

AWM106 Agricultural Sediment Fundamentals

| Name | Date | Grade |
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Lab Exercise #9– Water Sample Collection and Analysis

Lab Objective (3-5 bullets):

Study the difference among different water sources in the amounts and types of sediment load that they are carrying.

Lab Introduction Narrative (3-5 sentences):

This lab involves collecting water samples from various sources, letting the sediments settle out over time, and measuring and observing the differences among the samples.

Text References:

Tools and Materials:

- 10 clean, clear bottles with screw-on caps (soft drink bottles should work fine).
- Permanent marker (Such as a Sharpie) to label the sample bottles.
- String or wire to tie around the neck of the bottles, to lower them into the water for collecting the samples. If you are collecting the samples from a bridge or stream bank, be sure to have a long enough string to reach under the water.
- *Life jacket if you are clumsy!!*
- A flat surface where you can leave the samples undisturbed for 5 to 7 days.
- A ruler to measure sediment depth at the end of the settling period.
- Map of the sampling area to identify the sites.
- (optional) GPS or other means to document the sample locations.

Safety Precautions:

Be careful in collecting water samples, so that you do not fall into the water and become part of the sediment load!

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Procedures:

- 1) Select a series of water bodies, ditches, streams, creeks, drainage tile, etc.---flowing into the same watershed if possible. If possible, find some sites where the water is obviously carrying eroded soil. Select some coming from construction sites, some from agricultural sites, some from road ditches, etc.
- 2) Collect 6 to 10 water samples from different sample sites.
 - a) Use a clean, clear glass or plastic bottle that has a lid. Plastic or glass soft drink bottles should work.
 - b) Tie a string or wire around the neck of the bottle to dip it into the water and fill it with the sample---if you want to avoid getting into the water.
 - c) Fill the bottle and close the lid.
 - d) Label each bottle to identify the sample location.
 - e) Write down whatever information you can about the sample site, including whatever you can determine about the sources of the water body you are sampling, and its downstream path beyond the sampling point.
- 3) Locate sampling points on a map of the watershed---use GPS on your phone or other device if available to document the location of each sample.
- 4) Take to bottles to a place where they can be set on a level surface and left undisturbed for a few days.
- 5) Shake the closed bottles to suspend all of the sediments in the water, the set them on a flat surface and let them stand undisturbed for 5 to 7 days of “settling time”.
- 6) At the end of that settling time, compare the samples as follows:
 - a) Be careful not to disturb the samples until you have made the observations.
 - b) Record the sample identification from the bottle.
 - c) Observe the appearance and record notes about what you see.
 - i) Color of the water---clear, cloudy, dark, etc.
 - ii) Presence of sediment in the bottom of the bottle.
 - (1) Describe the sediment—color, stratified layers or uniform
 - (2) Measure depth of sediment---and each layer if present—carefully measuring on the outside of the bottle without moving it.
 - (3) Any other visible differences among samples.
 - iii) Note any floating or suspended materials that are still present.

Maintenance of Workstation and Tools:

Properly dispose of the sample bottles after completing this lab exercise. Clean up the work area when finished.

Summary Statement:

Many flowing water bodies carry sediment loads. This exercise will demonstrate the different types and amounts of sediments carried by different water sources. Knowing the source of water is the first step in identifying what management could be used to correct any problems.

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Lab-covered Questions (15-points):

| Element | Excellent | Proficient | Partially Proficient | Below Proficient | Unsatisfactory | Points |
|---------------------------|---|---|--|--|--|--------|
| Student Lab Participation | 5 points The student is engaging thoroughly, with well thought out questions and answers. | 4 points For the student to answer (or ask a question) to engage in the discussion, he/she is engaging, but sometimes is not fully explained or developed. | 3 points The student's question/answer was somewhat proficient but could have been expanded upon | 2 points- 1 pt. The student's answers was minimal and did not address much of the issues or topics in order to be engaging. | 0 points Engagement was neither attempted nor completed | __/5 |
| Student Lab Performance | 5 points The student's actions, feedback and comments were thought-provoking and had substance | 4 points The student's actions, feedback, and comments were good but could be expanded upon | 3 points The student's actions, feedback, and comments made were minimal and did not provide much depth | 2 points- 1 pt. The student's actions, feedback, and comments were one sentence that did not expand upon the lab topic | 0 points No responses or feedback were given by student | __/5 |
| Total points | | | | | | __/ 10 |

Lab Participation (10-points):