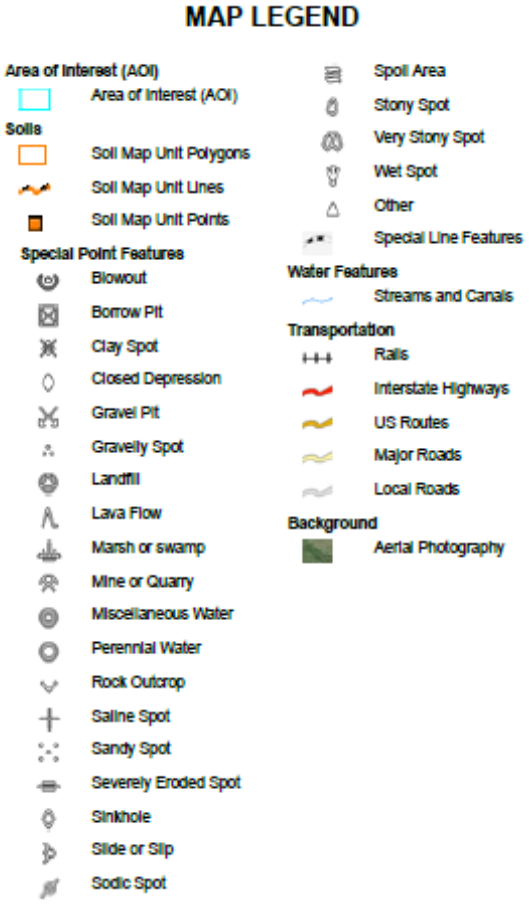
Connecticut Envirothon Soils Workshop - Map Reading Exercises
October 27, 2019

Exercise 1: Topographic Map

1. What are the brown colored lines on the topographic map below?
2. The contour intervals are 10 feet. What is the elevation of the Skungamaug Cemetery?
3. What do the blue-colored areas on the topographic map represent?
4. What do the green shaded areas on the topographic map represent?
5. What do the white shaded areas on the topographic map represent?

Exercise 2: Soil Survey Report

1. What soil map unit symbol covers the largest area within the map? (Hint: look at percent in AOI)
2. How many acres does this soil map unit cover in the AOI?
3. What is the soil map unit name?
4. Looking at the soil map, is the 85C soil map unit mostly forested or open fields?
5. On the soil map, circle soil map unit 108. What does the blue-colored line represent?
6. What is in the middle of soil map unit 23A?



Map Unit Symbol	Map Unit Name	Acres in AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	0.8
12	Raypol silt loam	6.6
23A	Sudbury sandy loam, 0 to 5 percent slopes	11.8
34A	Merrimac fine sandy loam, 0 to 3 percent slopes	5.6
38A	Hinckley loamy sand, 0 to 3 percent slopes	6.2
38C	Hinckley loamy sand, 3 to 15 percent slopes	3.6
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	2.9
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	3.4
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	20.4
108	Saco silt loam	19.0
Totals for Area of Interest		**80.2**

Custom Soil Resource Report
Soil Map

Map Scale: 1:4,330 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 200, 400, 800, 1200

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Use the soil map unit descriptions and land classification information below to complete the following:

1. Draw a circle around the farmland classification of soil map units 23A, 85C, and 108.
2. Draw a rectangle around the soil parent material of soil map units 23A, 85C, and 108.
3. Under the typical profile, is there an O horizon described for soil map units 23A, 85C, or 108?
4. What soil map unit has the highest water table?
5. What soil map unit has a *high* rating for available water storage in the profile?
6. What soil map unit has a depth to restrictive feature (densic material) between 20 and 43 inches?
7. What soil map unit has a *very low* rating for runoff class? Why?
8. Draw a circle around the soil map units on the Inland Wetlands table and map that are CT Inland Wetlands.

Map Unit Descriptions

23A—Sudbury sandy loam, 0 to 5 percent slopes

Map Unit Setting
National map unit symbol: 9lkv
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Sudbury and similar soils: 80 percent; *Minor components:* 20 percent

Setting
Landform: Terraces, outwash plains
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile
Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: sandy loam
Bw1 - 5 to 17 inches: gravelly sandy loam
Bw2 - 17 to 25 inches: sandy loam
2C - 25 to 60 inches: stratified gravel to sand

Properties and qualities
Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained

Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High
Depth to water table: About 18 to 36 inches
Frequency of flooding: None *Frequency of ponding:* None
Available water storage in profile: Low (about 4.2 inches)
Hydrologic Soil Group: B
Hydric soil rating: No

85C—Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony

Map Unit Setting
National map unit symbol: 2w67f
Elevation: 0 to 1,520 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Paxton, very stony, and similar soils: 55 percent; *Montauk, very stony, and similar soils:* 30 percent;
Minor components: 15 percent

Setting
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile
Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities
Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low
Depth to water table: About 18 to 37 inches
Frequency of flooding: None *Frequency of ponding:* None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.8 inches)
Hydrologic Soil Group: C
Hydric soil rating: No

108—Saco silt loam

Map Unit Setting
National map unit symbol: 9ljv
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition
Saco and similar soils: 80 percent *Minor components:* 20 percent

Setting
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-silty alluvium

Typical profile
A - 0 to 12 inches: silt loam
Cg1 - 12 to 32 inches: silt loam
Cg2 - 32 to 48 inches: silt loam
2Cg3 - 48 to 60 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent *Frequency of ponding:* Frequent
Available water storage in profile: High (about 10.1 inches)
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Land Classifications:

Inland Wetlands (CT)

The State of Connecticut defines inland wetlands based on soils. The Connecticut Inland Wetlands and Watercourses Act defines wetland soils to include any of the soil types designated as poorly drained, very poorly drained, alluvial, or floodplain by the National Cooperative Soil Survey, as may be periodically amended, of the Natural Resources Conservation Service of the United States Department of Agriculture.

Map unit symbol	Map unit name	Rating	Component name (percent)	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	CT wetland	Ridgebury, extremely stony (40%)	0.8	1.1%
			Leicester, extremely stony (35%)		
			Whitman, extremely stony (17%)		
			Swansea (2%)		
12	Raypol silt loam	CT wetland	Raypol (80%)	6.6	8.2%
			Walpole (2%)		
			Scarboro (2%)		
23A	Sudbury sandy loam, 0 to 5 percent slopes	CT nonwetland	Sudbury (80%)	11.8	14.7%
			Ninigret (5%)		
			Agawam (5%)		
			Merrimac (5%)		
			Tisbury (3%)		
34A	Merrimac fine sandy loam, 0 to 3 percent slopes	CT nonwetland	Merrimac (85%)	5.6	7.0%
			Hinckley (5%)		
			Sudbury (5%)		
			Agawam (3%)		
			Windsor (2%)		
38A	Hinckley loamy sand, 0 to 3 percent slopes	CT nonwetland	Hinckley (85%)	6.2	7.7%
			Merrimac (5%)		
			Windsor (5%)		
			Sudbury (5%)		
38C	Hinckley loamy sand, 3 to 15 percent slopes	CT nonwetland	Hinckley (85%)	3.6	4.4%
			Merrimac (5%)		
			Windsor (5%)		
			Agawam (3%)		
			Sudbury (2%)		
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	CT nonwetland	Canton, very stony (50%)	2.9	3.6%
			Charlton, very stony (35%)		
			Chatfield, very stony (5%)		
			Sutton, very stony (5%)		
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	CT nonwetland	Paxton (55%)	3.4	4.3%
			Montauk (30%)		
			Woodbridge (5%)		
			Charlton (5%)		
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	CT nonwetland	Paxton, very stony (55%)	20.4	25.4%
			Montauk, very stony (30%)		
			Woodbridge, very stony (6%)		
			Charlton, very stony (5%)		
			Stockbridge, very stony (1%)		
108	Saco silt loam	CT wetland	Saco (80%)	19.0	23.7%
			Limerick (5%)		
			Lim (5%)		
			Rippowam (3%)		
			Winooski (3%)		
			Bash (2%)		
			Hadley (2%)		
Totals for Area of Interest				**80.2**	**100.0%**

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- CT nonwetland
- CT wetland
- Not rated or not available

Soil Rating Lines

- CT nonwetland
- CT wetland
- Not rated or not available

Soil Rating Points

- CT nonwetland
- CT wetland
- Not rated or not available

Water Features

- Streams and Canals

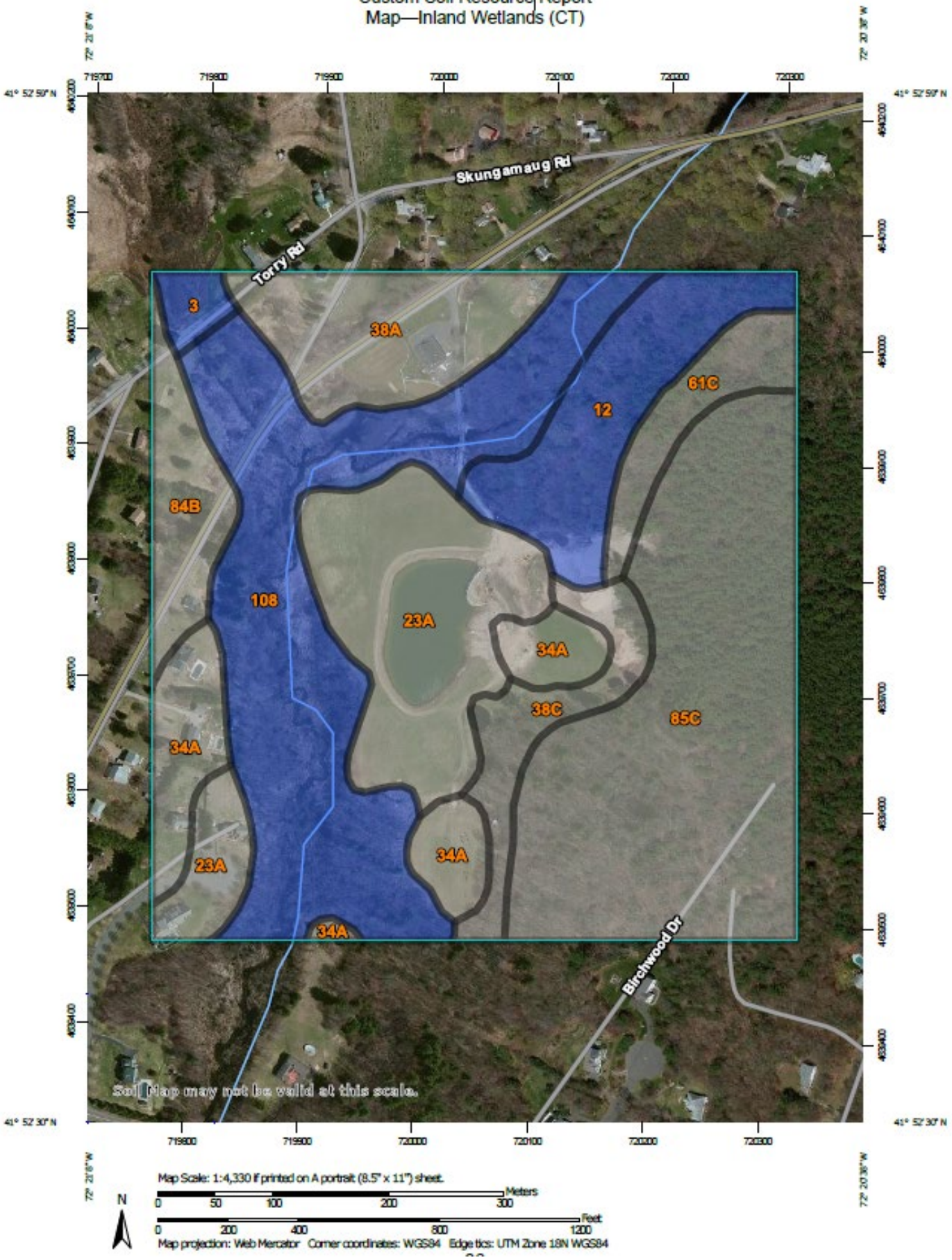
Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

Custom Soil Resource Report
Map—Inland Wetlands (CT)



Exercise 3: Web Soil Survey

Launch Web Soil Survey by clicking the green 'Start WSS' button 

On the left-hand of the screen under "**quick navigation**" click the down arrow next to "**address**" and enter the address (*1032 Tolland Stage Rd, Tolland, CT*)

Create an AOI (area of interest) using either the polygon tool 

, or the rectangle tool 

.
You should see a defined hatched area.

The next few steps will require navigating the tabs. 

Click the **Soil Map** tab and observe the map unit legend. Scroll down the legend and click on Sudbury sandy loam, 0 to 5 percent slopes and read the **Description of Sudbury**.

1. Under **Settings**, what are the two landforms Sudbury soils are formed on?

2. **Under properties and qualities**, does this soil map unit flood or pond?

3. Under the **Typical Profile**, how many horizons are described?
   To learn more about soil horizons see the next page.

Click on the **Soil Data Explorer** tab, **Soil Properties and Qualities** tab, **Soil Health Properties** tab, **Soil Health – Organic Matter**, and **View Rating**. Open the **legend** tab to see what the colors represent. Below the map is the interpretation report – view the soil organic matter ratings (percent) for each soil map unit.

1. Why are some much higher in organic matter than others? Could it be that some soils are forested, and others are cropped?

Click on **Soil Qualities and Features**, **Parent Material Name**, and **View Rating**. Read the summary rating by soil map unit below the map.

1. What are the soil map unit symbols of the soils formed in lodgment till? Alluvium?
   To learn more about parent materials see the last page.

If you have time, locate what soils are mapped at your school or home.