Soils and Site Evaluation Module

General Description

The Soil and Site Evaluation Module will address the use of soil morphology, landscape description and interpretation of data, and non-soil data for on-site wastewater applications. The module will consist of a comprehensive guide beginning with the basics of soil science (definitions, formation, and morphology) to details regarding specific problem areas (water table monitoring, restrictive horizons, mineralogy). Each chapter (see outline below) in the guide will consist of written reference materials and a slide set with script. Additionally the module will contain suggested agenda for numerous short courses. The reference materials will include details on soil morphology (soil horizons, color, texture - field and lab methods of determination, structure, consistence, redoximorphic features - mottles, landscape evaluation/slope type, drainage concerns and landscape position), soil and landscape relationships, and non-soil issues that must be considered for a complete site evaluation. Additionally, details on the use of county soil survey (NRCS) publications will be discussed. Video or slide set segments will be included to illustrate morphological features as well as to demonstrate a quick method of making soil monoliths for teaching purposes.

Projected Audience

- Training Instructors
- Soil Scientists
- Non-Soil Scientists
  - Direct contact
    - EHS
    - Regulators
    - Practicing Eng.
    - Soil Consultants/Evaluators
    - Installers
    - Builders
  - Land Transfer (Financial/Legal)
    - Planners/Developers
    - Bankers/Realtors/Surveyors
  - Public
    - Homeowners
    - Elected Officials
  - Train the trainer
    - Environmental Educators
    - Teachers

General Course Goals (The specific course goals will vary depending on course)

- To communicate the importance of an accurate soil/site evaluation (assessment)
- To understand soil and site variability
- To be able to understand and utilize known relationships between soil and site conditions and on-site wastewater system performance to make informed decisions
- To use soil morphology and site conditions to establish an long term acceptance rates (LTAR) for designing an onsite wastewater system
- To use soil and site conditions to choose the most appropriate onsite system for a site

Example of (basic level) Learning Objectives (objectives will vary depending on audience and specific course)

- To be able to understand and utilize known relationships between soil and site conditions and on-site wastewater system performance to make informed decisions
  - To know
    - soil science terminology,
    - properties,
    - methodologies,
    - and processes
  - To understand the importance of soils in OSWW system siting and performance
  - To determine
    - soil science terminology,
    - properties,
    - methodologies,
    - and processes
  - To utilize their new found knowledge to perform a soil/site evaluation with supervision of a practicing professional

What is to be covered overall (specifics will vary by course)

- Soil science principles necessary to perform soil and site evaluations (assessments)

Method(s) of delivery

- Lecture/field instruction are design to integrate local regulation into the class to

illustrate how the science and regulation are related

- Lecture (PowerPoint)
  - Scripted presentation with handouts
    - Copy of slides
    - Fact sheets
    - Extended outline
    - Video
    - Laboratory Methods as needed
- Field
    - Lab exercises (Monoliths, Structure, Texture, Color)
    - Soil Morphology by Pits and Augers
    - Landscape and Geology/Geomorphology
    - Soil Mapping/Variability
    - Soil Mineralogy/Consistence
    - Water movement measurements/permeability
    - Non-soil parameters

Outline (for detailed Outline see link)

I. Introduction
II. Landform/landscapes
III. Soil morphological descriptions
IV. Principles of site evaluation (data collection)
V. Matching the system to the soil and site
VI. Special problem areas (include identification, interpretation, measurement techniques, and methods to overcome potential problems)

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