# **Fresh Waters Discussion Guide (for use during or after reading)**

1. What is fresh water? Why is fresh water so important to our way of life on Earth? (What Is Fresh Water?, p. 4-5)
   1. Fresh water is water that is salt free. It can be found in lakes, ponds, streams, rivers, wetlands, and glaciers. Living things, including humans, rely on fresh water for survival. In addition, humans have found ways to use fresh water to make their lives easier. For example, we use fresh water for electricity, cleaning our dishes, and even for flushing our toilets!
2. What do you notice and wonder about the major bodies of fresh water detailed on pages 6 and 7? (Major Fresh Waters, p. 6-7)
   1. Students’ answers will likely vary. Guide the discussion toward students’ interests and encourage them to ask questions to help pique their curiosity and maintain engagement.
3. How do streams turn into rivers? How are streams and rivers used by people? (Rivers and Streams, p. 8-11)
   1. Streams form from melted ice and snow running down the sides of mountains. As the water travels downhill due to the force of gravity, it gets faster and bigger. Streams connect with other streams or bodies of water to become even larger, eventually forming rivers that are wide, flat, and contain deep waterways.
   2. People use streams and rivers for transportation, hydroelectric power, and for fertilizing crops.
4. What are lakes? Describe the differences between closed and open lakes. (Lakes, p. 14-17)
   1. A lake is a large area of fresh water surrounded by land. Small lakes are called ponds, and very large lakes can be seas (they’re even a bit salty). Some lakes get their fresh water from rivers and streams, and others fill up with groundwater or rainwater. Open lakes are those that drain into rivers and closed lakes are those that have no outlet. Closed lakes are sometimes saltier than open lakes because their water evaporates or drains into the ground, leaving salt behind.
5. Describe what happens to rainwater as it travels to and through a watershed. (Watersheds, p. 18-21)
   1. Rain falls everywhere and is pulled downhill by gravity until it reaches a river or lake. This process drains excess water so land does not become flooded. Rivers and lakes drain water from areas known as watersheds. Cities have adapted to support this process by creating storm drains and sewer systems.
6. How can pollution affect watersheds? (Watersheds, p. 18-21)
   1. It is important to note the negative effects pollution has on watersheds. When land or water in a watershed is polluted, the contaminants affect any runoff, causing polluted water to spread to other, clean areas. Most water pollution comes from waste or sewage produced by farms, factories, refineries, and cities.
7. What are wetlands and how do they form? Why are wetlands important to protect from human activity, such as building towns, resorts, or shopping malls? (Wetlands, p.22-25)
   1. Wetlands are areas of land covered by water for at least some of the year. This water can come from the ground, a flooded river, or the ocean. Wetlands can contain fresh water but can also be a little salty. Common wetlands include swamps, marshes, and bogs.
   2. It is important to protect wetlands from human activity because building on them makes it more difficult for them to protect and support their ecosystems as well as the variety of animals and plants that live there.
8. Describe how humans use groundwater and aquifers. (Groundwater, p. 26-29)
   1. Groundwater refers to the about 30% of Earth’s fresh water that is buried underground. Rain and melted snow seep through soil and fill empty spaces underground. An aquifer is a layer of rock and soil that contains groundwater. It can be used as a source of fresh water for rural areas and deserts.

1. What are glaciers and ice sheets? What is happening to many of Earth’s glaciers due to global warming and why is this problematic? (Glaciers, p. 30-33)
   1. Glaciers are huge masses of ice that slowly move across the land. Ice sheets are dome-shaped glaciers spread across the landscape, covering everything with ice. Glaciers are powerful! They can carry boulders, cut valleys into mountains, and wear away at rock. Many glaciers are melting due to global warming. Not only does this cause issues for the animals relying on the glaciers for their habitat, it also causes rising sea levels and increased flooding, which negatively affects other areas of Earth.
2. Most of Earth’s fresh water is currently unavailable for human use. List and describe at least two reasons why our access to freshwater is limited. (Unavailable Fresh Water, p. 36-37)
   1. Almost all of Earth’s fresh water is unavailable to humans! Most of it is in glaciers, hidden underground as groundwater, stuck in permafrost (a permanently frozen layer found underground in cold areas of Earth), or traveling through the water cycle. Right now, people only have access to about one third of 1% of Earth’s fresh water, but much of that is polluted and unsafe, too! Fresh water is precious, and we need to make choices that protect it.