

Lesson Title: Stream Dynamics

Ohio Standards Connection:

Standard(s): Earth and Space Science

Benchmark(s): (grades 3-5) B. Summarize the processes that shape Earth's surface and describe evidence of those processes

Indicator(s):

Grade(4) 8. Describe how freezing , thawing and plant growth reshape the land surface by causing the weathering of rock.

10. Describe evidence of change on Earth's surface in terms of slow processes (e.g., erosion, weathering, mountain building and deposition) and rapid processes (e.g. volcanic eruptions, earthquakes and landslides).

Lesson Summary: The purpose of this lesson is to compare a natural stream with one that has been straightened in an urban area. The student will see how water moves slower in a meandering stream. They will also look at how a meandering stream is actually longer than a straight stream.

Estimated Duration: class period

Background Information: Most streams in Northeast Ohio meander across the landscape. Meanders are good for the stream because they provide areas for fish and macro-invertebrates to live. A meandering stream generally almost always has an active floodplain, which helps to reduce flooding in our communities. By storing floodwater in the floodplain, pollution has time to settle out, making our water cleaner. A stream will always try to recreate meanders by eroding its banks. That's one reason why our urban streams are prone to stream bank erosion.

Instructional Procedures:

Set up two stream models, one straight (urban) and one meandering (natural), utilizing string or rope. Use one length that is around 10 feet long, while the other is 20. Make sure the starting and ending points of each stream are the same distance apart. Line up students on each stream. Compare how many fit along each stream. Next, form two teams, and have them race in pairs down the stream. See who gets to

the end first. The straightened stream will always transport water the fastest. This point can be further emphasized having students be boulders in the stream, further impeding the flow of water. Another way to impede the flow of water is to have students pretend to be shrubs and tree roots along the stream banks. These are also great places for fish to hide during storm events.

Discussion:

- * The straightened stream may transport water the fastest (traditional engineering approach), but why can this be a bad thing?
- * Think about the people living down stream, where does all that water go?
- * What if you were a fish living in the stream? How would you survive during a storm event in each stream?
- * What about pollution from our landscape? How can pollution settle out of the storm water if water is moving too fast?
- * Straightened streams move fast, what effect will that have on the stream banks?

Materials and Resources:

10 foot piece of rope

20 foot piece of rope

large area

Vocabulary:

Floodplain

Meander