

EPSc 413 Homework #5

Due April 12, 2017

Write all answers on separate sheets of paper. Please only write on one side of the page.
Answers may also be typed.

1. Soil Classification

This question requires you to become familiar with soil classification concepts.

Assign soil orders to soils displaying the following profiles and diagnostic features. Explain your reasoning for the assignment. **(40 pts)**

a.

Horizon	Thickness
Ap	0-18 cm
E	18-28 cm
BE	28-36 cm
Bt1	36-46 cm
2Bt2	46-66 cm
2Bt3	66-79 cm
2Bt4	79-104 cm
2BC	104-152 cm

Diagnostic features:

Ochric epipedon (A-BE)
Argillic horizon (Bt1-2Bt4)
>50% Base saturation

b.

Horizon	Thickness
Ap1	0-20 cm
A	20-28 cm
Bw1	28-46 cm
Bw2	46-56 cm
Bw3	56-76 cm
BC	76-107 cm
C	107-152 cm

Diagnostic features:

Mollic epipedon (Ap1, A)
Cambic horizon (Bw1-BC)
Udic moisture regime
>50% base saturation

c.

Horizon	Thickness
A	0-13 cm
E	13-20 cm
Bhsm1	20-28 cm
Bhsm2	28-38 cm
Bs1	38-56 cm
Bs2	56-66 cm
BC	66-140 cm
C	140-203 cm

Diagnostic features:

Ochric epipedon (A)
Albic horizon (E)
Spodic horizon (Bhsm1-Bs2)
Aquic moisture regime

d.

Horizon	Thickness
Ap	0-15 cm
A/B	15-28 cm
Bo1	28-51 cm
Bo2	51-84 cm
Bo3	84-119 cm
Bo4	119-155 cm
Bo5	155-168 cm

Diagnostic features:

Ochric epipedon (Ap, A/B)
Oxic horizon (Bo1-Bo5)
<35% base saturation

e.

Horizon	Thickness
Ap	0-18 cm
Bg1	18-36 cm
Bg2	36-58 cm
Bg3	58-94 cm
Cg	94-152 cm

Diagnostic features:
 Ochric epipedon (Ap)
 Cambic horizon (Bg1-Bg3)
 Aquic moisture regime

g.

Horizon	Thickness
Ap	0-20 cm
Bt1	20-86 cm
Bt2	89-96 cm
2R	96+ cm

Diagnostic features:
 Ochric epipedon (Ap)
 Argillic horizon (Bt1, Bt2)
 >50% base saturation

f.

Horizon	Thickness
Ap	0-20 cm
A1	20-36 cm
A2	36-64 cm
Bg1	64-79 cm
Bg2	79-97 cm
Bkssg1	97-112 cm
Bkssg2	112-152 cm

Diagnostic features:
 Mollic epipedon (Ap-Bg1)
 Cambic horizon (Bg1-Bkssg2)
 Slickensides (Bkssg1-Bkssg2)
 Aquic moisture regime

h.

Horizon	Thickness
A	0-20 cm
Bt1	20-41 cm
Bt2	41-53 cm
Bk	53-66 cm
C	66-122 cm
Cr	122-203 cm

Diagnostic features:
 Mollic epipedon (A)
 Argillic horizon (Bt1, Bt2)
 >50% base saturation

2. This question asks to think about soil forming processes.

List two examples of each of the four soil forming processes (transformations, translocations, additions, losses). (24 pts)

3. Learning to work with online soil survey tools

This exercise requires you to familiarize yourself with the online tools available for obtaining soil information for a specific area.

- a. Choose a location that you are familiar with in the United States. This could be your home, favorite park, a major landmark, or any place with an address. **List the location you chose and briefly explain (1 sentence) why you chose it.** (2 pts)
- b. Go to: <http://websoilsurvey.nrcs.usda.gov/>. This site contains the Web Soil Survey (WSS), an online integrated soil geographic information system for the entire United

States. Go to this site and click on the green “Start WSS” button; a new window or browser tab should appear (you may need to enable popups in your browser). Using the commands on the left side of the screen and in the tool bar at the top of the interactive map, find your location of choice. Follow the instructions to create a soil map of this area. Note that the WSS system may take a minute to load after you select an area of interest (AOI). **Print the map and map unit legend and attach it to your homework assignment.** (4 pts)

- c. Pick one of the soil units listed on the map to explore further. These will often have a name like “Menfro-Urban land complex, 9 to 20 percent slopes”. “Menfro” is the soil series name. “Urban” means that the soil is in an urban area and has dwellings and human development on it; “Urban” is NOT the name of a soil series. For the map unit you selected, investigate the associated soil series (for example, Menfro). To find information on the soil series you selected, go to: <https://soilseries.sc.egov.usda.gov/osdname.aspx>. Enter the soil series name and click “Submit”. **Print and attach the series description from the pop-up window.** Next view the extent map. **Print this map and attach it to your assignment.** (4 pts)

Answer the following questions about your soil:

- d. What is the taxonomic class of the soil series you selected? (4 pts)
- e. What is the particle-size class, mineralogy class, cation exchange capacity class, soil temperature regime class, the soil great group, and soil order? You will find the information in Chapter 3 of your textbook, especially Table 3.7, to be helpful. (10 pts)
- f. What diagnostic features in your soil profile lead to its soil order assignment? (4 pts)
- g. Given what you personally know about your site and the soil description, pick three of the main soil forming factors and discuss how they have influenced the development of your soil. (8 pts)

WSS Notes:

1. WSS has a few scheduled down periods each week for maintenance. See: <http://websoilsurvey.nrcs.usda.gov/app/Help/MaintenanceSchedule.htm>
2. Additional help and other information can be found at: <http://websoilsurvey.nrcs.usda.gov/>