

*SeaKeepers K-12 Curriculum*  
**Water Quality Testing**  
Using Earth Echo Kits



# SeaKeepers K-12 Curriculum

## Lesson 7: Water Quality



**Grade Level: 9-12**

**Estimated Time: 150 min (3 x 50 min sessions)**

### **Lesson Overview:**

Students will learn about sources and impacts of pollution by using Earth Echo Water Quality kits to test local bodies of water. They will learn about pollution using the case study of Biscayne Bay, then they will use their knowledge to analyze their local ecosystem. They will work together to interpret the results of the water quality samples, consider where the pollution may have come from, and discuss the impacts of their results both locally, and further “down the stream” in coastal habitats.

### **Lesson Breakdown:**

#### ***Session 1: Case Study (50 minutes total)***

- Read “[Building Back Miami’s Biscayne Bay: Do natural solutions hold hope?](#)” or watch the embedded video available within the news article. (10-20 min)
- On a whiteboard, make a list of the sources of pollution identified, as well as the impacts to local ecosystems. (5-10 min)
- Allow students time to perform their own research on the case study and add to the list of pollution sources and impacts. (10-15 min)

#### ***Session 2: Field trip (30- 45 min activity)***

- Demonstrate Earth Echo kit & data reporting procedure (5 min)
- Activity: Divide students into groups of 2-4 and have each group fill out a data sheet (15-20 min)
- Compare group results and calculate an average (5 min)
- Ask students to consider or research what these results might indicate in preparation for next session.
- Assign one student from each group to submit their data to Earth Echo (details provided on datasheets)

#### ***Session 3: Interpretation & Discussion (50 min)***

- Interpretation of results: What is ‘normal’ pH of fresh or salt water? What does each metric indicate about the water? What does high oxygen or low oxygen suggest? (15 min)
- Recreate your list of local sources of pollution and potential impacts for local ecosystems. (20-25 min)

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### **Standard(s) Addressed: What standard(s) will be the focus of the lesson?**

- SEC3. Obtain, evaluate, and communicate information to construct explanations of community interactions.
- Develop a model to explain ecological succession in terms of changes in communities over time and the impact of disturbance on community composition.

### **Preparation & Materials:**

- Earth Echo Water Quality Testing Kit
- Whiteboard/markers
- Phones/laptops for student research

### **Tips:**

When showing students the data sheet, walk through each of the environmental factors together so all data sheets are filled out completely. Remind students that they are contributing to a real scientific study, so all measurements should be as accurate as possible.

### **Anticipated Learning Objectives:**

- Understand the difference between point-source and non-point source pollution
- Understand the impacts of pollution on inland ecosystems as well as coastal ecosystems
- Identify ways for the local ecosystem (in a perfect, well-funded world) to reduce pollution
- Identify sources of pollution