Session 9
Septic Tank Drainfield Site Suitability and Evaluation Workshop
9-Web Soil Survey.ppt

Accessing, Retrieving, and Summarizing Pertinent x Representative Soil Survey Data

Web Soil Survey: **http://websoilsurvey.nrcs.usda.gov/app/**

Frame 1: Title – Web Soil Survey, accessing useful soil survey data by internet

Frame 2: To access Web Soil Survey, either go to the web site shown here or
Google **Web Soil Survey**

1. Click on the Green Button – START WSS

Frame 3: The first thing you need to do is get yourself close to the area of interest, AOI.

2. Map of US will be displayed. The Menu bar on left allows you to define the 'domain' or 'search conditions'. Options include:
    a. Address
    b. State and county
    c. Soil survey area
    d. Latitude and longitude
    e. PLSS (section, township, range)
    f. Bureau of Land Management domain
    g. Department of Defense domain
    h. Forest Service domain
    i. National Park Service domain
    j. Hydrologic unit
3. Our example – select Soil Survey area

Frame 4:

4. enter "Montana", "Cascade"
5. Select "VIEW"

Frame 5:

6. Map display will be 'general' area of selection. In our case – you'll see Great Falls in the center of the map and a fairly large area around Great Falls.

Frame 6:

7. Manipulation options – the "Tool" bar
    a. Zoom in
    b. Zoom out
    c. Pan
    d. Zoom to full extent
    e. Zoom to AOI extent – Area of Interest

f. Zoom history back
g. Zoom history forward
h. "I" – click a map layer name for additional details
i. Identify available data: soil data and soil maps
j. Define AOI – Area of Interest – by rectangle
k. Define AOI by polygon

8. About the '+'. On your screen, the location of your cursor will be marked by a plus sign. Move your cursor to the map, in the vicinity of the area you are interested in, i.e., your self-defined Area of Interest, AOI. Using your cursor, draw a 'box' around the approximate area of interest.

Frame 7:

9. When you release your cursor, Web Soil Survey will provide an expanded view of the area inside the box, i.e., the AOI you have defined. In my example here, I've circled in red the AOI which I defined with my cursor.

Frame 8:

10. As you can see in this slide, we now have an expanded view of the AOI, with road and street names, visual markers.
11. By clicking on the "PAN" tool selection – the small hand toward the left side of the tool bar, I can now grab the image on the screen and 'pull down' the view to the exact location I am interested in looking at.

Frame 9:

12. In this case, I've grabbed the image and pulled the image down, i.e., moved north along Bootlegger Trail to Chandelle Lane.
13. I'm now going to move my cursor to the tool bar again, and select the AOI, area of interest tool with the RECTANGLE.
14. This will allow me to define with more specificity the AOI for which I want to view and/or print the soil survey map.

Frame 10:

15. When I release my cursor, Web Soil Survey will provide an outline of the AOI I have defined. Web Soil Survey will then advise that Web Soil Survey is 'Creating AOI", i.e., creating the area of interest.

Frame 11:

16. In this **Frame**, the AOI is outlined in 'blue', and the area of interest is designated by the blue hash markings.

Frame 12:

17. Now you will need to scroll back up to the top of the page and look for the 'folder' tabs. You will see:
    a. Area of Interest (AOI)
    b. Soil Map

c. Soil Data Explorer
d. Shopping Cart

18. Move your cursor to ‘Soil Map’ and select (click on) ‘Soil Map’

Frame 13:

19. Web Soil Survey will now retrieve the soil map, the corresponding legends, and a data table, indicating the various soil series within the mapped area and the percentage of the AOI occupied by each of the soil mapping units. The table will provide the following information:
    a. Map Unit Symbol
    b. Map Unit Name
    c. Acres in AOI
    d. Percent of AOI (in each map unit)

Frame 14:

20. You’ve now got a variety of options available to gather additional information.
21. In our example, I’ve placed a red star at three locations, i.e., the approximate locations of our field site visits.

Frame 15:

22. First, I’m going to take my cursor and draw a box, i.e., an expanded vision of a smaller AOI within my initial AOI. I’ve selected Chandelle Lane.
23. When I release my cursor, after drawing this box, I’ll get an expanded view of a much smaller area.

Frame 16:

24. Here’s that expanded view of Chandelle Lane. As you can see, there are only two soil mapping symbols, i.e., only two mapping units recognized. They are identified as symbols 20 and 209.
25. Note the blue lines, which are indicators of ephemeral streams – flowing some of the time, but not all the time. There are about 4 stream channels flowing through this expanded AOI.
26. Looking back at our table on the left side – note that the table still applies to the original AOI – not this expanded view.
27. Symbol 20 refers to Benz clay loam, 0-2 percent slope, while symbol 209 is Vanda clay.

Frame 17:

28. Now, if you want some specific information about each of these soil mapping units, you can move your cursor to the soil series name in the table and click on the series of interest.
29. We’ll first select Vanda clay, 0-2 percent slope, since our AOI appears to be right in the middle of this mapping unit

Frame 18:

30. We'll first select Vanda clay, 0-2 percent slope, since our AOI appears to be right in the middle of this mapping unit
31. When I clicked on Vanda clay, 0-2 percent slope, the Map Unit Description which is shown here on the right side of the **Frame** was displayed.
32. As you can see, the Vanda clay referred to is found in a stream terrace setting, the landscape is generally flat (linear). You'll notice that I've blocked out some key properties and qualities.
33. Depth to restrictive feature is reported to be more than 80 inches. What this means is that 'water will flow downward' to more than 80 inches. However, what's more important is the 'capacity of the most limiting layer to transmit water'. You'll see that the transmission rate is 0.00 to 0.06 inches/hour. You know what 0.00 inches per hour translates to – essentially a non-measurable rate of downward flow. 0.06 inches/hour equates to 1000 minutes/inch.
34. The other item in this report which is a little alarming to me – as a soil scientist – is the issue referred to as Sodium adsorption ratio, maximum:30. Sodium adsorption ratio, i.e., SAR, is a ratio of the amount of sodium to the sum of calcium and magenesium. The reason this SAR of 30 is alarming is that typically, clay-dominated soils with high SAR (greater than 6) are dispersed when wet, i.e., no structure.

Frame 19:

35. Let's now turn our attention to how we are going to store and retrieve these data. You'll notice an option for a "Printable Version". If you select this option, you can name the file you want to save – as a pdf and you can then view the data. A couple things you need to be aware of:
    a. Have patience
    b. Temporarily turn off pop-up blockers
    c. You'll need to have adobe acrobat installed on your computer

Frame 20:

36. Now, if you want to look at other sites in the same area – in our case, the other two locations that I initially marked within my AOI, I can use the back tool on the menu bar.

Frame 21:

37. Let's not forget Google Earth. What's particularly interesting about this site, Chandelle Lane, is that all of the existing septic drain fields are visible and obvious in the image.

Frame 22:

38. With the back tool on the tool bar, I paged back to the original AOI and you can see that I've circled the other locations where I'm curious about the soil description. This second one will help illustrate the value of actually making the site visit and getting into the soil pit.

Frame 23:

39. I first decided to use Google Earth to see if I could locate the site. I'm not totally sure about the exact location, but I know that the proposed site is on top of this ridge line.

Frame 24:

40. Back to Web Soil Survey – the close-up of the AOI indicates that the site could be either Lisam-Rock outcrop complex or Scobey-Kevin clay.

Frame 25:

41. Well, I personally know that this particular site is not Scobey-Kevin clay. Having inspected the site, looked at the profile, and determined texture, percent coarse fragements, I've ruled out Scobey-Kevin clay loam and gone with Lisam-Rock outcrop complex. And, looking at the details, you can see why.
42. As for limitations:
    a. Depth to restrictive feature: 10 to 20 inches to bedrock
    b. Drainage class: well drained
    c. Capacity: moderately high – I know it's high (failure to treat)
    d. Available water capacity: 1.9 inches – either sand, rock, or gravel
    e. The typical profile description fits what I saw when I went to the pit.

Frame 26:

43. Back to Web Soil Surveyto look at our one remaining site –over on Lake Flat Lane.

Frame 27:

44. I thought it would be good to confirm with Google Earth again. I'm not exactly sure of the location, based on the aerial image – but…

Frame 28:

45. From Web Soil Survey, I've been able to 'generally' isolate the area. Fortunately, the web soil survey shows only Benz clay loam, 0-2 and 2-10 percent slope.

Frame 29:

46. Looking at the soil mapping unit description, the pit compares well with the description for Benz clay loam.
    a. Location was alluvial fan
    b. Drainage class: well drained
    c. Sodium adsorption ratio still bothers me – but given that it is a loam….
    d. Typical profile – as observed
    e. No obvious limitations

Frame 30: As you can see, there's a lot of useful, confirmation data that can be obtained from Web Soil Survey. With some practice, this exercise takes no more than 20 minutes and should generate no more than 3-4 pages of soil information. Actually, a printed copy of the typical profile description may be all the confirmation data you need after making the pit inspection.

Questions:

File Web Soil Survey DEQ Septic.doc