Dirty Water

Summary

In this program students compare different scenarios to determine the best method of preventing soil erosion into the water system. They will do this by measuring and comparing the amount of recharge water vs. discharge, and the discharge waters' conductivity and total dissolved solids.

GRADE LEVEL: 3-12
PROGRAM DURATION: 1 hour
SETTING & ACTIVITY: Classroom, Outdoors; Experimentation, Carousel Questioning

OBJECTIVES: With hands-on experimentation and data collection followed by classroom discussion, this program demonstrates to students the everyday occurrence of soil erosion as a harmful, but preventable, threat to water. Following the program students should be able to:

- Describe at least one way soil erosion can affect water quality.
- Provide a solution to control soil erosion.
- Rank three different solutions to control soil erosion based on collected data.
- List variables of water that can be measured to determine water quality.

KAS: 3-ESS3-1, 3-LS4-4, 4-ESS2-1, 5-ESS3-1, 3-5 ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3, MS-LS2-5, MS-LS4-4, KY.3.MD.2, KY.3.MD.3

FORGING ASSOCIATIONS: The program content can be used as a transition or extension between associated standards. Some examples include:

- 3-LS4-1: This activity can help students visually see why erosion can destroy evidence of life before it can fossilize.
- 4-PS3-1: Unimpeded water moves faster and has more energy in which to cause more erosion. Slow the water, slow the energy and cause less damage.
- 4-PS3-2: When water collides with erosion control methods, the energy of the water changes and results in less erosion.
- 4-ESS3-3: Erosion can result in dangerous natural disasters that can impact humans.
- MS-ESS3-3: Ideas gathered through this program can help students design methods of minimizing human impact.
- HS-LS2-7: Ideas gathered through this program can help students design, evaluate, and refine solutions for reducing human impact.

COLLABORATIVE PROGRAMS: When paired with the *Guided Cave Tour* or *Immersion Off-trail Tour*, students can go underground to see the groundwater which can be impacted by erosion. Both programs *Water Quality* and *Where does all the Pollution go?* will add another dimension to the everyday occurrences that can affect water quality. *Eco Engineers* will allow students to recognize erosion potential on their own industrial sites and contemplate a solution. *Cave Creatures* will show students that besides human, many other organisms depend on clean groundwater. Displays in the museum also show sources and prevention methods for water quality.

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