

SECTION**3****Enrichment****Beach Renourishment**

When you hear the word erosion, what do you think of? Most people probably think of farm land that's being worn away by water or wind. However, beaches also experience erosion. Beach erosion has many causes, both natural and human. Natural causes include currents, tectonic plate movement, earthquakes, waves, tides, and winds. Human causes of beach erosion are over-development of land and construction of harbors and jetties for pleasure boating. The things that make living at the beach so nice can have a devastating effect on the beach itself. That's because they interfere with the natural movement of sand. As part of the natural process, sand moves up and down a beach in a drifting pattern. Unfortunately, jetties and other structures interrupt that process, and the sand is deposited in one area and not further down the beach. Because less sand is being carried by water, erosion takes place.

A Beach Disappears and Reappears

One severe example of beach erosion was in a coastal area of western Florida where an entire beach almost disappeared. Before the erosion, the beach was about 24 m wide and served as a protective barrier for the oceanfront properties that lined the beach.

1. List at least three causes of beach erosion. For each, indicate whether the cause is natural or human.

2. Why is the beach so important to the people who live along it?

3. The western Florida beach renourishment project cost \$22.8 million. Do you think it was worth the price tag? Give reasons to support your answer.

Two decades later, the beach was barely 3 m wide. When beaches erode, lives and property are placed at risk. Fortunately, the beach underwent renourishment, a process that puts beaches back the way they were before erosion changes them. The renourishment effort restored 46 m of beach per day until a new and enlarged beach measuring 41–56 m was created.

Rebuilding a Beach

Renourishing a beach is very different from how it's created in nature. A beach is naturally created over time when waves and tides bring sand and broken down seashells to the shoreline. With renourishment, however, creating a beach involves tugboats, barges, bulldozers, and other heavy equipment. Sand from another location (where it's plentiful) is loaded onto a barge that is towed by a tugboat to a pumping station. The sand-filled barge is connected to a water-filled pipe, and the sand and water mixture is blasted onto the surface of the beach. Finally, bulldozers come along and evenly spread the mountains of sand until a beautiful new beach is created. This beach renourishment process has been used on more than 161 km of Great Lakes and coastal beaches.