Chapter 10: Subaqueous Soil Survey
  • Standards for mapping and sampling
SUBAQUEOUS SOILS (SAS) DESCRIPTION

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DISCUSSION: Permanently submerged mineral or organic substrates covered by relatively shallow water display recognizable soil morphology and meet Simonson’s soil formation (1959) model in that chemical and physical additions, losses, transformations, and translocations created the morphology. Such soils are informally known as “subaqueous soils.” Kubiena (1953) proposed a comprehensive classification that included subaqueous soils. More recently, Demas (1993, 1998) and Demas et al. (1996) reintroduced subaqueous soil concepts in the U.S. Recent reviews (Stolt and Rabenhorst, 2012; Soil Survey Staff, 2012d) provide comprehensive treatment of subaqueous soil settings and processes. Payne (2010) presents operational methods for subaqueous soil inventory. The 11th edition of Keys to Soil Taxonomy (Soil Survey Staff, 2010) presently recognizes subaqueous soils as suborders of Entisols and Histosols (Wassens and Wassits) that meet the criterion of “a positive water potential at the soil surface for more than 21 hours each day in all years.”

The description of subaqueous soils is similar to that of terrestrial soils but differs in several important ways. Many subaqueous soil parameters (color, texture, RMF, etc.) fit traditional descriptive conventions outlined in this Field Book. The unique setting and morphology of subaqueous soil coupled with its recent scientific importance warrant a separate section that presents all descriptors in one place. This section includes description forms and subaqueous soil description examples. (NOTE: The most prevalent subaqueous settings are coastal marine or brackish estuaries. The descriptive conventions presented here reflect this. Freshwater subaqueous settings may require additional descriptors.)

SUBAQUEOUS SOILS DESCRIPTION—Record subaqueous soil profile information using the following parameters. (NOTE: Field Book soil descriptors presented elsewhere [e.g., horizon] have page number references. Please refer to the cited page for complete choice lists.)

BATHYMETRY

Bathymetry is the measurement of sea- or lake-floor or river bottom relief. Because of nautical importance, bathymetric data are commonly expressed as a depth from the water surface at Mean Lower Water (MLW) tidal datum to the bottom. The water surface reference in a coastal setting is commonly Mean Low Water (MLW) or Mean Tide Level (MTL) (see graphic on p. 2–99). Lack of bathymetric data often requires field collection of such data during
## VIBRACORE LOG SHEET

### SITE

- **Site/Pedon ID (YYYYSTFIPS###)**: 52011R009014A
- **Date/Time Sampled**: 8/16/2011 8:30 AM
- **Soil Type**: Frankensoil
- **Map Unit**: Frankensoil mucky silt loam
- **Location (geographic)**: Ninigret Pond: 1000 m E. of intersection of Route 1 and Route 1A at Ninigret Park, RI
- **Waypoint (#)**: 4
- **GPS (model/unit #)**: Trimble Geo XH
- **Lat.**: 41° 22' 13.0"
- **Lon.**: W 71° 39' 4.0"
- **UTM Easting**: 721720 m
- **UTM Northing**: 4583254 m
- **UTM Zone**: 19
- **Elevation (NAVD 88)**: -1.2 m
- **Water Depth (cm)**: 120 cm
- **Tidal Period**: Outgoing

### CORE LOG

- **a) TOTAL Pipe Length (before coring)**: 390 cm
- **b) RISER Length (after coring)**: 260 cm
- **c) INSIDE Length (sinker length: surface to bottom)**: 264 cm
- **d) Core Settlement (= c - b)**: 4 cm

**Final Core Length (after core completed: = a - c)**: 126 cm

**Where Is Core Stored?**: URI Bay Campus cold storage

**Date Described**: 8/17/2011
Laboratory analysis

• Routine analyses:
  • particle-size,
  • cation exchange capacity,
  • base saturation,
  • organic carbon,
  • pH,
  • calcium carbonate equivalent,
  • salt,
  • bulk density,
  • water retention, and
  • clay mineralogy
Welcome

Welcome to the website for the National Cooperative Soil Survey (NCSS) Soil Characterization Database. This application allows you to generate, print, and download reports containing soil characterization data from the National Soil Survey Center (NSSC) Kellogg Soil Survey Laboratory (KSSL) and cooperating laboratories. The data are stored and maintained by the NSSC-KSSL. Data can be viewed onscreen or downloaded in comma-delimited text files for use in other applications.

If you are a first-time user, please read the Data Usage information before accessing the database.

Sign up for e-mail updates on the NCSS Lab Data Mart

NCSS Soil Characterization Basic Query

Clear All Search Criteria

Site Information

Country
United States (US)

State or Other Administrative Division
Rhode Island (RI)

County
Washington (RI009)

Lab Pedon Number

User Pedon ID

Soil Series

Execute Query
### Primary Characterization Data

**Washington, Rhode Island**

**Sampled as on Sep 16, 2000:** Anguilla, Sandy or sandy-skeletal, mixed, mesic Aeric Hapludolls

**Revised to:**

**SSL:** Project R1201701 University of Rhode Island Data
**Site ID:** R1009-2000-009-NP-P Lat: 41° 22' 7.93" north Long: 71° 38' 35.85" west MLRA: 149B
**Pedon No.:** URI0009NP
**General Methods:** 4B1A, 2A1, 2B

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Sampling issues for coastal and subaqueous soils

- Minimum 3 quarts for characterization
- Sulfides
  - Will oxidize and change pH if exposed to air in shipment
Sampling

- Soil moisture
- Bulk density

Photo by Jaclyn Fiola
Need for partner laboratories

- Refrigerated storage
- Incubation pH
- Soil conductivity