Chartiers Valley High School
Lesson Plans
Week of 5-23-05

Instructor: Mrs. Zieger	**Course:** Environmental Science **Period #/**
Objective(s): The Students will...	identify problems that occur when soil is not properly managed.
Related Curriculum Standard:	F-3 - Natural Hazards
Activities/Procedures: (Timeline- 5 Days/1 Week)	Monday - • Attn. getter - Pose a question - "Who can name a current, local environmental issue?" "Who can name a previous enviro issue?" mills, smoke, pollution etc... • Discussion & notes • In groups, students will get on the computer, and each group will find two current enviro issue articles. Tuesday - - In groups utilizing pre-reading and reading strategies (attached) students will read the articles. • Using criteria for a summary (attached) and writing rubric, students will summarize the articles. Wednesday - • Students will present their information. • Audience will discuss possible solutions to these issues.

	Thursday – • Question - "How could solid waste management play a role in nearly all of Pgh's current envico issues?" • Read, notes & discussion – Solid Waste Management – Science Explorer: Prentice Hall Friday – Experiement/Activity – Save that soil. Attached → From – (Source) Science Explorer: Prentice Hall
Materials (resources):	• Science textbook • Science notebook • Science folder/portfolio • Science work packet • Science World Magazine • Writing Utensil (student owned) • Internet • CV Library • AIU video library • Teacher-made materials & resources Supplemental Materials List Attached
Assessment:	• Teacher Observation • Weekly notebook & packet checks • Participation rubric checklist • Quiz – None • Test – • Project - Save that Soil!
Homework:	Review notes from class discussions - especially new vocab.

Controlling Variables

Skills Lab

Save That Soil

In this lab, you'll decide how to control variables as you investigate the way rainfall causes soil erosion.

Problem

How are different types of land surfaces affected by rainfall?

Materials

newspaper	2 unbreakable pans
2 blocks	sod
loose soil	"rainmaker"
water	

Procedure

1. Cover a table with newspaper. Obtain two pans. Insert a block under one end of each pan so raise the two ends to the same height.
2. Read over the rest of the lab. Write a hypothesis that you will test. Pay careful attention to the variables you must control.
3. Place loose soil in the raised end of one pan. Place a small square of sod (soil with grass growing in it) in the raised end of the second pan. One variable is the amount of soil in each pan. Find a way to make the two amounts of soil the same. Record your procedures.
4. Create a "rainmaker" that controls the amount of water and the way it falls on the two soil samples. Then use your rainmaker to test the effect of the same amount of "rain" on the two kinds of soil. Record the results.
5. Review your experiment and your results. Do you see any procedure you wish to change? If so, get your teacher's permission to try the lab again with your revised procedures.

Analyze and Conclude

1. What effects did the "rainwater" produce on each type of soil you tested?
2. This experiment models soil erosion. What can you conclude about actual soil erosion caused by rain? How could a farmer use the information gained from this experiment to conserve topsoil?
3. **Think About It** Why was it essential for you to control the amounts of soil and "rainfall" in the two pans?

Design an Experiment

How does soil erosion caused by a gentle, steady rain compare with that caused by a heavy downpour? Design an experiment to find out. Be sure to control the way you imitate the two types of rain. Obtain your teacher's permission before conducting this experiment.

Extending the Inquiry

Design an Experiment To compare erosion by different kinds of "rainfall," loose soil should be used in both pans.

Safety

Students should wear safety goggles and lab aprons. Review the safety guidelines in Appendix A.

Program Resources

- **Teaching Resources** Skills Lab blackline masters, pp. 131–132

Media and Technology

Lab Activity Videotape
Environment of Science, 7

Transition –

Just as solid waste management can have an adverse effect on Pittsburgh's current environmental status – air and/or water pollution can have similar effects ie: flooding water pollution can produce hazards and solid waste issues etc…

- Discuss clean-up efforts after the local Chartiers Creek flooding in September 2004 – how did the flooding and pollution effect the air, utilities, the streets, buildings?….