

# A Pollution Mystery

Solve the mystery of who polluted Great Bay.

**FOCUS:** By adding pollution to clean water, students graphically illustrate what can happen to Great Bay and other estuaries.

**Background:** Even though Great Bay looks clean, it has suffered some of the same stresses that other estuaries have. Fortunately, many of these sources of pollution no longer threaten the bay. Today Great Bay is mostly at risk from household and community sewage disposal.

## A L L G R A D E L E V E L S

### SUPPLIES:

- a large, clear bowl
- long-handled spoon
- small film canisters or baggies with the name of the polluter on the outside of each and pollutant inside. (see materials listed below in parentheses). There should be a role for each student, so you will have to make duplicates.

1. Distribute small vials or baggies of materials to class members. Explain that each vial is marked with the name of a character in the story.
2. Read the Pollution Mystery below. When his/her character is mentioned, student should go to front of room and add contents of vial to large container of water and stir it in as the teacher (or student) reads the story.
3. At the end of the story, ask: How can we prevent Great Bay from becoming polluted? Take suggestions, such as, conserve water so it doesn't have to be cleaned up. What can kids do to protect Great Bay? (conserve water, recycle, etc.)

## Pollution Mystery

This is the story of an estuary that was named "BetweenLand" by the Native Americans. They lived along its shores and hunted and fished. Sometimes the remains of their feasts washed into the water (add oyster shell fragments). But it wasn't much.

The Native Americans built their camps on higher ground next to the estuary because they knew that even in a heavy rain storm the salt marsh grasses would soak up the runoff like a sponge and keep their camp from flooding. They cleared small plots of land for gardens.

Then European settlers came. They cut down the trees along the shoreline to open up land for farming. Soil washed into the bay because there were no longer trees to hold it back. (Add soil)

Farmers grew crops along the shoreline and used fertilizers to help grow corn, potatoes, strawberries, etc. (Add baking powder)

Along the banks of a stream that flowed into the estuary a miller built a dam to harness water power to turn the water wheel in his factory. He and his workers used the energy of the water to power machinery to grind corn. Some of the flour got into the water. (flour)

Nearby, a tanner used strong chemicals to turn horse hides into leather. Some of the chemicals washed into the bay. (ink, food coloring)

A shipbuilder used the water to carry logs to a sawmill and a boatyard to build ships. Some of the bark, wood, and sawdust sank to the bottom and decayed. (add sawdust and/or wood chips)

Bacteria that attacked the wood and sawdust used up a lot of the oxygen in the water that fish needed. (Add gummy fish or Goldfish crackers; they'll float)

Soon other residents built houses along the shore. Where did they dump their sewage? Into the water. (Raisins, toilet paper)

At first, the bacteria in the mud could absorb and clean up the sewage. But before long, too much sewage overloaded the estuary's ability to break it down into nutrients that plants could use to grow. One of these homeowners was a gardener who was very proud of her exotic plants and large lawn stretching to the water's edge. She used fertilizers and insecticides to keep them green and healthy. (cocoa)

Next door, whenever a driver washed his car, he didn't notice that all the phosphate soap ran down his driveway into the water. (add dishwashing liquid)

Some picnickers were enjoying watching hawks circle on air currents above Great Bay. Some of the trash from their picnic was caught by the breeze and carried out over the mud flats. (add bits of wax paper) A sudden rain storm blew up, and the picknickers ran for cover.

A lobsterman was hauling traps above the deep channel in Furber Straits. A box of rubber bands that he used to peg the claws of his catch sat on the railing of his lobster boat. The wind and pelting rain blew the rubber bands overboard. (rubber bands)

In Portsmouth, a tanker captain was unloading fuel oil that would someday be used to heat homes around Great Bay. He failed to notice that some of the oil spilled into the harbor as it was being transferred from the ship to shore holding tanks. Tides and currents carried the oil up the Piscataqua River and into Great Bay. (coffee mixed with cooking oil)

Then one day a sailor went out onto the estuary and discovered it wasn't clean and clear any more. (put tiny plastic or clay sailboat on top).

"Who polluted this water?" he cried.

What was the answer? "We/They all did."

And we all can do something about it.

## F U R T H E R E X P L O R A T I O N S

### 1. CAREERS

Find out about careers on Great Bay and how they may have changed over time.