Deep Hole Testing/Form 11 – A BOH Refresher

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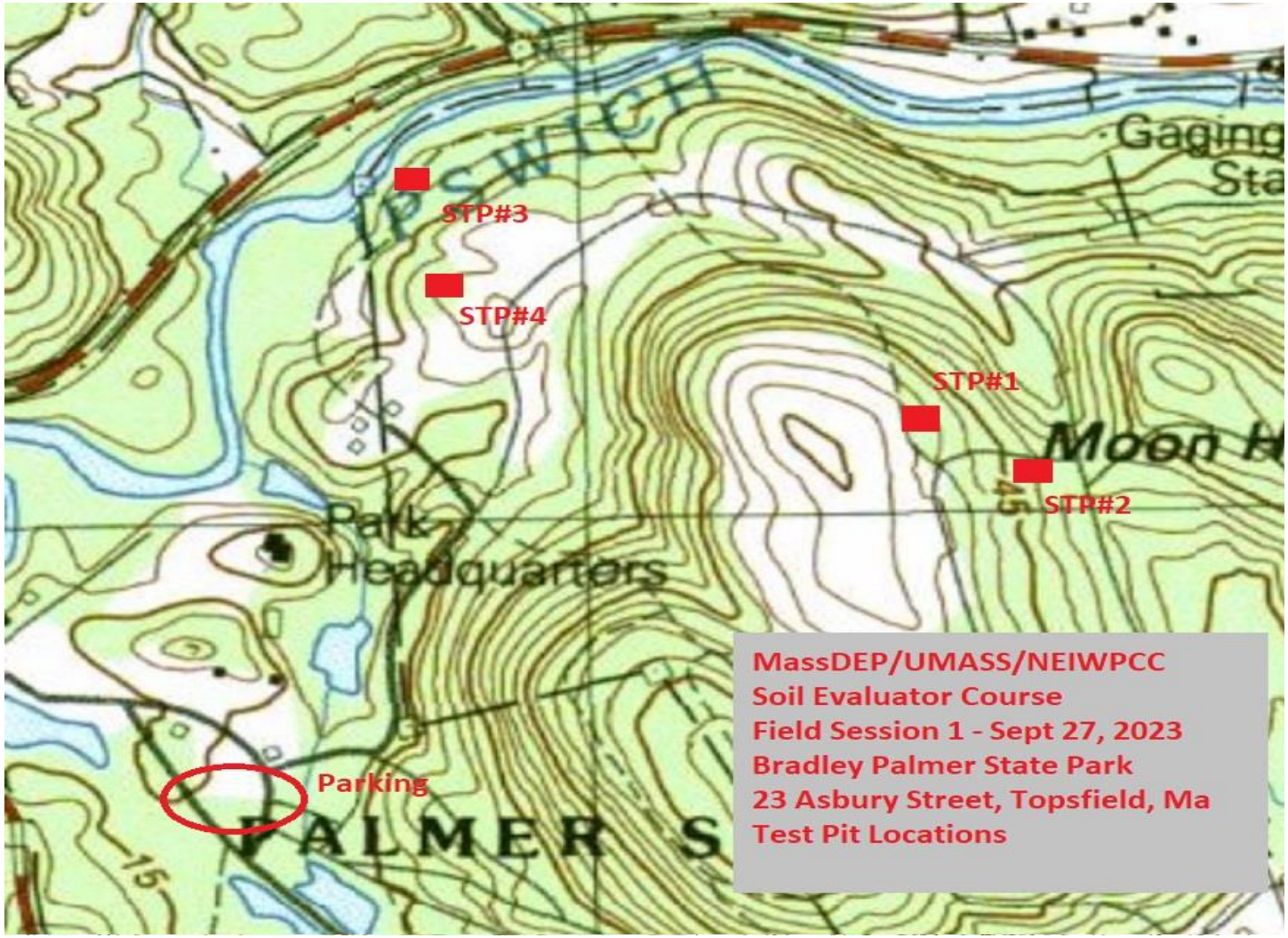
MassDEP Drinking Water Program

Deep Hole Testing/Form 11 Topics To Be Covered

- Filling out Form 11 completely
- Deep Hole expectations
- Field tips for the reviewer/documentation
- Redox examples
- Perc testing hole location
- Form 11 soil log completeness
- Final site documentation

Filling out Form 11 Section B (Reference Information) – Topsfield Bradley Palmer Site



Form 11 – Section B. Site Information

FORM 11

MassDEP website:

Go to: http://Mass.gov/dep/ which is the MassDEP homepage and use the Search feature. For Form 11 Soil Assessment and Form 12 Percolation Test forms, type in "Form 11 Title 5" and then open up the Title 5 Septic System Forms link which should be the first link. Click on the Title 5 Construction and Repairs Forms to get the Form 11 and Form 12.

OR DIRECTLY USE THESE TWO LINKS:

Soil Suitability Assessment for On-Site Sewage Disposal - Form 11: www.mass.gov/doc/form-11-soil-suitability-assessment-for-on-site-sewage-disposal-0/download

Percolation Test - Form 12: www.mass.gov/doc/form-12-percolation-test-0/download

Form 11 – Section B. Site Information

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

Owner Name

Street Address | Map/Lot #

City | State | Zip Code

B. Site Information

1. (Check one) ☐ New Construction ☐ Upgrade
2. Soil Survey
   Source | Soil Map Unit | Soil Series
   Landform | Soil Limitations
   Soil Parent material
3. Surficial Geological Report
   Year Published/Source | Map Unit
   Description of Geologic Map Unit:
4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☐ No
5. Within a velocity zone? ☐ Yes ☐ No
6. Within a Mapped Wetland Area? ☐ Yes ☐ No If yes, MassGIS Wetland Data Layer: Wetland Type
7. Current Water Resource Conditions (USGS): Month/Day/ Year Range: ☐ Above Normal ☐ Normal ☐ Below Normal
8. Other references reviewed:
   (Zone II, IWPA, Zone A, EEA Data Portal, etc.)

Question 2: Soil Survey (Cal-Davis SoilWeb)

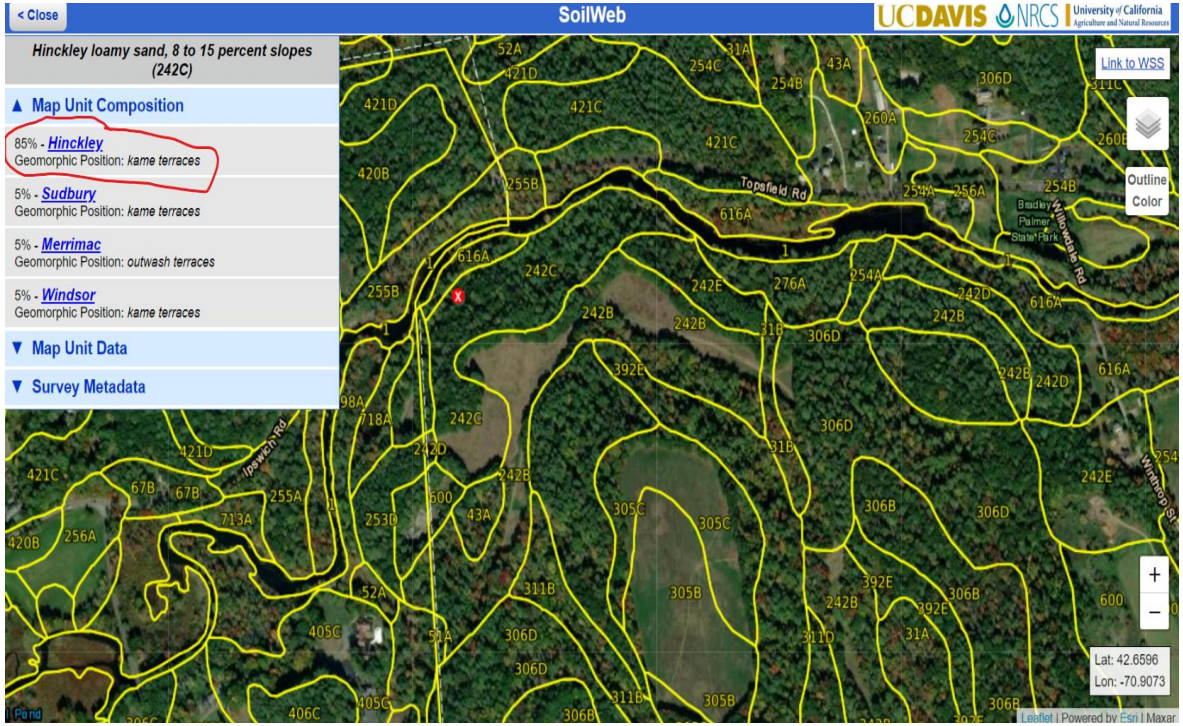
SOIL SURVEYS

University of California at Davis soils mapping website:
http://casoilresource.lawr.ucdavis.edu
Click "Soil Survey"
2. Click "SoilWeb"
3. Go to "Menu" tab at upper left hand side of page where you can go to "Map Settings" and "Zoom to Location"
4. Click on your site area and soils information pops up on left hand side of page
5. Click on "Soil Type" for more information including soil series, soil profile, parent material, etc. (**parent material** can be found under the "Hydraulic and Erosion Ratings" tab)

NE Soil website:
http://nesoil.com
Private site where you can connect to the U. of California-Davis soils mapping website. This site contains other soil information and photos of actual soil profiles. Once on, click on the "Soil Maps Google Maps" phrase on the right hand side of the page.

Web Soil Survey website:
http://websoilsurvey.nrcs.usda.gov
Click the green "Start WSS" button & go to the "Address" tab located under "Quick Navigation." Then type in the address in order to determine your area of interest. Once there, use the AOI tab above map to determine the exact area.
2. Once determined, click on the "Soil Map" tab to populate the soil information and click on Map Unit Name on the left hand side of the page to get detailed information on that soil map unit.
3. For more soils data while in the "Soil Data Explorer" tab, go to the "Soil Properties and Qualities" sub tab and explore there.

Question 2: Soil Survey (Cal-Davis SoilWeb)



Essex County, Massachusetts, Southern Part

242C—Hinckley loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2svm9
Elevation: 0 to 1,480 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Question 3: Surficial Geologic Maps continued

SURFICIAL GEOLOGY

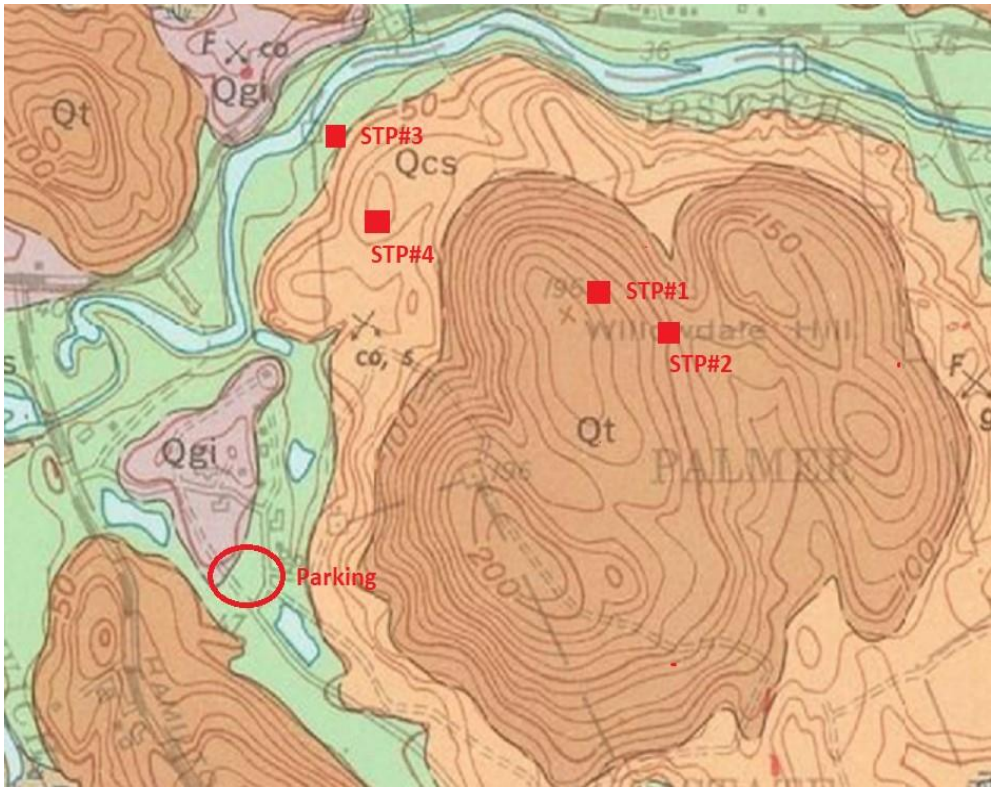
The Massachusetts Geological Survey – Office of the State Geologist website:
In order to access the latest surficial geologic maps, you need to go to this link: https://ngmdb.usgs.gov/Prodesc/proddesc_108424.htm

Once there, click on any quadrangle map in the pulldown list for the map. In order to figure out the colors associated with the geologic material on the map, open up the "Index Map" in that same pulldown list and go to the legend which describes what geologic material the mapped colors represent.

For access to earlier scanned surficial geologic maps which may provide additional information, use the following link: http://ngmdb.usgs.gov/ngmdb/ngmdb_home.html. Click on "Map Catalog" and under the "Themes" category, pull down the "Geology" menu and click on "Surficial." Then go to the "State or Territory" box and click on "Massachusetts." Then below that, select the county to narrow your search of publications. Click on the search button and look for the surficial quadrangle map your site is located in.

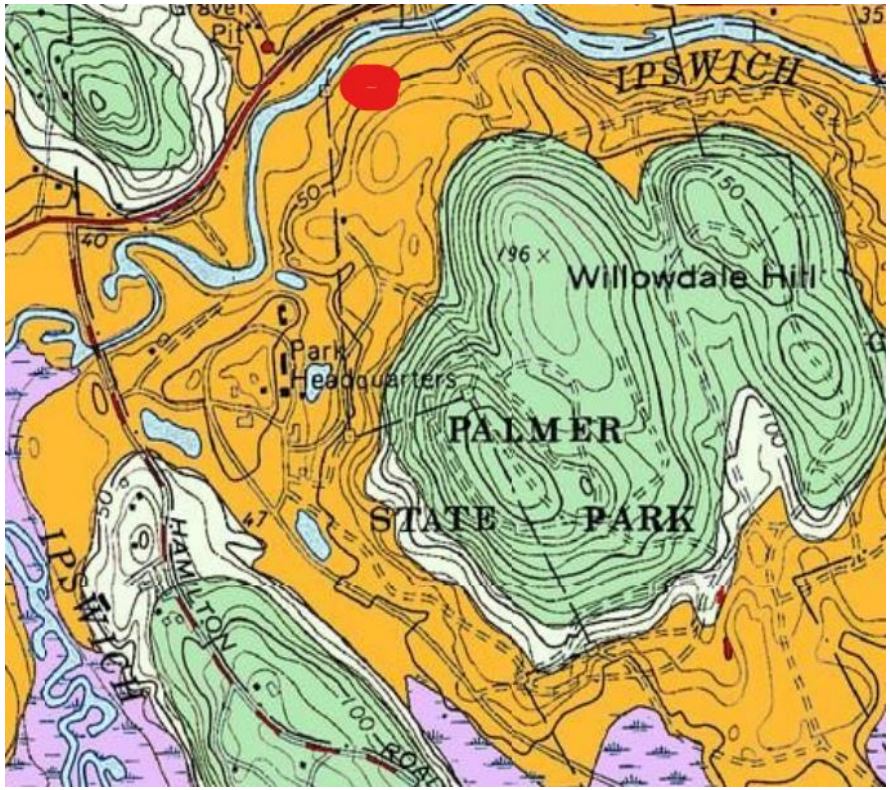
To find out exactly what USGS quadrangle sheet your site is in, open up the Massachusetts Hydrogeologic Information Matrix, scroll to Appendix A on page 101 and find the town you are working in. The quadrangle sheets that have that specific town in them are listed next to the town name. Here is the link to that document: https://www.mass.gov/doc/usgs-hydrogeologic-information-matrix/download?_ga=2.52281453.536894060.1648477673-1328804946.1621264663. Or you can go to the following link on the Massachusetts Geological Survey website: http://www.geo.umass.edu/stategeologist/Quads_Towns_WS7_34x44.pdf which provides a visual representation of the quadrangle maps overlying the towns.

Question 3: Surficial Geologic Maps continued



- Older maps with more detail

- newer generalized maps



Question 4, 5 & 6 Flood rate Insurance Map/Velocity Zone/Wetland (MassGIS)

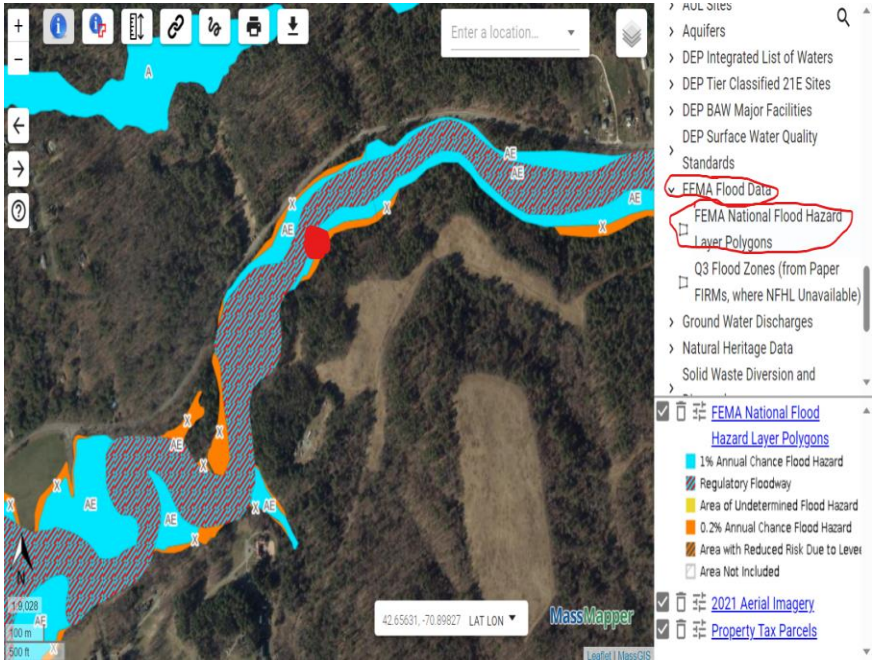
FLOOD ZONES, WETLANDS, SOURCE PROTECTION AREAS, ETC.

MassGIS: Type in MassMapper in your web browser search field. Click on MassMapper – Massachusetts, then hit the "Enter" button at the bottom of the page to get to the MassGIS datalayers. Enter the address or zoom into the area of concern.

IMPORTANT DATALAYERS:

- **IMAGES FOLDER** – USGS Topographic Maps Folder (choose USGS topographic maps layer); Aerial Photos (Ortho Imagery) Folder. Choose the most recent aerial datalayer
- **PHYSICAL RESOURCES FOLDER** – Aquifers Folder (Aquifers by yield green shade and Sole Source Aquifer layers); Hydrography Water Features Folder (DEP Wetlands folder – choose the datalayer that works best; Major Hydrography USGS 25K Rivers and Water Bodies Folder – add rivers streams and water bodies; Surficial Geology Folder (general information – use State Geologists surficial maps before using these) - can get surficial deposit depths here; Soils (click on the first soils layer in that folder)
- **INFRASTRUCTURE -** Public Water Supplies Folder (Public Water Supplies layer)
- **REGULATED AREAS FOLDER** – FEMA Flood Data (most current) Folder (FEMA National Flood hazard Layer polygons) for Regulatory Floodways; Surface Water protection Areas Folder (Zone A); Wellhead Protection Areas Folder (IWPAs and Zone II layers)
- **Other folders are available, so explore and see which ones help you better evaluate your site**

Question 4, 5 & 6 Flood rate Insurance Map/Velocity Zone/Wetland (MassGIS)



- Regulatory floodways and velocity zones

- Wetlands data

Question 7: Current Water resource Conditions Map (USGS site) 2/20/24

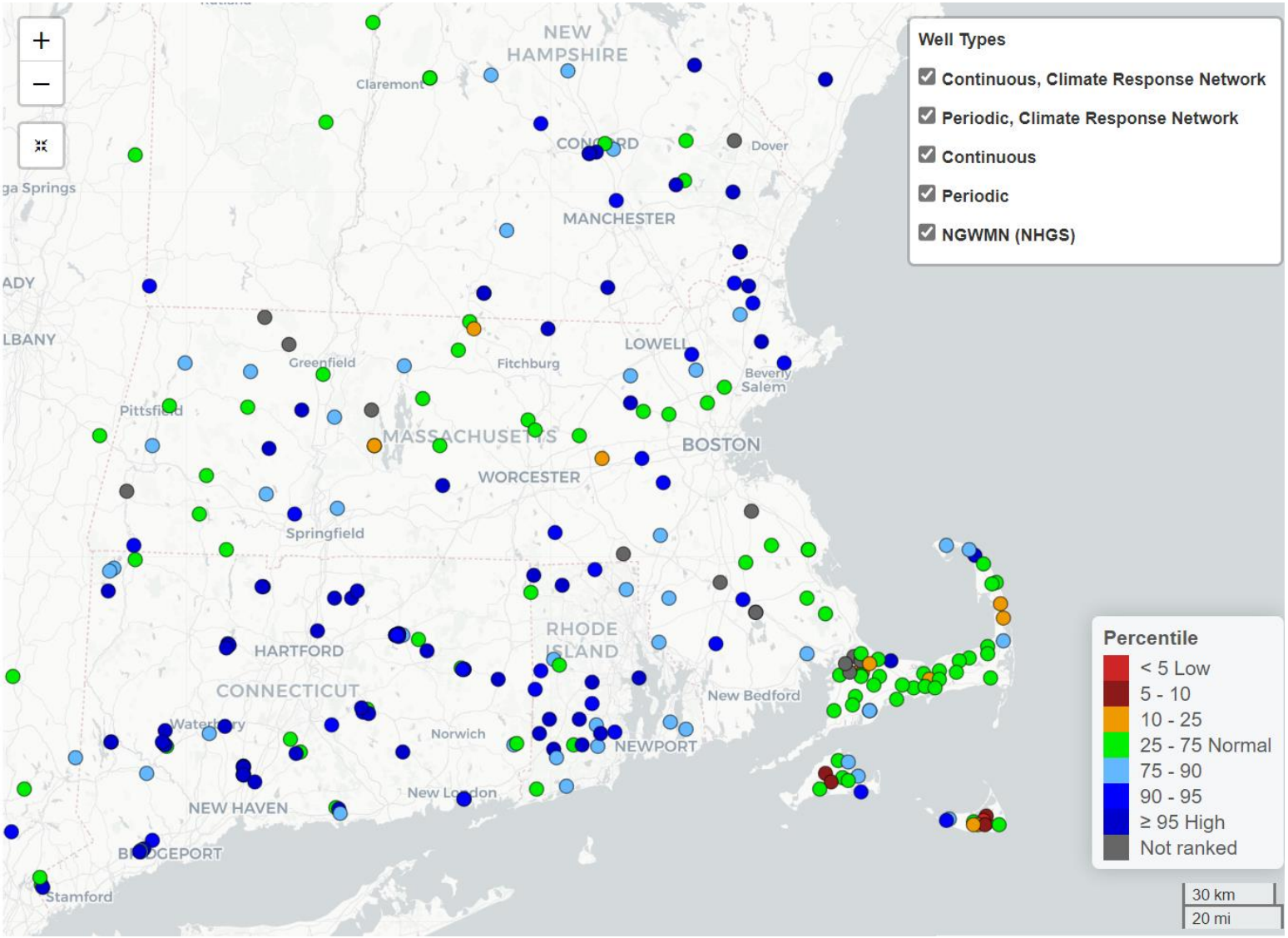
CURRENT WATER RESOURCES CONDITIONS

United States Geologic Survey (USGS) Website:
For groundwater data measured from wells throughout Massachusetts, including Real-Time, Active, and Historical information, and to find the current conditions, type in this link below which will take you directly there: https://newengland.water.usgs.gov/web_app/GWW/GWW.html

A map of New England wells will come up showing the general range of water levels relative to normal conditions. Make sure in the legend in the upper right-hand corner of the map that the only well types to be checked off are the first two. "Continuous, Climate Response Network" and "Periodic, Climate Response Network." In order to obtain detailed measurements and monthly averages for a particular well, simply click on the well and then click on the link "see site graph and statistics" for the graph that shows the current conditions. If you click on the link on that page listed as "View Data on Monitoring Location Page," you will get the actual measurements over time by hovering your cursor over the measurements.

In order to obtain groundwater level information for use in the Frimpter Method calculation in order to calculated the estimated seasonal high groundwater level, type in this link: https://newengland.water.usgs.gov/web_app/frimpter/frimpter.html. Click on the nearest well in the same geologic formation as at the site and a pop-up box will appear with the aquifer type, OWmax, and OWr values. These values are also included in a table as you scroll down the page. Click on the "link to data" for more information. A slightly different methodology is applied to sites on Cape Cod. Select this link for a step-by-step menu on how to determine: Estimating High Groundwater Levels | Cape Cod Commission.

Question 7: Current Water resource Conditions Map (USGS site) 2/20/24



Question 8: Other references Reviewed (Well Driller Data Portal, MassGIS Zone II)

OTHER REFERENCES

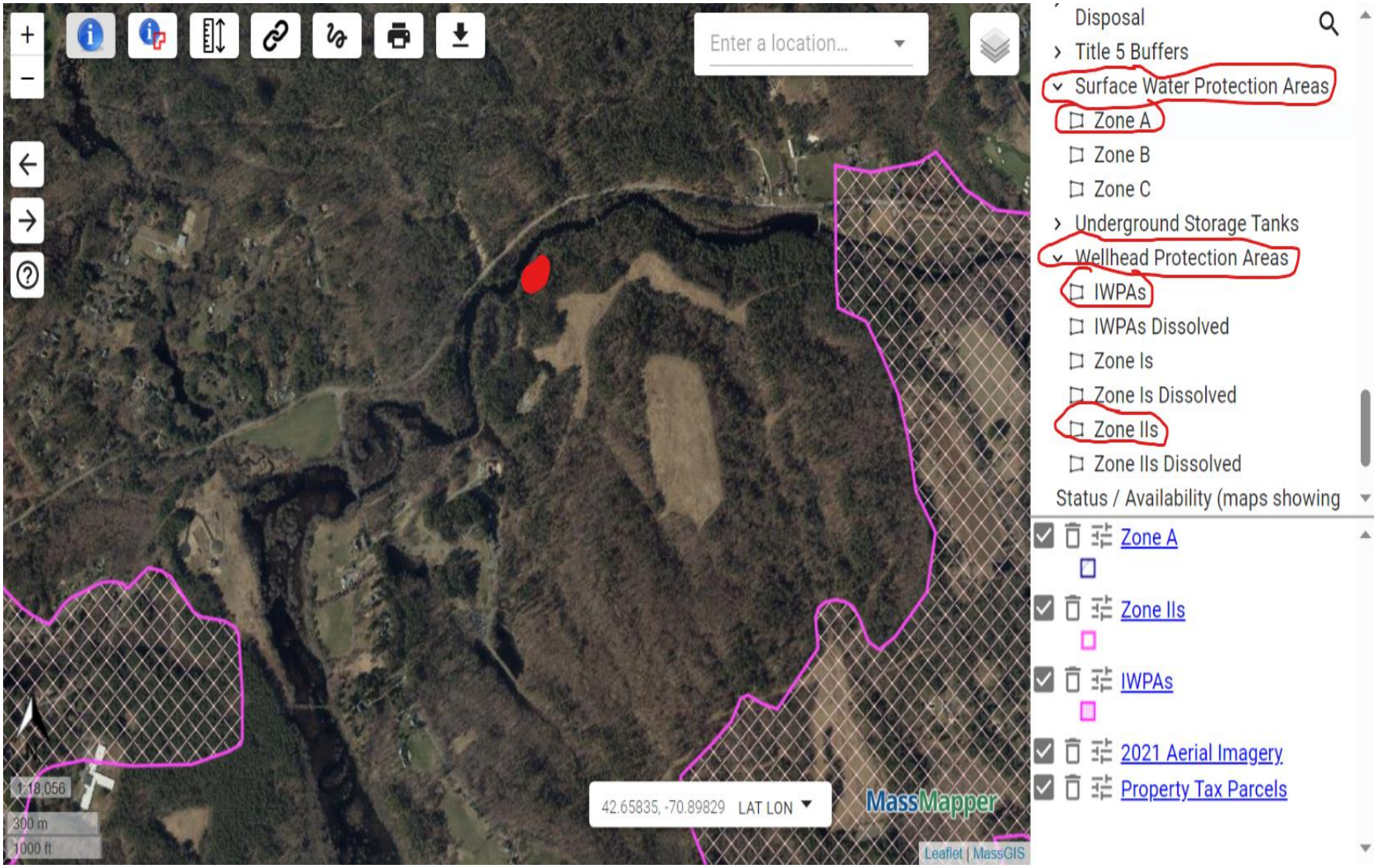
You can access the **MassDEP well driller database** through the EEA Data Portal. This application contains all but a few of the wells that MassDEP has in its possession. Here you can filter on city/town, type of well, etc., and open the report for the nearest well you are searching for to obtain depth to bedrock, depth to water table at time of drilling, lithologic log, and other information about the well. The link to the site is: https://eeaonline.eea.state.ma.us/portal#!/search/welldrilling.

You can access the locations of all currently verified wells within Massachusetts that are included in the Well Driller Database using this link (zoom in the map in order for the wells to appear): https://mass-eoeea.maps.arcgis.com/apps/webappviewer/index.html?id=cdd11842864942178b71f2c7bd5a0b95

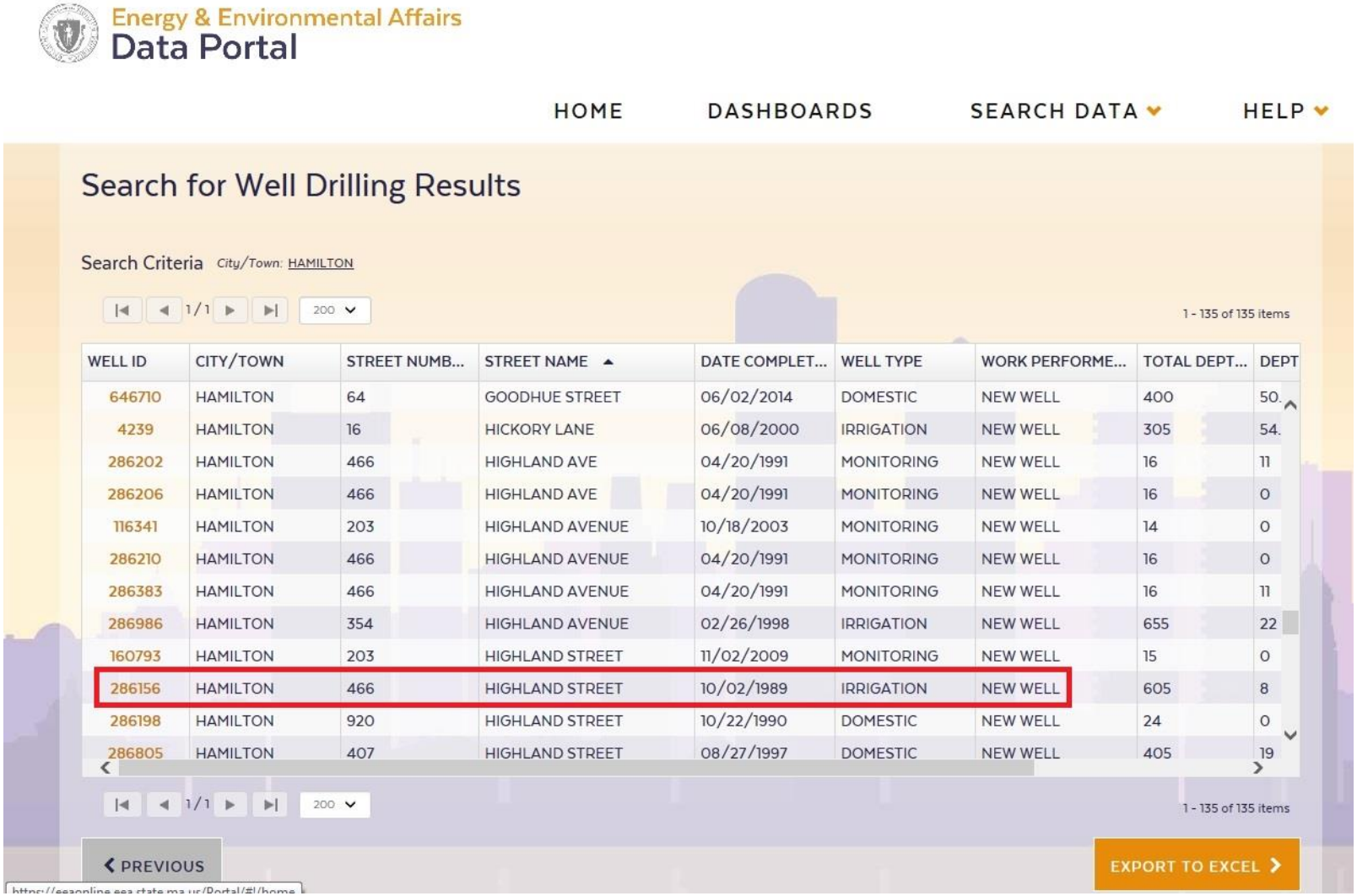
Description of the many features of the Well Location data viewer can be found using the following link: download (mass.gov)

Addresses and phone numbers of MassDEP offices across the Commonwealth: http://www.mass.gov/eea/agencies/massdep/about/contacts/

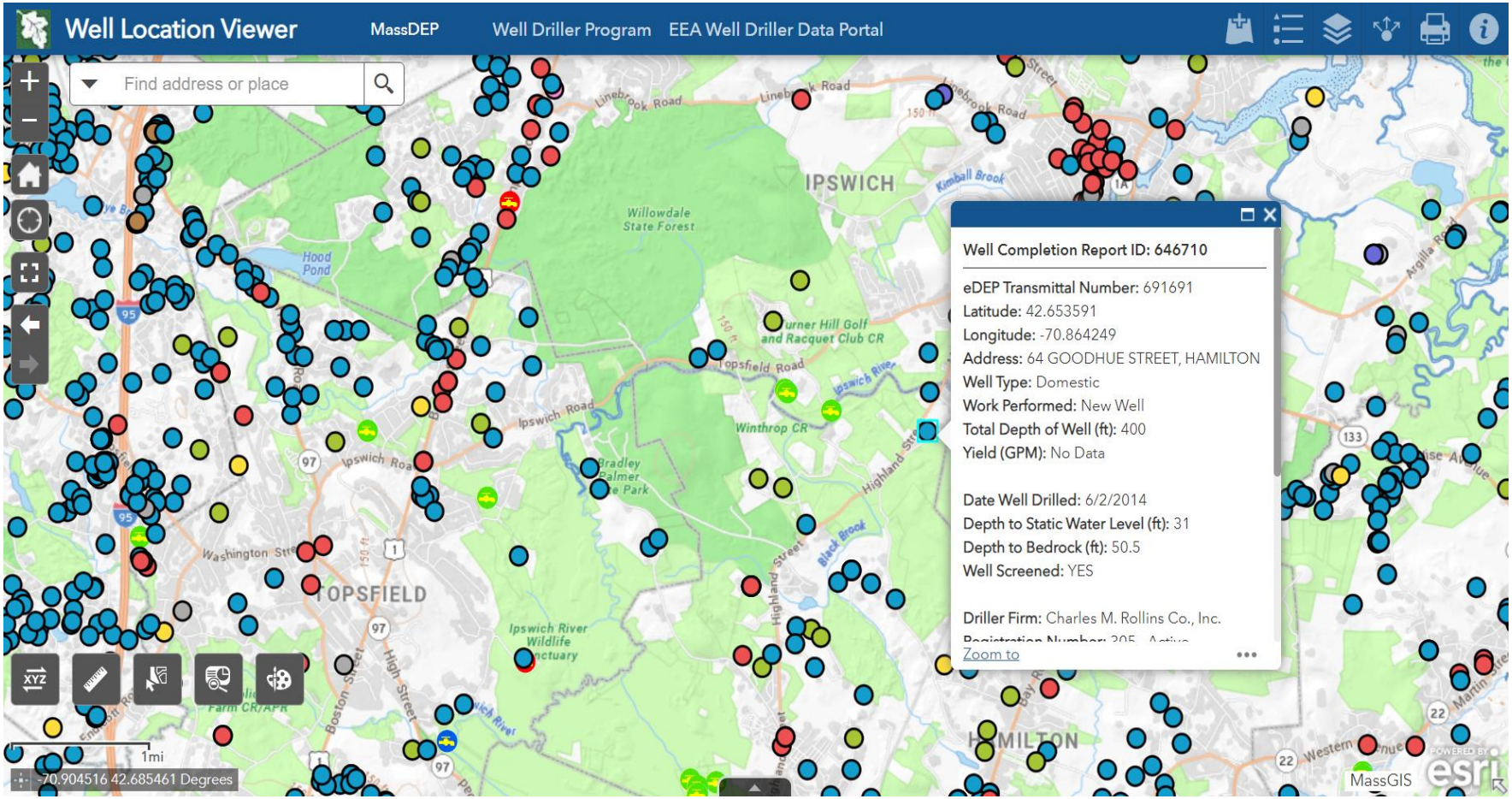
Question 8: Other references Reviewed (MassGIS Zone II)



Question 8: NEAREST WELL – Well Driller
EEA Data Portal



Question 8: NEAREST WELL – Well Location Data Viewer



Section B filled in completely

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

Owner Name

Street Address | Map/Lot #

City | State | Zip Code

B. Site Information

1. (Check one) ☑ New Construction ☐ Upgrade

2. Soil Survey — Source: – Cal Davis Soilweb – NRCS Soil survey | Soil Map Unit: 242C/616A | Soil Series: 242C – Hinkley loamy sand, 8-15% slopes; 616A – Fluvaquents, frequently flooded, 0-3% slopes

   Landform: 242C – outwash deltas, terraces, and plains, moraines, eskers, kames, kame terraces; 616A – Alluvial flats | Soil Limitations: 242C – NONE; 616A – high water table, frequently flooded

   Soil Parent material: 242C – sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist; 616A – friable loamy alluvium over friable sandy eolian deposits

3. Surficial Geological Report — Year Published/Source: 1969 Cuppels / Stone, Stone, 2018 Graciosa-Cohen | Map Unit: Qms or Qcs / Coarse deposits

   Description of Geologic Map Unit: Marine and estuarine sands or collapsed stratified drift deposits / gravel deposits, sand and gravel deposits, and sand deposits

4. Flood Rate Insurance Map — Within a regulatory floodway? ☑ Yes ☑ No

5. Within a velocity zone? ☐ Yes ☑ No — maybe

6. Within a Mapped Wetland Area? ☐ Yes ☑ No — If yes, MassGIS Wetland Data Layer: N/A (Wetland Type)

7. Current Water Resource Conditions (USGS): 9/18/23 (Month/Day/Year) — Range: ☑ Above Normal ☐ Normal ☐ Below Normal

8. Other references reviewed: (Zone II, IWPA, Zone A, EEA Data Portal, etc.)
   GIS – not in Zone II, IwPA, or Zone A
   Well Location Viewer App – nearest well is ~ 2300 ft away (too far)

Section C: On-Site Review

Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TH-1 (Hole #) | 5/22/18 (Date) | 8:30 am (Time) | overcast 72° (Weather) | 42.00595 (Latitude) | -71.20226 (Longitude:)

1. Land Use: agricultural field - Hay field (e.g., woodland, agricultural field, vacant lot, etc.) | grass (Vegetation) | none (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: farm field approximately 500 ft north of Union Street adjacent to airport shed

2. Soil Parent Material: glacial outwash | terrace (Landform) | SU (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body 1000 feet | Drainage Way N/A feet | Wetlands 700 feet
Property Line 150 feet | Drinking Water Well 300 feet | Other N/A feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: 42" Depth Weeping from Pit | 46" Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			

Proper Deep Hole Construction

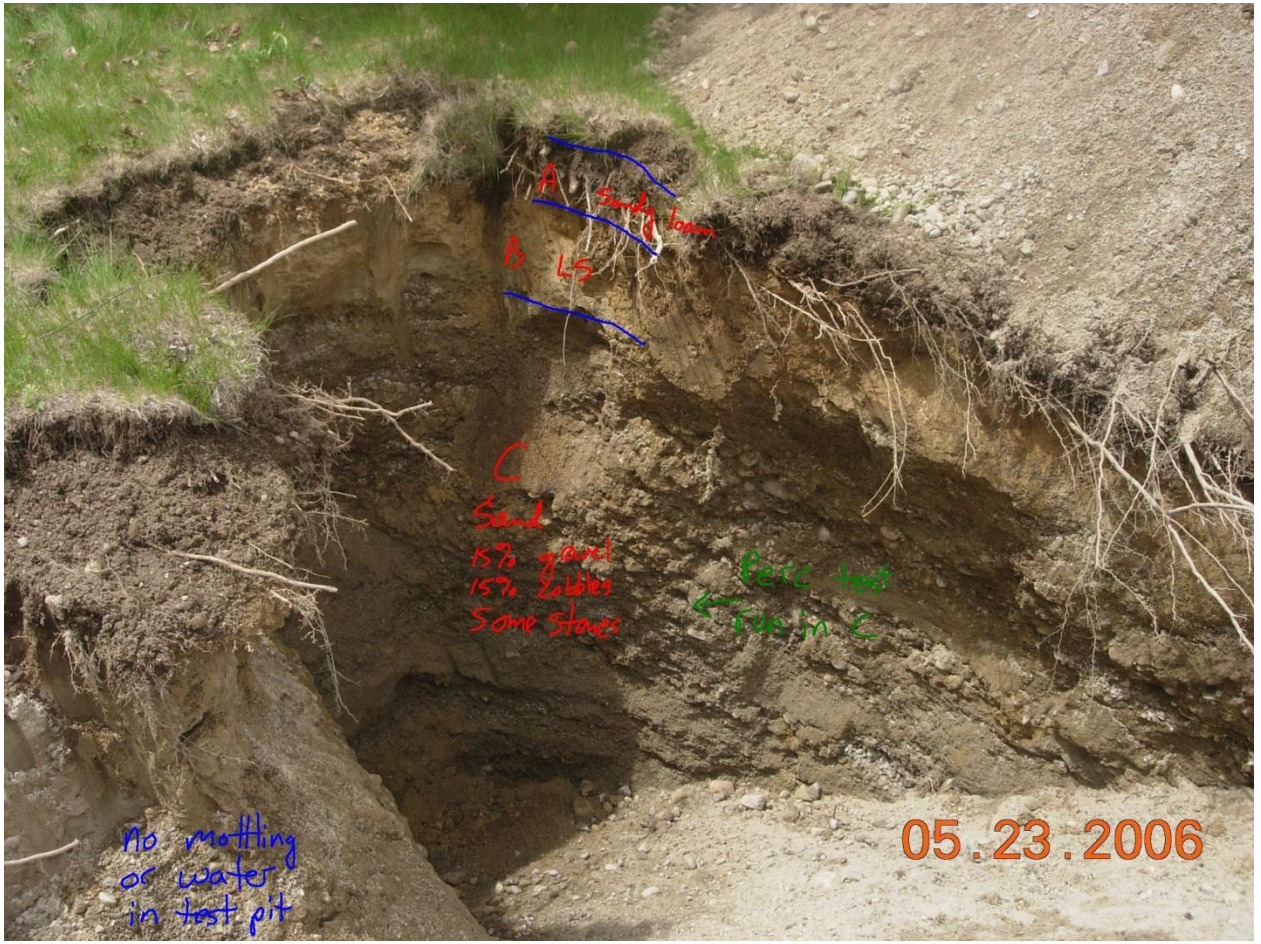
- Title 5 regulation 310 CMR 15.000
- Subpart B – Siting of Systems
    - 15.100: General Provisions
    - 15.101: Site Evaluation Criteria
    - 15.102: Deep Observation Hole Test
    - 15.103: Soil Profile
    - 15.104: Percolation Testing
    - 15.105: Procedure for Performing a Percolation Test
    - 15.106: Landscape Position
    - 15.107: Hydrogeologic Properties

Specifics

- Deep hole down to at least 4 feet below the proposed SAS bottom elevation
- Minimum depth of 10 feet
- Adjoining shelf down to 5 feet to allow detailed soil evaluation
- Minimum 2 holes per SAS area (2 in primary and 2 in reserve)

Make sure pit is wide enough and shelf is close to deep portion of pit

No shelf/ramp entire whole – not acceptable



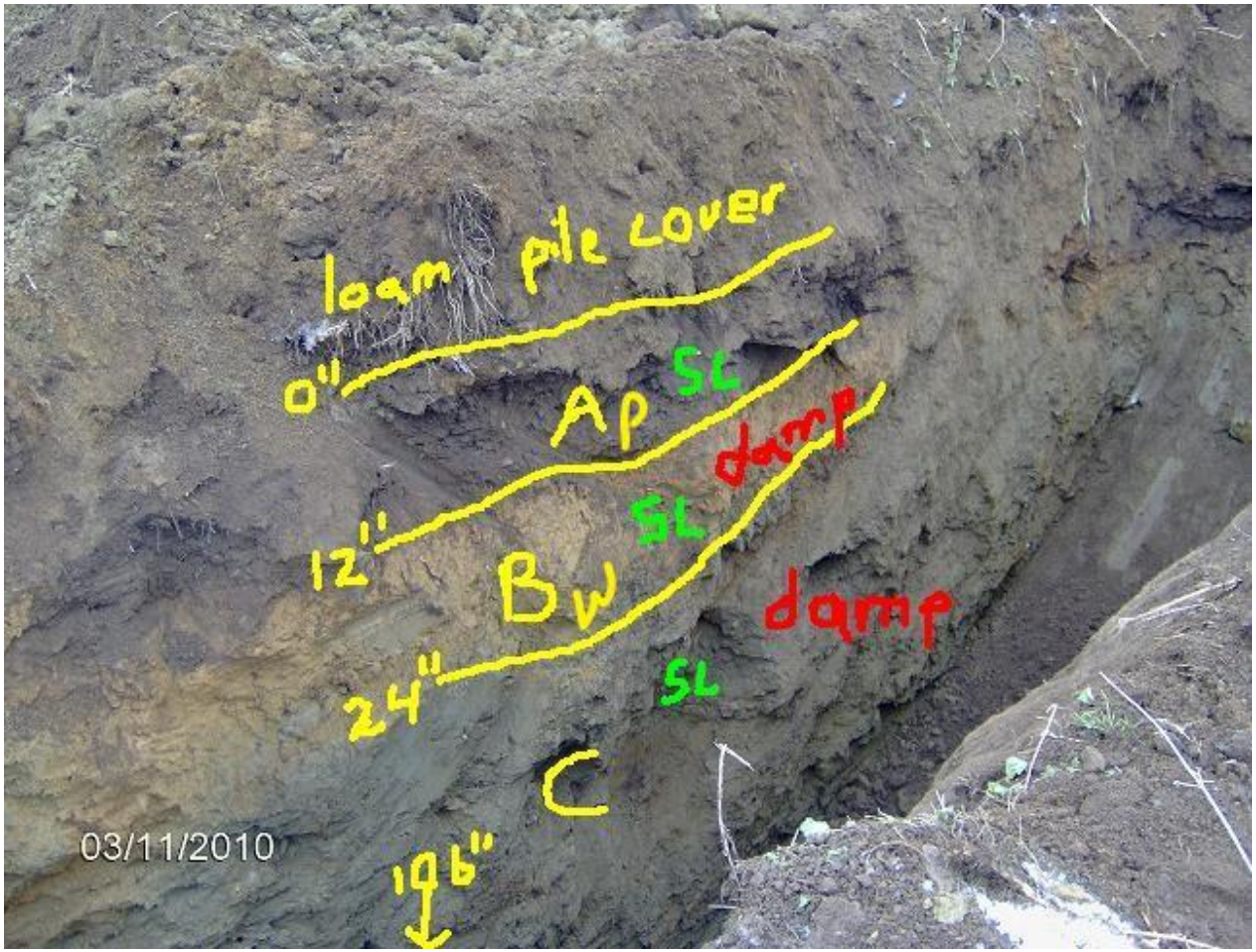
Using spoils pile to populate soil log – not acceptable

Get in the hole!!!!

Get dirty!!!!

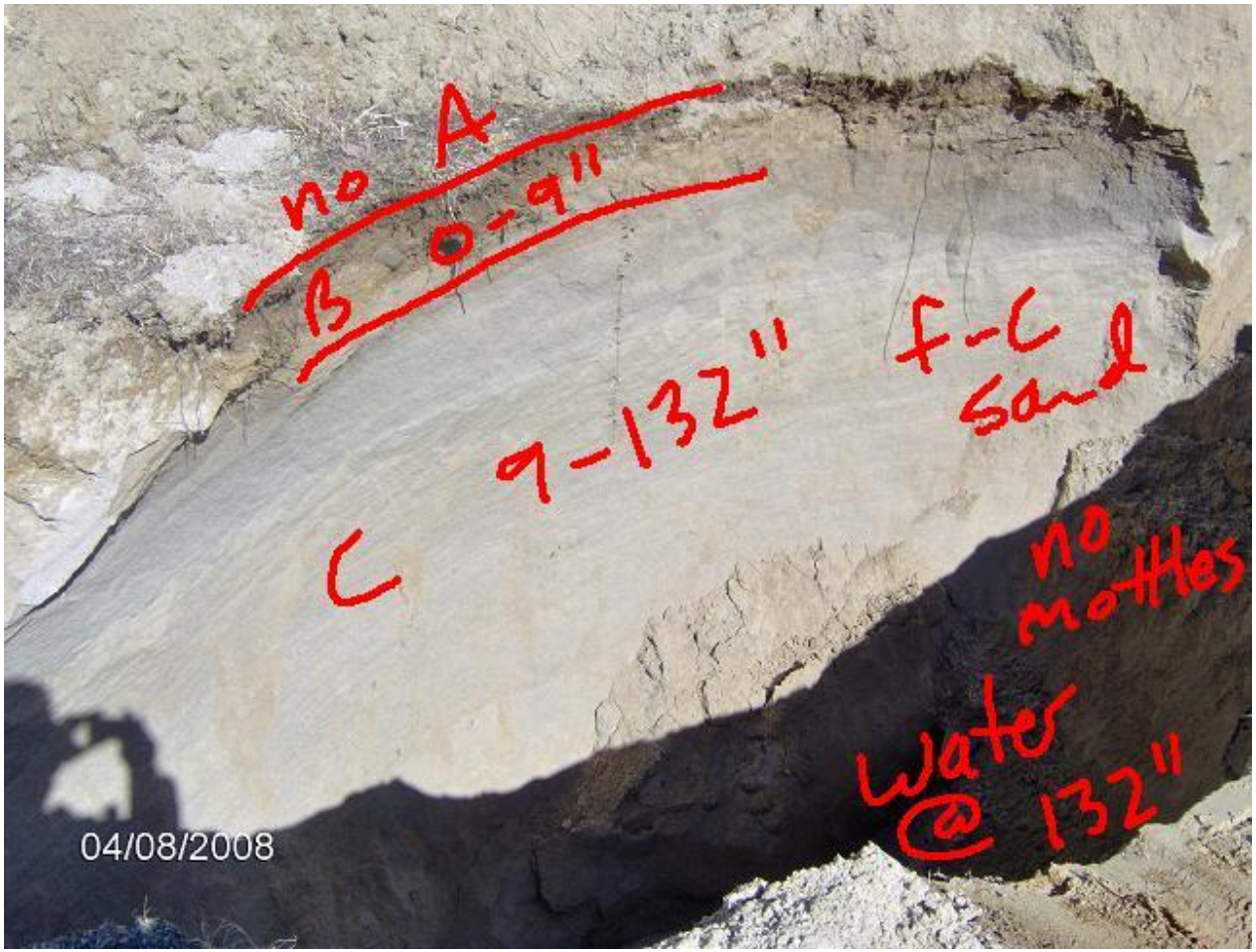
Be careful of potential cave-ins

Tip – Take a picture and draw a general log of the pit on it

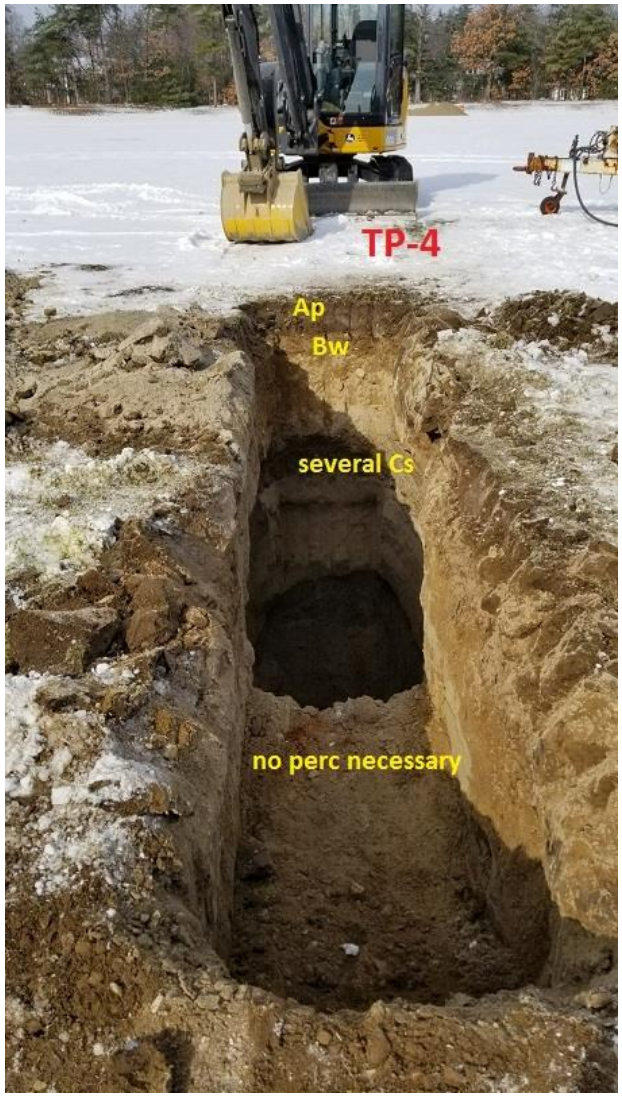


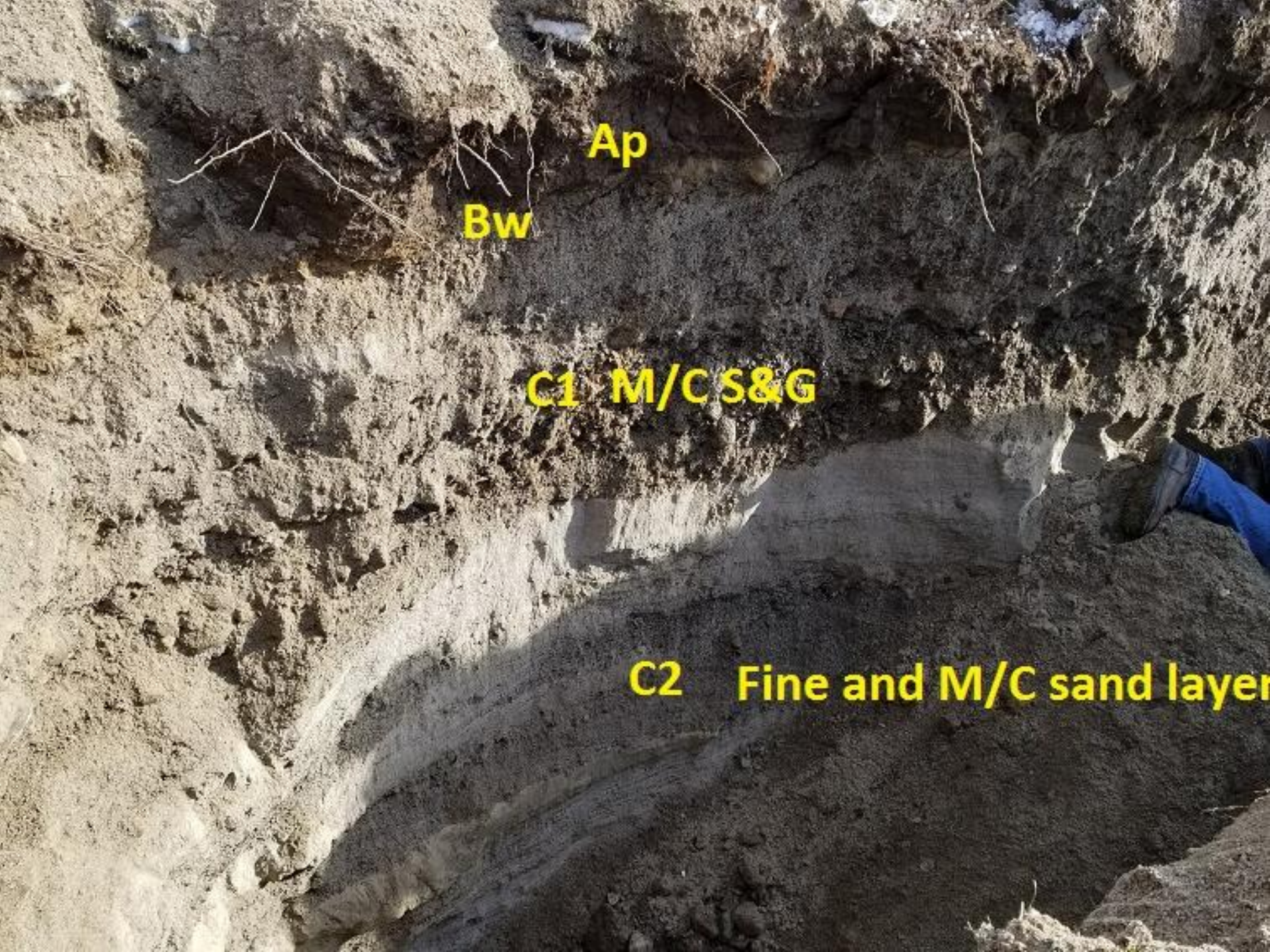
Before

After



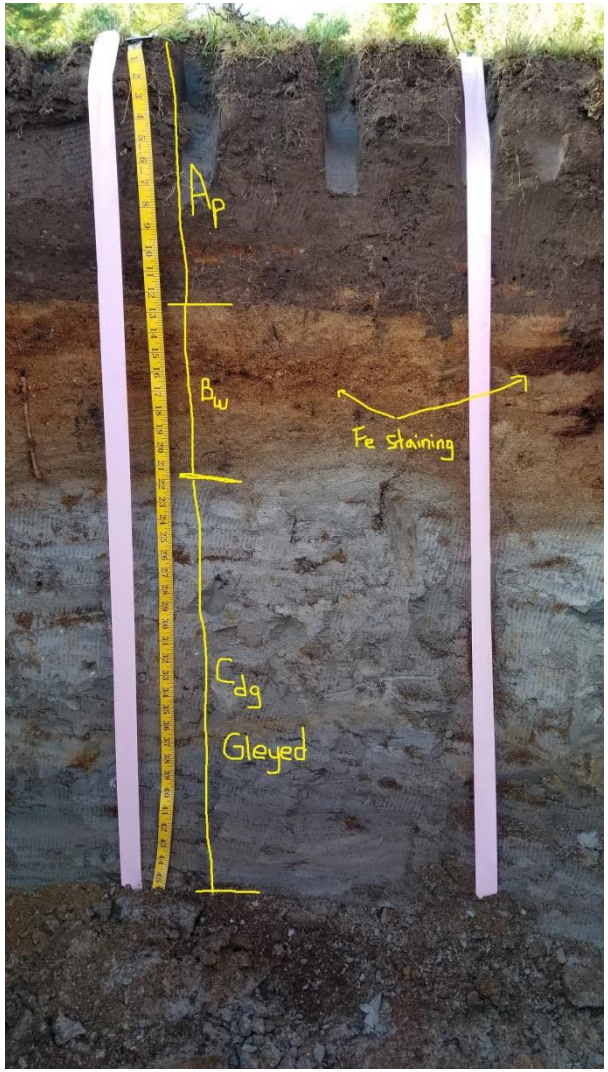
Take photo and complete once you are back in the office – include perc test results

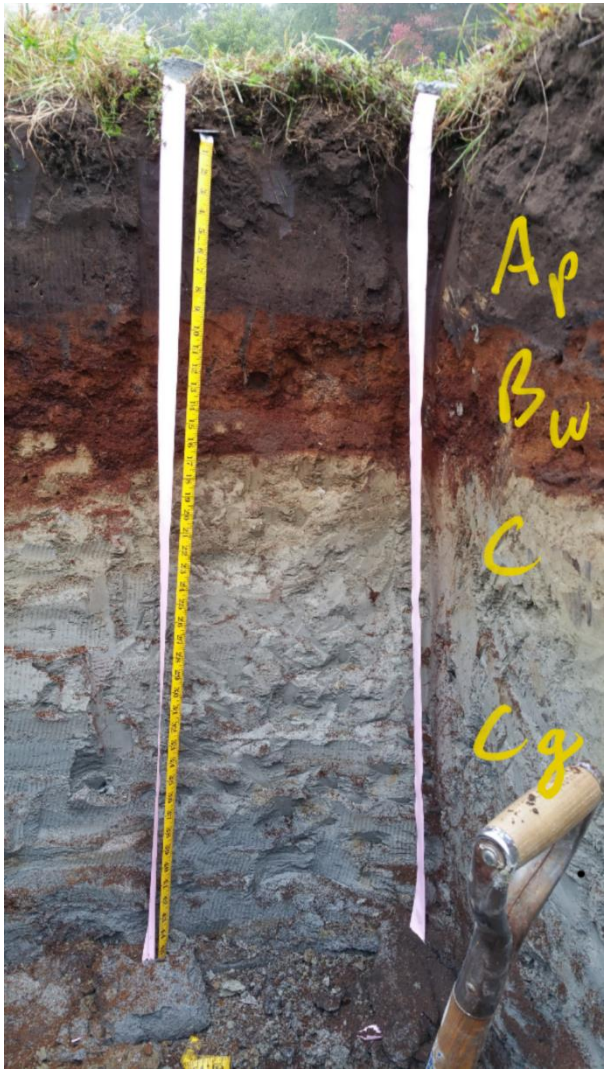


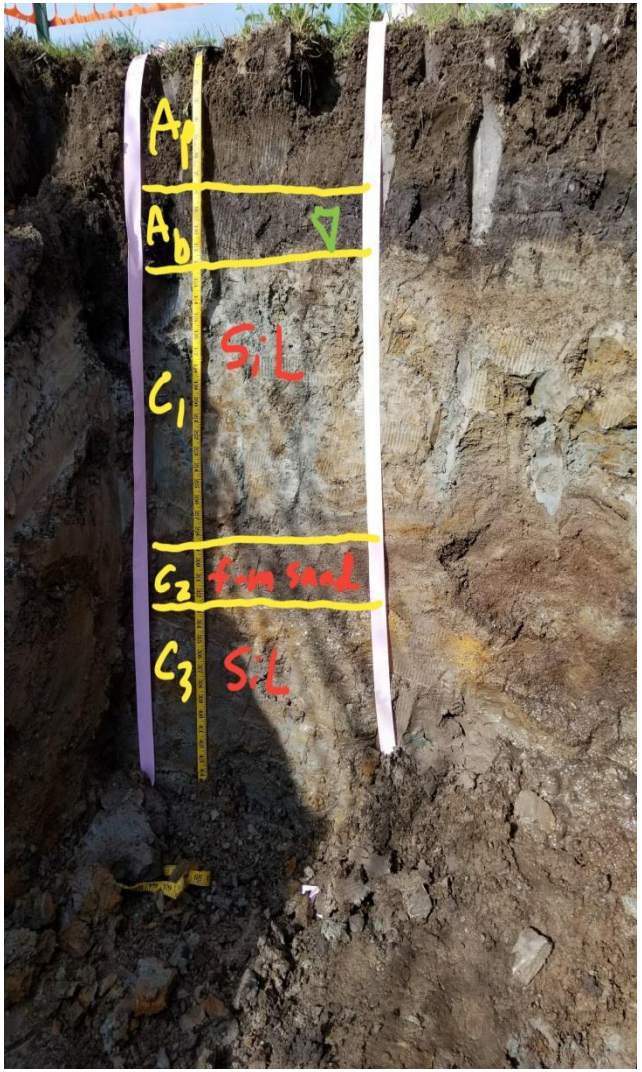

Ap
Bw
C1 M/C S&G
C2 Fine and M/C sand layer

….more examples

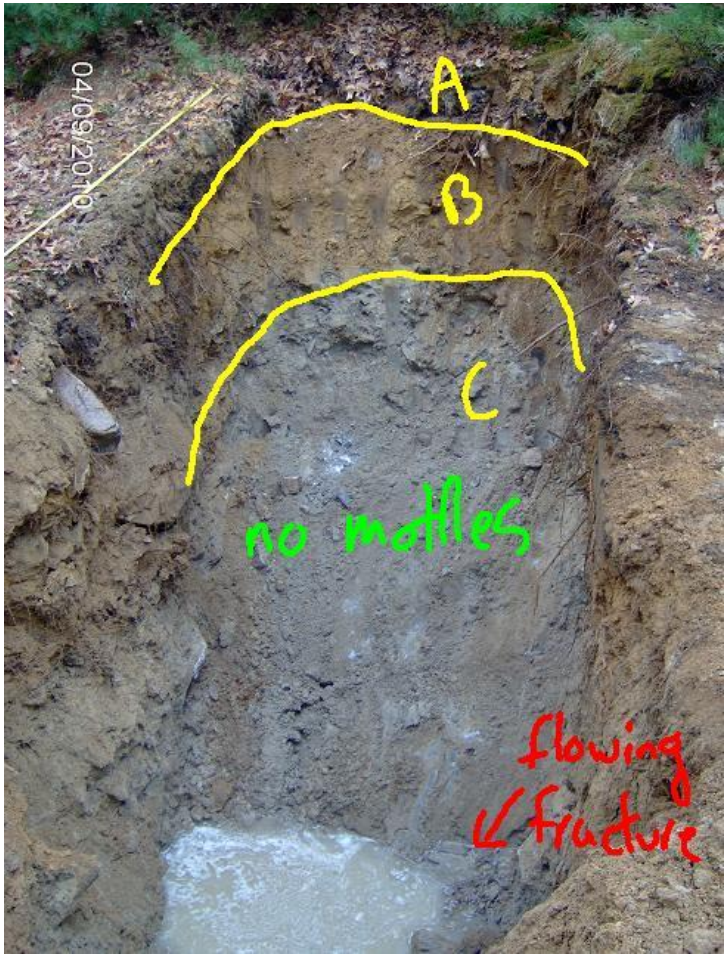
Sometimes it's only a matter of feet







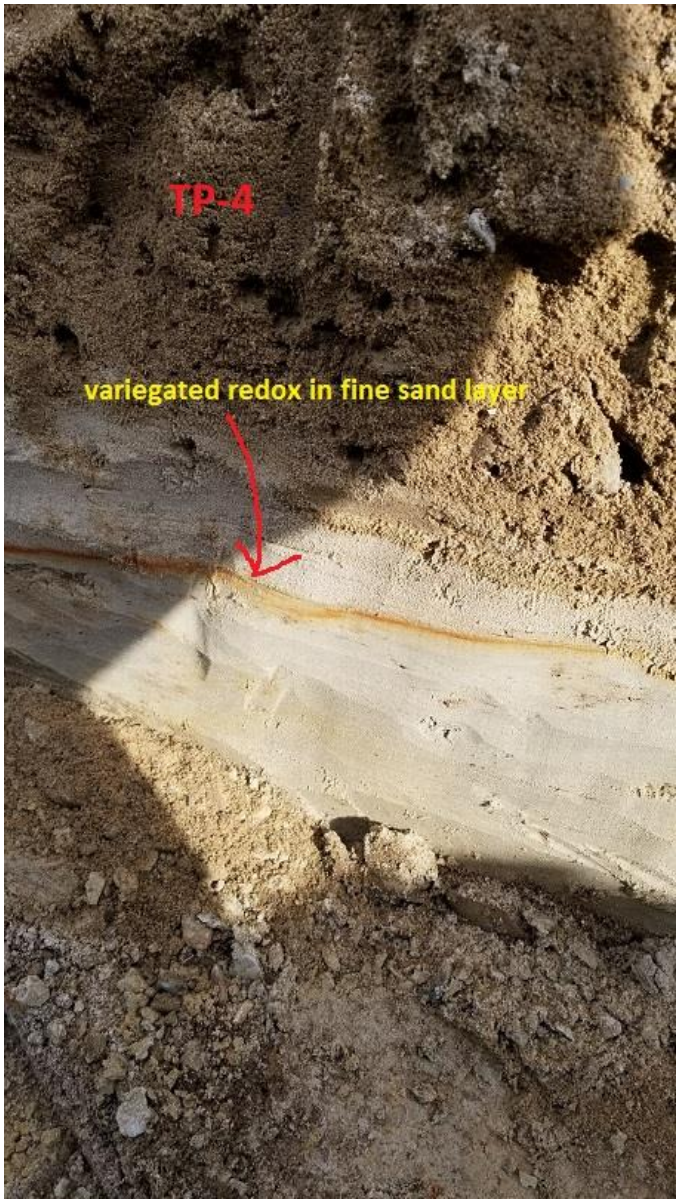
Bedrock just might be an issue here!!!!



Should you be a detailed logger or a “lumper”?

Redox

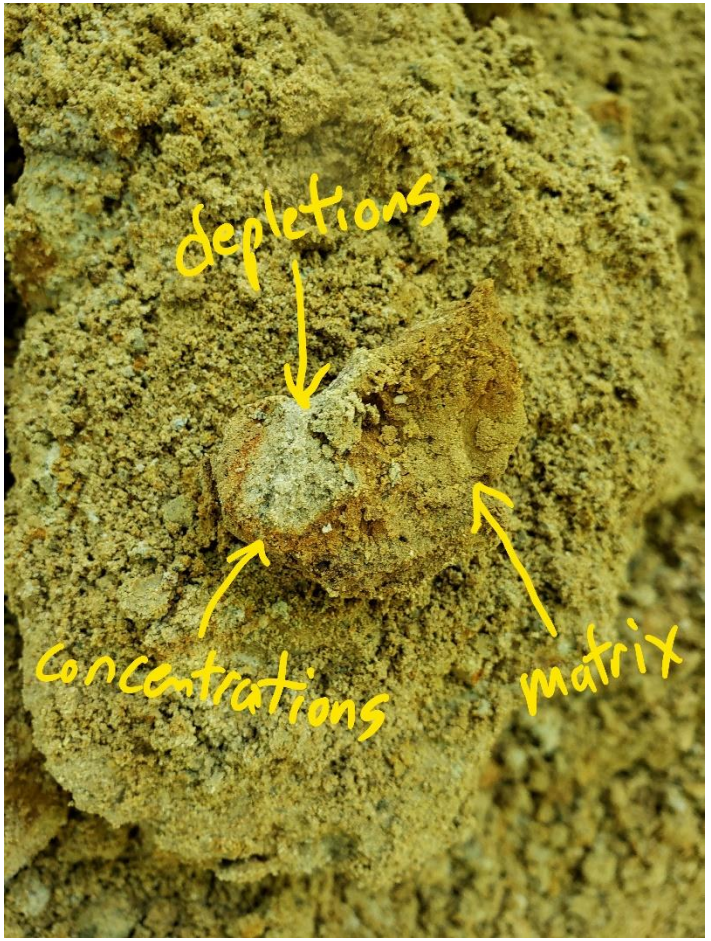
Variegated redox



Redox

Sometimes you only see 2 colors

Typical redox with matrix, concentrations, and depletions



Perc testing

Perc test in most limiting layer

Provide perc wall stability when needed

Do you think this will pass????

…..or how about this????

Picking the right material to perc

Make sure your perc hole is not too close to the deep part of the hole

Loading Test

Test pit soil log example

Field log

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-10	A	SL	10YR4/3		Cnc : Dpl:				Granular	Friable	
10-24	B	LS	10YR5/8		Cnc : Dpl:				Massive	Friable	
24-112	C	Sand	2.5YR5/2	42"	Cnc : Dpl:				Massive	Friable	
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Corrected field log

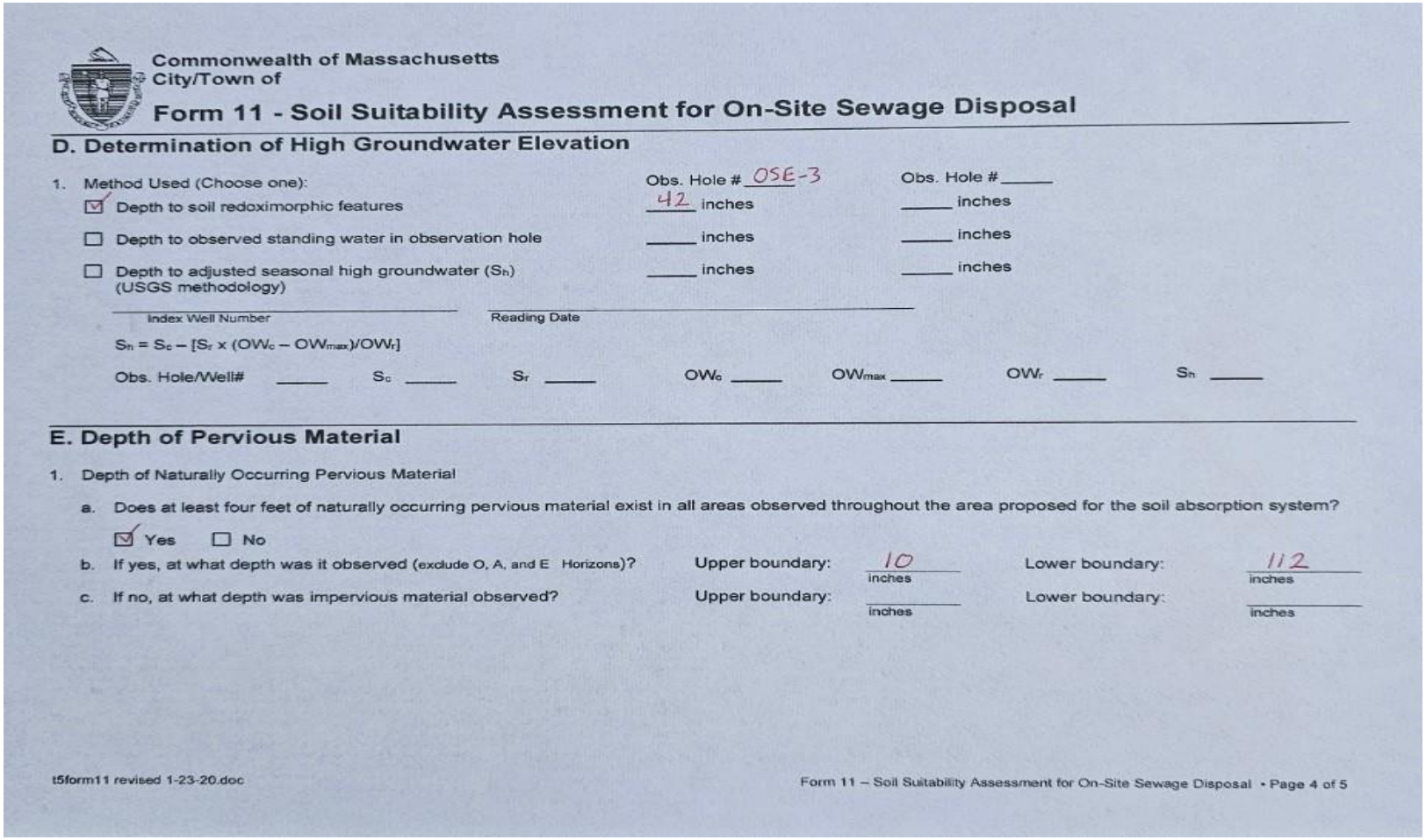
Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-10	A_p	SL	10YR4/3	—	Cnc: — Dpl: —	—	—	—	Granular	Friable	
10-24	B_w	LS	10YR5/8	—	Cnc: — Dpl: —	—	—	—	Massive	Friable	
~~24-44~~ ~~24-112~~	C_1	S & G ~~Sand~~	2.5YR5/2	42"	Cnc: 7.5YR5/6 Dpl: 5Y7/2	10%	15%	—	Single grain ~~Massive~~	~~Loose~~ ~~Friable~~	
44-112	C_2	Sand	2.5YR5/2	↓	Cnc: ↓ Dpl: ↓	↓ **	—	—	Single Grain	Loose	
					Cnc: Dpl:						
					Cnc: Dpl:						

Additional Notes:

** redox becomes significantly more abundant around 80"

Parts D and E relative to the entire site for the SAS



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used (Choose one):	Obs. Hole # OSE-3	Obs. Hole # _____
☑ Depth to soil redoximorphic features	42 inches	_____ inches
☐ Depth to observed standing water in observation hole	_____ inches	_____ inches
☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)	_____ inches	_____ inches

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

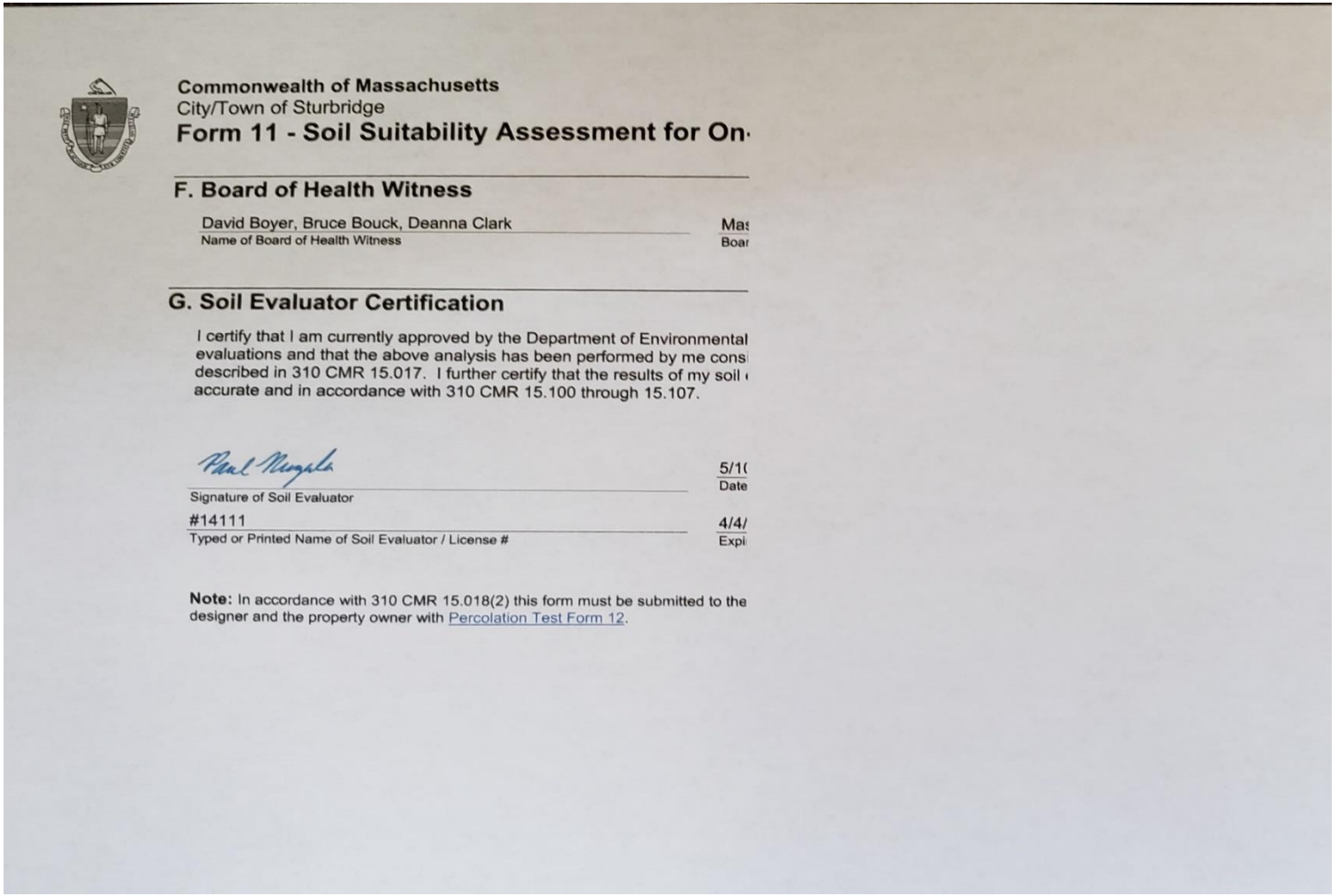
a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☑ Yes ☐ No

b. If yes, at what depth was it observed (exclude O, A, and E Horizons)? Upper boundary: 10 inches Lower boundary: 112 inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Signature and license # of Certified Soil Evaluator



Commonwealth of Massachusetts
City/Town of Sturbridge
Form 11 - Soil Suitability Assessment for On

F. Board of Health Witness

David Boyer, Bruce Bouck, Deanna Clark — Mas
Name of Board of Health Witness — Boar

G. Soil Evaluator Certification

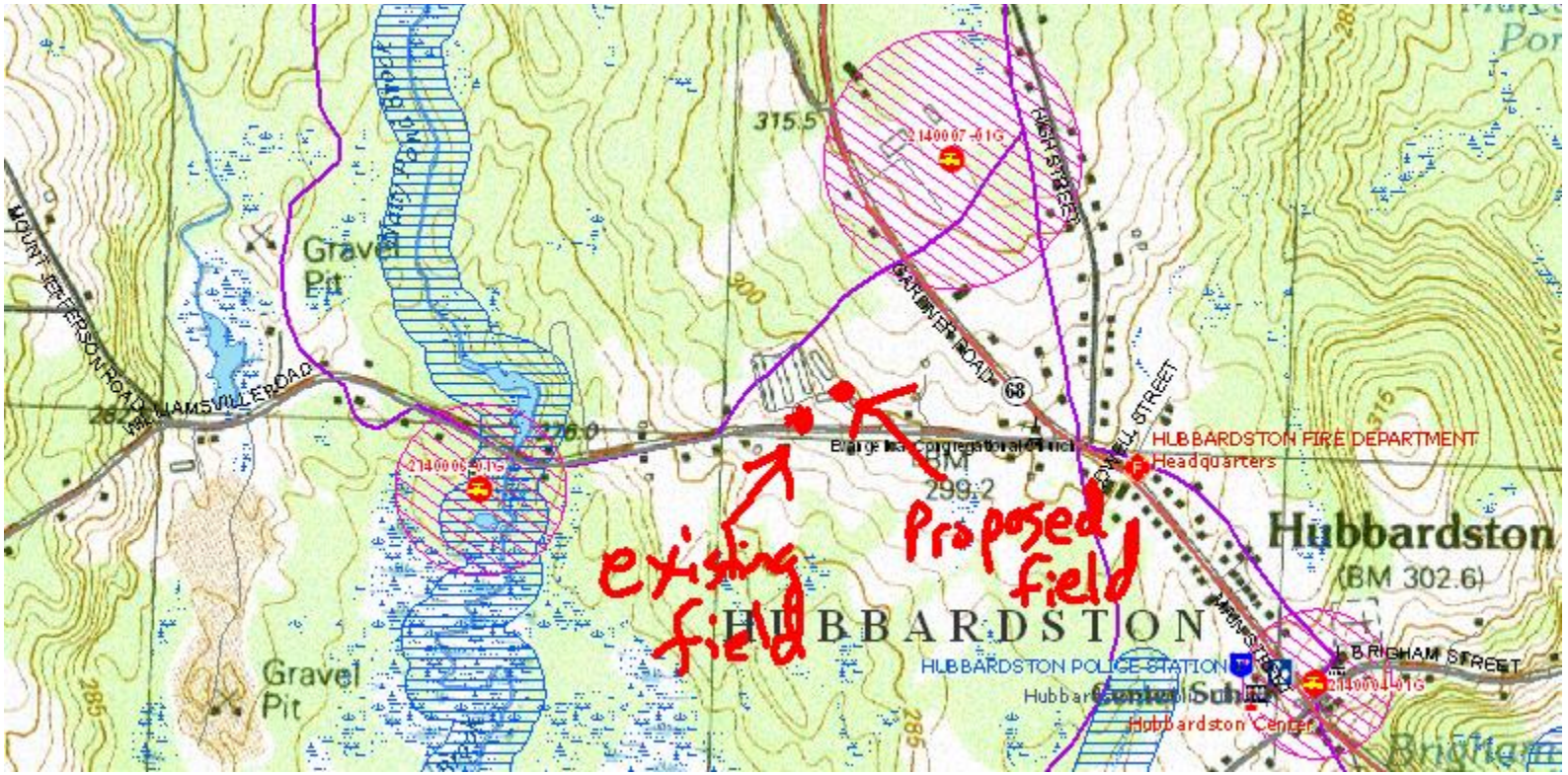
I certify that I am currently approved by the Department of Environmental
evaluations and that the above analysis has been performed by me cons
described in 310 CMR 15.017. I further certify that the results of my soil
accurate and in accordance with 310 CMR 15.100 through 15.107.

Paul Murphy — 5/1(
Signature of Soil Evaluator — Date

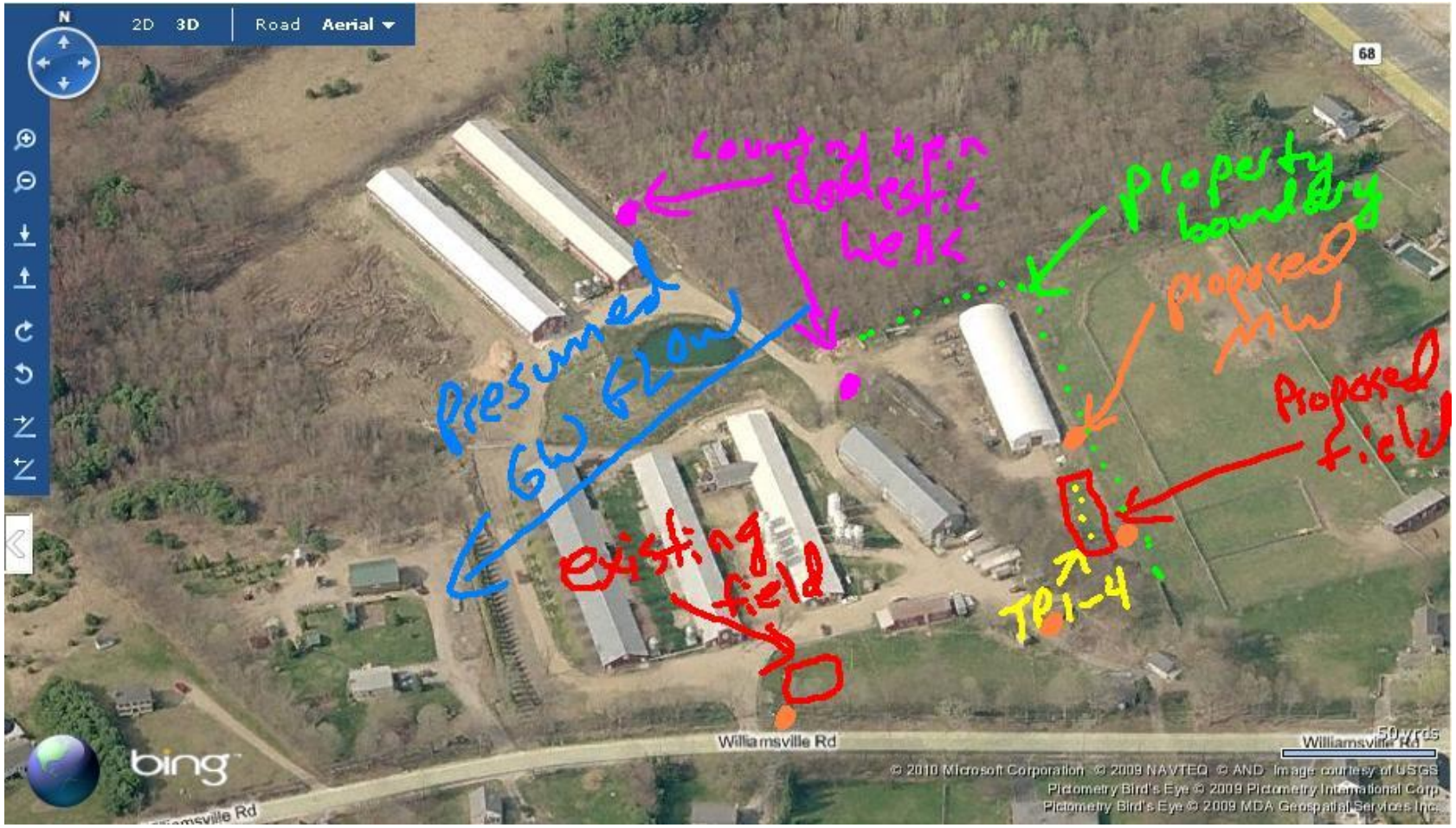
#14111 — 4/4/
Typed or Printed Name of Soil Evaluator / License # — Expi

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the designer and the property owner with Percolation Test Form 12.

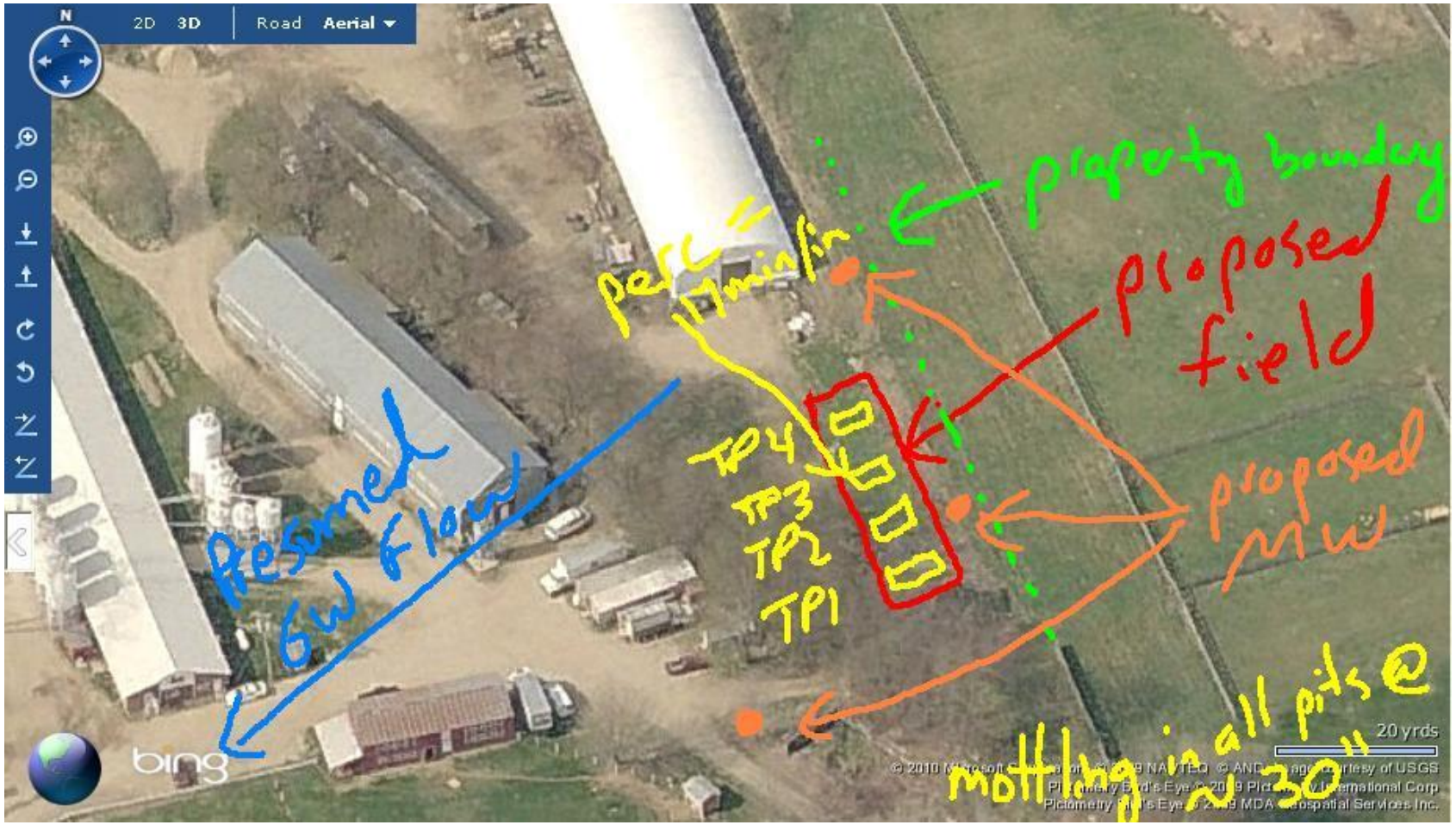
Know your surroundings and create a record – topo map is key for potential impacts



Pictometry zooms in to the site for refined detail – provide as much additional detail for your records

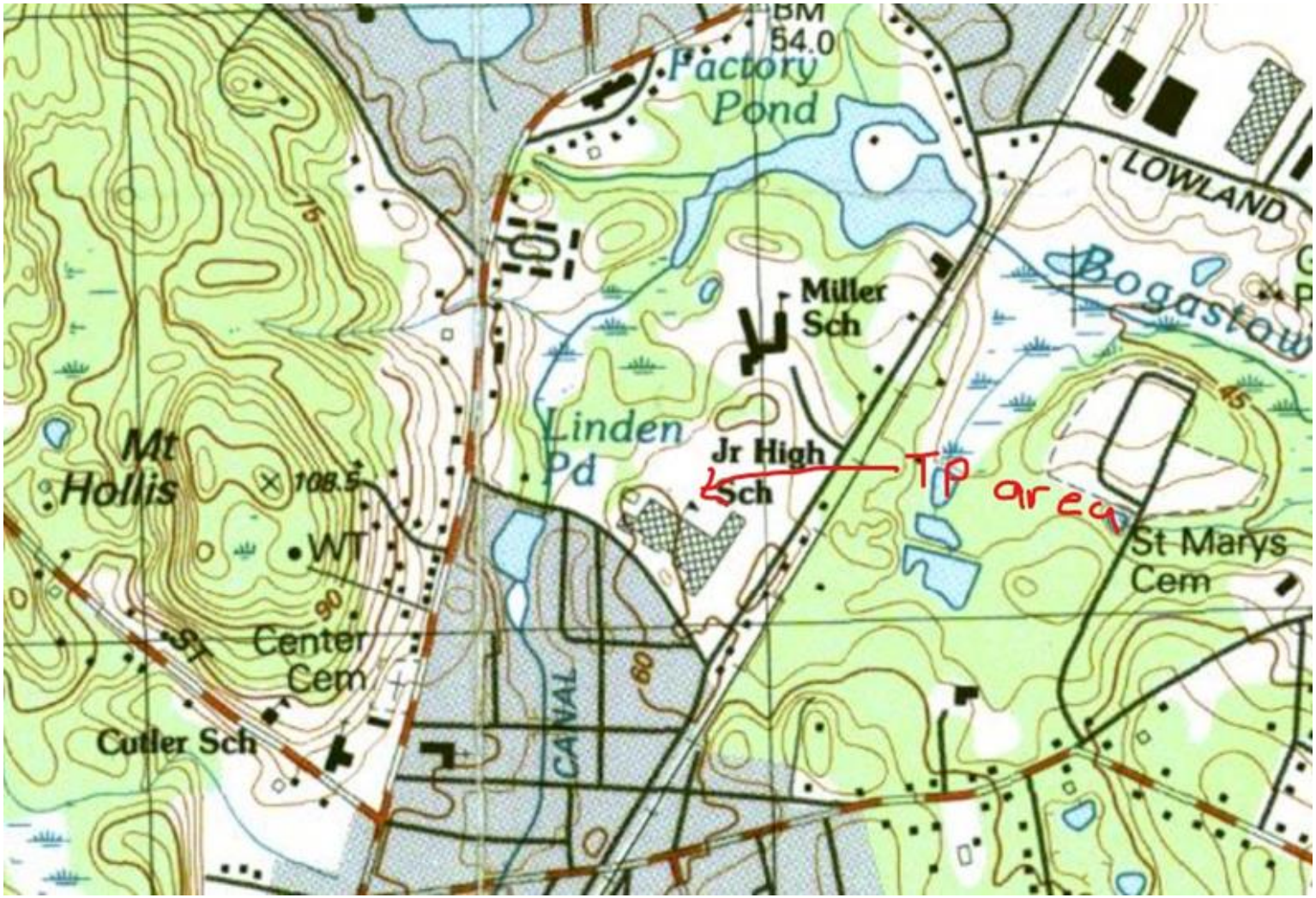


Refine further

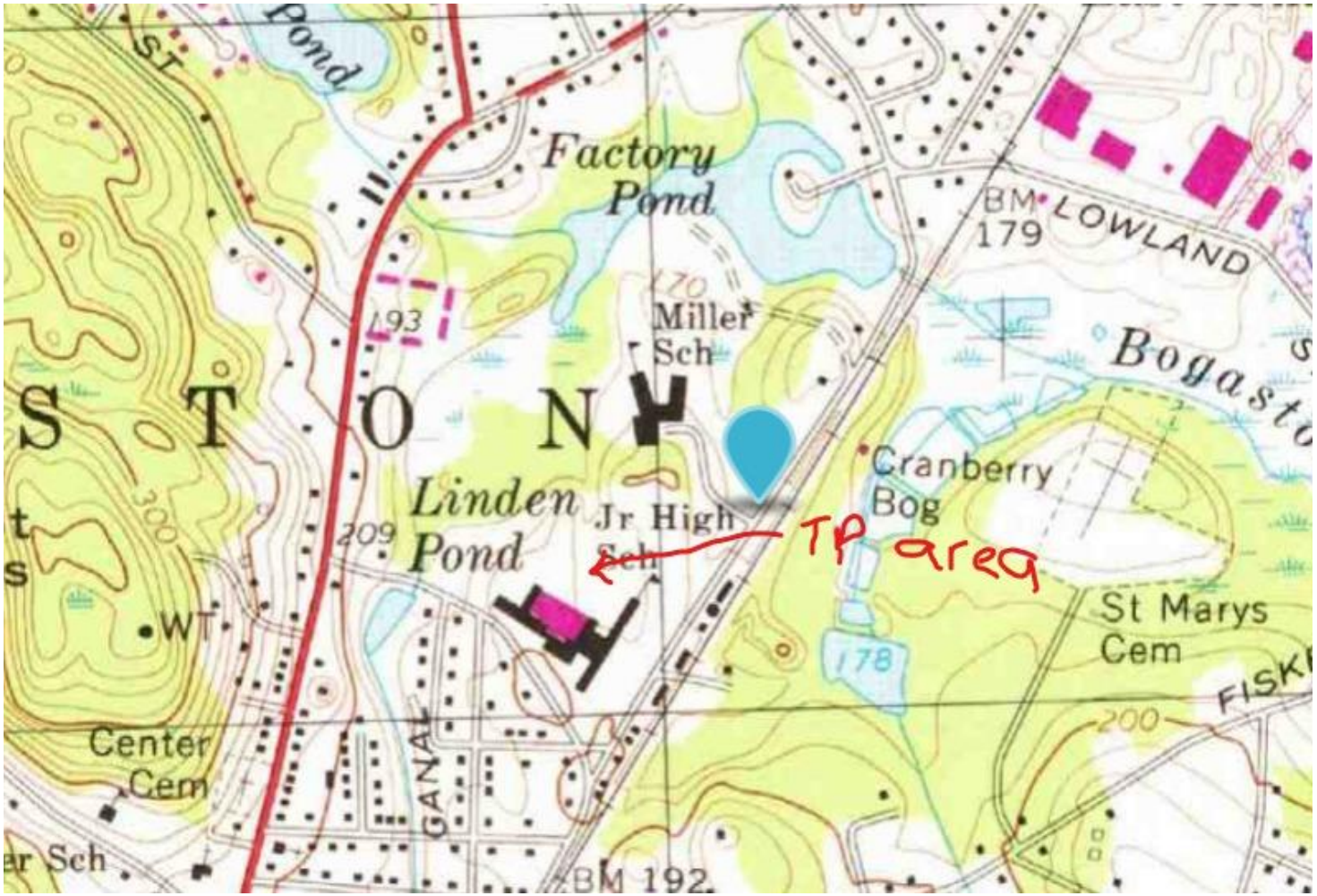


Photograph test pit locations

Example of knowing the history of a site – Current Topo (1987)

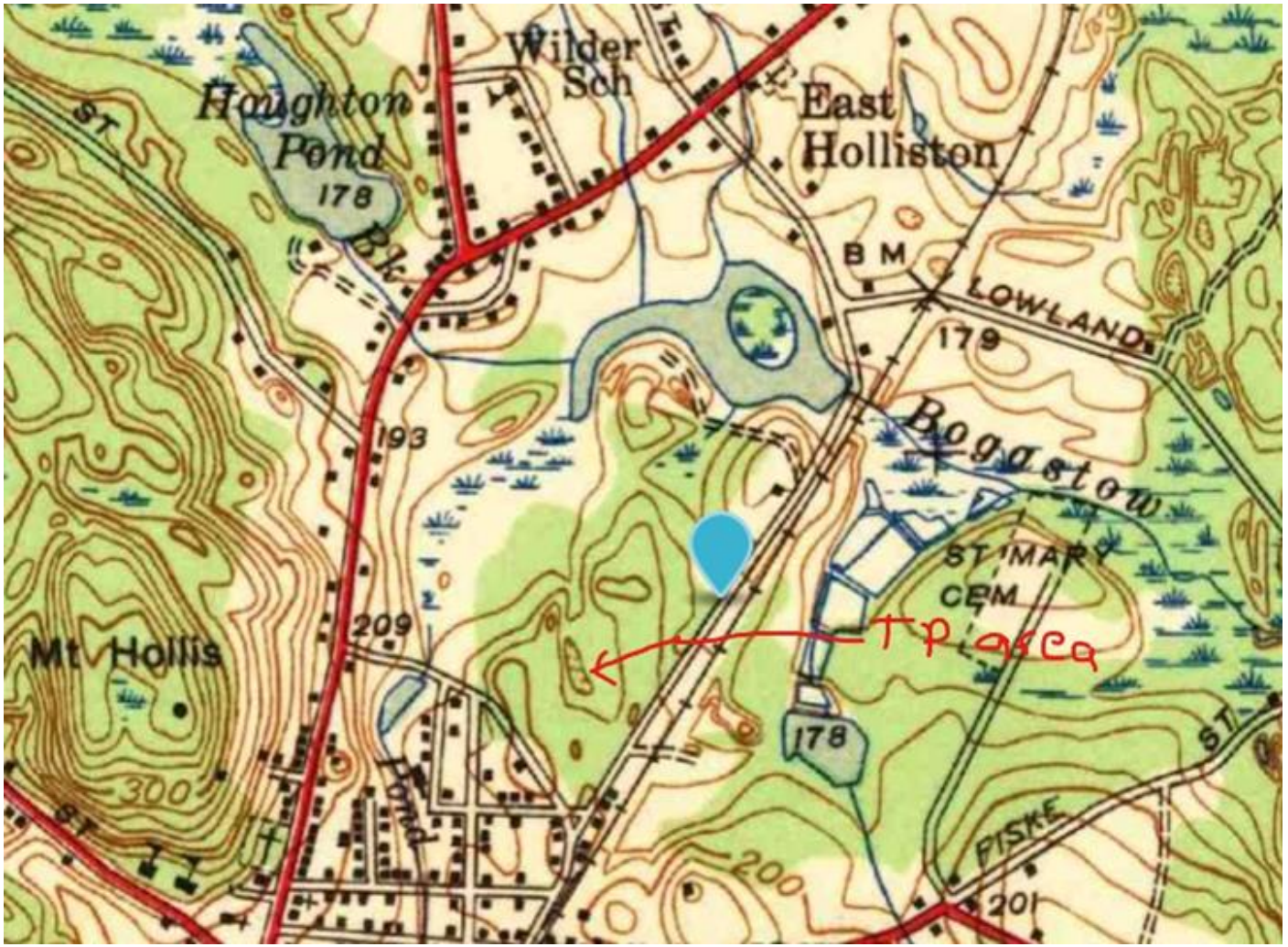


Example of knowing the history of a site – 1969 Topo



Swamp deposits 11 feet into the hole

Example of knowing the history of a site – 1942 Topo



Summary

- Make sure Form 11 is filled out completely
- Be there when digging commences
- Make sure holes are deep enough and shelved appropriately
- Get in the hole
- Safety first
- Know your redox
- Proper perc testing
- Take pictures and document what you witnessed
- Develop a site history with old topo maps
- Create a record of the site

WELL DRILLER PROGRAM

- Well driller certification
- Well completion reports
- EEA data portal
- Well Location viewer

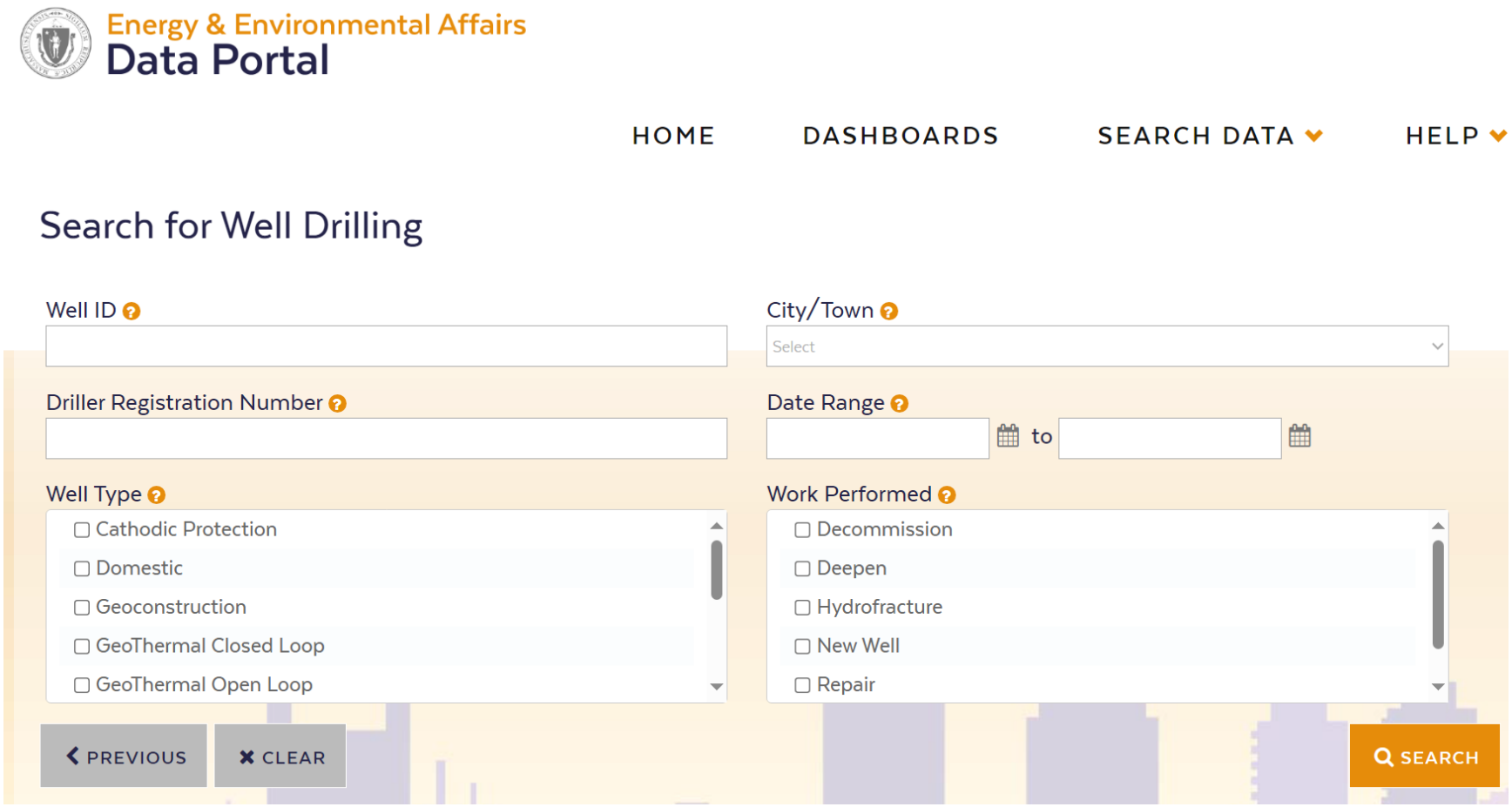
Well Driller Certification

Commonwealth of Massachusetts
Department of Environmental Protection - Well Driller Program
List of Certified Well Drillers
Janurary 1st, 2023 - December 31st, 2023

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection

Business Name	Business Address	Business Phone	Business Website	Driller Name	Registration Number	Monitoring
A & J Well Company Inc.	PO Box 698, Slatersville, RI 02876	(401)766-2832	https://www.ajwellco.com/	Wright Jr., John, J	19	
A & J Well Company Inc.	PO Box 698, Slatersville, RI 02876	(401)766-2832	https://www.ajwellco.com/	Wright, Scott	1021	
A. Chapman Company, LLC	68 Laurel St, West Boylston, MA 01583	(508)981-6248	N/A	Chapman, Andrew, D	379	
All Cape Well Drilling & Test Boring	PO Box 126, Brewster, MA 02631	(508)896-8690	https://www.allcapewelldrilling.com/	Harrington, Shaun, F	526	
All Cape Well Drilling & Test Boring	PO Box 126, Brewster, MA 02631	(508)246-6646	https://www.allcapewelldrilling.com/	Harrington, Mary, L	648	
American Artesian Well, LLC	50 Lucille Dr, Tewksbury, MA 01876	(781)935-1705	N/A	Jones Jr., Robert, E	908	
American Well & Pump, Inc.	5 Appletree Ln, Westport, MA 02790	(508)728-1186	http://wellbyawp.com/index.php	Leonard, Thomas,	899	
Arcadis US Inc	110 West Fayette St, Ste. 300, Syracuse, NY 13200	(315)418-7756	https://www.arcadis.com/en-us	Cornell, David,	994	M
Arcadis US Inc	110 West Fayette St, Ste 300, Syracuse, NY 13200	(315)418-7756	https://www.arcadis.com/en-us	Richmond, Douglas,	995	M
Atlantic Well Drilling, Inc.	P.O. Box 339, North Eastham, MA 02651	(508)255-1211	https://atlanticwelldrilling.com/	Peterson, Ronald, C	786	
Avellino Well & Pump	95 Beaver Rd, Reading, MA 01867	(781)944-5454	http://avellinowellandpump.com/	Ciano, Angelo,	685	
Barre Artesian Well	26 Old School House Rd, Oakham, MA 01068	(508)882-5286	N/A	Amidio, John, R	402	
Barre Artesian Well	26 Old School House Rd, Oakham, MA 01068	(774)272-5443	N/A	Valley, Michael	1011	
Barton Water Systems	37 Hudson Rd, Oxford, MA 01540	(508)987-5531	N/A	Barton, Michael, D	945	
Bay State Pump Company	789 Wachusett St, Holden, MA 01520	(800)427-6122	https://www.baystatepumpco.com/	Lamarche, Scott,	566	
Bay State Pump Company	789 Wachusett St, Holden, MA 01520	(800)427-6122	https://www.baystatepumpco.com/	Brewer, Andrew, W	862	
Beals & Sons, Inc.	247D West Main St, Northborough, MA 01532	(508)393-1833	N/A	Beals, Thomas, L	679	M
Black Bear Drill Service	24 Quimby Road, Brookline, NH 03033	(603)721-5415	https://blackbeardrill.com/	Conaway, William, F	755	
Boyd Artesian Well Co., Inc.	1054 Route 52, Carmel, NY, 10512	(845)225-3196	https://www.facebook.com/BoydArtesianWellCoInc/	Boyd, Henry, M	489	
Bronson Drilling	PO Box 1013, Winchester, MA 01890	(617)610-1801	http://bronsondrilling.com/home/	Bronson, Daniel, L	880	M
Carr-Dee Corp.	37 Linden St, Medford, MA 02153	(781)391-4500	https://www.facebook.com/drillmore/	DeSimone, Stephen,	451	
Cascade Drilling LP	151 Suffolk Lane, Gardner, MA 01440	(508)936-1050	https://www.cascade-env.com/drilling/	Duchnowski, Dennis, P	838	
Cascade Drilling LP	151 Suffolk Lane, Gardner, MA 01440	(802)343-1422	https://www.cascade-env.com/drilling/	Aldrich, Christoper,	946	
Caswell Pump Co., Inc.	35 Colburn Rd, Temple, NH 03084	(603)878-1672	http://caswellpump.com/	Caswell, Peter, W	492	
Charles M. Rollins Co., Inc.	126 Depot Rd, Boxford, MA 01921	(978)887-2320	https://www.rollinswell.com/	Rollins, George, W	305	
Charles M. Rollins Co., Inc.	126 Depot Rd, Boxford, MA 01921	(978)887-2320	https://www.rollinswell.com/	Rollins, Amos,	1008	
Charles Pratt Jr.	237 Sheep Pasture Rd, Southwick, MA 01077	(413)569-5571	N/A	Pratt Jr., Charles, E	265	

Well Completion Reports



Well Completion Report

MassDEP

Well Completion Report ID: 295554

eDEP Transmittal Number:

WELL LOCATION

GPS North: 42.660550 GPS West: -70.896369 Assessors Map:

Address: 275 Topsfield Road Assessors Lot:

Sub Division: Permit Number:

City/Town: IPSWICH Date Issued:

Board Of Health Permit Obtained: NR

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock
New Well	Domestic	Air Rotary	Air Rotary

ADDITIONAL WELL INFORMATION

Developed:

Disinfected:

Total Well Depth: 142.00

Fracture Enhancement:

Well Seal Type:

Depth to Bedrock: 10.00

PERMANENT PUMP (IF AVAILABLE)

Pump Description:

Type:

Nominal Pump Capacity:

Intake Depth:

Horsepower:

Comments: Protective well seal - drive shoe

CASING

From(ft)	To(ft)	Type	Thickness	Diameter
0.00	20.00	Steel		6

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter
		NSOB		

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery
01/24/1994	Air Lift	7.00	01:00	140	00:10	52

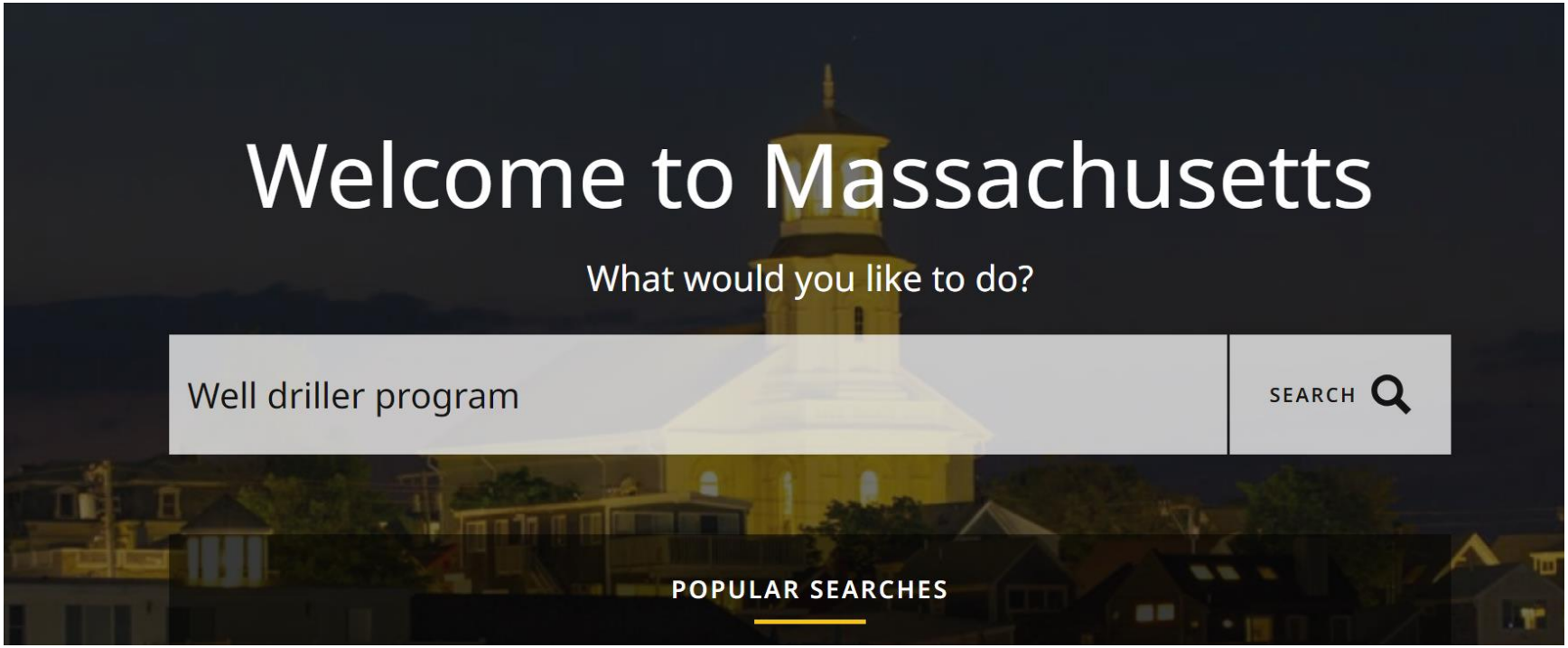
OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate
0.00	10.00	Till			No			

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft
10	75		bedrock	No						
75	80		bedrock	Yes						
80	142		bedrock	No						

Well Location Viewer – Mass.gov – Well Driller Program



Well Location Viewer

Well Driller Program →

The **Well Driller Program** regulates persons who engage in the business of drilling wells.

Well Driller Certification →

If you are a **driller** not previously certified in Massachusetts, please contact the DWP **Program** Director at **program**.director-dwp@mass.gov or (617) 292-5770.

Well Driller Program Technical Advisory Committee →

The Technical Advisory Group was formed to provide advice and input into the MassDEP, **Well Driller Program** formulation of Regulation and Guidance.

DATASET

Well database →

Well Location Viewer

Additional Resources

310 CMR 46.00: Certification of Well Drillers and Filing of Well Completion Reports →

Massachusetts Boards of Health Directory →

American Ground Water Trust →

National Ground Water Association →

Massachusetts Ground Water Association →

US EPA: Private Drinking Water Well Information →

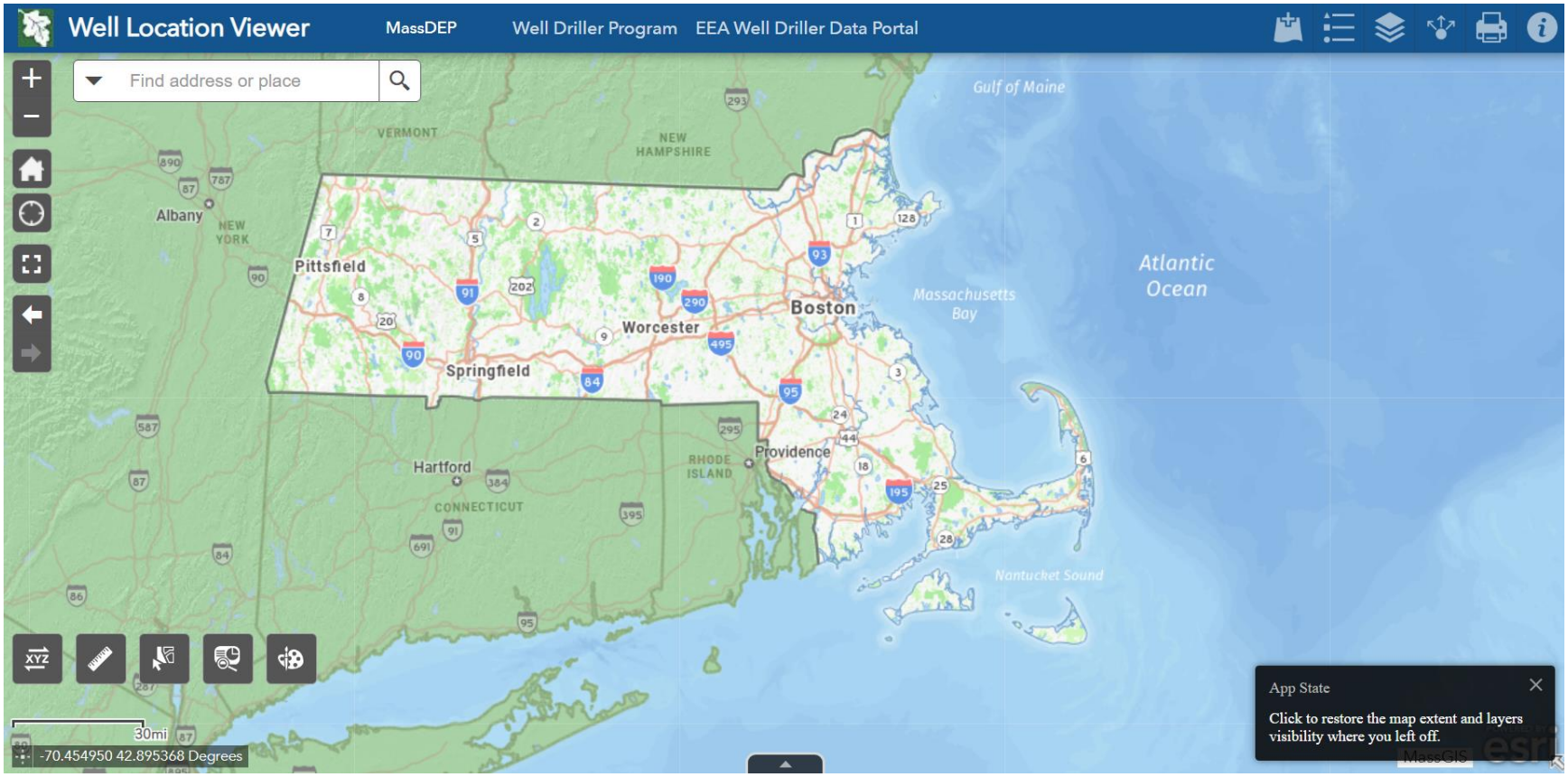
American Water Works Association →

List of Certified Well Drillers (English, PDF 510.4 KB)

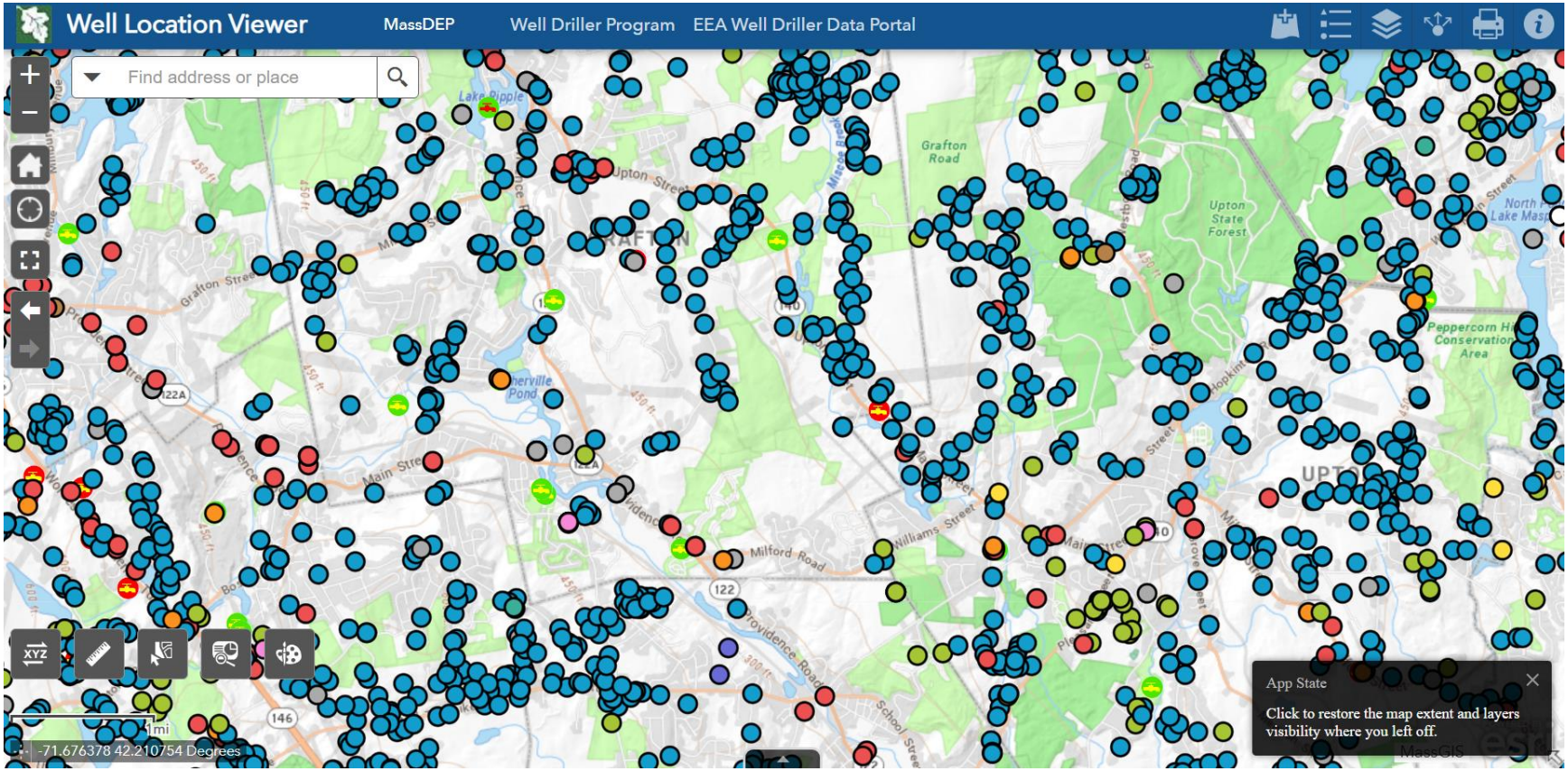
MA GIS Well Location Viewer →

MA GIS Well Location Viewer Guide (English, PDF 317.31 KB)

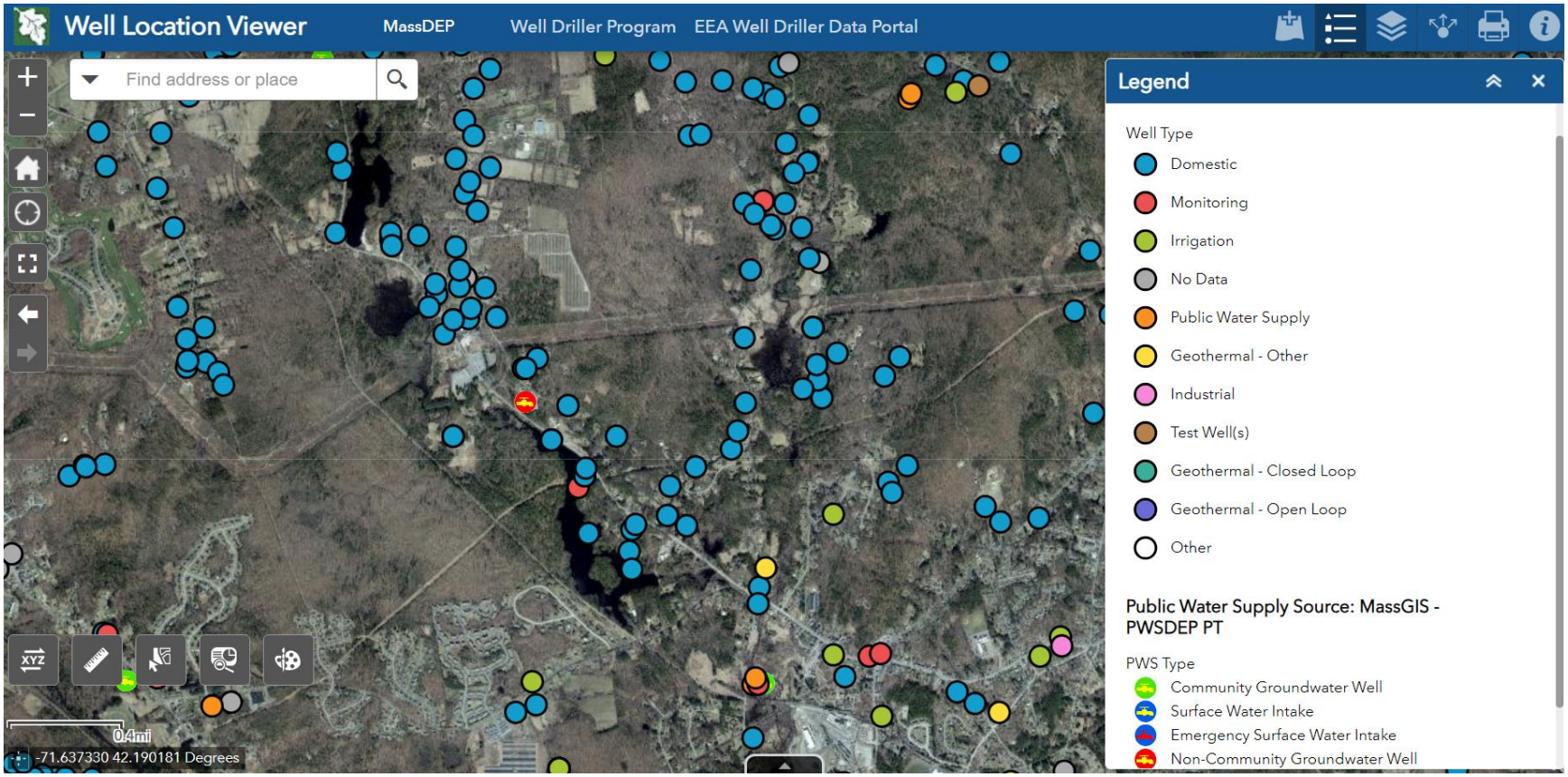
Well Location Viewer



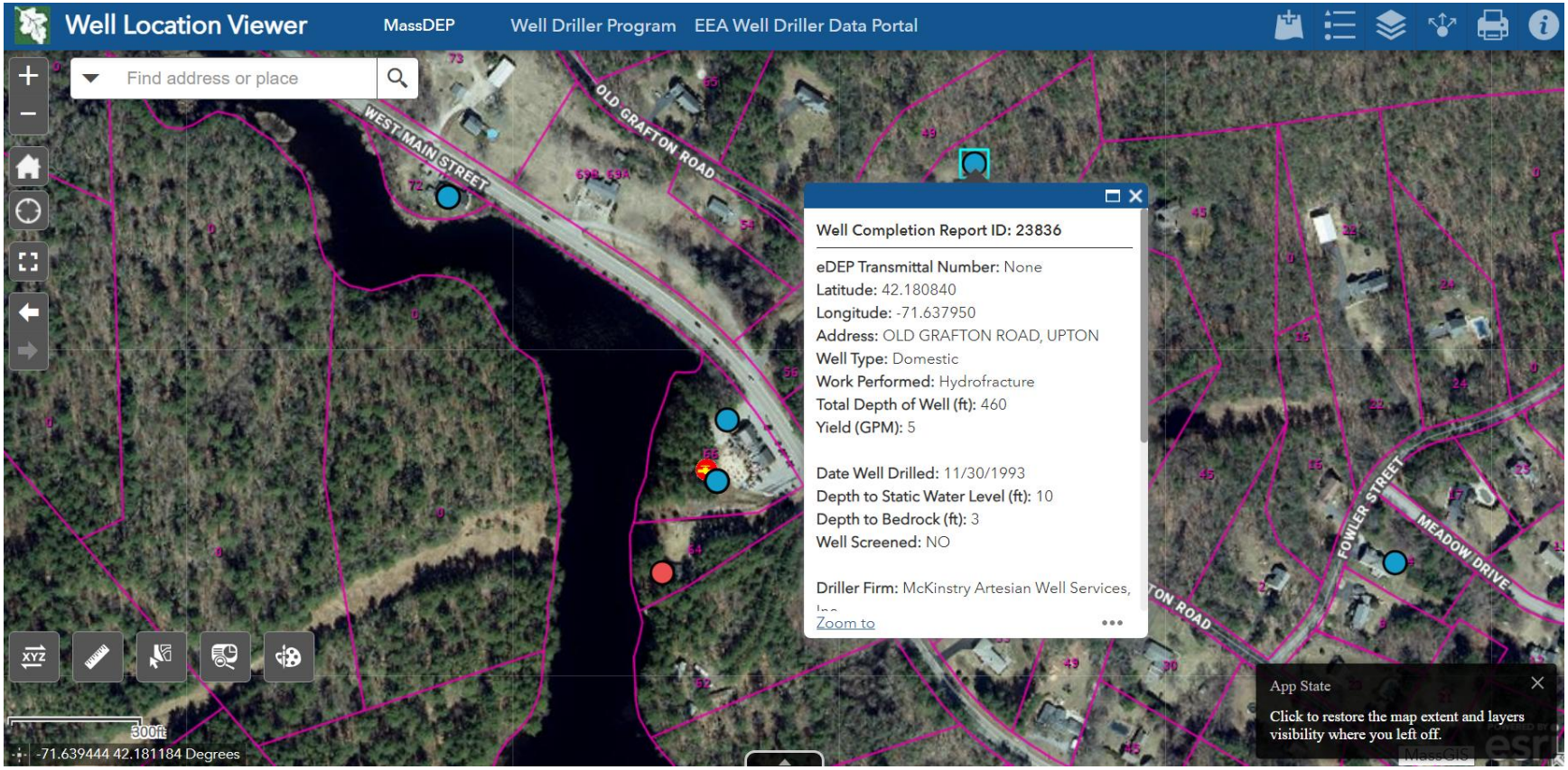
Well Location Viewer



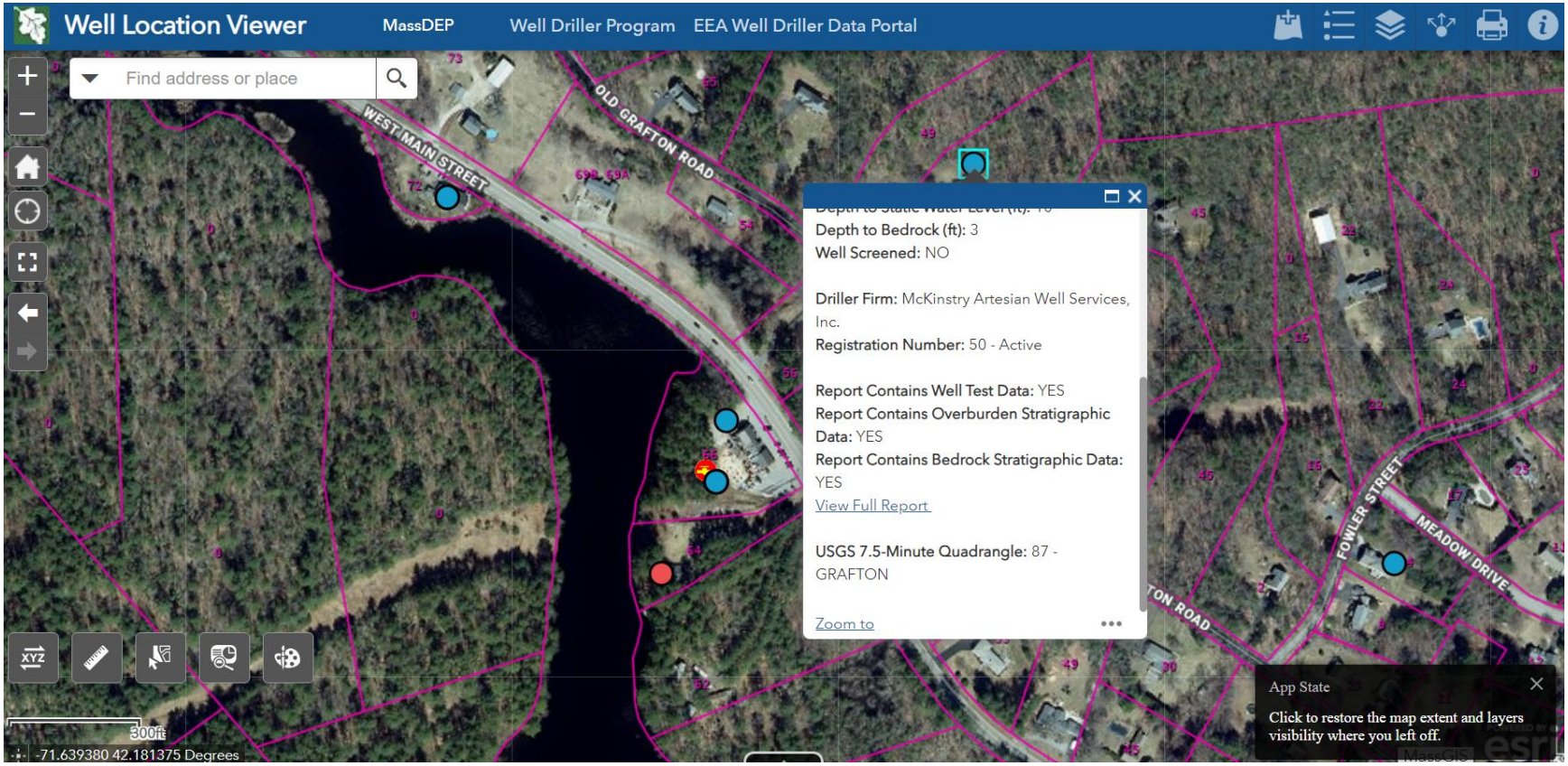
Well Location Viewer



Well Location Viewer



Well Location Viewer



MassDEP

Well Completion Report ID: 23836

eDEP Transmittal Number:

WELL LOCATION

GPS North: 42.180840 **GPS West:** -71.637950 **Assessors Map:**
Address: 47 Old Grafton Road **Assessors Lot:**
Sub Division: **Permit Number:**
City/Town: UPTON **Date Issued:** 11/30/1993
Board Of Health Permit Obtained: Y

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock
Hydrofracture	Domestic	Air Hammer	Air Hammer

ADDITIONAL WELL INFORMATION

Developed: No
Disinfected: No
Total Well Depth: 460.00
Fracture Enhancement: No
Well Seal Type:
Depth to Bedrock: 3.00

PERMANENT PUMP (IF AVAILABLE)

Pump Description:
Type:
Nominal Pump Capacity:
Intake Depth:
Horsepower:
Comments: Geographic Description

Well is located 300' E of Old Grafton Road, .4 mi N of Fowler Street.

Water-Bearing Material: Grey Soft Rock

CASING

From(ft)	To(ft)	Type	Thickness	Diameter
0.00	20.00	Steel	17#	6

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface
12/03/1993	10.00

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery
12/03/1993	Constant Rate Pump	5.00	4:00	160	24:00	10

OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate
0.00	3.00			Subsoil				

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft
3	103		Ledge							
103	203		Ledge							
203	303		Ledge							
303	403		Ledge							
403	460		Ledge							

Bruce Bouck
Bruce.Bouck@mass.gov
781-407-1710

Title 5 – Marybeth Chubb (Marybeth.Chubb@mass.gov), Claire Golden (Claire.Golden@mass.gov)

Soil Evaluator Certification – Bruce Bouck (Bruce.Bouck@mass.gov)

Well Driller Program – Julie Butler (Julie.Butler@mass.gov)

Well Location Viewer – Alex Gamble (Alexander.Gamble@mass.gov)

Private wells – Joe Cerutti (Joseph.Cerutti@mass.gov)

Be Well Informed Tool – Joe Cerutti (Joseph.Cerutti@mass.gov)

QUESTIONS????