

LESSON PLAN

Roger Platt – Tavares Middle School, Tavares, FL

Lesson Title: School Yard Runoff

Grade Level: Middle School / High School

Topic: Do School Grounds Pollute The Local Water Systems

Time Required: 15 minutes for collection
1 class period (55 minutes) for tests and charting data
(repeat as conditions and time permit for a long term study)

Objectives:

1. Demonstrate the skills of collecting samples and testing procedures.
2. Analyze the chemical runoff from campus.
3. Predict the environmental impact.

Materials: Collection bottles
Test kits for ammonia (NH_3), nitrite (NO_2^-), nitrate (NO_3^-), pH,
dissolved oxygen, and phosphate (PO_4^{3-})
Centigrade thermometers
Data sheets

Procedure:

1. Select one or more test sites on campus. If possible, select areas where runoff will collect in the following areas:
 - A. Down spouts
 - B. Retention area for campus
 - C. Retention area from the parking lot
2. Wait for a rain storm.
3. After/During heavy downpour, collect samples (place collection bottle at down spout before storm, wait for storm to completely pass to collect from retention areas).

*** Special Safety Note: Take all precautions from danger of lightening.

4. Record on data sheets all weather and site information/characteristics.
5. Perform all tests according to the QA/QC protocol and record all data.
6. Analyze the data - Compare data from various test sites.
7. Make predictions on environmental impact.

Data:

Collector's/Student Name _____
Site Location/Description _____
Date _____ Time _____
Wind Direction _____ Relative Humidity _____
Amount of Rainfall _____
Temperature of Air Before storm _____ After storm _____
Temperature of Water Before Storm _____ After storm _____
pH _____ PO_4^{3-} _____
 NO_2^- _____ NO_3^- _____
 NH_3 _____ O_2 _____

Questions:

1. Which test site had the most chemicals in the water runoff?
2. Why would the chemical levels vary from test site to test site?
3. Where would the O_2 level be the highest? Why?
4. If the runoff from the site drained directly into a lake/pond, predict the possible impacts.