.us/gisdata/inventories/details.cfm?DSID=300">http://www.nysgis.state.ny.us/gisdata/inventories/details.cfm?DSID=300</a>
GIS Contacts			Janet Freedman		Judy Stevens
Phone			(401) 783-3370		
Email			<a href="mailto:j_freedman@crmc.state.ri.us">j_freedman@crmc.state.ri.us</a>		<a href="mailto:jmsteven@gw.dec.state.ny.us">jmsteven@gw.dec.state.ny.us</a>
GIS Contacts					John Barge-APA
Phone					518-891-4050
Email					<a href="mailto:jwbarge@gw.dec.state.ny.us">jwbarge@gw.dec.state.ny.us</a>

	<u>ME DEP</u>	<u>RI DEM</u>	<u>RI CRM</u>	<u>VT ANR</u>	<u>NY DEC</u>
Notes:	Fringing Tidal Wetlands are under-represented. These marshes border many estuarine river miles throughout Maine, but do not show up on wetlands maps, due to their narrow width, mostly less than 30 m wide. Casco Bay NEP may have done some mapping. Pam Morgan at UNE has mapped in detail about 12 Casco Bay fringing marsh sites.	Statewide wetlands coverage delineated from 1:12000 1988 aerial photography. Wetlands as interpreted from 1988 aerial photography to one quarter acre polygon resolution by Cowardin 16 classification scheme. Also distributed on USGS Quad basis and Town	RIGIS shared between two agencies Over flights are planned	NWI: 1:80000 CIR compiled on 1:24000 quad sheets Appended NWI data: Vermont Significant Wetlands Inventory: Nearly two-thirds of the wetlands were hand digitized from RF 24000 scale NWI mylars. Remainder was scanned from RF mylars or RF 25000 mylars.	No wetlands data are available for New York County (Manhattan), or Saratoga County on the CUGIR site.  Adirondack Park Freshwater Wetlands- Covertypes classification is not included. Mapping methodology and attribution differs from NYS DEC wetlands data outside the Park.
NWI Digital Maps for State Complete? (y/n)	NO	NO	Refer to DEM	NO	NO - Over 800 of 980 total quadrangle maps are available. DEC has initiated a project with the USFWS to update those NWI maps in the lake plains area of western New York.
State Quad Units Not Available	See Appendix D	See Appendix E	Refer to DEM	See Appendix F	See Appendix G

	<u>ME DEP</u>	<u>RI DEM</u>	<u>RI CRM</u>	<u>VT ANR</u>	<u>NY DEC</u>
NWI Scale	1:24,000	1:24,000	Refer to DEM	1:80000 CIR compiled on 1:24000 quad sheets	1:24,000
Additional wetlands data available? (y/n)	YES	YES	YES	YES	YES
Scale (1:24,000, 1:12,000)	1:12000 USGS DOQ statewide  1:24,000 Maine Data Catalogue  NRCS State Soils STATSGO 1:250,000	USGS DOQ's 1:12,000 statewide  RIGIS 1:12,00  NRCS Soils SSURGO limited 1:24,000	Internally degraded coastal wetland sites in Narragansett Bay at a .5 acre scale for potential restoration sites and .25 acre for monoculture stands of P. Australis  Narragansett Bay Estuarine Habitat data Target minimum mapping unit was 0.5 acres for eelgrass beds, 0.25 for discrete coastal wetlands, and 3 to 5 acres for internal polygons.  The Trend Analysis of estuarine and marine wetlands in Narragansett Bay. Target minimum mapping unit was 0.25 acres for discrete coastal wetlands	USGS DOQ's 1:12,000 statewide  Vermont Center for Geographic Information(VGIS ) 1:12,000 limited  NRCS SSURGO 1:24,000 limited	NYS Hydrography - 1:24,000  NYS DEC Freshwater Wetlands 1:24,000  Adirondack Park Freshwater Wetlands- Data set is tiled by 7.5 minute quad.

	<u>ME DEP</u>	<u>RI DEM</u>	<u>RI CRM</u>	<u>VT ANR</u>	<u>NY DEC</u>
Projection (NAD 27, NAD 83, State Plane)	UTM Zone 19, meters, NAD 83	Transverse Mercator NAD 83	Transverse Mercator NAD 83	Vermont State Plane Meters (NAD83)	Adirondack Park Freshwater Wetlands- UTM zone 18, meters, NAD 27.  NYS Freshwater Wetlands- UTM zone 18, meters, NAD 83. CUGIR -UTM NAD 83.
How was data derived? (digitized on aerial photograph, etc)	WETCHAR: NWI polygons for towns characterized on six different wetland functions and values at a scale of 1:24,000.	1988 aerial photography wetlands identified on photos were manually transferred onto mylar sheets and digitized by hand from tablets	Narragansett Bay coastal wetland sites: Internally degraded coastal wetland sites in Narragansett Bay were delineated from 1999 color aerial photography. Narragansett Bay Estuarine Habitat data was delineated from color aerial photo. The Trend Analysis of estuarine and marine wetlands in Narragansett Bay and their 500-foot upland buffer were delineated from 1990 true color aerial photography and 1950's bland and white aerial photography.	NWI maps were used by the State of Vermont Agency of Natural resources as a means of creating this data layer. Nearly two-thirds of the wetlands were hand digitized from RF 24000 scale NWI mylars. The remainder of the state was scanned from RF 24000 or RF 25000 scale mylars. These mylars were created by transferring wetland polygon boundaries from RF 62500 scale NWI mylars to RF 24000 scale maps.	Adirondack Park Freshwater Wetlands - Polygon and line attributes included. Mapping methodology and attribution differs from NYS DEC wetlands data outside the Park.  NYS DEC Freshwater Wetlands Maps: Wetlands are mapped using a variety of information sources, such as aerial photography, soil surveys, other wetlands inventories, and field verification. The mapped wetlands are then depicted on NYS Department of Transportation 1:24,000 planimetric quadrangle base maps.

	<u>ME DEP</u>	<u>RI DEM</u>	<u>RI CRM</u>	<u>VT ANR</u>	<u>NY DEC</u>
How are wetlands classified? Cowardin/HGM / other	Cowardin	Cowardin		Cowardin	Freshwater Wetlands Mapping and Classification Regulations. See <a href="http://www.dec.state.ny.us/website/regs/part664.html#664.4">http://www.dec.state.ny.us/website/regs/part664.html#664.4</a>
What format is data available to the public?	Data can be downloaded for free in shapefile, txt, dbf format.	Data is in E00 format	Refer to DEM	CD's, multiple data layers (bundles), and DVD's can be downloaded for varying prices. Wetlands layers are available for free off the website	Free downloads in E00 format off the CUGIR website.

## **Conclusions and Recommendations**

The New England States and New York have varying levels of wetland data available to them in digital format. The National Wetlands Inventory Maps are incomplete to varying degrees in all states surveyed except New Hampshire. The NWI maps were at a scale of no larger than 1:24,000, and in VT, they were at a smaller scale of 1:80,000. NRCS soils data is available as a substitute for some states, but also to varying degrees. The most complete soils data exists in Connecticut, which has SSURGO data at 1:12,000. Some state agencies have produced their own wetlands maps to replace the NWI maps. Massachusetts DEP has maps that are at a scale of 1:12,000 for nearly the entire state, with color infrared images at 1:5,000. They use a minimum mapping unit of .25 acres. Their maps are highly accurate, and MADEP has used the sequential maps to conduct an effective wetlands change and enforcement programs. Other states, such as Vermont, rely heavily on NWI maps, which often do not capture small forested wetlands. From this assessment, it is clear that the New England States and New York would greatly benefit from a concerted effort to increase the compatibility of data for interstate comparison purposes, use a consistent minimum mapping standard to ensure accuracy, and receive funding to improve the mapping efforts that are ongoing in their state.

As stated in this report, the USFWS cannot update the wetland maps at a fast enough rate, and do not have the funding to do so. The New England States and New York, with the exception of Massachusetts, do not have state wide wetland maps that would meet the Federal Wetland Mapping Standard being developed by the FGDC. The FGDC is going to most likely require a minimum mapping unit of .5 an acre. That is of a larger scale than many of the state agencies have at their disposal. NEIWPC is thus, suggesting that a concerted effort be undertaken to improve the mapping products in the New England States and New York.

It is important that state agencies have access to quality wetlands maps for proper decision making. Large scale color infrared imagery should be available for every state, to allow for wetland polygons to be generated in accordance with the FGDC standards. Simply put color infrared photography shows water features well since water absorbs infrared wavelengths and appears black on the photography. This aids in picking out and mapping wetlands. The cost associated with generating this type of imagery has decreased substantially as demand has increased and more companies providing the imagery have come into the market. With so many agencies and organizations to benefit from accurate maps, the necessity for such products greatly outweighs the cost. NEIWPC is thus, suggesting that a concerted effort be undertaken to improve the mapping products in the New England States and New York. This could most easily be done if federal agencies such as the EPA, ACOE, NRCS, USFWS, and/or others develop a cost-sharing agreement, to provide interested states funding to improve their state wetland mapping.

## **State Data Needs**

### **NY DEC**

NY DEC could greatly benefit from updating the elevation dataset, at a vertical accuracy of +/- 1 foot for flatter areas, +/- 2 feet for areas with slope above ~10%. They could also benefit from the development of (protocol and processing of source data for) impervious surface areas at higher resolution (ideally ~3 foot pixels or better) and level of accuracy than that available in NLCD. It was also expressed that the NY DEC would greatly appreciate an update plan for all National Map base layers other than orthophotography (already covered under NYS plan and funding).

### **VT DEC**

The Vermont wetlands section would like to improve their wetland maps using color infrared photography preferably flown at 1:40000 scale or better.

### **MA DEP**

MA DEP recommends a national program to serve as the general contractor providing large scale digital imagery and other derivative products to states with known specifications and a wholesale price on a regular time interval. This way states could plan to fund wetland mapping initiatives, land cover and watershed assessments within their constrained budgets knowing that current, state-of-the-art digital imagery would be made available to them on-time from the federal procurement program. Most other states would benefit from this program also. MA DEP uses base wetlands mapping that is done at a scale of 1:12,000. They have found very useful is the development of state wide color digital ortho photography. The latest round includes a near infrared band. The combination of a wetlands base map and regular ortho imagery has allowed MA DEP to track wetlands change and wetlands loss. Future acquisition of ortho photography at regular intervals is critical for continuing the surveillance.

### **CT DEP – no comment**

### **RI DEM – no comment**

### **ME DEP**

Many of the wetlands in the NWI layer are gone/misidentified/misclassified, etc. There is also inconsistency from one quad to the next. ME DEP could use funding to complete an update of the NWI layer as well as the 1:24,000 NHD project in Maine.

**National Wetland Inventory:  
Missing or Inadequate Coverage in New England and New York**

**USGS Quad Index 24 K**

Appendix A

<b>MA DEP</b>		
<b>Non-Digital Data:</b>		<b>No Data:</b>
Chatham Dennis Fall River East Great Point OE E Harwich (digital) Harwich OE N Hyannis (digital) Hyannis OE S Monomoy Point (digital) Monomoy Point OE W New Bedford North New Bedford South	North Truro Orleans (digital) Provincetown Sciticut Neck Wellfleet (digital) Wellfleet OE E Westport (digital) Westport OE S Woods Hole	Dennis Dennis OE N Great Point OE E Harwich (digital) Harwich OE N Monomoy Point (digital) Westport OE S

Appendix B

<b>CT DEP</b>	
<b>Non-Digital Data:</b>	<b>No Data:</b>
Ashaway Mystic Watch Hill	Branford Branford OE S Guilford OE S

Appendix C

<b>NH DES</b>	
<b>Non-Digital Data:</b>	<b>No Data:</b>
State is complete	

Appendix D

<b>ME DEP</b>		
<b>Non-Digital Data:</b>	<b>No Data:</b>	
	Boundary Pond Burntland Pond OE W Daaquam Danforth Devils Head Devils Head OE E Doyle Ridge East Lake Easton Center Estcourt Forest Forest City Fort Kent North Fort Kent South Frenchville Grand Isle Hardwood Mountain SW Hardwood Mountain SW OE W Houlton South	Kellyland Landry Lille Loon Bay Madawaska Mars Hill Moose Bog Morrison Brook North Amity Orient Robbinston Rocky Brook Rocky Mountain NW Saint Camille De Belle Chassee Saint Francis Saint John Saint Zacharie North Simsquish Lake Skinner Twin Peaks Van Buren Vanceboro Wheelock

Appendix E

<b>RI DEM</b>	
<b>Non-Digital Data:</b>	<b>No Data:</b>
Block Island Kingston OE S Sakonnet Point Tiverton	

Appendix F

<b>VT ANR</b>	
<b>Non-Digital Data:</b>	<b>No Data:</b>
	Highgate Center OE N Jay Peak OE N North Troy OE N Richford OE N Sheldon Springs OE N

Appendix G

NY DEC			
Non-Digital Data:		No Data:	
Allentown	Lake Huntington	Albert Marsh	Limekiln Lake
Ashford	Lee Center	Alder Brook	Long Tom Mountain
Ashford Hollow	Lewis	Altona OE N	Louisville
Belfort	Liberty West	Ancram	Lowville
Belmont	Limestone	Au Sable Forks	Lyon Mountain
Black Creek	Little Valley	Bakers Mills	Massena
Bolivar	Livingston Manor	Bay Pond	Massena OE N
Boonville	Mallory	Belfort	McKenzie Mountain
Camden East	Manlius	Big Moose	Middleburgh
Camden West	Milford	Bisby Lakes	Minerva
Canastota	Monticello	Bloomington	Moffitsville
Cassville	Mount Vision	Bolton Landing	Mooers OE N
Cattaraugus	North Osceola	Bombay	Morehouseville
Cazenovia	North Western	Brainardsville	Morrisburg
Cicero	North Western	Brandreth Lake	Morrisonville
Cleveland	Number Four	Brant Lake	Morristown
Clinton	Olean	Brantingham	Mount Adams
Clintonville	Oneonta	Breakabeen	Mount Marcy
Collins Center	Oran	Brother Ponds	Mount Tom
Constableville	Orwell	Canajoharie	Nehasane Lake
Copper Lake	Oswegatchie SW	Cape Vincent South OE W	Newton Falls
Crystal Dale	Panther Lake	Carlisle	North Creek
Cuba	Point Rock	Chateaugay	North Elba
Delevan	Port Douglas	Chestertown	North Osceola

DeRuyter	Port Leyden	Churubusco	Ogdensburg West
Dugway	Portville	Churubusco OE N	Otter Lake
Ellicottville	Rawson	Claverack	Page
Erieville	Redfield	Clintonville	Page Mountain
Florence	Remington	Cobleskill	Paradox Lake
Forestport	Remsen	Conklingville	Pattersonville
Franklinville	Richfield Springs	Constable	Peasleeville
Freedom	Richland	Cranberry Lake	Peck Lake
Friendship	Rome	Croghan	Peru
Gowanda	Roscoe	Crystal Dale	Pharaoh Mountain
Hartwood	Salamanca	Dannemora	Pierce Field
High Market	Schuyler Lake	Delmar	Piseco Lake
Highland Lake	Soft Maple Reservoir	Derrick	Point Rock
Houghton	Syracuse East	Dix Mountain	Ragged Lake
Humphrey	Utica East	Duanesburg	Randall
Jamesville	Utica West	Eagle Bay	Raquette Lake
Jeffersonville	Verona	Eagle Lake	Ravena
Jewell	West Leyden	East Greenbush	Redford
Knapp Creek	West Valley	Edwardsville	Richmondville
	West Winfield	Elizabethtown	Rocky Peak Ridge
	Westdale	Ellenburg Center	Rotterdam Junction
	Westernville	Ellenburg Depot OE N	Sabattis
	White Lake	Esperance	Saint Regis Mountain
	Williamstown	Fishs Eddy	Schoharie
	Willsboro	Florence	Schroon Lake
	Woodgate	Forked Lake	Sharon Springs
		Fort Covington	Shelving Rock
		Fort Plain	Silver Bay
		Franklin Falls	Slim Pond
		Gabriels	South Pond Mountain
		Galloo Island	South Valley

		Glenfield Gore Mountain Harrisburg High Market Hoffmeister Hogansburg Hogansburg OE N Honnedaga Lake Hudson North Hudson South Jay Mountain Johnsburg Keene Keene Valley Kinderhook Lake Luzerne Lake Placid Lassellsville Lester Dam Lewis Limekiln Lake	Sparrowhawk Point Sprout Brook Spruce Lake Spruce Lake Mountain Stark Stony Creek Stottville The Glen Tooley Pond Underwood Upper Saranac Lake Vanderwhacker Mountain Waddington Wakely Mountain Warrensburg West Lowville Wilmington Witherbee Wolf Mountain
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