Missouri State Envirothon Challenge
Soils Ecostation

Soils

This eco-station is situated on soil mapping unit 22C2. Using the Soil Survey of Callaway County, Missouri answer the following questions.

Sl. (4 *points)* What is the name of this 22C2 mapping unit? And what percent slope?

Keswick loam, 5 to 9 percent slopes, eroded

S2. (4 *points)* Soil Mapping unit 19C2 is directly up slope from the 22C2 soil mapping unit. What is the name of this 19C2 soil mapping unit? And what percent slope?

Gorin silt loam, 3 to 9 percent slopes, eroded

S3. (16 *points)* Beginning on page 85 of the *Soil Survey of Callaway County, Missouri*, very detailed descriptions of soil series are given. Answer the following questions for the soils identified in questions 1 and 2 above.

What is the parent material of each of the soils? 19C2- 22C2-

19C2 --Loess and Pedisediments
22C2-Pedisediments and Weathered Glacial Till.

What is the surface horizon texture of each of the soils?

19C2-

22C2-

(19C2-Silt Loam)

(22C2-loam)

S4. (8 *points)* Using the soil & water features table beginning on page 168 of the *Soil Survey of Callaway County, Missouri,* at what depth might you expect to high water table in the 19C2 and 22C2 soil mapping units?

19C2-

22C2-

(19C2--2.0 to 4.0.feet)

(22C2--1.0 to 3.O.feet)

Following the examination of the soil excavation at this site, please answer the following questions.

S5. (4 *points)* Which of the following sequence of soil horizons best fits this profile?

A. Ap, E, Bt, C
B. A, E, Bt, C
C. A, E, 2Bt, 2C
D. O, Ap, E, Bt

S6. (4 *points)* At what depth does the subsoil begin?

Wildlife

WI. (2 *points)* This soil is a Keswick Loam (22C2). Would this site be *good* for grassland, pasture and legume establishment?

A. Yes

B. No

W2. (10 points) 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 of Callaway County.

Very Poor:

W3. (6 *points)* What type of vegetation (herbaceous, shrub, tree) is primarily recommended for this soil type?

Trees, pastures (legumes, Cool Season Grass, Warm Season Grass)

Forestry

Fl. (6 *points)* How does the vegetation in a forest act to protect the soil against erosion?

Leaf litter protects the surface; roots hold the soil; tree canopy breaks the force of rain drops.

F2. (6 *points)* Would a soil profile be more acidic under a hardwood forest or under a pine forest? Why?

Acidic, because the needle litter when it decays is low in bases and high in acid compounds.

F3. (2 *points)* Which plant community would most likely have an "E" soil horizon?

A. swamp
B. grass
C. forest
D. dessert
E. all of the above

Aquatics

A1. (2 *points)* Groundwater resources can be lost in which way.
A. Siltation of lakes and streams
B. Removing too much groundwater
C. Bacterial or chemical contamination
D. A&B
E. B & C
F. All the above

A2. (4 *points)* The biggest threat to water quality in the U.S. is what type of pollution?

Sedimentation or soil erosion

A3. (2 *points)* Why is coliform bacteria used as an indicator of poor water quality?

A. Indicates acid rain
B. Indicates high oxygen levels
C. Indicates high nitrate levels
D. Indicates fecal contamination
E. Indicates excessive algae bloom

A4. (8 *points)* If a pond were to be built in this watershed, how many acres of land should drain into a 1 acre pond? Why?

10-15:1,
If you have less you may not have enough runoff to keep the pond full
If you have more, the pond will remain too turbid for fish growth

A5. (4 *points)* If you were to build a pond here, why should you have a test pit dug?

To see if you have the right soil type to hold water

A6. (6 *points)* If a pond is built here, would you increase or decrease soil erosion? Why?

-Decrease. The pond will detain the water, preventing further erosion

A7. (2 *points)* How can soil erosion effect fish?

A. Clog gills
B. Silt in eggs
C. Prevent from seeing prey
D. Fill in habitat
E. All the above