

## Photo Description



Water flows over rocks and stones near train tracks. The water looks muddy and brown as it moves. Green grass grows on the sides where the water flows.

## Scientific Phenomena

This image shows surface water runoff - the anchoring phenomenon where water flows over land when there is more water than the ground can absorb. This happens because rainwater or melting snow moves across surfaces, picking up sediment (dirt and small rocks) as it flows. The brown color indicates the water is carrying particles from the ground, demonstrating erosion and transportation of materials. This is a fundamental Earth process that shapes our landscape and is easily observable after rainstorms.

## Core Science Concepts

1. Water Movement: Water flows downhill due to gravity, following the path of least resistance
2. Erosion and Weathering: Moving water picks up and carries soil, sand, and small rocks
3. Sediment Transport: The brown color shows tiny pieces of earth being moved by the water
4. Surface Materials: Different surfaces (rocks, soil, vegetation) affect how water flows

### Pedagogical Tip:

Use concrete, hands-on experiences like pouring water on different surfaces in a sandbox or outdoor area to help kindergarteners understand abstract concepts like erosion and water flow.

### UDL Suggestions:

Provide multiple ways for students to engage with this concept: visual observation of the photo, tactile experiences with water and sand, and kinesthetic activities like acting out water flowing downhill.

## Zoom In / Zoom Out

1. Zoom In: At the microscopic level, individual soil particles and tiny rock fragments are being lifted and carried by water molecules. The turbulent motion of water creates forces that dislodge particles from surfaces.
2. Zoom Out: This small stream connects to larger water systems - it may flow into storm drains, streams, rivers, and eventually the ocean. This is part of the global water cycle where water continuously moves through Earth's systems.

### Discussion Questions

1. What do you notice about the color of this water? (Bloom's: Remember | DOK: 1)
2. Why do you think the water is moving in that direction? (Bloom's: Analyze | DOK: 2)
3. What would happen if we poured clean water on dirt? (Bloom's: Apply | DOK: 2)
4. How is this flowing water similar to when you wash your hands? (Bloom's: Analyze | DOK: 3)

### Potential Student Misconceptions

1. Misconception: "Dirty water is bad water that someone made messy"  
Clarification: The brown color comes naturally when water picks up soil and rocks as it flows - this is how Earth changes shape over time
2. Misconception: "Water only flows in one direction because someone tells it where to go"  
Clarification: Water flows downhill because of gravity - an invisible force that pulls everything toward the ground

### Cross-Curricular Ideas

1. Math - Measurement & Patterns: Observe and count rocks of different sizes in the water flow. Create a simple chart showing "big rocks" vs. "small rocks." Discuss patterns: Do bigger rocks move faster or slower than small ones?
2. ELA - Descriptive Language & Storytelling: Read books about rain and water together, then have students dictate or draw their own story about "Where does the water go?" Create a class book with student illustrations of water flowing from clouds to streams to rivers.
3. Art - Color Mixing & Observation: Provide watercolors and have students paint the different colors they see in the photo (browns, grays, greens). Discuss how adding water to paint makes it flow and change, just like the muddy water in the picture.
4. Social Studies - Community & Infrastructure: Take a nature walk to observe local water flow near your school or neighborhood. Discuss where rainwater goes and how communities manage water (gutters, storm drains, drainage systems). Connect to keeping neighborhoods safe and clean.

### STEM Career Connection

1. Hydrologist - A scientist who studies water and how it moves through Earth's systems. Hydrologists watch rivers, streams, and rainfall to understand water flow, predict flooding, and protect communities. They might measure how fast water flows and what it carries. Average Annual Salary: \$84,000
2. Civil Engineer - A builder who designs roads, bridges, and drainage systems that work with water flow instead of fighting against it. They figure out where water will go and make sure it doesn't flood towns or wash away important structures. Average Annual Salary: \$88,000
3. Environmental Scientist - A scientist who studies how water affects plants, animals, and the land around us. They might investigate how muddy water from runoff affects streams and fish, and work to keep water clean and healthy for all living things. Average Annual Salary: \$73,000

### NGSS Connections

- Performance Expectation: K-ESS2-1 - Use and share observations of local weather conditions to describe patterns over time
- Disciplinary Core Ideas: K-ESS2.D - Weather and Climate
- Crosscutting Concepts: Patterns - Patterns in the natural world can be observed and used as evidence

### Science Vocabulary

- \* Flow: When water moves from one place to another
- \* Erosion: When water or wind moves soil and rocks to new places
- \* Sediment: Tiny pieces of rock, sand, and dirt that water carries
- \* Surface: The top part of something that you can see and touch
- \* Runoff: Water that flows over the ground instead of soaking in

### External Resources

Children's Books:

- A Drop Around the World by Barbara Shaw McKinney
- Down Comes the Rain by Franklyn M. Branley
- Water is Water by Miranda Paul