

**Objectives and Test Questions for the Presentation by Lee D. on
“Soil Compaction and Acid-S Conditions”**

Objective #1 – Understand the causes of soil compaction and how it impacts wetland hydrology.

Objective #2 – Understand how acid-sulfate impacts wetland hydrology.

Objective #3 – Learn how to mitigate high bulk density.

Five test questions

1. What are some of the reasons why created wetland soils are compacted? (select all that apply)
 - A. To limit losses to local groundwater seepage and/or perch the saturated zone.
 - B. To limit spread of invasive species.
 - C. Routine construction and grading operations.
 - D. Soil materials are moved and placed in a moist to wet condition.
 - E. Lack of fencing in sensitive areas.

Answer: A, C and D

2. Which of the following statements is true? (select all that apply)
 - A. We are routinely at or above theoretical root limiting bulk density at many created/mitigation sites.
 - B. Poorly drained soils can support upland vegetation and not show any redox features.
 - C. A “traffic pan” can lead to very wet winter conditions yet very dry extended summer droughts.
 - D. Active growing root tips can and do move soil particles out of the way.
 - E. Macropore development associated with soil structure does not impact bulk density.

Answer: A, B and C

3. What mitigates high bulk density? (select all that apply)
 - A. Air temperature.
 - B. Appropriate moisture content.
 - C. Tillage/ripping.
 - D. Macropore development.
 - E. Planting high density cover crops.

Answer: B, C, and D

4. Which of the following statements are true about acid sulfate soils? (select all that apply)
 - A. With few exceptions, any soil pH <3.8 is indicative of acid sulfate soils and needs attention.
 - B. They are formed from the weathering of sulfide-bearing parent materials, which results in extremely low pH and precipitation of sulfate salts.

- C. Active acid sulfate soils are commonly pH 2.0 to 3.5 and very high in sulfates salts and soluble metals.
- D. Post-active acid sulfate soils will slowly decrease in pH.
- E. Minimal applications of lime will generate significant acidity.

Answer: A, B, and C

5. Which of the following are false? (select all that apply)
- A. Adding compost or other organic amendments does not work well will lime amendment.
 - B. All “risky materials” should be analyzed for total sulfate.
 - C. Near-surface brown to red materials (e.g. weathered soils) are usually much lower risk since the sulfate probably oxidized long ago.
 - D. Liming rates commonly range from 50 tons per acre 6” deep to 100+ and the lime needs to be mixed and incorporated.
 - E. Agricultural lime additions can eliminate pyrite oxidation.

Answer: B, C, and D