## WATER QUALITY

## SUMMARY

Using a simulated community, students learn of sources of pollution along with possible solutions. Water quality of 3 different water sources is examined by measuring parameters such as temperature, dissolved oxygen, total dissolved solids, and conductivity. Students also learn how macroinvertabrates can act as indicators. Through a role-playing game students experience the effects water quality has on the biodiversity of a stream.

## GRADE LEVEL: 3-12 ACTIVITY DURATION: 2 hours

SETTING & ACTIVITIES: Classroom, Cave, Outdoor; Model, Data Collection, Game

**OBJECTIVES:** With the use of a model community and water testing equipment, this program provides students with a simulation of everyday pollution, ways to prevent it, and techniques to test water quality. Following the program students should be able to:

- Explain what happens to polluted surface waters.
- Provide a solution to control certain pollution.
- Describe what a Best Management Practice is.
- List everyday sources of pollution.
- List variable of water that can be measured to determine water quality.

KAS: 3-LS4-3, 4-ESS2-1, 4-ESS2-2, 5-ESS3-1, 5-ESS2-2, HS-LS2-7, HS-LS4-5

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

- 3-LS4-4: Pollution control and remediation can provide solutions to a wrongfully impacted environment.
- 4-ESS3-2: Erosion can result in dangerous natural disasters that can impact humans.
- 4-LS1-1: Bioremediation is the use of specific plants to remediate and control pollution through use of internal and external structures.
- 5-ESS2-2: The dangers of pollution to fresh-water habitats can be even more emphasized when students learn just how little of the Earth's waters are fresh.
- MS-ESS3-3: Ideas gathered through this program can help students design methods of minimizing human impact.
- HS-LS2-2: This program offers a great introduction/review of rocks for activities to meet this standard.
- 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 pollution. The program *Dirty Water* will add another dimension to the everyday occurrences that can affect water quality. *Eco Engineers* will allow students to recognize potential pollution sources on their own industrial sites and contemplate a solution. When adding the watershed activity from *Where does all the Pollution go?*, the students get an intense 2.5 hours of water quality lab and class work. *Cave Creatures* will show students that besides humans, many other organisms depend on clean groundwater.





