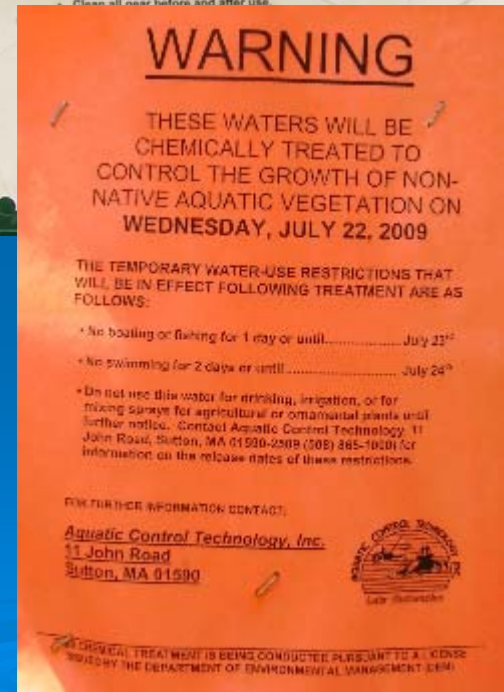


Freshwater Subaqueous Soils

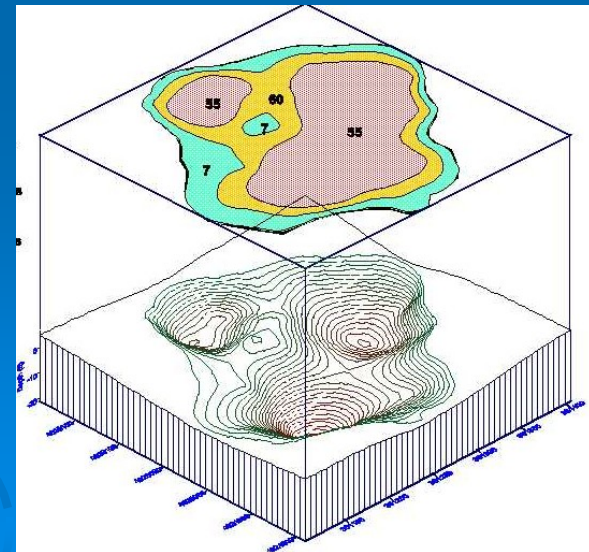
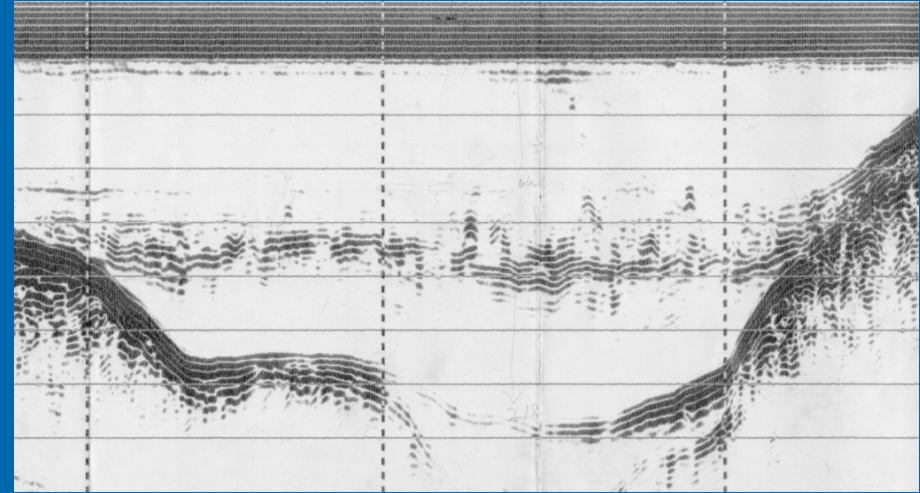
Jim Turenne, RI
NRCS

[http://nesoil.com/
sas](http://nesoil.com/sas)



Need for freshwater SAS data

- Pond restoration – Grafton Pond, MA.
- Nutrient input/hydrologic conditions.
- Dam Removal – Lime Pond, Saw Mill Pond
- Invasive control (BMP) – Bowdish, 3 other.
- Peat thickness and volume – SE MA.
- Potential fuel source (84,000,000 cubic ft Bowdish)

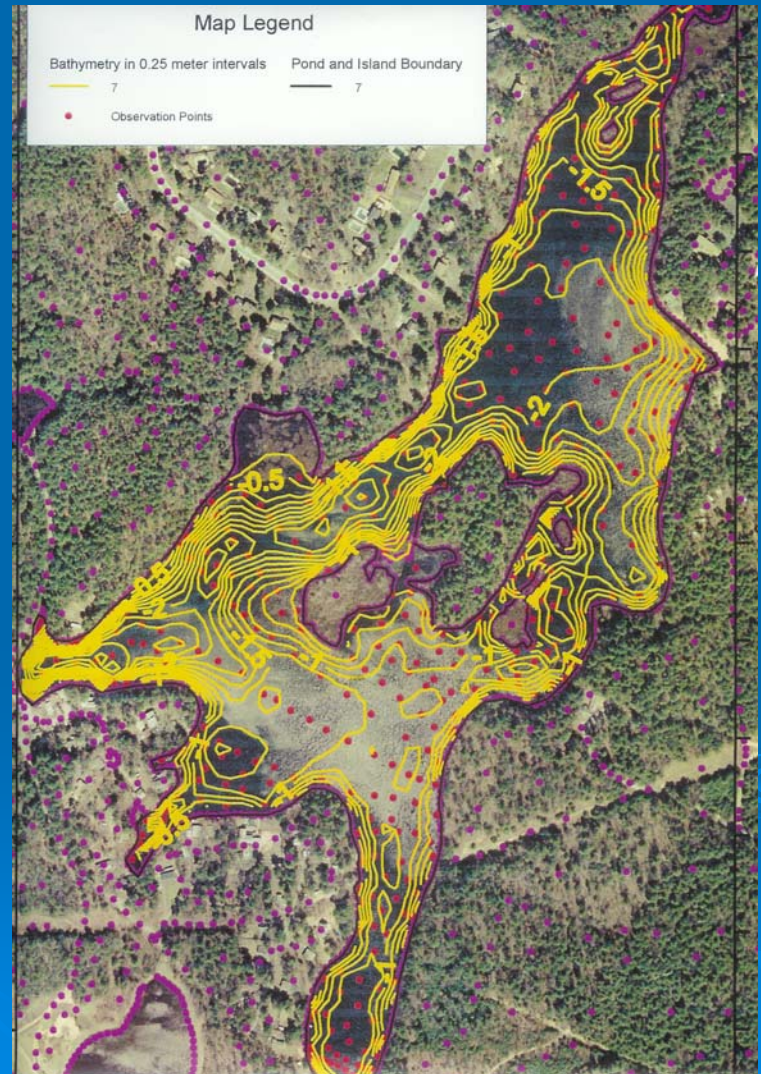


Classification- needs more input

- **Wassists** - are subaqueous Histosols. Defined as Histosols that have a positive water potential at the soil surface for 90% of each day. These soils are the second suborder to classify out under Histosols after Folists. The formative element Wass is derived from the German (Swiss) word “wasser” for water.
- BBA. Wassists that have, in all horizons within 100 cm of the mineral soil surface, an electrical conductivity of <0.2 dS/m in a 5/1 by volume mixture of water and soil. **Frasiwassists**
- **Wassents** - are subaqueous Entisols. Defined as Entisols that have a positive water potential at the soil surface for 90% of each day. These soils are the first suborder to classify out under Entisols. The formative element Wass is derived from the German (Swiss) word “wasser” for water.
- **Key to Great Groups**
- LAA. Wassents that have, in all horizons within 100 cm of the mineral soil surface, an electrical conductivity of <0.2 dS/m in a 5/1 by volume mixture of water and soil. **Frasiwassents**

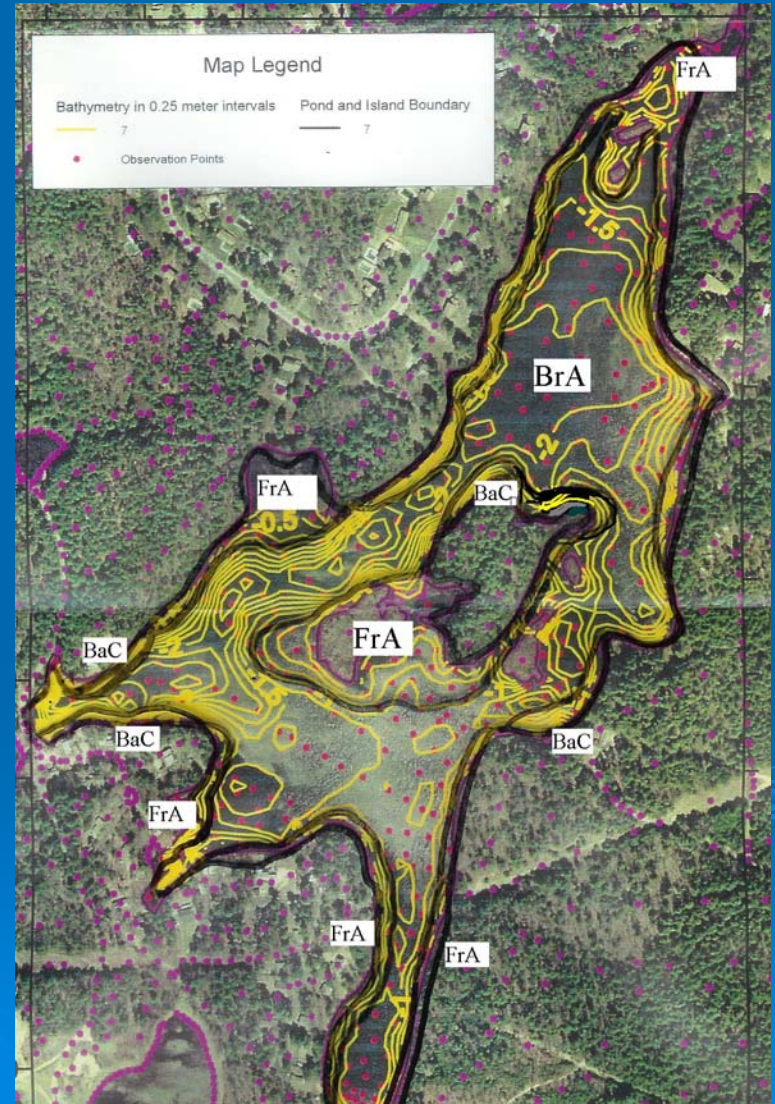
Mapping Protocol

- Similar to Sub-tidal – no tide correction but need surface/spillway ele.
- Need to develop landscapes but similar to salt water.
- Use GPR in winter or ice for sub-bottom and bathy.
- Core and soil data same as sub-tidal



Mapping Protocol

- Series and map unit phases need to be developed.
- Organic – dysic/euic, decomposition, terric types.
- Mineral – particle family, parent material, surface.
- Interps needed.



Imagery / Pictometry



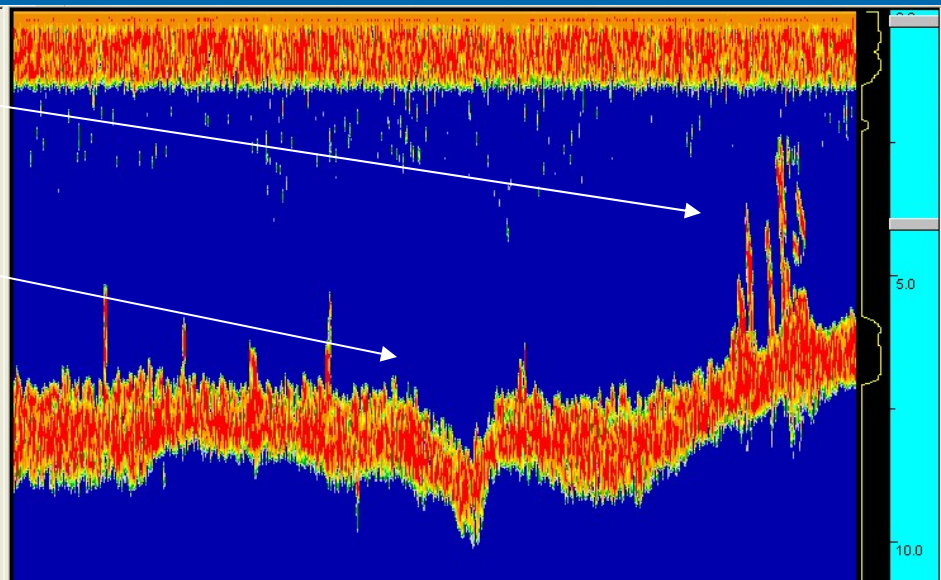
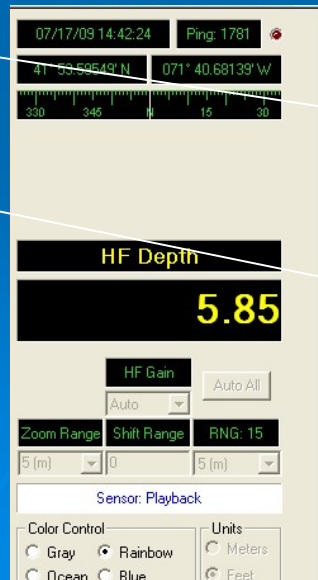
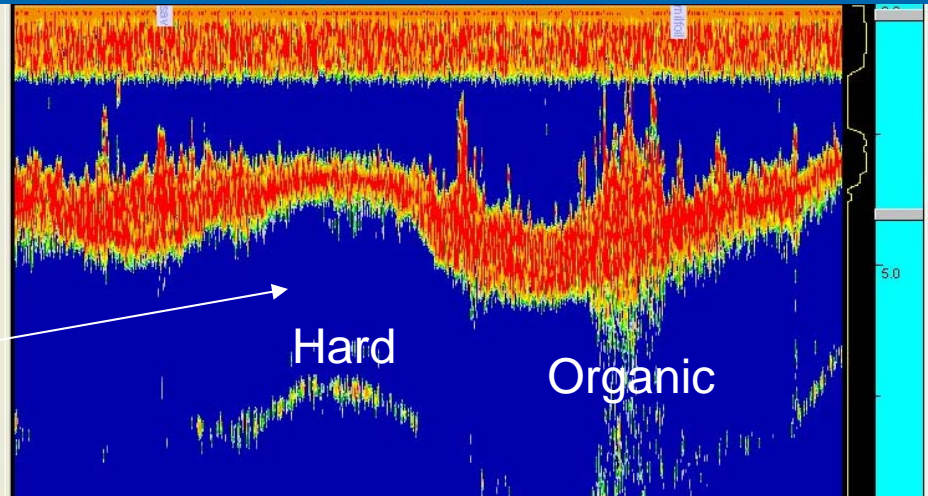
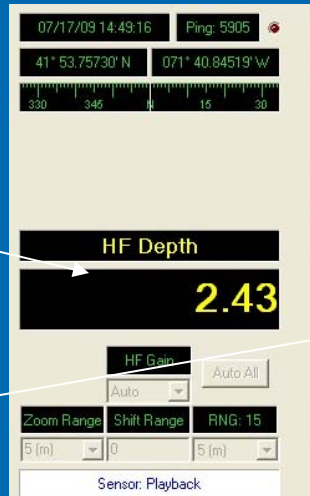
Acoustic Map

Survey Grade
Fathometer
(detailed
bathymetry)

Bottom type
mapping.

SAV, boulders,
stumps.

Submerged stream
channels

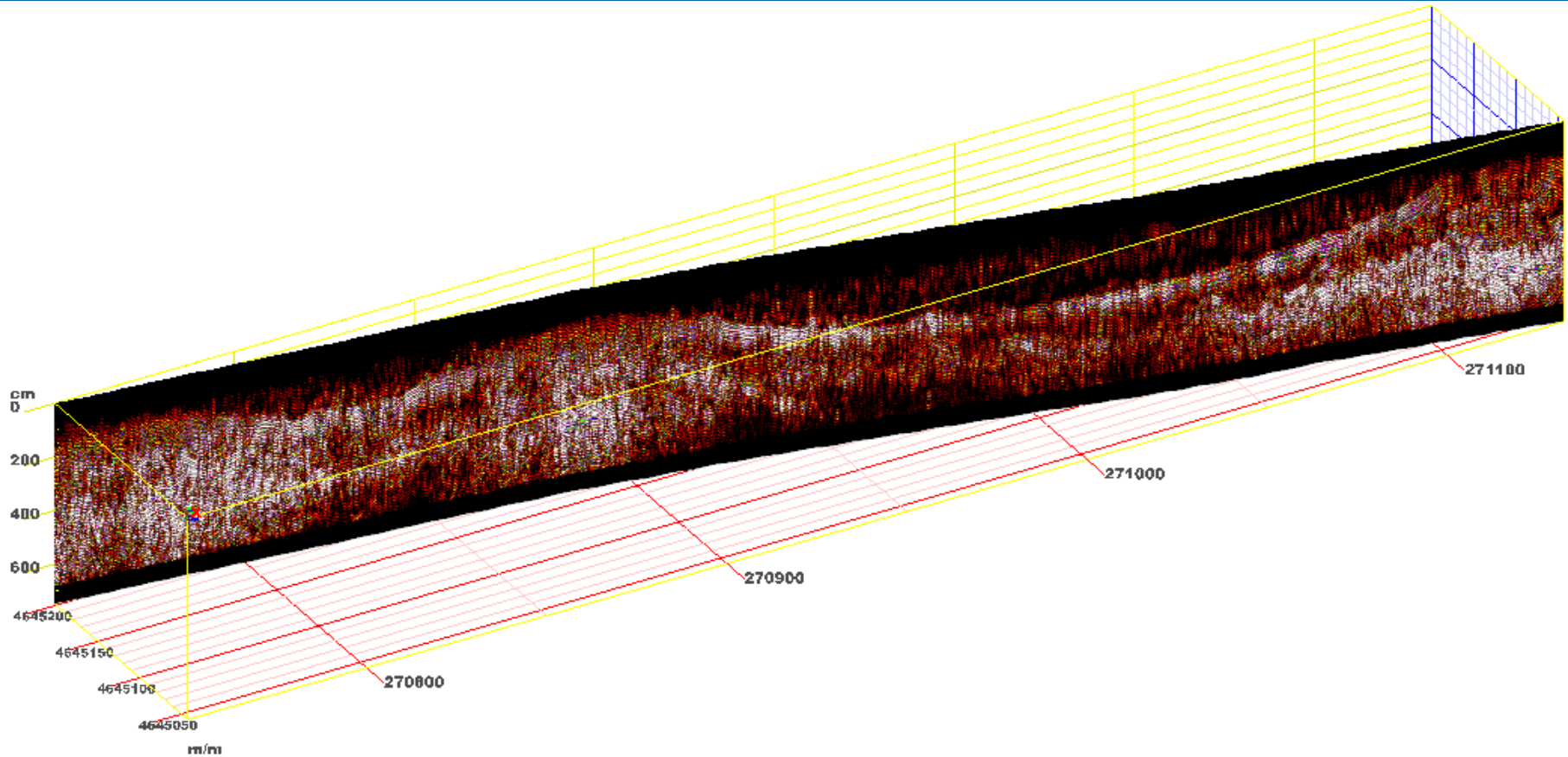


On Bowdish Pond

- 250 acre pond in NW RI.
- NRCS partnering with DEM for Invasive Study on Ponds (EQIP).
- Need baseline bathy and soil mapping – no data.
- Used GPR to profile pond in winter 09.
- Bathy being collected now.

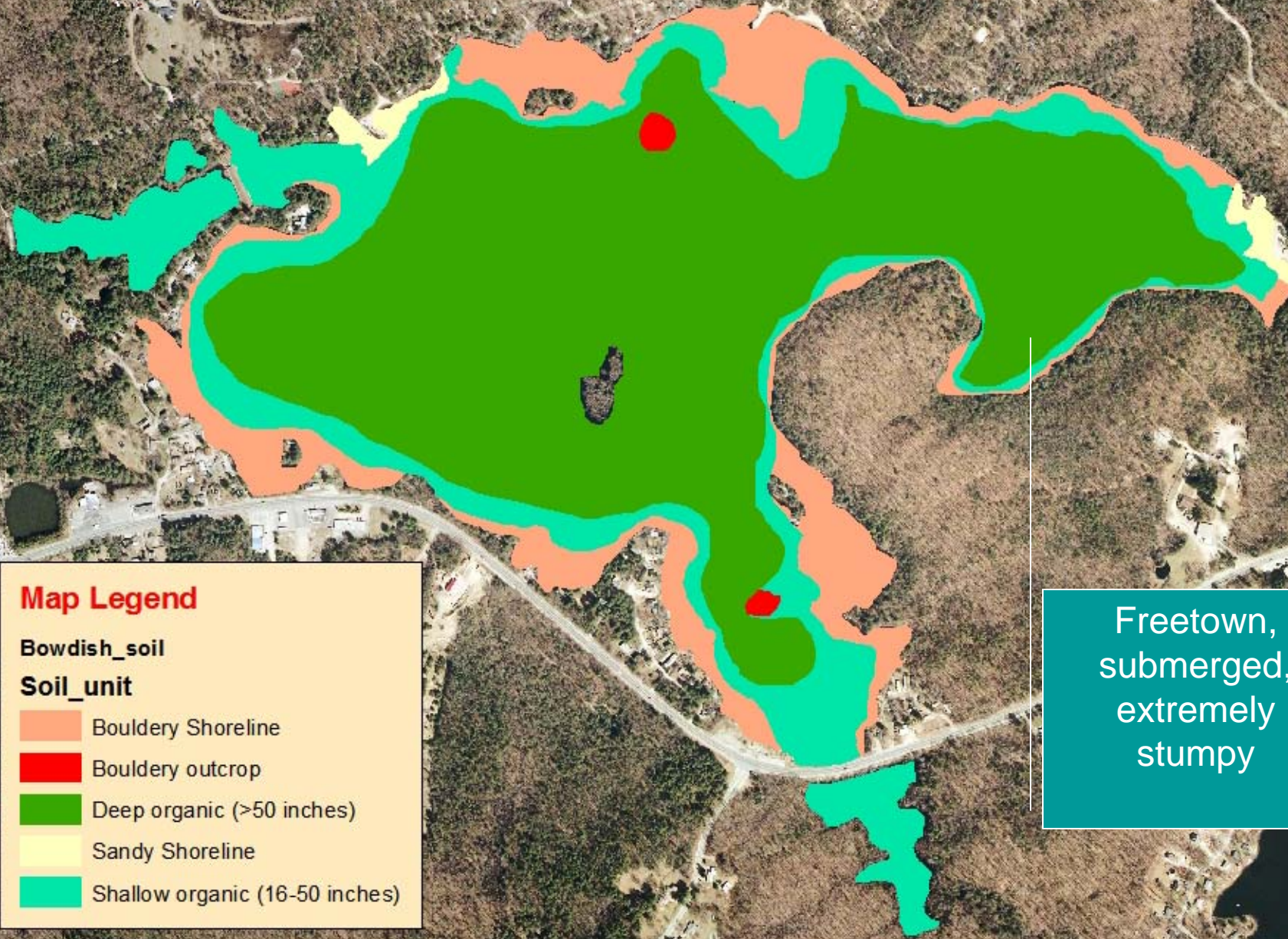


GPR / GPS Interface – Google Earth



Map Examples










Map Legend

Bowdish_soil

Soil_unit

-  Bouldery Shoreline
-  Bouldery outcrop
-  Deep organic (>50 inches)
-  Sandy Shoreline
-  Shallow organic (16-50 inches)

Freetown,
submerged,
extremely
stumpy



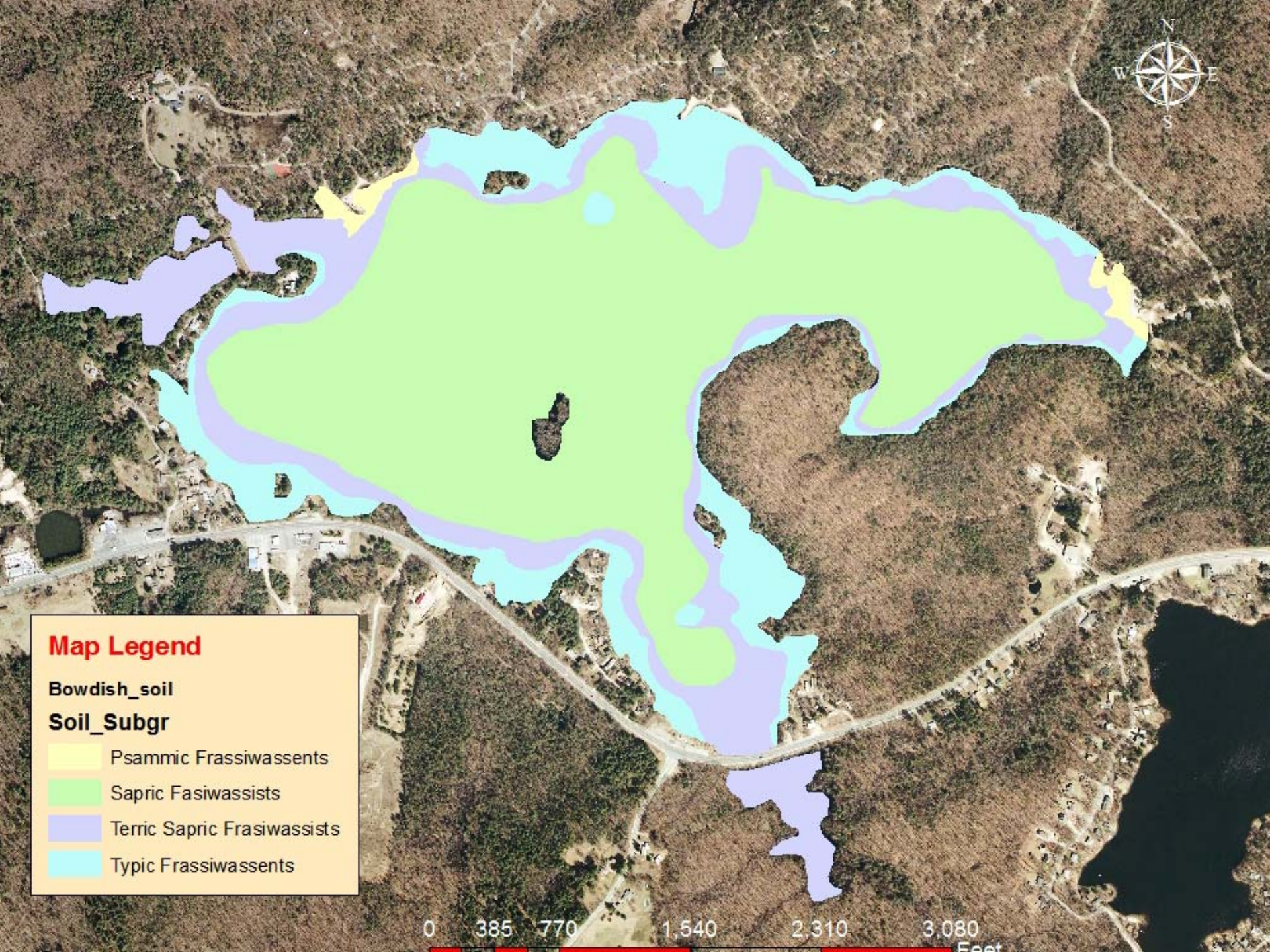


Map Legend

Bowdish_soil

Soil_Subgr

- Psammic Frasiwassents
- Sapric Fasiwassists
- Terric Sapric Fasiwassists
- Typic Frasiwassents





Submerged
#18

Mapped
As
Fresh
(FrA)



Terrestrial
#19

Mapped as
Carver
(252)



Sample 16

Oa 0-15

C 15-17

Oe 17-23

Oa2 23-30

C2 30-34

Oe2 34-36

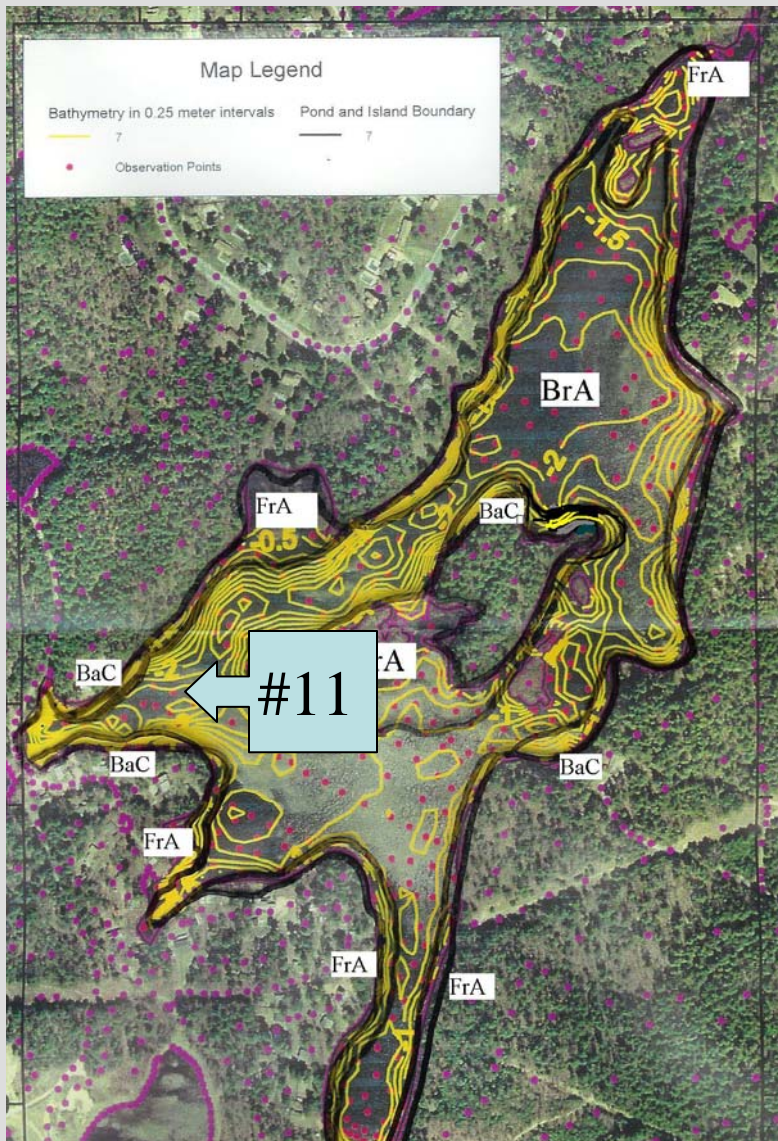
C3 36-38

2C 38-44

2Oa 44-125

2Oa2 125-135





#11

Typic
Haplosaprist

Organic
Staining
At 80 cm



Burrage Pond Organic Deposits

