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science for a changing world

USGS post-Sandy Supplemental
Theme 3 – Storm Surge Network

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U.S. Department of the Interior
U.S. Geological Survey

USGS post-Sandy Response

- **Detailed in Circular 1390: Meeting the Science Needs of the Nation in the Wake of Hurricane Sandy—A U.S. Geological Survey Science Plan for Support of Restoration and Recovery**
- **Summary here:** http://www.usgs.gov/blogs/features/usgs_top_story/usgs-awarded-supplemental-funds-to-support-hurricane-sandy-rebuilding/

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Science Themes

- Theme 1: Coastal Topographic and Bathymetric Data to Support Hurricane Impact
- Theme 2: Impacts to Coastal Beaches and Barriers
- **Theme 3: Impacts of Storm Surge, Including Disturbed Estuarine and Bay Hydrology**
- Theme 4: Impacts on Environmental Quality, Including Exposure to Chemical and Microbial Contaminants
- Theme 5: Impacts to Coastal Ecosystems, Habitats, and Fish and Wildlife

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Network Types

- **Distributed**
  - Water level sensors: pressure transducers
    - Generally 30-second recording intervals (shorter if needed)
    - Supports FEMA and other inundation modeling
  - RDGs
    - Water Level (Radar) and Met data
    - GOES connected
    - Could be important to local emergency operations
- **Transect**
  - Wave sensors (RBR)
    - 0.25-second recording interval
    - Supports USGS wave run-out, FEMA, and other modeling

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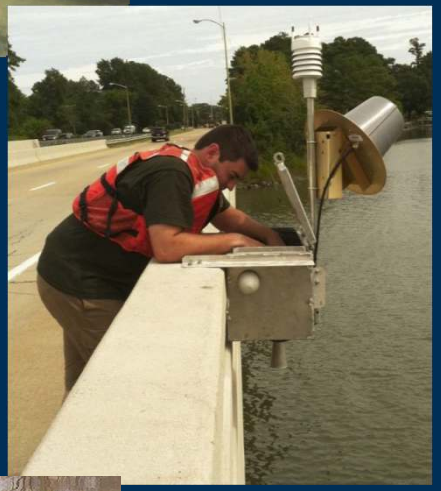
Storm-Sensor Deployment

- **Deploy sensors in the temporary monitoring network Rapid Deployment Gages**
  - **Storm tide**
  - **Wave height**
  - **Barometric pressure**

Storm-Tide Sensor

Rapid Deployment Real-Time Water Level Gage



High-Water Mark

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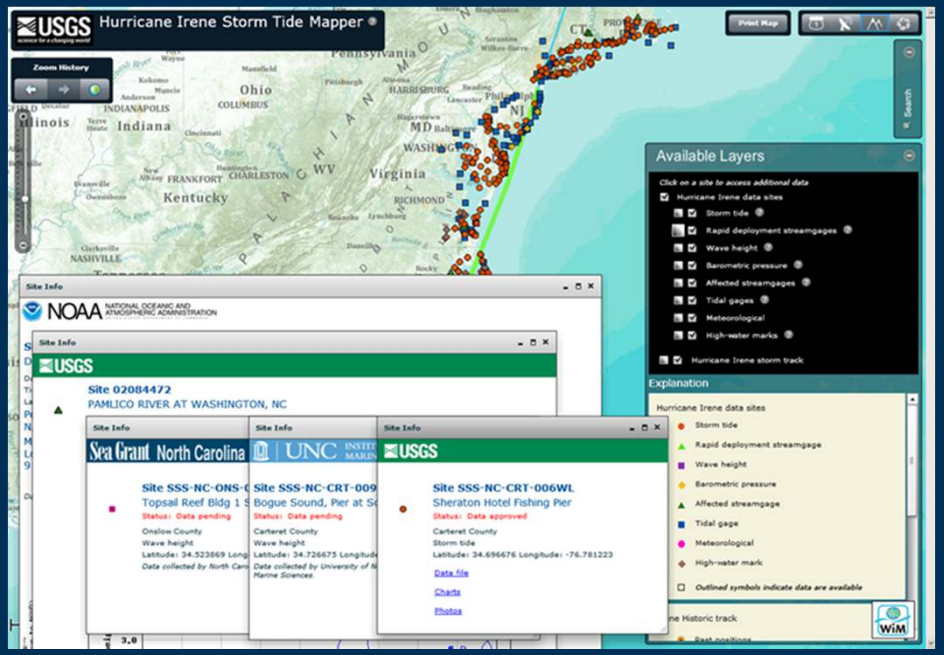
What is STN?
Using a Mapper to Communicate data

- Before storm
  - Locate sensor networks
  - Plan with partners
- During storm
  - Monitor real-time gaging locations
- After storm
  - Coordinate and communicate retrieval process and HWMs
  - Coordinate data processing and approval
  - Data dissemination



***Can display partner data**

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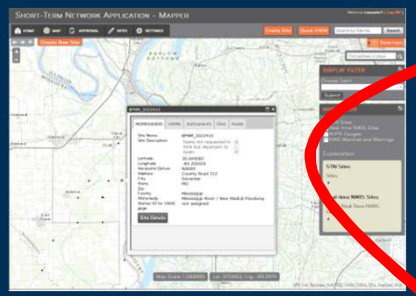
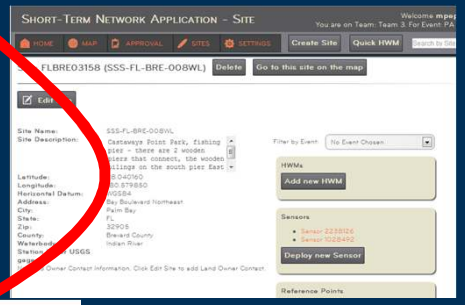
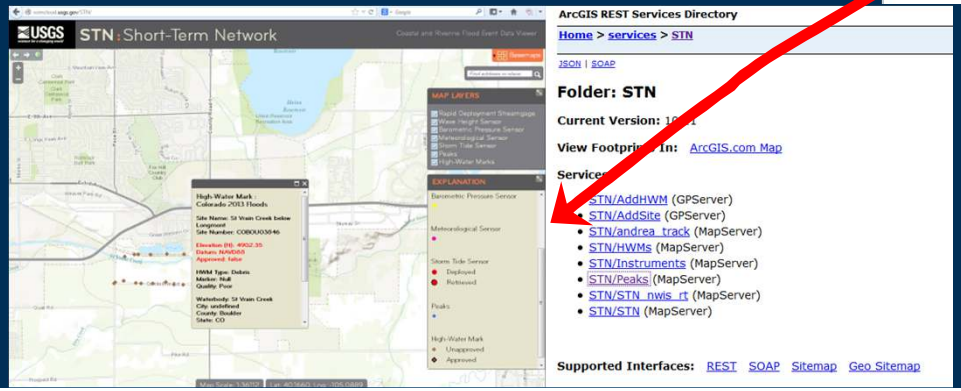
Data flow during an event

- Event declared and started in STN
- Data Collected by field crews
  - Deployments, retrievals, etc.
- Entered into STN
  - In field or office/hotel
- QA processing
  - In any office
- Immediate Provisional Data release
  - Mapper
  - Data Services







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Short Term Network Monitoring

Site Information

Site Number:	PA 00119
Site Name:	SLC-5
Site Description:	DS of Rte. 236 bridge (County Rd 2023)
Latitude:	41.15575833333333
Longitude:	-79.05306388888889
Horizontal Datum:	local control point
Address:	
City:	
State:	PA
Zip:	
County:	
Waterbody:	Sandy Lick Creek
Station ID for USGS gage:	

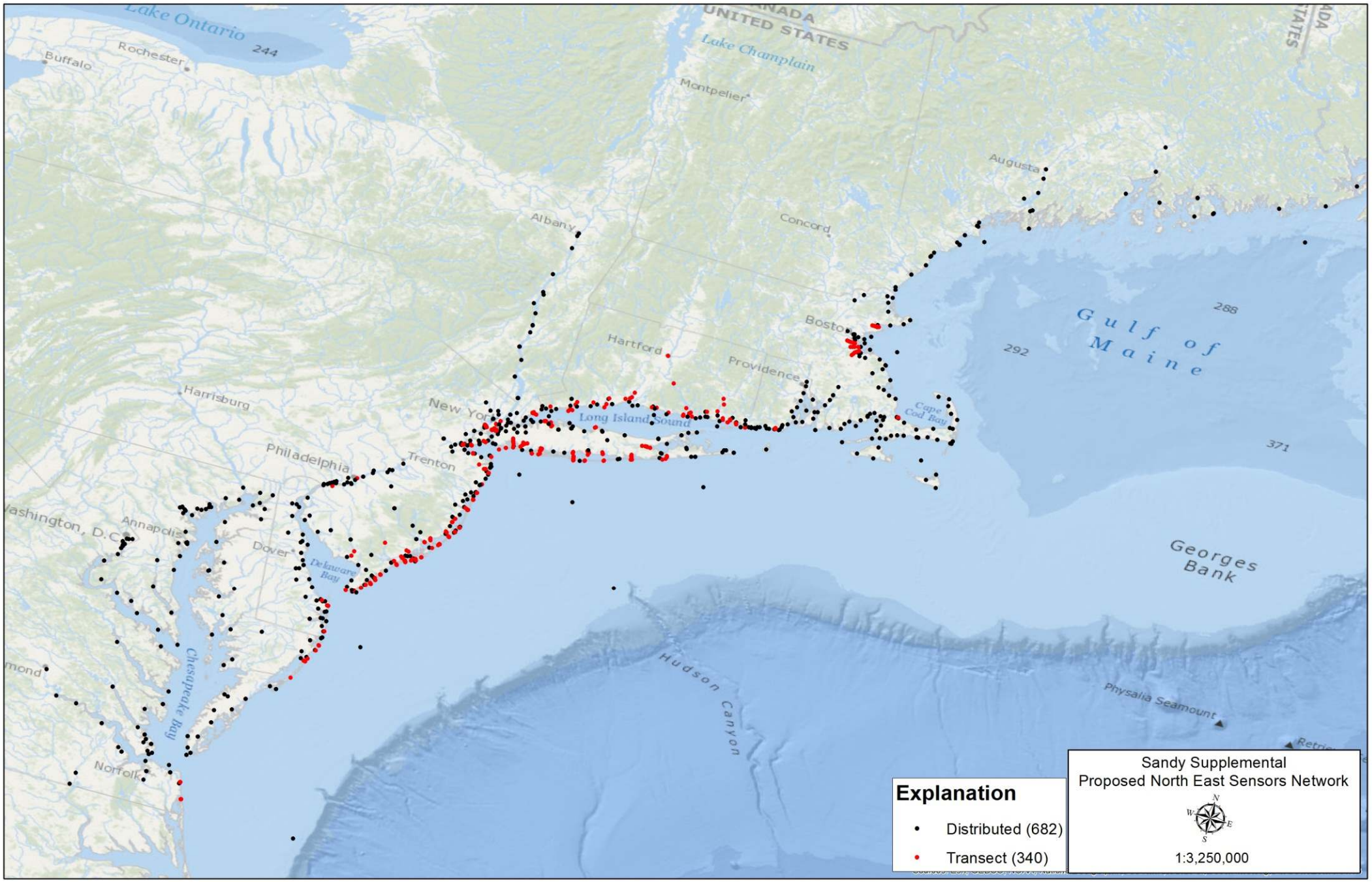
HWM Information

Event:	PA Flood June 2013
HWM Type:	Debris
HWM Environment:	Riverine
HWM Quality:	VP
Bank:	Right
Location Description:	Debris line on upstream right bank.
Latitude:	41.155780
Longitude:	-79.052990
Horizontal Collection Method:	Map (digital or paper)
Elevation (ft):	1231.84
Vertical Datum:	NAV88
Height above ground (ft):	0
Flagged Date:	7/2/2013
Surveyed Date:	7/23/2013
Vertical Collection Method:	Survey Rod and autolevel
Marker:	Not marked
HWM Notes:	HWM is 8.51 ft below BM on left end of upstream parapet wall.
Collection Team:	Team 1

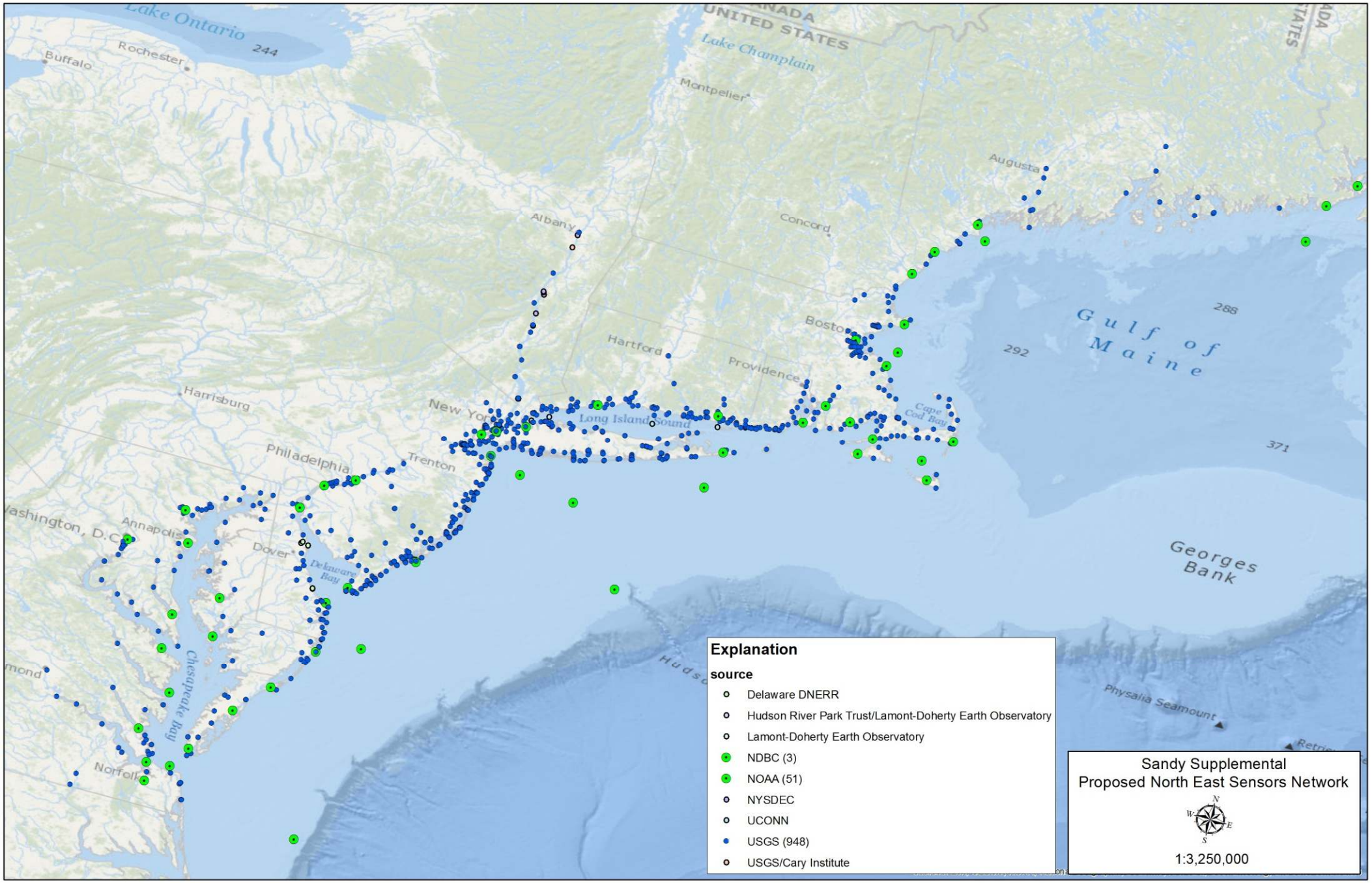
Photo File Information

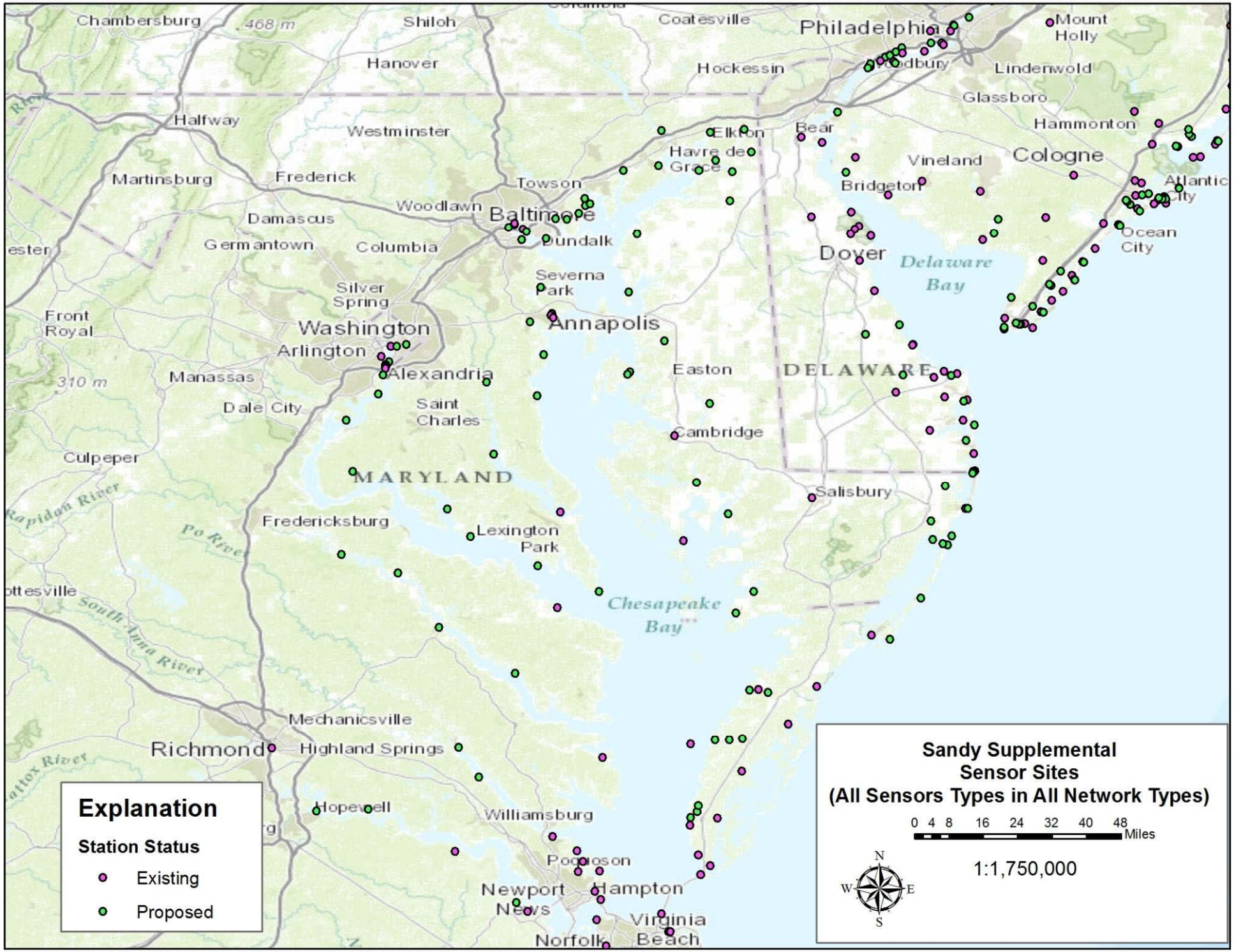
Photo of HWM at DS of Rte. 236 bridge (County Rd 2023), , PA, 7/2/2013 12:00:00 AM. Photograph by Andrew Ebner, USGS OH WSC.
Photo of BM on top of upstream left parapet. at DS of Rte. 236 bridge (County Rd 2023), , PA, 7/2/2013 12:00:00 AM. Photograph by Andrew Ebner, USGS OH WSC.

All Proposed Sites in post-Sandy STN



STN Sites by Source




Explanation
Station Status
Existing
Proposed
Sandy Supplemental
Sensor Sites
(All Sensors Types in All Network Types)
0 4 8 16 24 32 40 48
Miles
1:1,750,000
N
W
E
S
Chambersburg
Shiloh
Coatesville
Philadelphia
Mount Holly
Hanover
Hockessin
Lindenwold
Glassboro
Halfway
Westminster
Elkton
Bear
Hammonton
Havre de Grace
Cologne
Martinsburg
Frederick
Towson
Vineland
Bridgeton
Atlantic City
Woodlawn
Baltimore
Damascus
Dundalk
Ocean City
Germantown
Columbia
Dover
Delaware Bay
Severna Park
Silver Spring
Front Royal
Washington
Annapolis
Arlington
Alexandria
Easton
DELAWARE
Manassas
Dale City
Saint Charles
Cambridge
Culpeper
MARYLAND
Salisbury
Rapidan River
Fredericksburg
Lexington Park
Po River
Chesapeake Bay
South Anna River
Mechanicsville
Richmond
Highland Springs
Hopewell
Williamsburg
Poquoson
Newport News
Hampton
Virginia Beach
Norfolk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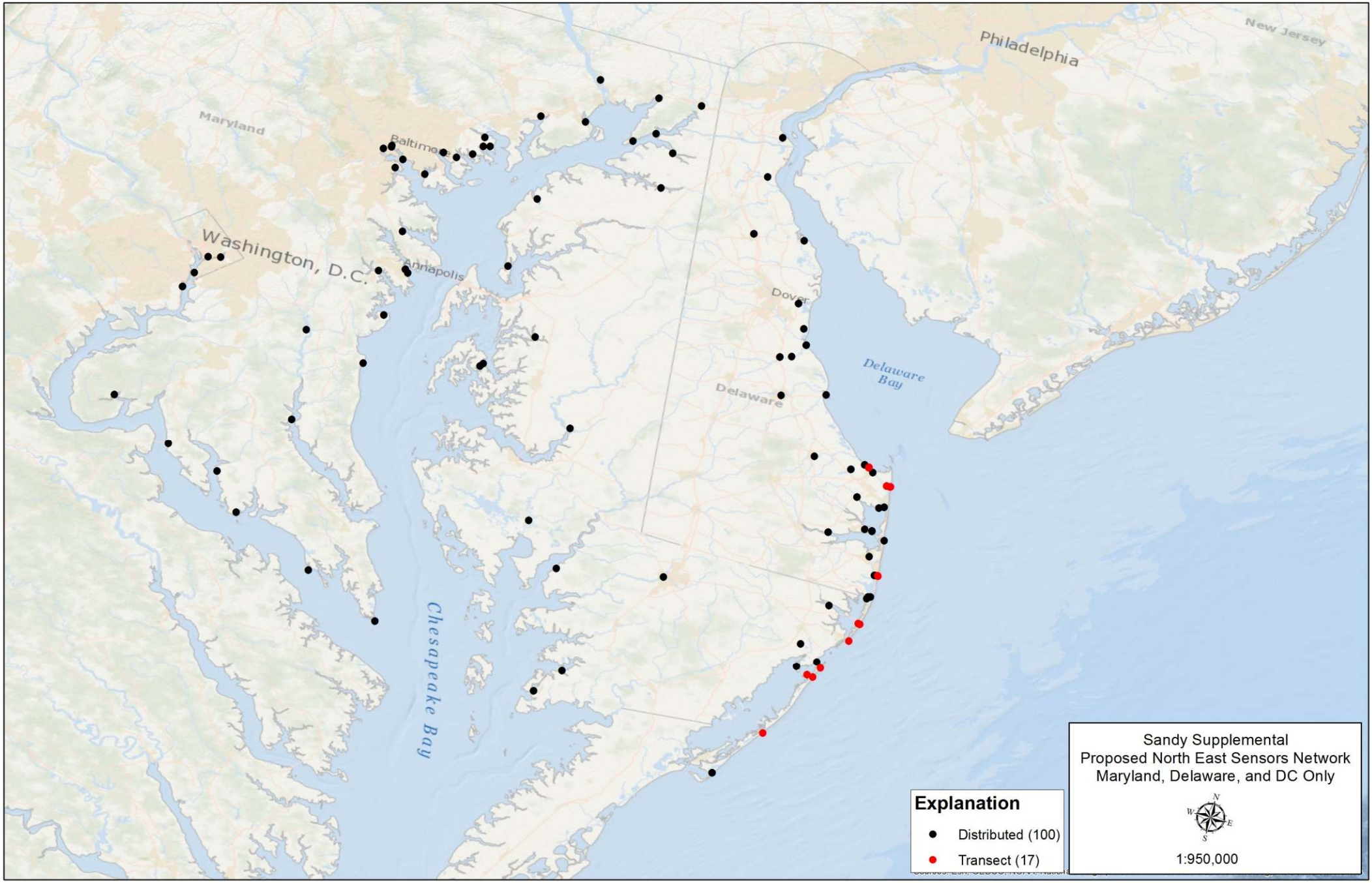
Proposed USGS MD-DE-DC Sites



Proposed USGS MD-DE-DC Sites by Type