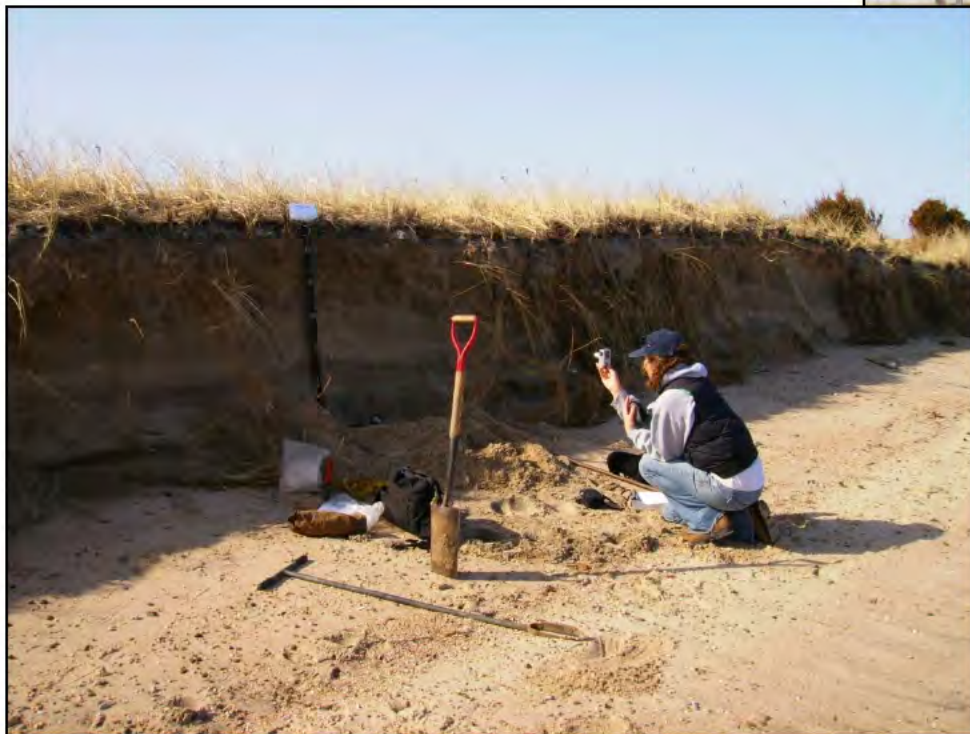


Coastal Planning in the Age of Superstorms: Coastal and Subaqueous Soil Mapping in Rhode Island



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www.mapcoast.org

www.nesoil.com/sas

Traditional Soil Survey

Focus on Farmland and Uplands

Web Soil Survey

Intro to Soils | Suitabilities and Limitations for Use | Soil Properties and Qualities | Ecological Site Assessment

Search

Map — Farmland Classification

Suitabilities and Limitations

Building Site Development

- Corrosion of Concrete
- Corrosion of Steel
- Dwellings With Basements
- Dwellings Without Basements
- Lawns, Landscaping, and Groundcover
- Local Roads and Streets
- Shallow Excavations
- Small Commercial Buildings

Construction Materials

Disaster Recovery Planning

Land Classifications

- Conservation Tree and Shrub
- Ecological Site ID
- Ecological Site Name

Farmland Classification

View Options

- Map ☒
- Table ☒
- Description of Rating ☒
- Rating Options ☒

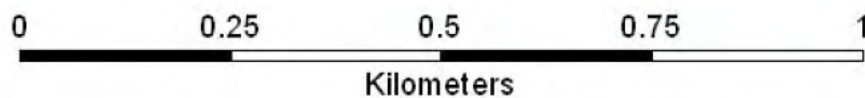
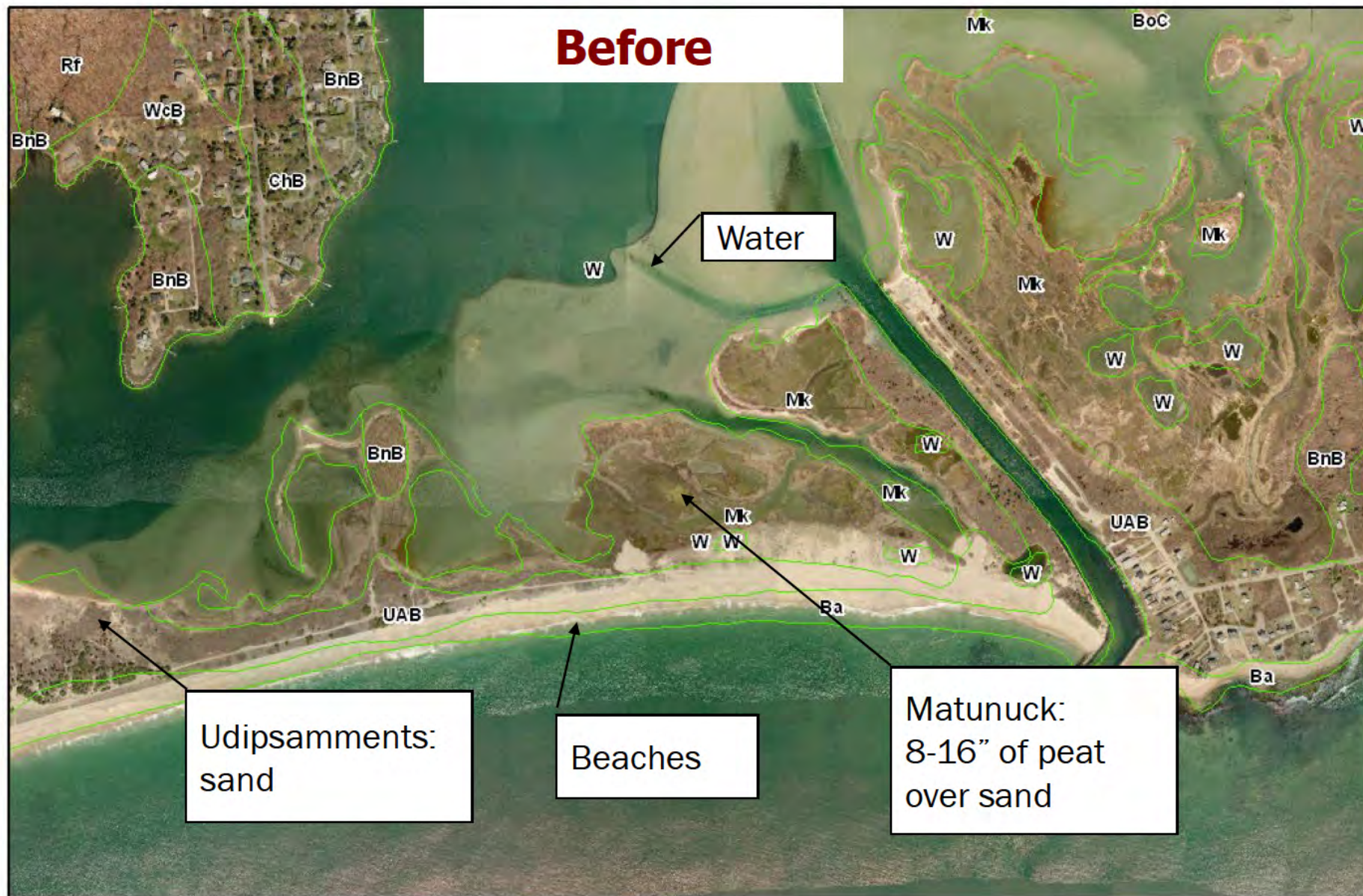
Map Legend

Layer Properties Menu

- ☒ Soil Rating Polygons
 - Not prime farmland
 - All areas are prime farmland
 - Prime farmland if drained
 - Prime farmland if protected from flooding or not frequently flooded during the growing season
 - Prime farmland if irrigated
 - Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
 - Prime farmland if irrigated and drained
 - Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
 - Prime farmland if subsoiled, completely removing the root inhibiting soil layer
 - Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60



Before



39%

Percent of the nation's total population that lived in Coastal Shoreline Counties in 2010 (less than 10% of the total land area excluding Alaska).

Source: U.S. Census Bureau, 2011

34.8 million

Increase in U.S. Coastal Shoreline County population from 1970 to 2010 (or a 39% increase).

Source: U.S. Census Bureau, 2011

446 persons/mi²

Average population density of the Coastal Shoreline Counties (excluding Alaska). Density in U.S. as a whole averages 105 persons/mi².

Source: U.S. Census Bureau, 2011

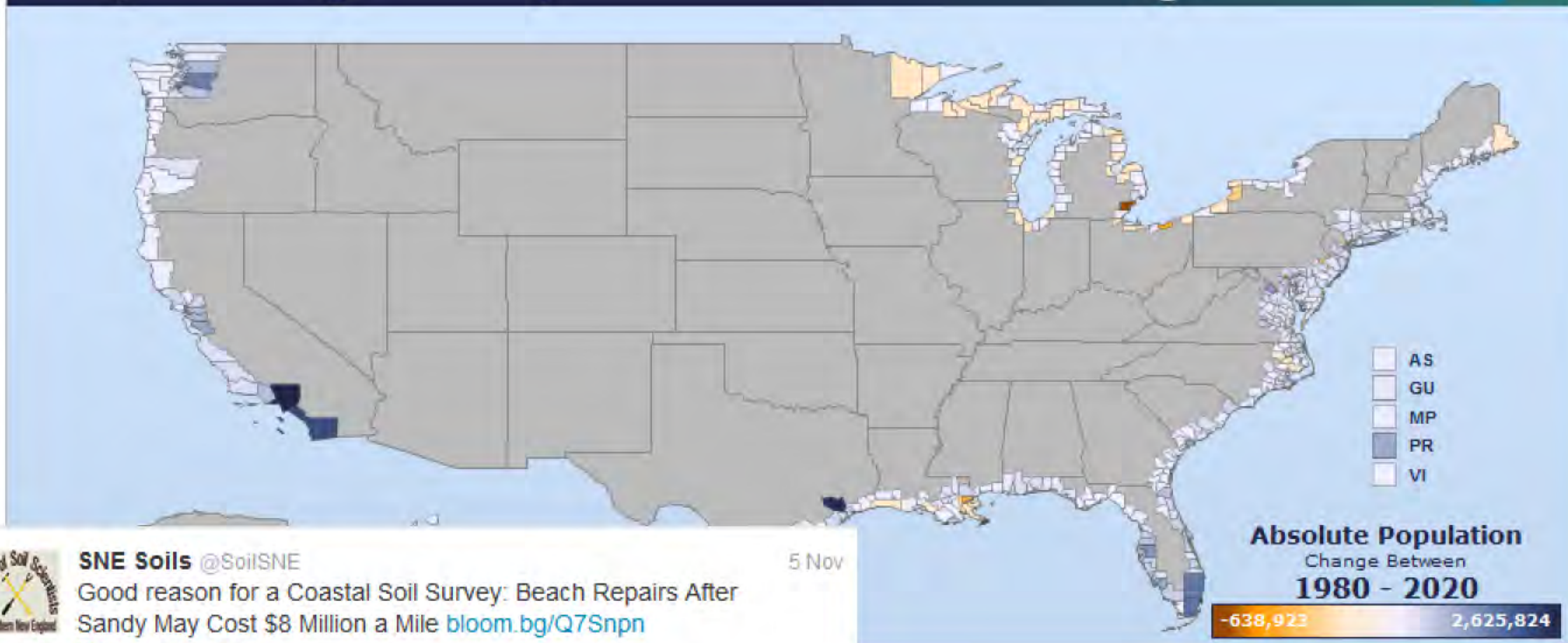
37 persons/mi²

Expected increase in U.S. Coastal Shoreline County population density from 2010-2020. Expected increase for entire U.S. is 11 persons/mi².

Source: Woods & Poole, 2011; NOAA, 2012

Population Living at the Coast, 1970 - 2030

i STATE OF THE COAST



SNE Soils @SoilSNE

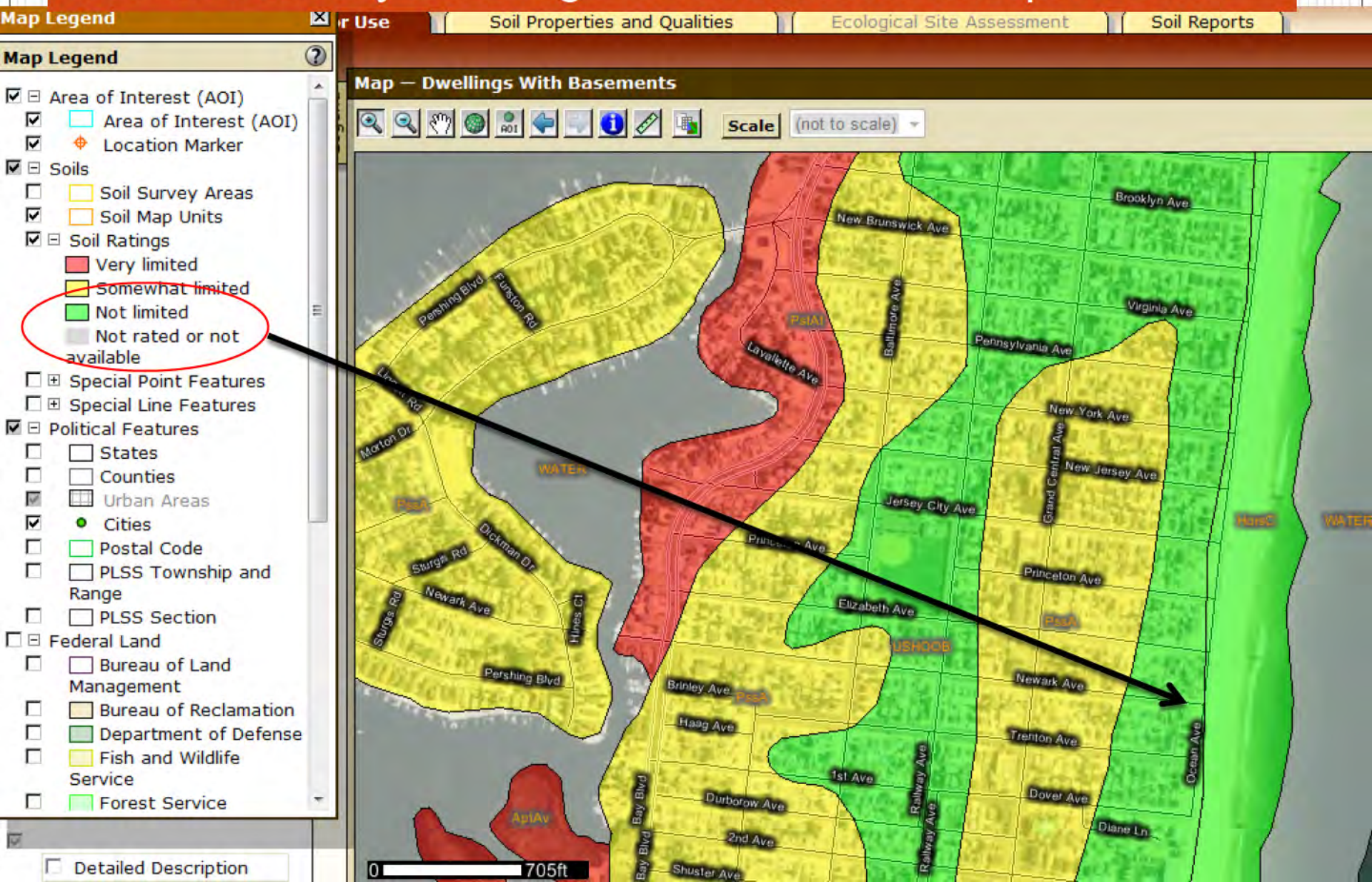
Good reason for a Coastal Soil Survey: Beach Repairs After Sandy May Cost \$8 Million a Mile bloom.bg/Q7Snnpn

[View summary](#)

Bottom Line: lot of people live along coast = need for accurate soil data (spatial and tabular)!

New Jersey Coastline

Web Soil Survey Dwellings with Basement Interpretations



Hurricane Sandy

10:16 AM EDT Sun Oct 28 2012

Position 32.1 N 73.1 W

Maximum Winds 75 mph

Gusts 90 mph

Movement NE at 10 mph

Minimum Pressure 951 mb (28.07 inches)

Blue Marble basemap imagery courtesy NASA

Satellite 10:16 AM EDT

10:16 AM EDT



SNE Soils @SoilsNE

Watching this storm, could be epic surf or epic damage: RT

@HuffPostGreen Grim storm eyes the East Coast huff.to/QCoL05

[View summary](#)

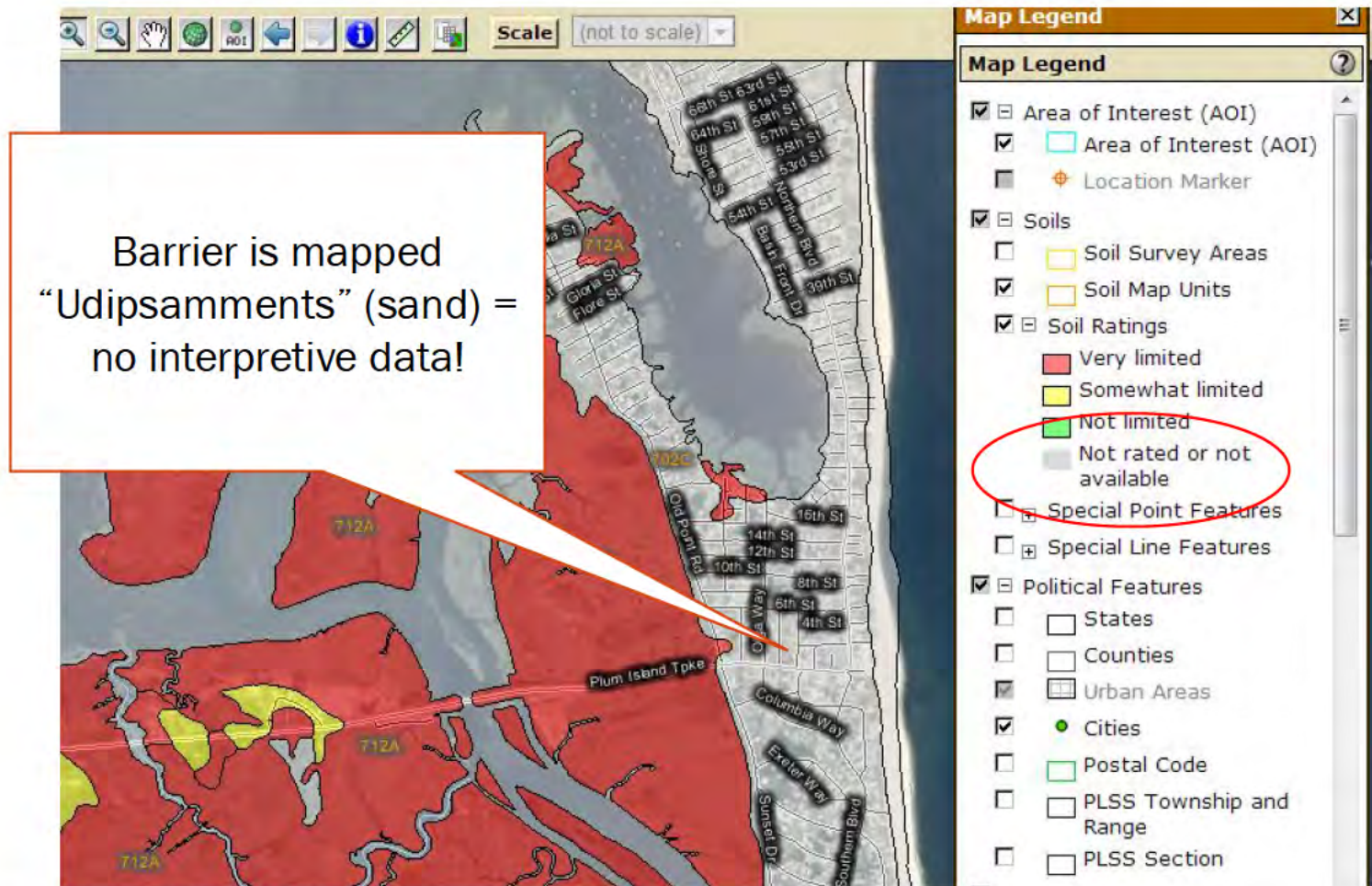
22 Oct

New Jersey Coastline; After Sandy



No Limitations??

Superstorm Nemo – Plum Is, MA



Havoc on Plum Island

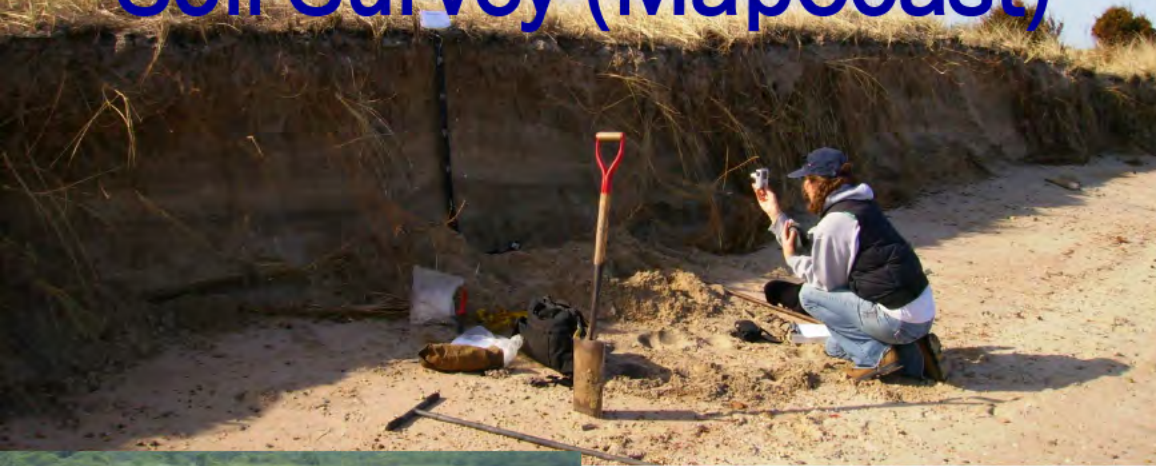
Superstorm Nemo

We need
better
soil data!



A house on the Plum Island seacoast in Newbury, Mass., sits partially collapsed into the churning surf. (THE ASSOCIATED

Rhode Island Coastal and Subaqueous Soil Survey (MapCoast)



Visit us at MapCoast.org

Subaqueous soil
information

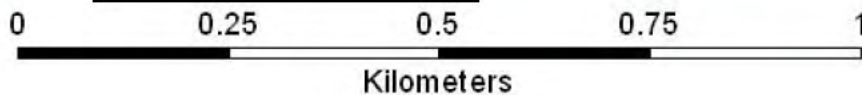
After

Matunuck (8-16")
Pawcatuck (16-50")

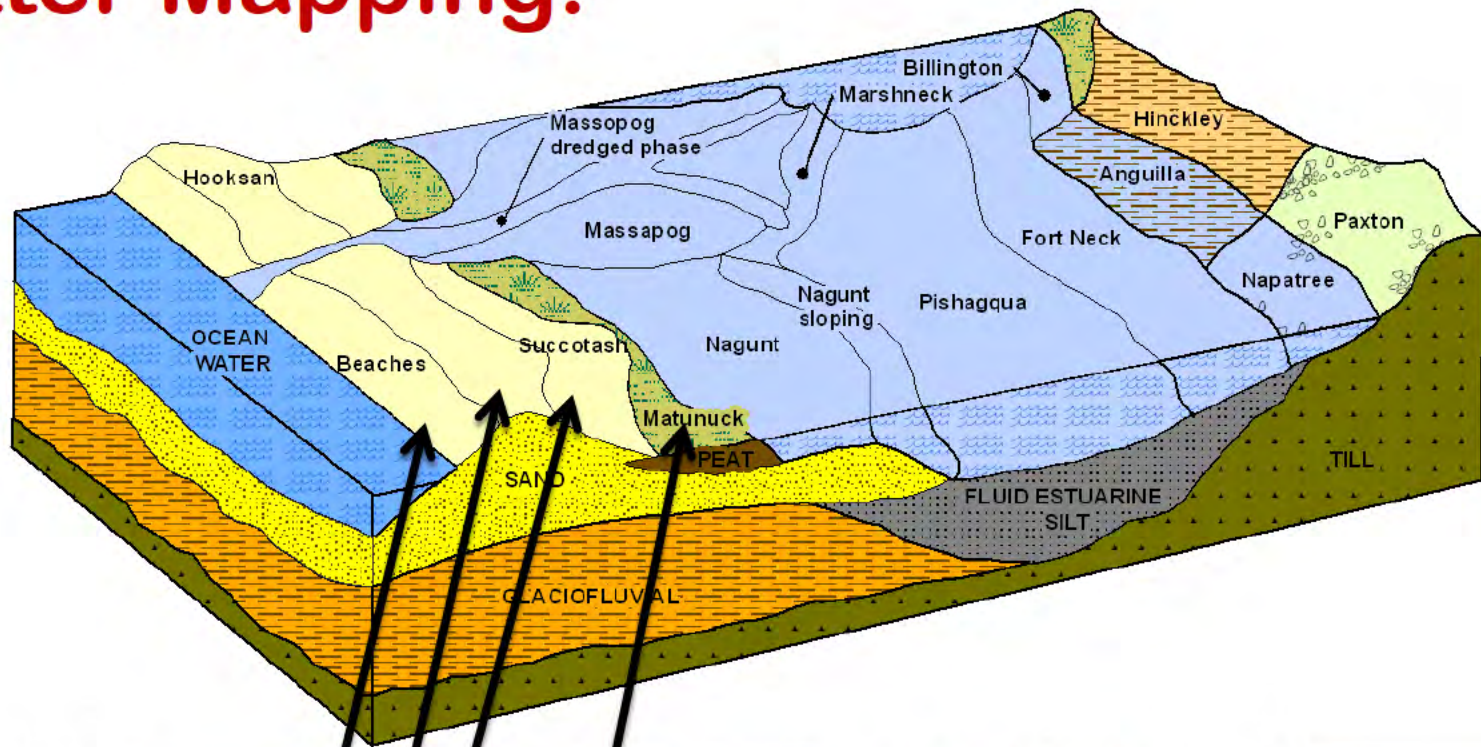
Hooksan,
Succotash,
Sandyhook
drainage catena

Beaches, sandy
surface

Beaches,
bouldery surface



Better Mapping:



Washover Fan
Deposition

Post-Sandy –
Quonochontaug Barrier
Conservation Land

Washover Fan
Deposition



More Map Units:

35 new map
units!



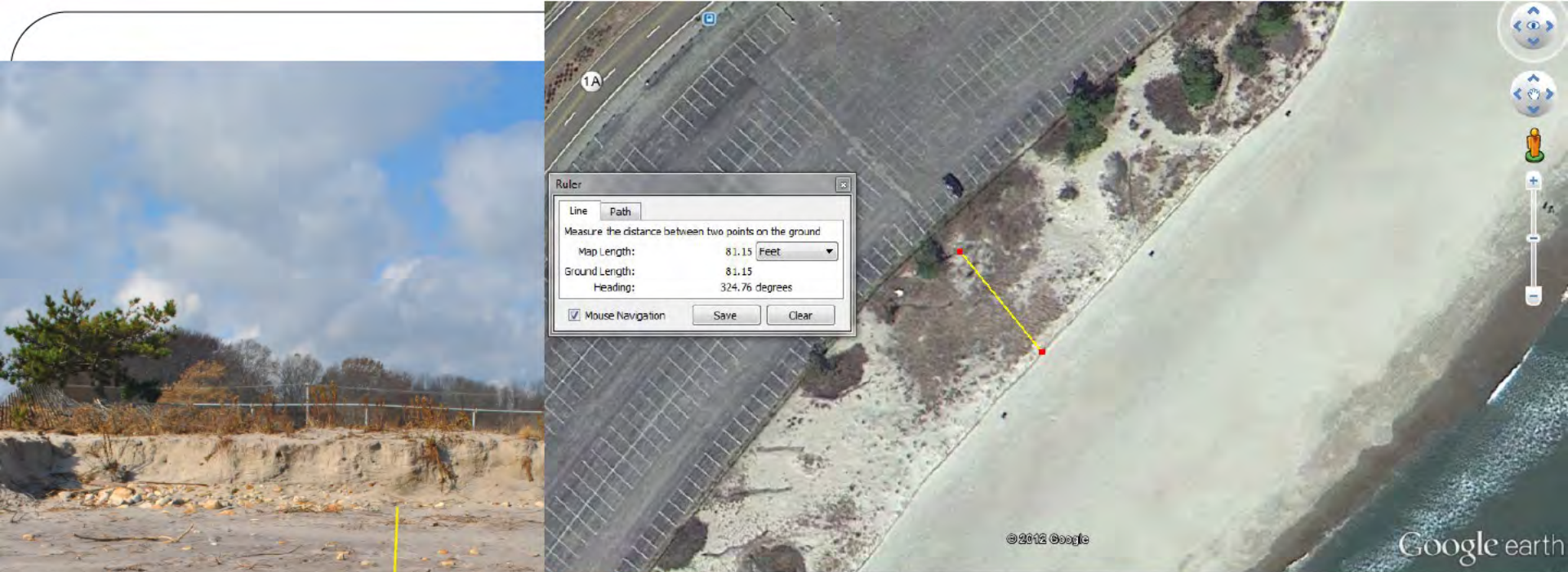
Beaches, boulder surface



Beaches, cobble surface



Beaches, sandy surface



90 feet of Hooksan Soil
Eroded by Sandy

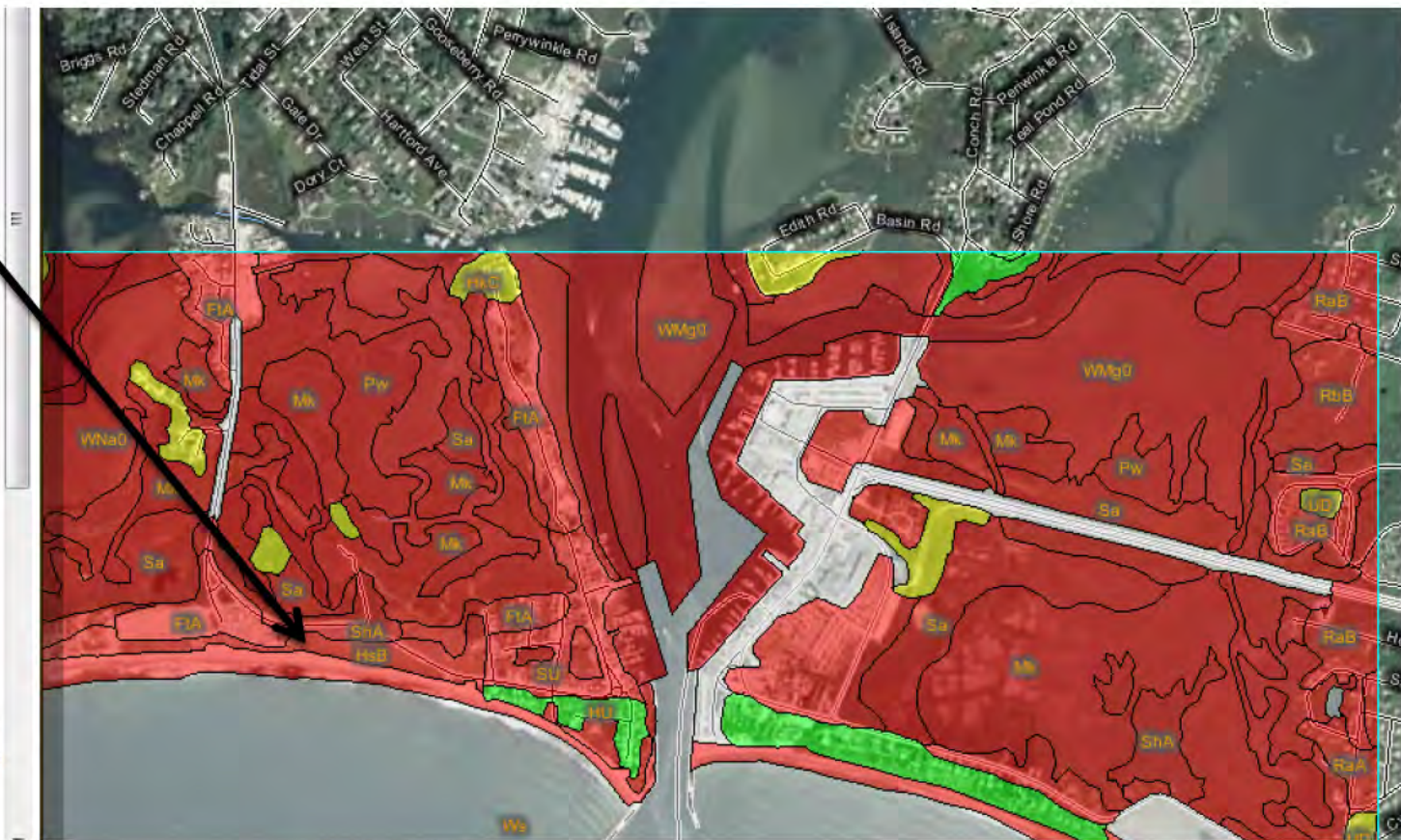
Pre-Sandy Fore-dune/Beach
(verified by GPS)

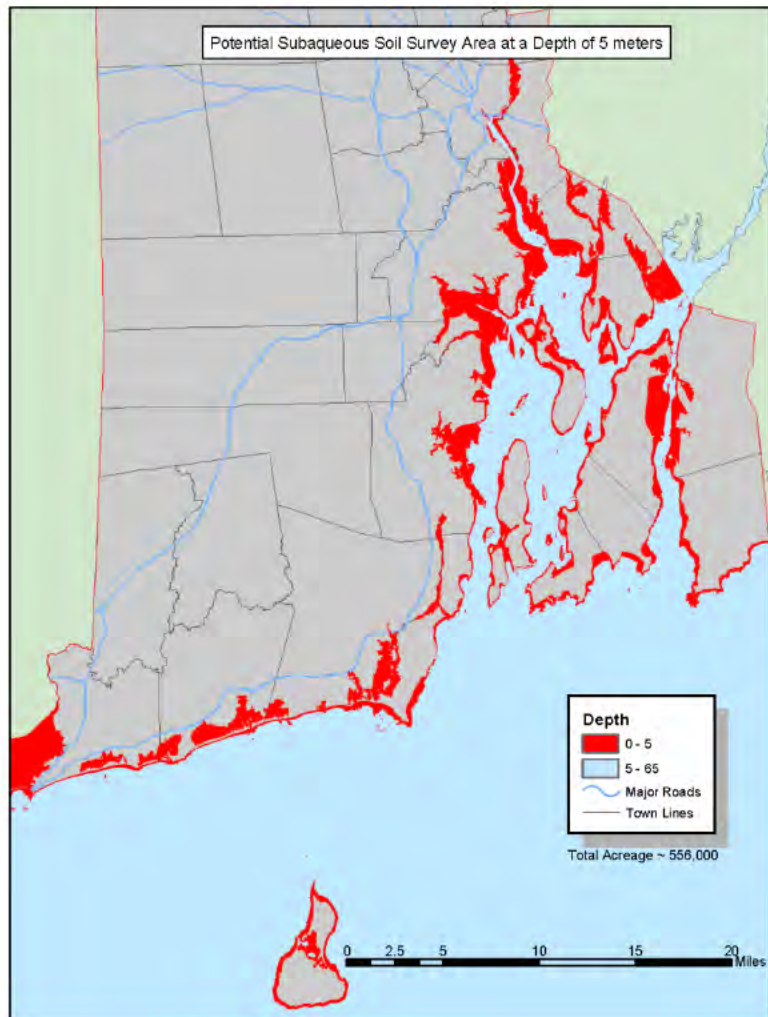
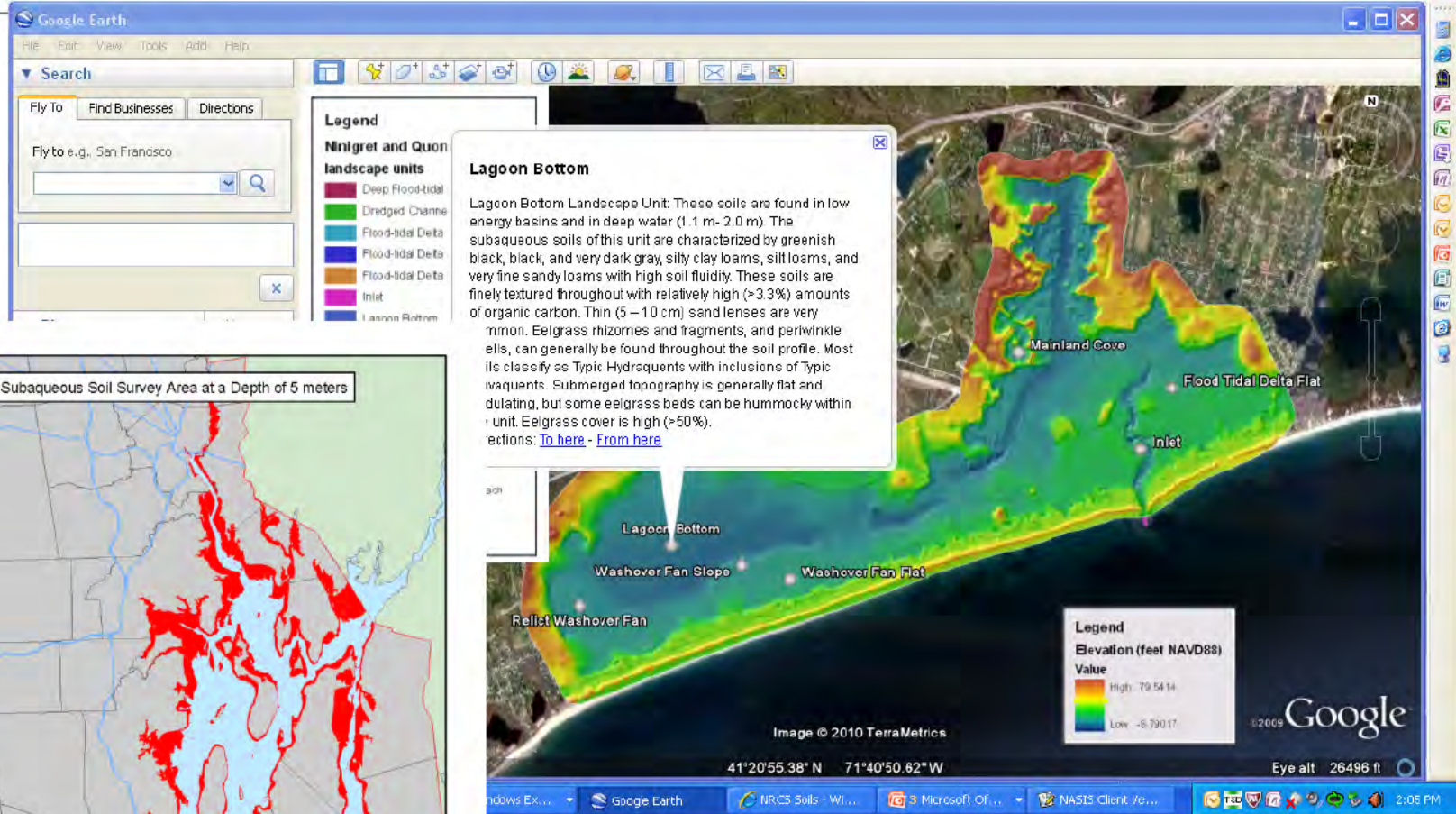
Better Interpretations:

Major limitations
for buildings

More Useful and Accurate Maps:

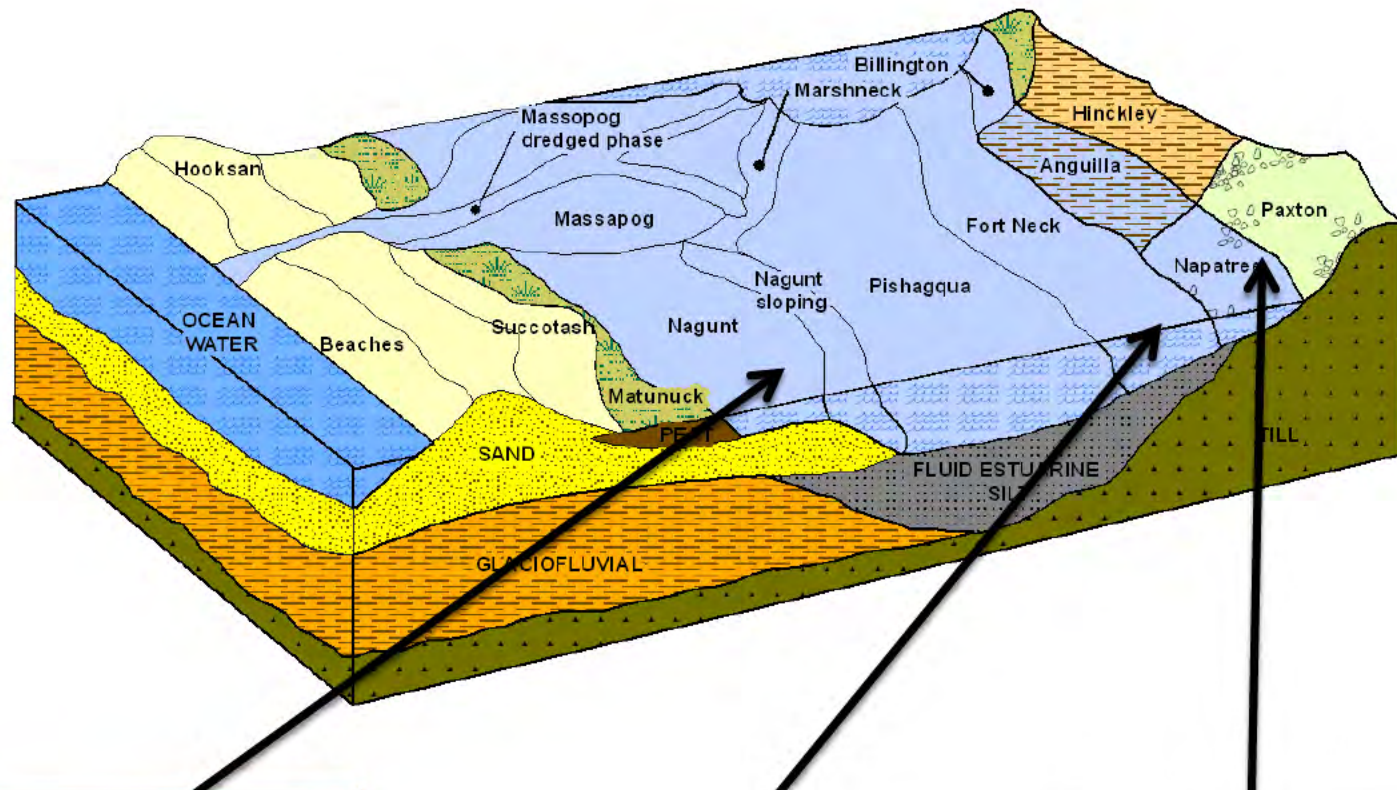
- ☒ LOCATION Marker
- ☒ Soils
 - ☐ Soil Survey Areas
 - ☐ Soil Map Units
 - ☒ Soil Ratings
 - ☒ Very limited
 - ☒ Somewhat limited
 - ☒ Not limited
 - ☐ Not rated or not available
- ☒ Special Point Features
- ☒ Special Line Features
- ☒ Political Features
 - ☐ States
 - ☐ Counties
 - ☐ Urban Areas
 - ☒ Cities
 - ☐ Postal Code
 - ☐ PLSS Township and Range
 - ☐ PLSS Section
- ☐ Federal Land
 - ☐ Bureau of Land Management
 - ☐ Bureau of Reclamation
 - ☐ Department of Defense
 - ☐ Fish and Wildlife Service





Subaqueous Mapping

- >500,000 acres of shallow water area



Rhode Island Coastal Zone Soil Survey Suitability for Oyster Aquaculture (bottom gear)

Map Legend

RI Coastal Zone Soil Survey

Aquaculture Suitability for bottom gear

- Fair - boulders
- Fair - depth, sloping
- Fair - sedimentation
- Fair - sedimentation, depth
- Not suited, intertidal
- Poor - boulders
- Poor - depth, high energy
- Poor - fluid bottom
- Poor - fluid bottom, depth
- Poor - fluid bottom, depth, navigation
- Poor - sedimentation, sloping
- Well suited

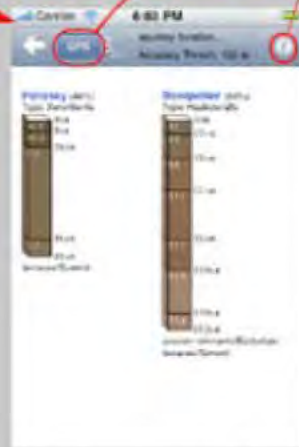


Interpretive maps



SoilWeb App:

Set the desired GPS accuracy with the slider, and click "Done" to return to the main view.

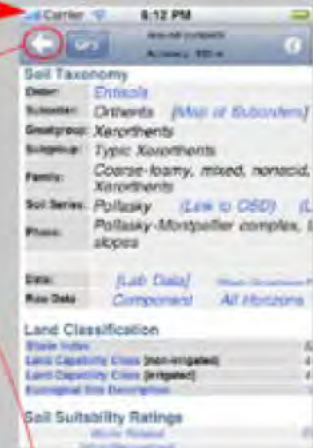


Application starts with GPS disabled. Click "GPS" to start acquiring location data. Click on the "info" button for application details.



Once a location with sufficient accuracy is acquired, map unit components are displayed. Soil profiles link to their Official Series Description

Component names are linked to their details on the CA Soil Resource page. Use the "back" arrow to return to the main view.



NRCS Web Soil Survey:

The simple yet powerful way to access and use soil data.



Like What You See?



**Request subaqueous and coastal
soils from YOUR state NRCS office**

<http://www.nrcs.usda.gov>