

# Appendix K

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## *Outlet Protection Calculations*

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PROJECT: Granite State Landfill

PROJECT NO: 1101

DATE: October 11, 2023

CALC. BY: NJM

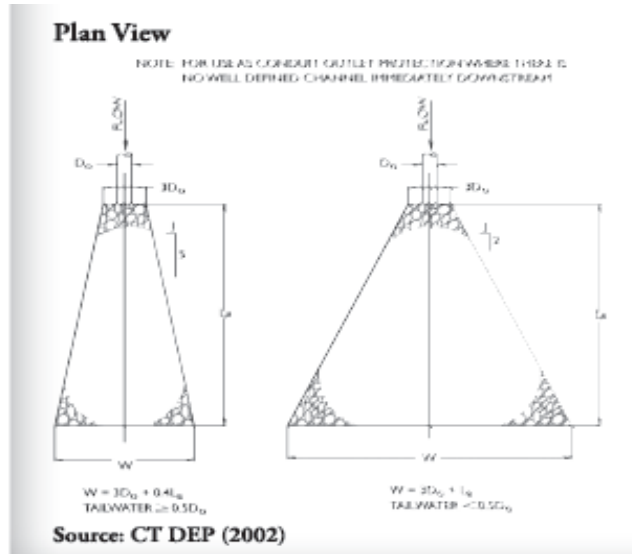
CHECK'D BY: AJS

**Outlet Protection Calculations NH Stormwater Manual Section 4-6)**Notes:**DD1-OUT**

$$\begin{aligned}
 Q_{25} &= 4.4 \text{ cfs} \\
 D_o &= 1 \text{ ft} \\
 L_a &= 1.8Q/D_o \cdot 1.5 + 7D_o \\
 W &= 3D_o + L_a
 \end{aligned}$$

$$\begin{aligned}
 L_a &= 12.3 \\
 W &= 15.3
 \end{aligned}$$

$$\text{Assume: } 3D_o = 3 \text{ ft}$$

**DD2-OUT**

$$\begin{aligned}
 Q_{25} &= 2.40 \text{ cfs} \\
 D_o &= 1 \text{ ft} \\
 L_a &= 1.8Q/D_o \cdot 1.5 + 7D_o \\
 W &= 3D_o + L_a
 \end{aligned}$$

$$\begin{aligned}
 L_a &= 9.9 \\
 W &= 12.9
 \end{aligned}$$

$$\text{Assume: } 3D_o = 3 \text{ ft}$$

**DD3-OUT**

$$\begin{aligned}
 Q_{25} &= 0.00 \text{ cfs} \\
 D_o &= 1 \text{ ft} \\
 L_a &= 1.8Q/D_o \cdot 1.5 + 7D_o \\
 W &= 3D_o + L_a
 \end{aligned}$$

$$\begin{aligned}
 L_a &= 7.0 \\
 W &= 10.0
 \end{aligned}$$

$$\text{Assume: } 3D_o = 3 \text{ ft}$$

**DD3A-OUT**

$$\begin{aligned}
 Q_{25} &= 2.30 \text{ cfs} \\
 D_o &= 1 \text{ ft} \\
 L_a &= 1.8Q/D_o \cdot 1.5 + 7D_o \\
 W &= 3D_o + L_a
 \end{aligned}$$

$$\begin{aligned}
 L_a &= 9.8 \\
 W &= 12.8
 \end{aligned}$$

$$\text{Assume: } 3D_o = 3 \text{ ft}$$

**DD4-OUT**

12" Pipe

$$\begin{aligned}
 Q_{25} &= 2.80 \text{ cfs} \\
 D_o &= 1 \text{ ft} \\
 L_a &= 1.8Q/D_o \cdot 1.5 + 7D_o \\
 W &= 3D_o + L_a
 \end{aligned}$$

$$\begin{aligned}
 L_a &= 10.4 \\
 W &= 13.4
 \end{aligned}$$

$$\text{Assume: } 3D_o = 3 \text{ ft}$$

**DD5-OUT**

Pipe = 12" Pipe

Q25 = 4.60 cfs

D<sub>o</sub> = 1 ft

L<sub>a</sub> = 1.8Q/D<sub>o</sub>1.5 + 7D<sub>o</sub>

W = 3D<sub>o</sub> + L<sub>a</sub>

L<sub>a</sub> = 12.5

W = 15.5

Assume: 3D<sub>o</sub> = 3 ft

**DD6-OUT**

Q25 = 0.00 cfs

D<sub>o</sub> = 1 ft

L<sub>a</sub> = 1.8Q/D<sub>o</sub>1.5 + 7D<sub>o</sub>

W = 3D<sub>o</sub> + L<sub>a</sub>

L<sub>a</sub> = 7.0

W = 10.0

Assume: 3D<sub>o</sub> = 3 ft

**POND-2-OUT**

Q25 = 0.00 cfs

D<sub>o</sub> = 2 ft

L<sub>a</sub> = 1.8Q/D<sub>o</sub>1.5 + 7D<sub>o</sub>

W = 3D<sub>o</sub> + L<sub>a</sub>

L<sub>a</sub> = 14.0

W = 20.0

Assume: 3D<sub>o</sub> = 6 ft

**POND-3-OUT**

Q25 = 2.60 cfs

D<sub>o</sub> = 2 ft

L<sub>a</sub> = 1.8Q/D<sub>o</sub>1.5 + 7D<sub>o</sub>

W = 3D<sub>o</sub> + L<sub>a</sub>

L<sub>a</sub> = 15.6

W = 21.6

Assume: 3D<sub>o</sub> = 6 ft

**POND-4-OUT**

Q25 = 1.80 cfs

D<sub>o</sub> = 1 ft

L<sub>a</sub> = 1.8Q/D<sub>o</sub>1.5 + 7D<sub>o</sub>

W = 3D<sub>o</sub> + L<sub>a</sub>

L<sub>a</sub> = 9.2

W = 12.2

Assume: 3D<sub>o</sub> = 3 ft

**POND-5-OUT**

Q25 = 6.00 cfs

D<sub>o</sub> = 1 ft

L<sub>a</sub> = 1.8Q/D<sub>o</sub>1.5 + 7D<sub>o</sub>

W = 3D<sub>o</sub> + L<sub>a</sub>

L<sub>a</sub> = 14.2

W = 17.2

Assume: 3D<sub>o</sub> = 3 ft

**POND-6-OUT**

Q25 = 0.60 cfs

D<sub>o</sub> = 1 ft

L<sub>a</sub> = 1.8Q/D<sub>o</sub>1.5 + 7D<sub>o</sub>

W = 3D<sub>o</sub> + L<sub>a</sub>

L<sub>a</sub> = 7.7

W = 10.7

**POND-7-OUT**

Q25 = 13.40 cfs

D<sub>o</sub> = 2 ft

L<sub>a</sub> = 1.8Q/D<sub>o</sub>1.5 + 7D<sub>o</sub>

W = 3D<sub>o</sub> + L<sub>a</sub>

L<sub>a</sub> = 22.0

W = 28.0

Assume:  $3D_o = 3$  ft

Assume:  $3D_o = 6$  ft

#### POND-8-OUT

$$\begin{aligned} Q_{25} &= 8.00 \text{ cfs} \\ D_o &= 2 \text{ ft} \\ L_a &= 1.8Q/D_o 1.5 + 7D_o \\ W &= 3D_o + L_a \end{aligned}$$

$$\begin{aligned} L_a &= 18.8 \\ W &= 24.8 \end{aligned}$$

Assume:  $3D_o = 6$  ft

#### POND-9-OUT

$$\begin{aligned} Q_{25} &= 13.00 \text{ cfs} \\ D_o &= 2 \text{ ft} \\ L_a &= 1.8Q/D_o 1.5 + 7D_o \\ W &= 3D_o + L_a \end{aligned}$$

$$\begin{aligned} L_a &= 21.8 \\ W &= 27.8 \end{aligned}$$

Assume:  $3D_o = 6$  ft

#### POND-10-OUT

$$\begin{aligned} Q_{25} &= 5.70 \text{ cfs} \\ D_o &= 2 \text{ ft} \\ L_a &= 1.8Q/D_o 1.5 + 7D_o \\ W &= 3D_o + L_a \end{aligned}$$

$$\begin{aligned} L_a &= 17.4 \\ W &= 23.4 \end{aligned}$$

Assume:  $3D_o = 6$  ft

#### POND-11-OUT

$$\begin{aligned} Q_{25} &= 21.10 \text{ cfs} \\ D_o &= 2 \text{ ft} \\ L_a &= 1.8Q/D_o 1.5 + 7D_o \\ W &= 3D_o + L_a \end{aligned}$$

$$\begin{aligned} L_a &= 26.7 \\ W &= 32.7 \end{aligned}$$

Assume:  $3D_o = 6$  ft

#### POND-12-OUT

$$\begin{aligned} Q_{25} &= 0.00 \text{ cfs} \\ D_o &= 2 \text{ ft} \\ L_a &= 1.8Q/D_o 1.5 + 7D_o \\ W &= 3D_o + L_a \end{aligned}$$

$$\begin{aligned} L_a &= 14.0 \\ W &= 20.0 \end{aligned}$$

Assume:  $3D_o = 6$  ft

#### POND-13-OUT

$$\begin{aligned} Q_{25} &= 0.00 \text{ cfs} \\ D_o &= 2 \text{ ft} \\ L_a &= 1.8Q/D_o 1.5 + 7D_o \\ W &= 3D_o + L_a \end{aligned}$$

$$\begin{aligned} L_a &= 14.0 \\ W &= 20.0 \end{aligned}$$

Assume:  $3D_o = 6$  ft

#### POND-DD-1A-IN

$$\begin{aligned} Q_{25} &= 8.20 \text{ cfs} \\ D_o &= 1 \text{ ft} \\ L_a &= 1.8Q/D_o 1.5 + 7D_o \\ W &= 3D_o + L_a \end{aligned}$$

#### FOREBAY-DD6-IN

$$\begin{aligned} Q_{25} &= 3.80 \text{ cfs} \\ D_o &= 1 \text{ ft} \\ L_a &= 1.8Q/D_o 1.5 + 7D_o \\ W &= 3D_o + L_a \end{aligned}$$

$$L_a = 16.8$$
$$W = 19.8$$

$$L_a = 11.6$$
$$W = 14.6$$

Assume:  $3D_o = 3 \text{ ft}$

Assume:  $3D_o = 3 \text{ ft}$

#### POND-2-IN

$$Q_{25} = 32.00 \text{ cfs}$$
$$D_o = 1.25 \text{ ft}$$
$$L_a = 1.8Q/D_o 1.5 + 7D_o$$
$$W = 3D_o + L_a$$

$$L_a = 39.5$$
$$W = 43.2$$

Assume:  $3D_o = 3.75 \text{ ft}$

#### DP-10

$$Q_{25} = 1.80 \text{ cfs}$$
$$D_o = 1.25 \text{ ft}$$
$$L_a = 1.8Q/D_o 1.5 + 7D_o$$
$$W = 3D_o + L_a$$

$$L_a = 10.5$$
$$W = 14.2$$

Assume:  $3D_o = 3.75 \text{ ft}$

#### FOREBAY-3-IN

$$Q_{25} = 12.80 \text{ cfs}$$
$$D_o = 1.25 \text{ ft}$$
$$L_a = 1.8Q/D_o 1.5 + 7D_o$$
$$W = 3D_o + L_a$$

$$L_a = 21.0$$
$$W = 24.8$$

Assume:  $3D_o = 3.75 \text{ ft}$

#### POND-4-IN

$$Q_{25} = 3.60 \text{ cfs}$$
$$D_o = 1 \text{ ft}$$
$$L_a = 1.8Q/D_o 1.5 + 7D_o$$
$$W = 3D_o + L_a$$

$$L_a = 11.3$$
$$W = 14.3$$

Assume:  $3D_o = 3 \text{ ft}$

#### FOREBAY-5-IN

$$Q_{25} = 9.30 \text{ cfs}$$
$$D_o = 1.25 \text{ ft}$$
$$L_a = 1.8Q/D_o 1.5 + 7D_o$$
$$W = 3D_o + L_a$$

$$L_a = 17.7$$
$$W = 21.4$$

Assume:  $3D_o = 3.75 \text{ ft}$

#### FOREBAY-6-IN

$$Q_{25} = 4.70 \text{ cfs}$$
$$D_o = 1 \text{ ft}$$
$$L_a = 1.8Q/D_o 1.5 + 7D_o$$
$$W = 3D_o + L_a$$

$$L_a = 12.6$$
$$W = 15.6$$

Assume:  $3D_o = 3 \text{ ft}$

#### FOREBAY-7-IN

$$Q_{25} = 21.30 \text{ cfs}$$
$$D_o = 2 \text{ ft}$$
$$L_a = 1.8Q/D_o 1.5 + 7D_o$$

#### FOREBAY-8-IN

$$Q_{25} = 21.70 \text{ cfs}$$
$$D_o = 2 \text{ ft}$$
$$L_a = 1.8Q/D_o 1.5 + 7D_o$$

$$W = 3D_o + L_a$$

$$L_a = 26.8$$

$$W = 32.8$$

$$\text{Assume: } 3D_o = 6 \text{ ft}$$

$$W = 3D_o + L_a$$

$$L_a = 27.0$$

$$W = 33.0$$

$$\text{Assume: } 3D_o = 6 \text{ ft}$$

#### FOREBAY-9-IN

$$Q_{25} = 15.60 \text{ cfs}$$

$$D_o = 2 \text{ ft}$$

$$L_a = 1.8Q/D_o 1.5 + 7D_o$$

$$W = 3D_o + L_a$$

$$L_a = 23.4$$

$$W = 29.4$$

$$\text{Assume: } 3D_o = 6 \text{ ft}$$

#### FOREBAY-11-IN

$$Q_{25} = 24.10 \text{ cfs}$$

$$D_o = 2 \text{ ft}$$

$$L_a = 1.8Q/D_o 1.5 + 7D_o$$

$$W = 3D_o + L_a$$

$$L_a = 28.5$$

$$W = 34.5$$

$$\text{Assume: } 3D_o = 6 \text{ ft}$$

#### FOREBAY-12-IN

$$Q_{25} = 38.60 \text{ cfs}$$

$$D_o = 2 \text{ ft}$$

$$L_a = 1.8Q/D_o 1.5 + 7D_o$$

$$W = 3D_o + L_a$$

$$L_a = 37.2$$

$$W = 43.2$$

$$\text{Assume: } 3D_o = 6 \text{ ft}$$

#### FOREBAY-13-IN

$$Q_{25} = 36.80 \text{ cfs}$$

$$D_o = 2 \text{ ft}$$

$$L_a = 1.8Q/D_o 1.5 + 7D_o$$

$$W = 3D_o + L_a$$

$$L_a = 36.1$$

$$W = 42.1$$

$$\text{Assume: } 3D_o = 6 \text{ ft}$$

$Q_{25}$  = Outlet discharge for 25-year storm event (cfs)

$D_o$  = Diameter of pipe (ft)

$L_a$  = Length of the apron (ft)

$W$  = Width of the apron (ft)

# Appendix L

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## *Site Specific Soil Survey Mapping and Report*



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Site Specific Soil Map Report

Granite State Landfill  
Dalton and Bethlehem, NH

prepared for:

CMA Engineers, Inc  
1 Sundial Avenue, suite 510N  
Manchester, NH 03103



*Michael Cuomo*

30 August 2022

**Michael Cuomo, Soil Scientist**  
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This report is in reference to the proposed Granite State Landfill site in Bethlehem and Dalton, NH. A Site Specific Soil Map was prepared on a +/-267 acre portion of the larger parcel to comply with soil mapping requirements of NHDES Env-Wq 1504.09(b)(3), Alteration of Terrain. The Alteration of Terrain rules reference the '*Site Specific Soil Mapping Standards for New Hampshire and Vermont*' SSSNNE publication number three, dated July 2021. The Site Specific Soil Map and this report comply with these standards. This report is a component of the Site Specific Soil Map and must be submitted with it for regulatory review.

Because of the size of the work area and phasing of the work, the field work and soil mapping was done by a team of three New Hampshire Certified Soil Scientists in 2021 and 2022: Joseph W. Noel, NHCSS 17, Marc E. Jacobs, NHCSS 38, and Michael Cuomo, NHCSS 6. The final soil map and this report are the responsibility of the author, Michael Cuomo. The soil map was prepared on a 1"=100' base plan with 2 foot topographic contours prepared by Horizons Engineering.

Soil Map Unit Descriptions

Soil series names and numerical map unit labels were selected based on best fit with those used in the *New Hampshire State-Wide Numerical Soils Legend* published by the USDA Natural Resources Conservation Service. The soils are described in detail below. Two hundred and thirty five excavator test pits and hand dug soil observations were made at the site, described in detail, and used in making this soil map. The test pit data and data from some of the hand dug soil observations is attached at the rear of this report. Additional hand dug observations were made for limited purposes and were not recorded. The map unit descriptions below are based on soils specific to this site. The saturated hydraulic conductivity and hydrologic soil groups were taken from SSSNNE publication number five.

**Becket very stony (57)**

Landscape setting and surface features: ridge tops, side slopes, and elevated plateaus with surface boulders and stones.  
Natural soil drainage class: well drained.  
Parent material: basal till.  
Hydrologic soil group: C  
Saturated Hydraulic Conductivity (ksat):  
    0.6 to 2.0 in/hr in B horizon;  
    0.06 to .06 in/hr in the C horizon.

Typical Description: test pit MJ61 is an example of Becket soils.

- 1-0" Leaf litter.
- 0-3" Black (10YR 2/1) fine sandy loam, granular, friable.
- 3-6" Gray (10YR 6/1) fine sandy loam, granular, friable.
- 6-17" Brown (7.5YR 4/4) fine sandy loam, blocky, friable.
- 17-36" Strong brown (7.5YR 5/6) fine sandy loam, blocky, friable.
- 36-62" Grayish brown (10YR 5/2) loamy sand, massive, firm.

Inclusions: test pit MC41 found Becket variant soils with a friable layer below the dense layer. Test pit MC36 found Becket soils buried by soil from construction of the road. Test pit MJ55 found Becket variant soil with presumed bedrock at less than 60" depth. Trails and roads were also included in some map units. Inclusions of Skerry soils are typical. Inclusions of Monadnock soils are estimated at 5%. Total dissimilar inclusions are about 20%.

Other features of this soil: the presence of a dense basal till layer about two feet from the surface perches water briefly. This is not considered groundwater saturation in the classic sense as it comes from atmospheric water above, and does not continuously connect to the groundwater table below. On this site some Becket soils had high chroma redoximorphic (redox) features within the dense basal till, not just in the upper 2 inches as described in the well-drained soil interpretive limits. Slope and landscape position were also used in distinguishing Becket from the similar Skerry soils. Becket soils occurs widely in the project area.

**Waumbek very stony (59)**

Landscape setting and surface features: valley, side slope, and foot slope settings with surface boulders and stones.

Natural soil drainage class: moderately well drained.

Parent material: loose glacial till.

Hydrologic soil group: B

Saturated Hydraulic Conductivity (ksat):

2.0 to 20.0 in/hr in B horizon;

6.0 to 20.0 in/hr in the C horizon.

Typical Description: test pit MC50 is an example of Waumbek soils.

- 5-0" Leaf litter.
- 0-3" Gray (7.5YR 6/1) stony fine sandy loam, granular, friable.
- 3-12" Strong brown (7.5YR 4/6) stony fine sandy loam, blocky, friable.
- 12-20" Reddish yellow (7.5YR 6/6) stony fine sandy loam, blocky, friable.
- 20-26" Olive yellow (2.5Y 6/6) stony fine sandy loam, blocky, friable, common & distinct redox.
- 26-63" Light olive brown (2.5Y 5/3) stony loamy sand, massive,

friable, common & distinct redox.

Inclusions: the Waumbek soil map unit contains trails created for forestry and recreation. Skerry inclusions are typical. Total dissimilar inclusions are about 5%.

Other features of this soil: this soil is of limited extent in the project area.

**Marlow (76)**

Landscape setting and surface features: ridge tops, side slopes, and elevated plateaus with surface boulders and stones.

Natural soil drainage class: well drained.

Parent material: basal till.

Hydrologic soil group: C

Saturated Hydraulic Conductivity (ksat):

0.6 to 2.0 in/hr in B horizon;

0.06 to .06 in/hr in the C horizon.

Typical Description: test pit MC84 is an example of Marlow soils.

1-0" Leaf litter.

0-3" Brown (7.5YR 4/2) bouldery fine sandy loam, granular, friable.

3-8" Strong brown (7.5YR 4/6) bouldery fine sandy loam, blocky, friable.

8-25" Yellowish brown (10YR 5/6) bouldery fine sandy loam, blocky, friable.

25-64" Light olive brown (2.5Y 5/3) bouldery fine sandy loam, massive, firm.

Inclusions: test pit MC83 found Marlow variant soils with bedrock at less than 60" depth. Trails and roads are also found in Marlow map units. Inclusions of Skerry and Becket soils are typical. Total dissimilar inclusions are about 20%.

Other features of this soil: the presence of a dense basal till layer about two feet from the surface perches water briefly. This is not considered groundwater saturation in the classic sense as it comes from atmospheric water above, and does not continuously connect to the groundwater table below. On this site Marlow soils are described having no redoximorphic (redox) features within the dense basal till, but some Marlow may have redox within 2 inches of the upper boundary of the dense layer. Marlow soils are of limited extent in the project area.

**Tunbridge very stony (99)**

Landscape setting and surface features: hill tops and steep irregular side slopes with surface stones and boulders.

Natural soil drainage class: well drained.

Parent material: loose glacial till with bedrock 20 to 40 inches

from the surface.

Hydrologic soil group: C

Saturated Hydraulic Conductivity (ksat):

0.6 to 6.0 in/hr in B horizon;

0.6 to 6.0 in/hr in the C horizon.

Typical Description: test pit MC15 is an example of Tunbridge soils.

2-0" Leaf litter

0-4" Dark brown (7.5YR 3/3) stony fine sandy loam, granular, friable.

4-8" Gray (7.5YR 5/1) stony fine sandy loam, massive, friable.

8-15" Strong brown (7.5YR 4/6) stony fine sandy loam, blocky, friable.

15-28" Brownish yellow (10YR 6/6) stony fine sandy loam, blocky, friable.

28"+ Bedrock.

Inclusions: test pits MC17 and MC60 found Tunbridge variant soils with a dense basal till layer above moderately deep bedrock.

Inclusions of the shallow Lyman and deep Monadnock soils are typical. Total dissimilar inclusions are about 20%

Other features of this soil: when flat rock was exposed at the bottom of a test pit which could not be moved with the small excavator used, it was labeled bedrock. This may not be bedrock but rather a very large boulder. In cases where more capable drilling equipment contradicts the soil map, the user should assume the bedrock depth data gathered with the drilling equipment is more accurate. This soil is of moderate extent in the project area.

#### **Monadnock very stony (143)**

Landscape setting and surface features: elevated plateaus, hills, and side slopes with surface stones and boulders.

Natural soil drainage class: well drained.

Parent material: loose glacial till.

Hydrologic soil group: B

Saturated Hydraulic Conductivity (ksat):

0.6 to 2.0 in/hr in B horizon;

2.0 to 6.0 in/hr in the C horizon.

Typical Description: test pit MC59 is an example of Monadnock soils.

4-0" Leaf litter.

0-3" Gray (7.5YR 5/2) stony fine sandy loam granular, friable.

3-9" Brown (7.5YR 4/4) stony fine sandy loam, blocky, friable.

9-16" Strong brown (7.5YR 4/6) stony fine sandy loam, blocky, friable.

- 16-24" Brownish yellow (10YR 6/6) stony fine sandy loam,  
blocky, friable.  
24-60" Light yellowish brown (2.5Y 6/4) stony loamy sand,  
massive, friable.

Inclusions: Monadnock variants with deep compact layers in the substrate, such as test pit MC21 were observed. Total dissimilar inclusions are about 15%.

Other features of this soil: this soils of moderate extent in the project area.

**Sunapee very stony (169)**

Landscape setting and surface features: found on foot slope landscape positions and in sloping valleys and drainage ways with surface stones and boulders.

Natural soil drainage class: moderately well drained.

Parent material: loose glacial till.

Hydrologic soil group: B.

Saturated Hydraulic Conductivity (ksat):

0.6 to 2.0 in/hr in B horizon;

0.6 to 6.0 in/hr in the C horizon.

Typical Description: test pit JN45 is an example of Sunapee soils.

2-0" Leaf litter.

0-3" Black (10YR 2/1) fine sandy loam, granular, friable.

3-5" Dark brown (7.5YR 3/4) fine sandy loam, granular,  
friable.

5-8" Dark yellowish brown (10YR 4/6) fine sandy loam,  
blocky, friable.

8-34" Yellowish brown (10YR 5/4) fine sandy loam, blocky,  
friable.

34-60" Olive gray (5Y 4/2) loamy fine sand to loamy very fine  
sand, massive, friable, common & distinct redox.

Inclusions: Waumbek and Colonel inclusions are typical. Total dissimilar inclusions are about 10%.

Other features of this soil: this soil is of very limited extent in the project area.

**Lyme very stony (247)**

Landscape setting and surface features: topographic depressions and drainage ways with surface stones and boulders.

Natural soil drainage class: poorly drained.

Parent material: loose glacial till.

Hydrologic soil group: C.

Saturated Hydraulic Conductivity (ksat):

0.6 to 6.0 in/hr in B horizon;

0.6 to 6.0 in/hr in the C horizon.

Typical Description: test pit JN44 is an example of Lyme soils.

- 1-0" Leaf litter.
- 0-5" Dark olive gray (5YR 3/2) fine sandy loam, granular, friable, common & prominent redox.
- 5-12" Olive gray (5Y 4/2) fine sandy loam, blocky, friable, common & prominent redox.
- 12-18" Light olive brown (2.5Y 5/3) fine to very fine sandy loam, massive, friable, common & distinct redox.
- 18-32" Olive gray (5Y 4/2) fine to very fine sandy loam, massive, friable, common & prominent redox.
- 32-40" Gray (5Y 5/1) loamy very fine sand, massive, friable, common & prominent redox.

Inclusions: inclusions of Pillsbury soils are typical. Total dissimilar inclusions are about 10%.

Other features of this soil: These wetland soils are of very limited extent in the project area.

**Udorthents, cuts and fills (299).**

Landscape setting and surface features: these are large areas of soils significantly manipulated by heavy machinery and/or filled, primarily made by moving on-site soil.

Natural soil drainage class: this can not be determined using conventional methods. These soils do not fit into drainage class concepts.

Parent material: glacial till that has been moved by human activity.

Hydrologic soil group: C. Best professional judgement and best fit with similar natural soils were used to assign hydrologic soil groups to this soil. These soils are highly variable, so no published reference data is available.

Saturated Hydraulic Conductivity (ksat): these soils are highly variable, so no published reference data is available. Where location specific data is required, it must be measured in the field.

Typical Description: Test pit MJ17 is an example of Udorthents, cut and fill soils.

- 0-27" Brown (10YR 5/3) loamy fine sand fill, massive, friable, relict redox in fill.
- 27-39" Dark gray (10YR 4/1) fine sand fill, massive, friable.
- 39-54" Dark yellowish brown (10YR 4/4) fine sandy loam, massive, friable.
- 54-66" Brown (10YR 5/3) sandy loam, massive, firm.

Inclusions: the variability of the materials in these map units can be high and can include concrete waste, ash, and dredge spoils. There is a large pile of broken pavement in one area and a large topsoil stockpile in another.

Other features of this soil: these soils are highly variable and widespread in the project area.

**Ossipee (495)**

Landscape setting and surface features: wet depressions in the landscape with pit and mound topography due to frequent tree throw resulting from poor rooting depth.

Natural soil drainage class: very poorly drained.

Parent material: organic soils over dense basal till or loose glacial till.

Hydrologic soil group: D

Saturated Hydraulic Conductivity (ksat):

There is no B horizon in this soil.

0.2 to 2.0 in/hr in the C horizon.

Typical Description: test pit MC68 is an example of Ossipee soils.

1-0" Leaf litter.

0-10" Dark brown (10YR 3/3) peat, massive, friable.

10-20" Very dark gray (2.5Y 3/1) muck, massive, friable.

20-32" Black (7.5YR 2.5/1) muck, massive, friable.

32-40" Dark brown (7.5YR 3/2) mucky fine sandy loam, massive, friable.

40-45" Dark brown (10YR 3/3) mucky fine sandy loam, massive, friable.

Inclusions: inclusions of the Peacham soil are typical along the edges of these map units. Total dissimilar inclusions are about 15%.

Other features of this soil: Ossipee soils have very low bearing strength and pockets of shallow open water. These are wetland soils. Ossipee soils are of limited extent in the project area.

**Udorthents, loamy (500)**

Landscape setting and surface features: variable landscape positions in which the upper soil horizons have been removed, exposing the loamy glacial till substrate at the surface.

These soils have been regraded and shaped by heavy equipment.

Natural soil drainage class: this can not be determined using conventional methods. These soils do not fit into drainage class concepts.

Parent material: glacial till with the lower horizons exposed at the surface by human activity.

Hydrologic soil group: C. Best professional judgement and best fit with similar natural soils were used to assign hydrologic soil groups to this soil. These soils are highly variable, so no published reference data is available.

Saturated Hydraulic Conductivity (ksat): these soils are highly variable, so no published reference data is available. Where



location specific data is required, it must be measured in the field.

Typical Description: test pit MJ21 is an example of Udorthents, loamy.

0-65" Light olive brown (2.5Y 5/3) sandy loam, massive, friable, with fine sandy loam plates which are firm.

Inclusions: the variability of the materials in these map units is high and can include non-soil materials such as concrete waste and broken pavement. Inclusions of 299 and soil stockpiles were found. Total dissimilar inclusions are estimated to be 20%.

Other features of this soil: excavation has removed all soil horizon development down to the parent material in many locations. This soil is of limited extent in the project area.

**Peacham very stony (549)**

Landscape setting and surface features: wet depressions in the landscape with pit and mound topography due to frequent tree throw resulting from poor rooting depth. These soils have surface stones and boulders.

Natural soil drainage class: very poorly drained.

Parent material: thin organic soil over dense basal till.

Hydrologic soil group: D

Saturated Hydraulic Conductivity (ksat):

0.6 to 2.0 in/hr in B horizon;

0.0 to 0.2 in/hr in the C horizon.

Typical Description: test pit JN15 is an example of Peacham soils.

0-11" Black (5Y 2.5/2) muck, granular, friable.

11-41" Gray (5Y 5/1) loamy very fine sand to very fine sandy loam, massive, friable, common & faint redox.

41-44" Gray (5Y 5/1) very fine sandy loam, massive, firm, common & faint redox.

Inclusions: Pillsbury inclusions were noted along the edges of Peacham map units. Some Peacham map units were extremely stony or bouldery. Total dissimilar inclusions are about 20%.

Other features of this soil: these wetland soils are of limited extent in the project area.

**Udorthents, bedrock less than 60" (550)**

Landscape setting and surface features: variable landscape positions where the surface soils have been removed, exposing the subsoil or bedrock.

Natural soil drainage class: this can not be determined using conventional methods. These soils do not fit into drainage class concepts.

Parent material: substrate of glacial till or bedrock exposed at the surface.

Hydrologic soil group: C. Best professional judgement and best fit with similar natural soils were used to assign hydrologic soil groups to this soil. These soils are highly variable, so no published reference data is available.

Saturated Hydraulic Conductivity (ksat): these soils are highly variable, so no published reference data is available. Where location specific data is required, it must be measured in the field.

Typical Description: test pit MJ23 is an example of Udorthents, bedrock less than 60 inches.

0-36" Light olive brown (2.5Y 5/3) sandy loam, massive, firm.  
36"+ Bedrock.

Inclusions: exposed bedrock is at the surface in less than 5% of the map unit area. Inclusions of 299 and 500 are typical. Total dissimilar inclusions are about 20%.

Other features of this soil: this soil is of limited extent in the project area. When flat rock was exposed at the bottom of a test pit which could not be moved with the small excavator used, it was labeled bedrock. This may not be bedrock but rather a very large boulder. In cases where more capable drilling equipment contradicts the soil map, the user should assume the bedrock depth data gathered with the drilling equipment is more accurate. This soil is of moderate extent in the project area.

#### **Skerry very stony (559)**

Landscape setting and surface features: valleys, gently sloping hill sides, and foot slopes with surface stones and boulders.

Natural soil drainage class: moderately well drained.

Parent material: basal till.

Hydrologic soil group: C

Saturated Hydraulic Conductivity (ksat):

0.6 to 2.0 in/hr in B horizon;

0.06 to 0.6 in/hr in the C horizon.

Typical Description: test pit MJ22 is an example of Skerry soils.

2-0" Leaf litter.

0-3" Black (10YR 2/1) fine sandy loam, granular, friable.

3-6" Gray (10YR 6/1) fine sandy loam, granular, friable.

6-8" Brown (7.5YR 4/4) stony fine sandy loam, massive, friable.

8-24" Yellowish brown (10YR 5/4) fine sandy loam, blocky, friable.

24-36" Light yellowish brown (10YR 6/4) stony sandy loam, blocky, friable, common & distinct redox.

36-60" Brown (10YR 5/3) sandy loam, massive, firm.

Inclusions: test pits MC12 and JN37 found Skerry variants with loose coarse sand or friable loamy sand below the dense basal till. Test pit MC30 found Skerry soils buried by soil from road construction. Skerry map units contain constructed roads and trails, Colonel, and Becket soil inclusions. Total dissimilar inclusions are about 20%.

Other features of this soil: where evidence of the seasonal high water table was found substantially above the dense basal till, the soil was mapped as Skerry, even if the seasonal high water table was more than 2 feet from the surface. This is one way the Becket and Skerry were separated on this site, along with slope and landscape position. Skerry is likely the most widespread soil in the project area.

**Pillsbury very stony (647)**

Landscape setting and surface features: seasonally wet depressions in the landscape with pit and mound topography due to frequent tree throw resulting from poor rooting depth. These soils have surface stones and boulders.

Natural soil drainage class: poorly drained.

Parent material: basal till.

Hydrologic soil group: C.

Saturated Hydraulic Conductivity (ksat):

0.6 to 2.0 in/hr in B horizon;

0.06 to 0.2 in/hr in the C horizon.

Typical Description: test pit JN8 is an example of Pillsbury soils.

4-0" Leaf litter.

0-7" Gray (7.5YR 5/1) stony loamy sand, massive, friable, common & faint redox.

7-15" Grayish brown (2.5Y 5/2) stony sandy loam, blocky, friable, common & distinct redox.

15-24" Strong brown (7.5YR 5/6) stony sandy loam, blocky, friable, common & distinct redox.

24-55" Olive (5Y 5/3) gravelly loam sand, platy, firm, common & distinct redox.

Inclusions: some Pillsbury map units contain small stream channels which have eroded down to bedrock in some areas. In some locations fill has been placed to cross these map units. Very stony inclusions of Colonel, Peacham, and Lyme soil inclusions were noted. Some Pillsbury map units are extremely stony or bouldery. Man-made ditches with mineral soil bottoms are also included. Total dissimilar inclusions are about 20%.

Other features of this soil: on this site Pillsbury was chosen as the best fit to describe the poorly drained soils with loamy sand texture dense basal till. The typical description of Pillsbury has a fine sandy loam dense basal till layer. This is a wetland soil.

Pillsbury occurs extensively in the project area.

**Meadowsedge (894)**

Landscape setting and surface features: wet depressions in the landscape with pit and mound topography due to frequent tree throw resulting from poor rooting depth.

Natural soil drainage class: very poorly drained.

Parent material: deep organic soil formed in place.

Hydrologic soil group: D

Saturated Hydraulic Conductivity (ksat): none given in reference.

Typical Description: test pit MC69 is an example of Meadowsedge soils.

0-10" Very dark brown (7.5YR 2.5/2) peat, massive, friable.

10-15" Black (10YR 2/1) muck, massive, friable.

15-17" Dark gray (10YR 4/1) mucky loamy sand, massive, friable.

17-26" Black (10YR 2/1) muck, massive, friable.

26-44" Very dark gray (10YR 3/1) muck, massive, friable.

Inclusions: inclusions of Ossipee, Peacham, Pillsbury, and Pondicherry soils are anticipated along the edges of these soil map units. Total dissimilar inclusions are about 20%.

Other features of this soil: Meadowsedge are wetland soils which are of limited extent in the project area. These soils have low bearing strength and pockets of shallow open water.

**Moosilauke (935)**

Landscape setting and surface features: gently sloping areas, often near wetlands and in drainage swales.

Natural soil drainage class: on this site Moosilauke is only mapped as somewhat poorly drained.

Parent material: glacial outwash.

Hydrologic soil group: C.

Saturated Hydraulic Conductivity (ksat):

2.0 to 6.0 in/hr in B horizon;

more than 6.0 in/hr in the C horizon.

Typical Description: test pit MJ35 is an example of Moosilauke soils.

0-6" Black (10YR 2/1) very fine sandy loam, granular, friable.

6-18" Light olive brown (2.5Y 5/3) loamy very fine sand, massive, friable, many & prominent redox.

18-24" Light olive brown (2.5Y 5/3) coarse sand, single grained, loose, common & faint redox.

24-32" Grayish brown (2.5Y 5/2) loamy coarse sand, massive, friable, redox masked.

Inclusions: poorly drained Lyme soils are typical. Dissimilar

inclusions total about 10%.

Other features of this soil: the Moosilauke differs from the similar Colonel soil in that it lacks a dense restrictive layer in the substrate. This soil is of very limited extent in the project area.

**Colonel very stony (947)**

Landscape setting and surface features: gently sloping areas often near wetlands and in drainage swales, with surface stones and boulders.

Natural soil drainage class: somewhat poorly drained.

Parent material: basal till.

Hydrologic soil group: C.

Saturated Hydraulic Conductivity (ksat):

0.6 to 2.0 in/hr in B horizon;

0.06 to 0.6 in/hr in the C horizon.

Typical Description: test pit JN12 is an example of Colonel soils.

3-0" Leaf litter.

0-4" Dark reddish brown (5YR 3/3) stony fine sandy loam, granular, friable.

4-11" Brown (7.5YR 4/4) stony fine sandy loam, blocky, friable.

11-20" Brown (7.5YR 4/4) stony sandy loam, massive, friable, common & distinct redox.

20-52" Brown (10YR 4/3) cobble loamy sand, platy, firm, common & distinct redox.

Inclusions: test pit MC5 is an inclusion of Pillsbury soils within the Colonel map unit. Inclusions of Skerry soils are typical. Test pits JN30 and MC58 are examples with friable lower layers. Test pit MC57 found an unnamed somewhat poorly drained soil variant. Total dissimilar inclusions are about 20%.

Other features of this soil: Colonel was chosen as the best fit to describe the somewhat poorly drained soils with loamy sand texture dense basal till. The typical description of Colonel has a fine sandy loam dense basal till layer. Colonel is of moderate extent in the project area.

**Pondicherry (992)**

Landscape setting and surface features: wet depressions in the landscape with pit and mound topography due to frequent tree throw resulting from poor rooting depth.

Natural soil drainage class: very poorly drained.

Parent material: organic soils over outwash sands.

Hydrologic soil group: D

Saturated Hydraulic Conductivity (ksat):

There is no B horizon in this soil.

6.0 to 20.0 in/hr in the C horizon.

Typical Description: test pit JN50 is an example of Pondicherry soils.

0-22" Olive gray (5Y 5/2) muck, granular, friable.

22-29" Gray (5Y 5/1 & 5Y 6/1) gravelly sand to coarse sand, massive, friable.

Observation discontinued.

Inclusions: inclusions of Searsport soils are described in test pit JN6. Total dissimilar inclusions are about 15%.

Other features of this soil: these wetland soils have low bearing strength and pockets of shallow open water. Pondicherry soils are of limited extent in the project area.

#### Limitations

Excavator access was limited by dense vegetation, steep slopes, and surface boulders. Most excavator-dug test pits were close to the existing roads and trails because of this.

In some cases, the target depth of 60 inches could not be reached because of boulders, even with the excavator. In many cases hand dug observations could not reach the target depth of 40 inches because of stones and boulders.

The 'very stony' modifier was used in many of the map units, which means about 3 to 27 feet between surface stones and boulders. There are many areas that classify as extremely stony surfaces, with about 3 to 17 feet between surface stones and boulders. Other areas lack surface stones. Considering use and management and to simplify the map, these differences were not mapped as separate soil map units and are considered non-limiting inclusions.

Existing roads and trails are treated as inclusions within the soil map units. Some roads and trails are not shown on the base map.

Soil boundaries are determined by observing the changes in topography, vegetation, and appearance of the surface. Of these, topography is relied on most heavily. In some areas the topography is not current on the base map due to active working of the site or dense vegetation obscuring the surface. The site has been worked by people for many years, so the tree line is not an accurate substitute for the edge of disturbance. These factors lessen the accuracy of soil map unit boundary line placement.

Soil boundaries are depicted as distinct lines between different soil types, but soils may meet at diffuse transition zones. The soil map is a simplified two dimensional representation of a complex three dimensional natural system.

The wetlands were flagged by Barry H. Keith, Certified Wetland Scientist. In most of the soil map area, the wetlands were flagged prior to the soil mapping and the wetland flag locations were plotted and used as part of the ground control in the preparation of this map. The wetland flag lines were used as soil map boundaries for the poorly and very poorly drained soil types in many areas.

A slope class is assigned to each soil map unit. Each slope class has a slope range. Small areas of slopes outside that range are allowed in the map units as inclusions. Less steep slopes are non-limiting inclusions and more steep slopes are limiting inclusions.

#### Soil Taxonomy

Soil taxonomy is the complex multi-level classification system developed over more than a century to identify and distinguish between soils around the world. The definitive reference is *Soil Taxonomy A Basic System of Soil Classification for Making and Interpreting Soil Surveys, 1999* from which the following two excerpts were taken.

*The primary objective of soil taxonomy is to establish hierarchies of classes that permit us to understand, as fully as possible, the relationship among soils and between soils and the factors responsible for their character. A second objective is to provide a means of communication for the discipline of soil science. Soil taxonomy was originally developed to serve the purposes of soil survey. During the last few decades, it has evolved into a means of communication in soil science...*

*Soil surveys require many non-taxonomic classifications that can be related to the real bodies of soil and that facilitate comparisons of both similarities and differences among them for a great variety of purposes...*

For this Site Specific Soil Map, the author of this report has made the judgement that physically similar soils with taxonomic differences should be mapped as one for this land-use.

#### Summary

The natural soils on this site are primarily dense basal till. The upper horizons are commonly fine sandy loam and the lower horizons are commonly loamy sand. Drainage of excess precipitation is slowed by the presence of dense basal till in the lower layers of most of the soils. Excess water collects in low lying areas where wetland soils have formed.

The rolling landscape and large elevation difference from one end of the project site to the other explain some of the different soils mapped. Other differences in the soils can be attributed to different geologic parent material and landscape position.

Much of the project area has been heavily manipulated by human activity. Soil and rock has been removed for construction material and/or stockpiled for future use. The project area has been logged and some areas cleared. Roads, trails, and structures have been built.

### Certification

This report and soil map are within the technical standards of the National Cooperative Soil Survey. The report and soil map are a special purpose product intended for development planning and engineering interpretations. They were produced by professional soil scientists, and are not products of the USDA Natural Resources Conservation Service. There is a map which accompanies this report.

The Site Specific Soil Map and this report conform to the standards of SSSNNE publication No. 3, as amended, "Site Specific Soil Mapping Standards for New Hampshire and Vermont." This map and report have been prepared to comply with soil mapping requirements of RSA 485 A:17 and NHDES Env-Wq 1500, Alteration of Terrain.



Example of Bouldery Surface  
Granite State Landfill



Test Pit JN4  
Granite State Landfill  
Becket soil  
15 September 2021



Tst Pit JN6  
Granite State Landfill  
Searsport soil  
16 September 2021



Granite State Landfill

16 May 2022

Surface boulder left behind by the glaciers.

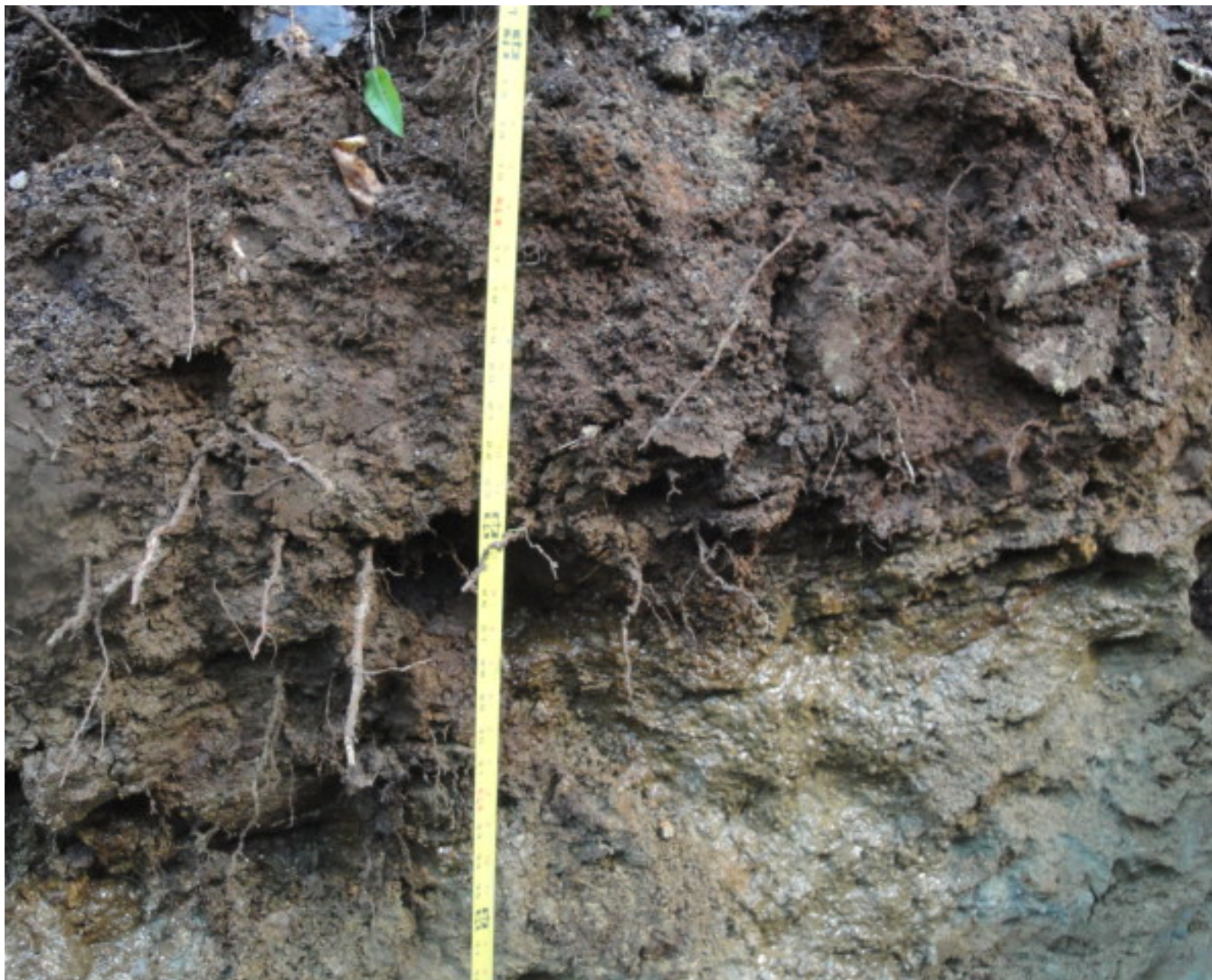
The soil auger (in front for scale) is about 42" tall



Test Pit JN20  
Granite State Landfill  
Skerry soil  
16 September 2021



Test pit JN 57  
Granite State Landfill  
Colonel very stony  
16 May 2022



Test pit JN59  
Granite State Landfill  
Colonel Soil  
16 May 2022





**Granite State Landfill**

Typical area of Udorthents, loamy (map unit 500) created by excavation to the underlying parent material.



# Site Specific Soil Map Legend, Granite State Landfill, Bethlehem and Dalton, NH

<b>Map unit</b>	<b>NRCS soil name</b>	<b>Drainage Class</b>	<b>Parent Material</b>	<b>Restrictive Layer</b>	<b>HSG</b>
57	Becket very stony	Well drained	Basal till	Yes	C
59	Waumbek very stony	Moderately well	Loose till	No	B
76	Marlow	Well drained	Basal till	Yes	C
99	Tunbridge very stony	Well drained	Loose till over bedrock	No	C
143	Monadnock very stony	Well drained	Loose till	No	B
169	Sunapee, very stony	Moderately well	Loose till	No	B
247	Lyme, very stony	Poorly drained	Loose till	No	C
299	Udorthents, cuts and fills	Not determined	Regraded glacial till	Variable	C
495	Ossipee	Very poorly	Organic over till	No	D
500	Udorthents, loamy	Well to somewhat poorly drained	Loamy glacial till	Variable	C
549	Peacham very stony	Very poorly	Basal till	Yes	D
550	Udorthents, bedrock less than 60"	Well to somewhat poorly drained	Excavated glacial till	Variable	C
559	Skerry very stony	Moderately well	Basal till	Yes	C
647	Pillsbury very stony	Poorly drained	Basal till	Yes	C
894	Meadowsedge	Very poorly	Deep organic	No	D
935	Moosilauke	Somewhat poorly drained	Glacial outwash	No	C
947	Colonel very stony	Somewhat poorly drained	Basal till	Yes	C
992	Pondicherry	Very poorly	Organic over sands	No	D
The letter attached at the end of the soil map unit label represents the average slope					
<b>Slope Legend</b>					
A	0-3%				
B	3-8%				
C	8-15%				
D	15-25%				
E	25% or more				

This map is within the technical standards of the National Cooperative Soil Survey.

It is a special purpose product intended for development planning and engineering interpretations.

It was produced by a professional soil scientist, and is not a product of the USDA Natural Resources Conservation Service.

There is a report that accompanies this map.

This detailed Site Specific Soil Map conforms to the standards of SSSNNE publication No. 3, as amended, "Site Specific Soil Mapping Standards for NH and VT."

This map has been prepared to comply with soil mapping requirements of RSA 485 A:17 and NHDES Env-Wq 1500, Alteration of Terrain.

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Test Pit Data

Granite State Landfill  
Dalton and Bethlehem, NH

prepared for:

CMA Engineers, Inc  
1 Sundial Avenue, suite 510N  
Manchester, NH 03103

30 August 2022

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 1 9/15/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
E	0-1	7.5YR 5/1	—	ST FSL	GR	FR	
Bs	1-10	7.5YR 4/6	—	ST FSL	BKY	FR	
Bw	10-24	10YR 4/6	—	GLS	MA	FR	
Cd	24-57	10YR 5/3	CF REDOX IN TOP OF Cd	LS	PLY	Fi	Pockets Friable upon removal

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: 24"  
 Depth To Restrictive Horizon: 24"  
 Depth To Bedrock: NONE TO 57"  
 Soil Series: BECKET

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 2 9/15/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-1	7.5YR 5/1	—	ST SL	GR	FR	
Bhs	1-9	5YR 3/4	—	ST SL	BKY	FR	
Bs	9-15	7.5YR 5/4	—	ST SL	BKY	FR	
BC	15-22	10YR 5/4	—	GS	MA	FR	
—	22	APPARENT BOULDER					

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: \_\_\_\_\_  
 Depth To Restrictive Horizon: \_\_\_\_\_  
 Depth To Bedrock: 22 - STOPPED / BOULDER.  
 Soil Series: BECKET

SOIL TEST PIT DESCRIPTION TEST PIT # JN #3 9/15/21 IN OLD LOGGING ROAD - GROWN-OVER  
 (DOWN FROM TP2)

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
B <sub>2</sub>	0-15	7.5YR 3/4		ST fsl	BKY	FR	
Cd	15-53	10YR 5/2		G LS	PLY	FI	SHALLOW PAN

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: \_\_\_\_\_

Depth To Restrictive Horizon: 15"

Depth To Bedrock: NONE TO 53"

Soil Series: BECKET (SURFACE DISTURBED to create shallow pan old logging rd.)

SOIL TEST PIT DESCRIPTION TEST PIT # JN #4 9/15/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
E	0-3	7.5YR 4/2		G SL	BKY	FR	
B <sub>2</sub>	3-13	7.5YR 4/6		G SL	BKY	FR	
Bw	13-20	10YR 5/4		G IS	MA	FR	
Cd	20-58	10YR 6/3	C:D 10YR 5/6	G IS	PLY	FI	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: 20"

Depth To Restrictive Horizon: 20"

Depth To Bedrock: NONE TO 58"

Soil Series: BECKET - shallow Cd

SOIL TEST PIT DESCRIPTION TEST PIT # JN #5 9/15/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						BOULDERY / STONY
Bhs	0-16	7.5YR 4/6	—	ST SL	BKY	FR	1-2" DISCON TINNOS E
Bs	16-23	10YR 3/6	2.5Y 5/3 Low chroma	ST LS	MA	FR	
Cd	23-54	2.5Y 4/2	CD Low & High Chroma	GLS	PLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: 16"  
 Depth To Restrictive Horizon: 23"  
 Depth To Bedrock: None to 54"  
 Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN #6 9/15/21 PHOTO

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oa	0-8	5Y 2.5/1		SAPRIC	GR	FR	
Cg	8-24	5Y 5/1	CF - REDUCED MATRIX	GS	MA	FR	

Depth to Observed Groundwater (inches): Weeping: 24" Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: 0" (AT SURFACE)  
 Depth To Restrictive Horizon: NONE TO 24"  
 Depth To Bedrock: NONE TO 24"  
 Soil Series: SEARSPORT

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 7 9/15/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-5	10YR 5/2	—	ST LS	BKY	FR	1" SY 3/2 BHS DISCONTINUOUS
Bs1	5-13	7.5YR 4/6	—	ST SL	BKY	FR	
Bs2	13-25	10YR 3/6	—	ST SL	MA	FR	
Cd	25-53	10YR 5/3 10YR 5/2	CF FD IN TOP OF CD	LS	PLY	Fi	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: 25"  
 Depth To Restrictive Horizon: 25"  
 Depth To Bedrock: NONE TO 53"  
 Soil Series: BECKET

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 8 9/15/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
E	0-7	7.5YR 5/1	CF FAINT 7.5YR 5/2	ST LS	MA	FR	TONGUE E - VERY WAVY BOUNDARY
Bw	7-15	2.5Y 5/2	CD 5Y 5/2	ST SL	BKY	FR	DISCONTIN. BHS
Bs	15-24	7.5YR 5/6	CD	ST SL	BKY	FR	
Cd	24-55	5Y 5/3	CD	CL	PLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: 0" AT SURFACE  
 Depth To Restrictive Horizon: 24"  
 Depth To Bedrock: NONE TO 55"  
 Soil Series: FILLS BURY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 9

9/15/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-2	7.5YR 5/1	—	ST LFS	GR	FR	
Bhs	2-6	7.5YR 3/4	—	ST SL	BKY	FR	
Bs	6-16	7.5YR 5/4	—	ST SL	BKY	FR	
BC	16-25	10YR 6/4	—	G LS	MA	FR	
Cd	25-60	10YR 6/3	—	LS	PLY	FIP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth to Seasonal High Water Table: NONE TO 60"  
 Depth to Restrictive Horizon: 25"  
 Depth to Bedrock: NONE TO 60"  
 Soil Series: BECKET

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 10

9/15/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
E	0-4	5Y 6/1	CD high chroma	ST LFS	GR	FR	
Bhs	4-16	5YR 4/6	CD/F high chroma	ST SL	BKY	FR	
Bs	16-20	7.5YR 4/6	FEW LOW CHROMA	G SI	MA	WEAKLY CEMENTED	
Cd	20-38	2.5Y 5/3	CD HIGH CHROMA	G LS	FIP	PLY	
	38	STOPPED ON BOULDER					

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth to Seasonal High Water Table: 0" AT SURFACE  
 Depth to Restrictive Horizon: 20"  
 Depth to Bedrock: NONE TO 38"  
 Soil Series: Pillsbury-like (AQUOD)



SOIL TEST PIT DESCRIPTION TEST PIT # JN # 11 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	2-0						
A	0-5	7.5YR 2.5/3	—	ST SL	GR	FR	
Bhs	5-16	7.5YR 3/4	—	ST FSL	BKY	FR	
Cd	16-56	2.5Y 4/3	CP 7.5YR 4/6	GLS	MA	Fi	PLATY POCKETS

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: 16

Depth To Restrictive Horizon: 16"

Depth To Bedrock: NONE TO 56"

Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 12 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
A	0-4	5YR 3/3	—	ST FSL	GR	FR	
Bhs	4-11	7.5YR 4/4	—	ST FSL	BKY	FR	
Bs	11-20	7.5YR 4/4	GD HIGH CHROMA E LOW CHROMA	ST SL	MA	FR	
Cd	20-52	10YR 4/3	CD HIGH CHROMA	Cobbly LS	PLY	Fi	
	STOPPED ON Boulder						

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: 11"

Depth To Restrictive Horizon: 20"

Depth To Bedrock: NONE TO 52"

Soil Series: Colone

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 13 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-3	7.5YR 5/1	—	ST SL	GR	FR	
B <sub>h</sub> s	3-7	5YR 3/4	—	ST SL	GR	FR	
B <sub>s</sub>	7-23	7.5YR 4/6	—	ST LS	MA	FR	
BC	23-29	7.5YR 4/4	—	GS	MA	FR	Weakly cemented
Cd	29-52	10YR 4/3	CF, FD REDOX	GIS TO GS	MA TO PLY	FI	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: 29"  
 Depth To Restrictive Horizon: 29"  
 Depth To Bedrock: NONE TO 52"  
 Soil Series: BECKET

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 14 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	2-0						
A	0-4	7.5YR 2.5/2	—	FSL	GR	FR	
B <sub>s</sub>	4-19	7.5YR 4/6	—	FSL	BKY	FR	
BC	19-25	7.5YR 5/3	—	S	MA	LO	
C	25-54	10YR 5/3	CF, FD REDOX	S	MA	LO	
	54	LARGE Boulder					

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: 25"  
 Depth To Restrictive Horizon: NONE TO 54"  
 Depth To Bedrock: NONE TO 54"  
 Soil Series: WAWMBEK-like inclusion in SKERRY UNIT.

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 15 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oa	0-11	5Y 2.5/2	—	SAPRIC ORGANIC	GR	FR	
Cg1	11-41	5Y 5/1	CF	VFS/VFS1	MA	FR	
Cg2	41-44	5Y 5/1	CF-	VFSL	MA	FI	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: 31

Depth To Seasonal High Water Table: 0" AT SURFACE

Depth To Restrictive Horizon: 41

Depth To Bedrock: None to 44

Soil Series: Peacham (Clayey Pit)

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 16 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
A	0-6	7.5YR 4/2	7.5YR 5/6 CD - Concent.	SI	GR	FR	
Bw	6-20	2.5Y 4/3	5Y 5/2 CD - DEPLE	IS	MA	FR	
Cd	20-37	2.5Y 5/2	CD - High Ch Concentrations	IS	MA	FI	
2C	37-48	7.5YR 4/6	NOT NOTED H2O mivnd	GS	MA	FR	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: 39"

Depth To Seasonal High Water Table: 0" AT SURFACE

Depth To Restrictive Horizon: 20"

Depth To Bedrock: None to 48

Soil Series: LYME - like

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 17 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-3	7.5YR 4/1	—	ST FSL	GR	FR	
Bhs	3-11	7.5YR 4/4	—	ST FSL	BKY	FR	
Bg	11-23	10YR 4/4	—	ST SL	BKY	FR	
BC	23-28	2.5Y 4/4	CD Concent.	COBBLY IS	MA	FR	
Cd	28-44	2.5Y 4/2	CD CONCENT. & DEPLETIONS	COBBLY IS	MA TO PLY	FI	
	STOPPED BOULDER						

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth to Seasonal High Water Table: 23"

Depth to Restrictive Horizon: 28"

Depth to Bedrock: NONE TO 44"

Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 18 9/16/21 PHOTO TAKEN

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						THIN DISCONTINUES
Bs1	0-6	7.5YR 3/4	—	FSL	BKY	FR	
Bs2	6-18	7.5YR 4/6	—	FSL	BKY	FR	
BC	18-21	10YR 3/6	CD-REDOX high & low	GS	MA	VFR	
Cd	21-54	2.5Y 5/3	CD Redox	GLSTO GS	MA TO PLY	FI	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth to Seasonal High Water Table: 18"

Depth to Restrictive Horizon: 21"

Depth to Bedrock: NONE TO 54"

Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 19 9/16/21 PHOTO

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	2-0						
E	0-1	7.5YR 5/1	—	FSL	MA	FR	
Bhs	1-5	7.5YR 4/6	—	FSL	BKY	FR	
Bs	5-15	10YR 4/6	—	FSL	BKY	FR	
Cd	15-56	10YR 6/3	CD REDOX CONIC. IN UPPER Cd	GLS TO GS	NA TO PLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth to Seasonal High Water Table: 15"

Depth to Restrictive Horizon: 15"

Depth to Bedrock: NONE TO 56"

Soil Series: SKERP

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 20 9/16/21 PHOTO

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-3	7.5YR 5/1	—	ST FSL	BKY	FR	
Bhs	3-6	5YR 3/4	—	ST FSL	BKY	FR	
Bs	6-18	7.5YR 4/4	—	COBBLY SL	MA	FR	
Cd	18-55	2.5Y 4/3	CF & CD	GLS	PLY	FP	SANDY LENSES IN PAN

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth to Seasonal High Water Table: 18"

Depth to Restrictive Horizon: 18"

Depth to Bedrock: NONE TO 55"

Soil Series: SKERP

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 21 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-3	7.5YR 4/2	—	ST FSL	BKY	FR	
Bhs	3-7	5YR 3/4	—	ST FSL	BKY	FR	
Bs	7-18	7.5YR 4/6	—	ST FSL	BKY	FR	
Bc	18-22	7.5YR 5/4	CD REDOX DEPLETIONS	ST SL	MA	FR.	5/2 depletions
Cd	22-60	10YR 4/2	CF REDOX	LS	PLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: 18"

Depth To Restrictive Horizon: 18"

Depth To Bedrock: NONE TO 60"

Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 22 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	2-0						
Bhs	0-15	7.5YR 3/4	—	ST FSL	BKY	FR	
Bs	15-20	7.5YR 4/6	—	ST FSL	BKY	FR	
Bc	20-26	10YR 5/4	CD redox DEPLETIONS.	GLS	MA	FR	
Cd	26-69	2.5Y 5/2	CD redox CONC. ON TOP CD	LS	PLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: 20"

Depth To Restrictive Horizon: 26"

Depth To Bedrock: NONE TO 69"

Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 23 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
E	0-2	7.5YR 5/2	—	ST FSL	BKY	FR	
Bhs	2-5	5YR 3/3	—	ST FSL	BKY	FR	
Bs	5-17	7.5YR 3/4	—	ST FSL	BKY	FR	
Bc	17-36	2.5Y 5/3	CD redox	ST SL	MA	FR	
Cd	36-48	10YR 5/3	CD redox ↑ chroma	GLS	PLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: 17"

Depth To Restrictive Horizon: 36"

Depth To Bedrock: NONE TO 48

Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 24 9/16/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
E	0-2	7.5YR 5/1	—	ST FSL	BKY	FR	
Bhs	2-8	5YR 3/4	—	ST FSL	BKY	FR	
Bs	8-20	7.5YR 4/4	—	ST FSL	MA	FR	
Cd	20-60	10YR 5/3	CD redox 10YR 5/1 & 6/1	GLS TO GS	PLY	FP	
					(MA-AREAS)		

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: 20"

Depth To Restrictive Horizon: 28"

Depth To Bedrock: NONE TO 60"

Soil Series: SKERRY (BORDER LINE - BUCKET - shallow pan)

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 25 9/16/24

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
A	0-5	5YR 2.5/2	—	ST FSL	GR	FR	
Bs	5-16	7.5YR 4/6	—	ST FSL	BKY	FR	
Bc	16-26	10YR 5/4	—	ST FSL	BKY	FR	
Cd	26-54	10YR 5/3	C-D redox concentration	CLS	MA TO PLY	FI	ON Boulder

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth to Seasonal High Water Table: 26"

Depth to Restrictive Horizon: 26"

Depth to Bedrock: NONE TO 54"

Soil Series: BECKET

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 26 9/16/24

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
E	0-2	7.5YR 5/1	—	ST FSL	BKY	FR	
Bs	2-16	7.5YR 4/6	—	ST FSL	BKY	FR	
Bc	16-22	10YR 5/4	C-D redox depletions.	ST SL	MA	FR	
Cd	22-44	2.5Y 4/2	C-D redox Concent	CLS	PLY	FI	
	Boulder						

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth to Seasonal High Water Table: 16"

Depth to Restrictive Horizon: 22"

Depth to Bedrock: NONE TO 44"

Soil Series: SKERRY



SOIL TEST PIT DESCRIPTION TEST PIT # JN # 27 9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
E	0-3	7.5YR 4/1	—	ST fsl	GR	FR	
Bhs	3-0	5YR 4/6	—	SC fsl	BKY	FR	
Bs	8-19	7.5YR 4/6	—	ST fsl	BKY	FR	
BC	19-28	10YR 4/6	CF CONCEN. ED DEPL.	GLS	MA	FR	
Cd	28-60	2.5Y 5/3 2.5Y 5/2	CD CONCEN	GLS TO GS	DLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth to Seasonal High Water table: 19"  
 Depth to Restrictive Horizon: 28"  
 Depth to Bedrock: None to 60"  
 Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 28 9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	0-3	5Y 2.5/1	—	HEMIC			
Oae	3-9	"	—	SAPRIC			
Cg1	9-15	5Y 4/2	EP CONCEN	IS	MA	FR	FIRM in place
Cg2	15-38	5Y 4/2 & 3/3	CF DEPL.	IS TO S	MA	FR	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: 28"  
 Depth to Seasonal High Water table: 0"  
 Depth to Restrictive Horizon: 19"  
 Depth to Bedrock: None to 38"  
 Soil Series: VPD Peacham - ESTIMATED

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 29 9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
O <sub>a</sub>	4-0	BLACK	—	SAPRIC			
E	0-3	7.5YR 4/2	—	ST FSL	GR	FR	
B <sub>hs</sub>	4-17	7.5YR 4/6	—	ST FSL	BKY	FR	
BC	17-27	10YR 4/4	CD DEPL.	LS	MA	FR	
C	27-52	2.5Y 4/3	CD CON C. CD DEP 10YR 5/6 10YR 5/2	LS	PLY	FI <sup>p</sup>	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: 17"

Depth To Restrictive Horizon: 27"

Depth To Bedrock: NONE TO 52"

Soil Series: SKEARV

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 30 9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
O <sub>e</sub>	5-0						
E	0-3	5Y 5/1	—	ST SL	GR	FR	
B <sub>hs</sub>	3-10	5Y 3/4	—	ST SL	BKY	FR	
B <sub>s</sub>	10-28	7.5YR 4/6	CD	SI	BKY	FR	
C <sub>d</sub>	20-34	5Y 5/2	CD	IS	MA TO PLY	FI <sup>p</sup>	
2C	34-57	5Y 5/2	CD	S	MA	FR	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: 53"

Depth To Seasonal High Water Table: 10"

Depth To Restrictive Horizon: 28"

Depth To Bedrock: NONE 57"

Soil Series: Coloned

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 31 9/17/21 PHOTO

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-2	10YR 4/1	—	ST LFS	MA	FR	
B <sub>h1</sub>	2-5	7.5YR 4/6	—	ST ESL	BKY	FR	
B <sub>h2</sub>	5-16	7.5YR 4/4	—	ST FSL	BKY	FR	
BC	16-26	10YR 5/3	CO CONC 7.5YR 5/6	IS	MA	FR	
CA	26-60	10YR 5/2	10YR 5/4 10YR 5/1	IS	PLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: 16"  
 Depth To Restrictive Horizon: 26"  
 Depth To Bedrock: None to 60"  
 Soil Series: SKERY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 32 9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
A	0-3	10YR 3/2	—	ST FSL	GR	FR	
B <sub>h1</sub>	3-6	5YR 4/6	—	ST FSL	BKY	FR	
B <sub>s</sub>	6-25	7.5YR 4/6	—	ST SL	BKY	FR	
BC	25-31	7.5YR 4/4	CO DEPL. & CONC 5/6 & 5/2	IS	MA	FR	
CA	31-62	10YR 4/2	TOP OF PAN 5/6	IS	PLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: 25"  
 Depth To Restrictive Horizon: 31"  
 Depth To Bedrock: None to 62"  
 Soil Series: SKERY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 33

9/17/21

PHOTO

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0	—	—				
A	0-3	7.5YR 7/2	—	ST FSL	GR	FR	
E	3-6	7.5YR 5/1	—	"	GR	FR	
Bhs	6-10	5YR 4/6	—	"	BKY	FR	
Bs	10-19	7.5YR 4/6	—	ST SL	BXY	FR	
Bc	19-22	10YR 5/3	CD CON. 5/6	GSL	MA	FR	
C	22-63	10YR 6/3	CD CON. TOP OF PAN	LS TO S	MA TO PLY	FP	COARSE PLATES W SANDY LENSES

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth to Seasonal High Water Table: 19"

Depth to Restrictive Horizon: 22"

Depth to Bedrock: None to 63"

Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 34

9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	2-0	—	—				
A	0-2	7.5YR 2.5/2	—	ST SL	GR	FR	DISCONTIN. E
Bhs	2-12	7.5YR 4/6	—	ST SL	BKY	FR	
Cd	12-64	2.5Y 4/2	CD CONCENT. 7.5YR 5/4	GLS TO GS	PLY	FI	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth to Seasonal High Water Table: 12"

Depth to Restrictive Horizon: 12"

Depth to Bedrock: None to 64"

Soil Series: Colonel (due to shallow pan)

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 35 9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
E	0-2	7.5YR 5/2	—	ST FSL	BKY	FR	
Bhs	2-8	7.5YR 4/6	—	ST FSL	BKY	FR	
Bs	8-20	7.5YR 4/4	—	ST FSL	BKY	FR	
BC	20-23	10YR 5/4	CD DEPLETIONS	SFSL	MA	FR	
Ca	23-54	2.5Y 5/3	CD CONCENTRATED	GLS TO GS	PLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: 20"

Depth To Restrictive Horizon: 23"

Depth To Bedrock: NONE TO 54"

Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 36 9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-3	10YR 5/2	—	ST FSL	GR	FR	
Bhs	3-8	5YR 4/6	—	ST FSL	BKY	FR	
Bs	8-18	7.5YR 4/4	—	ST FSL	BKY	FR	
BC	18-24	10YR 5/4	CD-CONCENT and depletions.	SL	MA	FR	
Ca	24-62	2.5Y 5/3	CD-CONCENT.	GLS TO GS	PLY	FP	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth To Seasonal High Water Table: 18"

Depth To Restrictive Horizon: 24"

Depth To Bedrock: NONE TO 62"

Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 37 9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
Bhs	0-6	5YR 4/6	—	ST SL	BKY	FR	
Bs	6-18	7.5YR 4/6	—	ST SL	BKY	FR	
BC	18-24	10YR 5/4	CD CONCENT DEPLETIONS	ST SL	MA	FR	
CA	24-41	2.5Y 5/3	CD CONC. & DEPL.	GLS TO GS	PLY	F <sub>1</sub>	
2C	41-51	2.5Y 5/2	CF CONCENT	GCOS	MA	FR	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth to Seasonal High Water table: 18"  
 Depth to Restrictive Horizon: 24"  
 Depth to Bedrock: NONE TO 51"  
 Soil Series: SKERRY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 38 9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	2-0		CP CONCENTRATION				
A	0-8	5Y 3/2	CP CONCENTRA.	ST IFS	GR	FR	
Cg1	8-16	5Y 5/2	CF DEPLETIONS	ST IFS	MA	FR	
Cg2	16-30	5Y 4/3		GLS	MA	FR	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: 20"  
 Depth to Seasonal High Water table: 0" AT SURFACE  
 Depth to Restrictive Horizon: \_\_\_\_\_  
 Depth to Bedrock: Plusbury - Estimated. also Lymec-like  
 Soil Series: Plusbury - Estimated.

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 39 9/17/21

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	1-0						
A	0-10	7.5YR 2.5/3	7.5YR 5/6 CD	ST LFS	GR	FR	
Cg1	10-18	5Y 5/1	CF 5/2	ST LFS	MA	FR	
Cg2	18-26	5Y 4/1	CO 9/4	1VFS	MA	FR	
2C	26-40	5Y 4/2	10YR 4/6 CP	1S	MA	FR	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_  
 Depth to Seasonal High Water table: 0" AT SURFACE Standing: 32"  
 Depth to Restrictive Horizon: NONE  
 Depth to Bedrock: NONE TO 40  
 Soil Series: PD - Pillsbury

ONE END OF PIT HAD SPODIC MORPHOLOGY - AQUOD - w/ Bh horizon

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 40 10/7/21 HAND DUG - SHOVEL & AUGER

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	1-0						
A	0-6	5Y 2.5/1	MASKED	ST FSL	GR	FR	
Bg	6-12	5Y 5/2	CD CONCENT. & DEPLETION	ST FSL	BKY	FR	
Bw	12-22	5Y 4/3	CD CONCENT. & DEPLETION	ST FSL	BKY	FR	
Cd	22-28	2.5Y 4/2	"	1S	MA	Fi	EXCAVATED TO WHAT APPEARED TO BE TOP OF Cd LAYER.
	L.O.E						

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_  
 Depth to Seasonal High Water table: 0" (AT SURFACE) Standing: \_\_\_\_\_  
 Depth to Restrictive Horizon: 22"  
 Depth to Bedrock: NONE TO 20  
 Soil Series: PILLSBURY

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 41 10/7/21 HAND DUG SHOVEL & AUGER

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-3	10YR 4/1	—	ST FSL	GR		
Bhs	3-5	5YR 3/4	—	ST FSL	GR		
Bs1	5-12	7.5YR 4/6	—	ST FSL	BKY		
Bs2	12-20	7.5YR 4/4	CD DEPLETIONS	ST SL	MA		
							DID NOT REACH ASSUME CD LATER

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth to Seasonal High Water Table: 12  
 Depth to Restrictive Horizon: None to 20"  
 Depth to Bedrock: None to 20"  
 Soil Series: Coland

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 42 10/7/21 HAND DUG - AUGER

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	0-21	5Y 2.5/2		hemie material	GR	FR	PRIMARYLY HEMIC SOME SAPRIC ZONES
Cg	21-30	5Y 5/1	REDUCED MATRIX	1VFS TO VFS1	MA	FR	

Depth to Observed Groundwater (inches): Weeping: @ SURFACE Standing: 20"  
 Depth to Seasonal High Water Table: 0" AT SURFACE  
 Depth to Restrictive Horizon: NONE TO 30"  
 Depth to Bedrock: NONE TO 30"  
 Soil Series: OSSIPEE



SOIL TEST PIT DESCRIPTION TEST PIT # IN # 43 10/7/21 HAND TOOLS SHOVEL & AUGER 20' N OF T 326 WET FLAG

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	1-0						
A	0-4	10YR 2/1	—	ST FSL	GR	FO	V. STONY SURFACE
E	4-6	10YR 4/1	—	ST FSL	GR	FO	
Bms	6-9	7.5YR 3/3	—	ST FSL	BKY	FO	
Bs	9-20	7.5YR 4/6	CD DEPL. & CONC. 5YR 4/6 2.5Y 4/3	ST FSL	BKY	FR	DID NOT GET TO "C" ASSUME Cd

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_

Depth to Seasonal High Water Table: 9"

Depth to Restrictive Horizon: NONE TO 20"

Depth to Bedrock: NONE TO 20"

Soil Series: Coloel

SOIL TEST PIT DESCRIPTION TEST PIT # IN # 44 10/7/21 HAND TOOLS SHOVEL & AUGER ~ 30' W of Wet Flag U3

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oi	1-0						
A	0-5	5Y 3/2	CP 7.5YR 4/6	FSL	GR	FR	
Bg	5-12	5Y 4/2	CD 5Y 4/1 CP 10YR 4/6	FSL	BKY		
Bw	12-18	2.5Y 5/3	CD Dep. 5Y 5/2	F to VFS1	MA		
BC	18-32	5Y 4/2	CP 7.5YR 4/6	"	MA		Fi - replace
C	32-40	5Y 5/1	CP 7.5YR 4/6	1 VFS	MA	↓	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_ ( ? )

Depth to Seasonal High Water Table: 0" (AT SURFACE)

Depth to Restrictive Horizon: NONE TO 40"

Depth to Bedrock: NONE TO 40"

Soil Series: LXME

TO 40'!

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 45 BACK HOE EXCAVATED 10/8/21 (RE-DUG A HAND EXCAVATED PIT DUG THE DAY BEFORE) NOTE

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	2-0			(NOT STONY)			
A	0-3	10YR 2/1	—	FSL	GR	FR	ALSO THIN DISCONT. E
Bhs	3-5	7.5YR 3/4	—	FSL	GR	FR	
Bs	5-8	10YR 4/6	—	FSL	BKY	FR	
Bw	8-27	10YR 5/4	—	FSL	BKY	FR	
C	34-60	5Y 4/2	CD REDOX. CONCEN.	fs to vfs	MA	FR	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth to Seasonal High Water table: 34"  
 Depth to Restrictive Horizon: NONE TO 60"  
 Depth to Bedrock: NONE TO 60"  
 Soil Series: SUNAPEE

SOIL TEST PIT DESCRIPTION TEST PIT # JN # 46 10/7/21 HAND EXCAVATED (SHOVEL & AUGER) DUG - FOR DRAINAGE CLASS DOC.

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oi	3-0			SPHAG.			
A	0-6	2.5Y 2.5/1	CP FINE 7.5YR 5/6	Bouldery FSL	GR	FR	
Bg	6-12	2.5Y 4/1	CF 2.5Y 4/1	ST FSL	MA	FR	
	STOPPED ON STONE						

Depth to Observed Groundwater (inches): Weeping: AT 12" Standing: \_\_\_\_\_  
 Depth to Seasonal High Water table: 0" (AT SURFACE)  
 Depth to Restrictive Horizon: NONE TO 12"  
 Depth to Bedrock: NONE TO 12.11"  
 Soil Series: PILLSBURY - ESTIMATED

SOIL TEST PIT DESCRIPTION TEST PIT # JN# 47 10/8/21 HAND EXCAVATED SHOVEL & AUGER

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	3-0						
E	0-4	10YR 5/1		ST FSL	GR	FR	
Bhs	4-6	5YR 4/6		ST FSL	GR	FR	
Bs	6-22	7.5YR 5/6		ST FSL	BKY	FR	
Bc	22-26	2.5Y 4/4		s ST S1	MA	FR	
Cd	26-30	2.5Y 5/3	CD-concentration	ls	PLY	FI	

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: 26"  
 Depth To Restrictive Horizon: 26"  
 Depth To Bedrock: None to 30"  
 Soil Series: BECKET

SOIL TEST PIT DESCRIPTION TEST PIT # JN# 48 10/8/21 HAND EXCAVATED SHOVEL & AUGER Photo of Bouldery surface

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
E	0-3	10YR 6/1		ST S1	GR	FR	
Bs1	3-8	7.5YR 4/6		ST S1	GR	FR	
Bs2	8-26	7.5YR 5/6		ST S1	BKY	FR	
Bc	26-29	10YR 5/4		ls	MA	FR	
Cd	29-31	10YR 5/3		ls	MA	FR	JUST ON TOP OF RESTRICTIVE LAYER

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_ Standing: \_\_\_\_\_  
 Depth To Seasonal High Water Table: NONE TO 31"  
 Depth To Restrictive Horizon: 29"  
 Depth To Bedrock: None to 31"  
 Soil Series: BECKET

FOR DRAINAGE CLASS DOCUMENTATION  
 10/8/21 HAND EXCAVATED SHOVEL & AUGER IN FROM WEI FLAG CLADE

SOIL TEST PIT DESCRIPTION TEST PIT # IN # 49

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe	4-0						
A	0-3	2.5Y 2-5/1	NONE DUE TO MASKING	ST FSI	GR	FR	
Bw	3-16	2.5Y 3/2	CF & FD -REDOX	ST LS	BK Y	FR	UNUSUAL COLOR IN SUBSOIL
	STOPPED ON STONE						

Standing: \_\_\_\_\_

Depth to Observed Groundwater (inches): Weeping: \_\_\_\_\_

Depth to Seasonal High Water Table: 0" (AT SURFACE)

Depth to Restrictive Horizon: NONE TO 16"

Depth to Bedrock: NONE TO 29"

Soil Series: PILLSBURY (ESTIMATED)

SOIL TEST PIT DESCRIPTION TEST PIT # IN # 50

SOIL HORIZON	DEPTH (inches)	MATRIX COLOR (moist)	REDOXIMORPHIC FEATURES	SOIL TEXTURE (USDA)	STRUCTURE	CONSISTENCE	OTHER FEATURES
Oe/oa	0-22	5Y 2-5/2	ORGANIC	Hemic/SAPRIC ORGANIC	GR	FR	
Cg	22-29	5Y 5/1 & 5Y 6/1	Reduced MATRIX	GS to COS	MA	FR	

~20" FROM TP #6 ON PERIMETER

10/8/21 HAND EXCAVATED AUGER

Standing: ~24"

Depth to Observed Groundwater (inches): Weeping: ~18"

Depth to Seasonal High Water Table: 0" (AT SURFACE)

Depth to Restrictive Horizon: NONE TO 29"

Depth to Bedrock: NONE TO 29"

Soil Series: CHOCORVA PONDICHERRY