

Total Station  
Score

## 2010 Missouri Envirothon Soils Ecostation

Team #

1. The Envirothon Soils Test station is located in S3, T44N, R12W in the Cole County Soil survey. Find the approximate location of the soils in the Soil Survey. Describe the Envirothon Soils Ecostation site to the nearest ¼ section with full mapping unit name and symbol. (5 points)

*SW1/4 of, Mapping Unit 73261 Wrengart silt loam, 5 to 9% slopes, bedrock substratum*

2. What does the Solum in this profile consist of? What is the depth of the Solum in this profile? (4 points)

*Solum in this profile consist of the A and B horizons, measurement is*

3. Based on your field observations would you say that this profile has a periodic high water table? Explain? (4 points)

*Yes, Redox Features/Mottles were observed in the 4 horizon. Mottles are indicative of a periodic water table*

4. What is the origin of the parent material of the last horizon that is depicted in this profile? Explain your answer (4 points)

*Residuum from weathered shale. That Residuum is weathered or unconsolidated shale that has collapsed, dissolved or broke up in place.*

5. What percentage of rock fragments would you say are present in the horizon that is depicted at depths to inches? (3 points)

Page  
Total



6. What landform would you say the soils station is located on? Explain your answer: (5 points)

*Could get the answer by looking up the map unit description on pg. 42 in the book Summit or just say the highest position on the hill slope that is nearly level*

7. Examine soil samples A and B and give me the soil textures of each sample (6 points)

*A= silty clay loam and B= clay*

8. What horizon nomenclature would you give the material in the sample C bucket (3 points)

*Cr, soft bedrock*

9. The notations listed on the Munsell Color Chart include which three variables? (3 points)

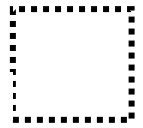
- a. Purity, Strength, Clarity
- b. Hue, Value, Chroma*
- c. Hue, Brightness, Contrast
- d. Texture, Contrast, Chroma
- e. None of the above

10. Permeability refers to the rate at which water moves through the soil. Permeability is controlled by the size and continuity of soil pores. List 3 other factors that may affect soil permeability. (3 points)

*Texture, organic matter, structure, root and animal activity, and density*




Days  
Soils  
Total



1. What seedling survival rating class would you give for mapping units 15002 and 60003? Which one would you recommend and why? (5 points)

*15002 is limited because it has a seasonal high water table that can kill the seedlings. and 60003 does not have a limitation. Therefore I would recommend MU 60003 because it has no limitation.*

2. Cole county soil survey indicates that the majority of the soils in the county did not form under grasses but rather under forested vegetation. How would you distinguish between forested soils vs. prairie soil? Explain your answer. (5 points)

*absence or presence of a dark surface layer because prairie grasses are limited to areas that are too wet or too dry for trees*

3. Soil horizons are named using combinations of letters and numbers. There are six master horizons (R, C, O, E, A, and B). In a forested area, what master horizon designation would be used for the uppermost soil layer consisting of leaf litter and other organic material on the surface? (5 points)

*O horizon for forested soils*

Forestry



Team #

1. How many acres of Water, Mapping unit 99001 were mapped in this county? What percentage of the total county acres is that? (5 points)

*5,496, 2.1 %.*

2. Which of the following soil properties would not be a limitation to pond construction? (3 points)

- A. High gravel content
- B. High sand content
- C. High water table level*
- D. Shallow bedrock depth

3. Pesticides and fertilizers are widely used by farmers to help them grow more bountiful crops. The term pesticide refers to any substance or chemical applied to kill or control weeds, insects, and other undesirable pests. Name one way pesticides or fertilizers can be lost from the soil? (3 points)

*Leaching or water runoff*

4. There are 17 elements that are necessary for plant growth. Name four. (4 points)

*Calcium (Ca), Magnesium (Mg), Potassium (K), Phosphorus (P), Sulphur (S), Nitrogen (N), Carbon (C), Hydrogen (H), Oxygen (O), Boron (B), Chlorine (Cl), Cobalt (Co), Iron (Fe), Manganese (Mn), Molybdenum (Mo), Zinc (Zn), and Copper (Cu)*

**Aquatics**



Team #

1. What soils associations in the survey are suggested to house the majority of remaining wetlands? (5 points)

*-Blake-Sarpy and Jamesfin-Moniteau associations*



2. Would this site be Good, Fair, Poor, or Very Poor for wetland development and wetland plants? Support your answer with data for this soil type from the Soil Survey. (5 points)

*The site would be poor or very poor because it is limited or very limited for establishment of wetland plants due to the depth of water, % slope and seepage of water movement through the soil profile*



3. The kinds and abundance of wildlife are indirectly related to the kinds of soil. Explain the relationship. (5 points)

*It depends (1) on the capability of soils to produce food and cover for wildlife, and (2) on the suitability of soils for structural measures that are needed to create, improve, or preserve wildlife habitat. Each species of wildlife is related to the availability of it's choice foods, and each plant, in turn, is directly related to the kind of soil.*



Page  
Total



Team #

1. Would the soil type in this area be a good place to treat waste water by the rapid infiltration process? Please explain your answer (5 points)

*Very Limited because it percs slowly, wetness, and slope*

2. Would the soils in this area be more likely to be Endosaturated or Episaturated? Explain your answer. (5 points)

*Episaturated because of a perched water table indicative of higher clay increase or presence of fragic properties. Or Most of the soils in this area are influenced by a perched water table as indicated in fragic soil properties.*

3. There are three major kinds of soil water: gravitational water, capillary water, and hygroscopic water. Which kind of the soil water fills large pores when the soil is saturated? (5 points)

*Gravitational Water*