

# Land and Water Concept Storyline

## Unifying Concept

Earth materials have unique properties and are parts of living and nonliving systems. Interactions within and among these systems cause changes in matter and energy.

## Unit Concept

The landscape is a result of the long-term integration of a variety of natural processes that act on the surface of the earth.

## Grade-Level Concept

Water has an important role in shaping the land, and land forms may change the direction and flow of water. Humans can affect these processes.

### Subconcept 1

**Different elements of earth systems interact to characterize the land and water landscape.**

Lesson 1: Pre-Unit Assessment: Thinking about Land and Water  
*Students discuss what they know and would like to know about land and water.*

### Subconcept 2

**Water evaporates, rises, condenses, and falls to earth, where it collects in lakes, oceans, rivers, and soil and rocks, in a process known as the water cycle.**

Lesson 2: The Water Cycle: Modeling Land and Water  
*Students build model stream tables and use them to study the water cycle.*

### Subconcept 3

**Streams and rivers slowly reshape the earth's land surface by eroding and carrying soil and rock.**

Lesson 3: Modeling Rain on Land  
*Students model the effects of rain on their stream tables and observe soil erosion.*

Lesson 4: Investigating Streams  
*Students pour water on their models and observe the formation of streams.*

### Subconcept 4

**The properties of soils and the flow characteristics of water determine the nature of erosion and deposition.**

Lesson 5: Examining Earth Materials  
*Students analyze four soil components and describe their properties.*

Lesson 6: Where Does the Water Go? Looking at Ground Water and Runoff  
*Students discover that different types of soil have differing capacities to retain water.*

Lesson 7: Where Does the Soil Go? Looking at Erosion and Deposition  
*Students observe the factors that affect how water erodes and deposits sediment.*

### Subconcept 5

**The interactions among the elements of the earth and circulating water change the landscape.**

Lesson 8: Bird's-Eye View: Looking at the Parts of a Stream  
*Students identify the common parts of the stream.*

Lesson 9: When Streams Join: Modeling Tributaries  
*Students model the formation of a larger stream or river that has multiple sources.*

Lesson 10: Rushing Rivers: Exploring Flow  
*Students use their models to compare the effects of fast- and slow-flowing water.*

Lesson 11: Hills and Rocks: How Nature Changes the Direction and Flow of Water  
*Students investigate how the shape of the land affects the direction and flow of water.*

Lesson 13: Exploring Slope  
*Students explore the effects of slope on stream formation.*

### Subconcept 6

**Humans interact with natural elements to affect changes in the landscape.**

Lesson 12: Dams: How Humans Change the Direction and Flow of Water  
*Students design and construct dams in their stream tables and test their effects.*

Lesson 14: Plants: Protecting Sloped Land from Erosion  
*Students predict and model how plants affect water flow and erosion.*

Lesson 15: Planning Our Homesites: Designing and Building a Landscape  
*Students design landscapes in their models, predict how runoff will affect these landscapes, and use these predictions to select a safe homesite.*

Lesson 16: Protecting Our Homesites: Testing the Interactions of Land and Water  
*Students test the effectiveness of the placement of their homesites.*

Lesson 17: Post-Unit Assessment: Sharing What We Know about Land and Water  
*Students reflect on and discuss what they have learned.*