

WHAT ARE SOME KINDS OF WATER?

**UNIT 5: Physical
Features of the Earth**
Lesson 10 — Grades K-1
INSTRUCTIONS



Overview

In this lesson students will learn about various kinds of water bodies located in the Bering Strait School District.

Objectives

On successful completion of this lesson, students will be able to:

- draw and describe bodies of water;
- identify features of a local body of water; and
- compare and contrast different bodies of water.

Alaska Standards

Alaska Science Standards

[A] A student should understand and be able to apply the processes and applications of scientific inquiry. A student who meets the content standard should:

[A.1] develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments.

[D] A student should understand and be able to apply the concepts, processes, theories, models, evidence, and systems of earth and space sciences. A student who meets the content standard should:

[D.2] develop an understanding of the origins, ongoing processes, and forces that shape the structure, composition, and physical history of the Earth.

Alaska Cultural Standards

[D] Culturally knowledgeable students are able to engage effectively in learning activities that are based on traditional ways of knowing and learning. Students who meet this cultural standard are able to:

[D.3] interact with Elders in a loving and respectful way that demonstrates an appreciation of their role as culture-bearers and educators in the community

[E] Culturally knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all elements in the world around them. Students who meet this cultural standard are able to:

[E.2] understand the ecology and geography of the bioregion they inhabit.



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Bering Strait School District Scope & Sequence

1st grade sequence #5: Physical Features of the Earth

- B. Can recognize common bodies of water.
- D. Use scientific processes to directly support the concepts of the physical features of the earth.

Materials

- *Comparing Bodies of Water* by Rebecca Rissman
- Chart paper and marker
- Student Worksheet: Bodies of Water

Additional Resources

Oceans and Seas (Bodies of Water) by Cassie Mayer

Water, Water Everywhere (A Reading Rainbow Book) by Cynthia Overbeck Bix

Living Near a River (Rookie Reader-About Geography) by Allan Fowler

National Geographic Little Kids First Big Book of the Ocean (First Big Books) by Catherine D. Hughes

Activity Preparations

1. Invite a culture bearer to visit the classroom and talk to the students. Meet with the person to discuss what the lesson will be about and what you would like them to talk about.
2. Read *Comparing Bodies of Water* to become familiar with the book before reading to students.
3. Write vocabulary words on chart paper and post in the room.
4. Draw chart on the board-see Activity Procedure #1.
5. Review Whole Picture section of the lesson for teacher background information.

Whole Picture

The BSSD region abounds with water bodies — from marshy low lands, to lakes, ponds, rivers, and of course the ocean. The following list describes common water bodies in this region.



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Ocean: An ocean is a large body of salty water that surrounds a continent. There are five oceans on Earth: Pacific, Atlantic, Indian, Arctic, and Antarctic. The Arctic Ocean, the smallest of the oceans, consists of the waters surrounding the North Pole between the North American and Eurasian continents. Throughout most of the year the Arctic Ocean remains frozen. In recent years, the summer sea ice extent has dramatically dwindled; local and scientific observers alike have noted more open waters and a resulting change in animal behavior.

Harbor: A harbor is a deep body of water that is mostly surrounded by protruding land. Because the land largely protects harbor waters from stormy weather, ships and boats typically remain safe if anchored in harbors during storms. Harbors are always part of a larger body of water (an ocean, sea, or lake). Harbors are similar to bays, but are more enclosed by landforms and are relatively small.

Bay: A bay is a large, semicircular body of calm water that is partly enclosed by land. Bay waters are always connected to larger bodies of water (oceans, seas, or lakes), and can vary in size. Frequently, multiple harbors can be found within a single bay.

River: A river is a long, flowing body of fresh water that typically empties into the sea or ocean. Rivers can also empty into other rivers; in this case, the river might be a tributary. Rivers are important parts of the hydrological cycle. Frequently a river's source, or headwaters, is located in the mountains and is fed by springs, snowmelt, rain, or glaciers. The mouth of the river is typically marked by a delta, a landform where the main stream splits into several distributaries before emptying into the sea.

Lake: A lake is a relatively large body of water that is surrounded on all sides by land. "Open" lakes contain freshwater because they are fed and drained by a river or stream. "Closed" lakes have no inlet or outlet; they are fed solely by precipitation and are drained by evaporation. Because evaporation leaves behind solids like salts, many closed lakes are saline. Lakes are larger and deeper than ponds, and their inland geographic location distinguishes them from lagoons.

Pond: A pond is a small body of water surrounded on all sides by land. It is smaller and shallower than a lake. Because ponds are relatively shallow, the water temperature from top to bottom remains mostly constant. The shallow waters and constant temperatures make ponds good habitat for water plants; these can grow even at the center of ponds (unlike in lakes, where the depth at the center prohibits plant growth). In cold weather, shallow ponds can freeze solid; the insects and other creatures that may inhabit ponds during summer frequently bury themselves in the ponds mud to hibernate at winter.

Marsh: A marsh is a wetland that is found alongside rivers, ponds, lakes, and the coast. Depending on their location, marsh waters might be freshwater, brackish water, or saltwater. They are dominated by treeless plant species, typically consisting of grasses and other herbaceous plants (seed-bearing plants that do not have woody stems, and die down to the ground after flowering).



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Lagoon: A lagoon is a shallow body of coastal water that is separated from the ocean by small islands, sandbars, or reefs. They are formed when erosion breaks away the land and ocean water seeps inland. The size and depth of coastal lagoons varies with the tides.

Water plays an important role in the lives of the many residents of the area. When young people are taught how to remain safe on the landscape, one of the many things they learn is the location and place name of important lakes, streams, rivers, and sloughs. Knowing where these places are can help a person should he become lost on the land while travelling (Fienup-Riordan and Rearden, 2012). But, beyond their importance as location markers, water bodies make subsistence living possible in rural Alaska. Lakes and rivers provide important fish as well as habitat for land mammals; ponds and marshes offer sanctuary for migratory birds; and the ocean is home to marine mammals, sea birds, and fish. These wet areas also provide habitat for edible greens and berries — important foods in a subsistence diet.

Alaska Native people have spent millennia carefully observing and studying river currents, tide flow, and the “feeding, resting, and migratory habits of fish, mammals, and birds” (Kawagley, et al., 2010, p. 224). This careful study has led to the development of unique hunting and fishing technology, including the kayak, fish wheel, and a plethora of hunting and fishing gear, as well as an intimate understanding of the interconnectedness of all land features, plant survival, and animal movement. This intimate knowledge of the landscape and their own role within it has allowed people to survive in the area for thousands of years.

However, as the climate changes, ice patterns, landscape features, and animal habits are changing as well. Areas once known to be stable are sinking, rivers are becoming shallower, and traditional hunting areas are no longer accessible. Marlin Sookiyak from Shaktoolik has noticed that a number of lakes have dried up and the permafrost melt is causing “great depressions, maybe 4 or 5 feet deep” (Sookiyak, 2011). The loss of lakes and ponds means a loss of habitat where migratory birds can lay their eggs (Kingeekuk, 2010) — the result is not only a decline in bird population, but also in a food people once depended on for subsistence.

Perhaps the most striking of changes in the water bodies of BSSD come in changes to river, lake, and sea ice. Throughout the region, people have noticed “later freeze-up in fall and earlier breakup in spring; thinner, less reliable river ice; the disappearance of cikullaq, newly frozen ice that in the past formed along open water in cold weather; rougher sea ice along the coast due to freeze-up following fall storms; and fewer evunret (piled ice) as well as evunret appearing in places where they were not previously seen” (Fienup-Riordan and Rearden, 2012, p.41).

These dramatic changes are making it more and more difficult for people to depend on the knowledge passed down through the generations to ensure a successful harvest and



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food supplies for the winter. In Savoonga, Perry Pungowiyi explained that in the past, the spring whaling season lasted from around the beginning of April through May, but lately, the conditions have only provided for a couple of days of hunting. Others, like respected hunter Chester Noongwook have explained their trepidation at these changes: "I am concerned about this happening ... Hunting is different, too because of this changing weather and ice. And the animals are different because they are living along with the ice, like the bowheads, walruses, seals, polar bears, maklaks (bearded seals). They all [used to] come close to our island because of the ice" (Krupnik and Jolly, 2002, p. 189).

To make matters worse, the sea ice now forms in patches, where once it was solid and extended outward to the sea. The lack of sturdy sea ice affects not only peoples' ability to hunt safely, but also animal behavior and predictability. As the ice becomes less stable, hunters must travel farther and farther into the sea to find them (a prospect that is both difficult and dangerous). Especially in those communities where most of their food comes from marine mammals, changes to ocean currents and ice mean changes in life ways. As George Noongwook puts it, "Now, we have to learn new ways of doing things in terms of getting food, because of the changes that are happening" (Noongwook, 2010).

Vocabulary

- lake** still body of fresh water with land around most of it.
- ocean** a large body of salty water. Most of Earth's water is in oceans.
- river** a large body of fresh moving water. Rivers may flow into lakes and oceans.
- stream** small body of fresh water that may begin in the mountains and flows downhill. Streams may flow together into a river.

Activity Procedure

1. Ask students what they know about streams, rivers, lakes, and oceans. Write their responses in a chart drawn on the board similar to below. Leave spaces so that other local bodies of water that students may have knowledge about may be added such as: bay, harbor, lagoon, pond, marsh. Refer to the vocabulary list to help fill in the chart.

lake	ocean	river	stream		



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2. Read the book *Comparing Bodies of Water* and discuss the story. Ask students to compare the bodies of water in the book to local bodies of water.
3. Have a culture bearer come in and talk about local bodies of water. They could tell about how the fishing, hunting, whaling, berry picking, animals, and plants have changed and what they think has caused the changes.
4. Hand out the Student Worksheet: *Bodies of Water*. Students will illustrate a stream, river, lake, and ocean scene. An extra sheet is included for illustrating additional local bodies of water. Encourage students to add themselves, friends, and/or family doing an activity in or on the body of water in their picture (canoeing, kayaking, fishing, whaling, swimming, picking plants, etc).

Extension Activities

- Do a Venn diagram comparing two different bodies of water such as: ocean/river, lake/stream, pond/bay.
- Tell students that they will be writing a poem about a local body of water. Have each student choose a body of water and write a descriptive word or words for each letter of the body of water on Student Worksheet: *Body of Water*. Remind students to look at the chart, vocabulary list, and/or any books about water bodies that are available. Students may need help from the teacher, another adult, or older student to write the poem. Ask students to share their completed poems with the class. Two examples of what a poem might look like are:

S-small

T-tiny

R-rocky

E-ends in a river

A-always flows downhill

M-may start in the mountains

R-rushing fast

I-icy in the winter

V-very long

E-erosion on the side

R-rocks on the bottom



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Student Worksheet: Bodies of Water

Name _____

Draw a picture of each body of water.

Body of water: STREAM

Body of water: RIVER



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Student Worksheet: Bodies of Water

Name _____

Draw a picture of each body of water.

Body of water: LAKE

Body of water: OCEAN



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Student Worksheet: Bodies of Water

Name _____

Draw a picture of each body of water.

Body of water: _____

Body of water: _____

