

How Salty Is It?

- Objectives:**
- 1) Name two reasons why the Great Salt Lake is so salty.
 - 2) Identify the major areas of the GSL.
 - 3) State the reason why different parts of the Great Salt Lake have different salinities.

Introduction

The Great Salt Lake is very unique. There are about 30 salt water lakes in the world and the Great Salt Lake is the largest in the western hemisphere. It has the 9th highest salinity in the world. It is also the 4th largest terminal lake in the world. But what does all this mean? And how did this lake get so salty?

A terminal lake means there is no outlet. There are four rivers (Bear, Weber, Ogden, Jordan) flowing into the lake but nothing flows out. This wasn't always the case. Thousands of years ago, the megalake, Lake Bonneville covered most of Utah. It was a fresh water lake with an outlet to the ocean. Around 15,000 years ago, the lake spilled out and drained through the Snake and Columbia Rivers, dropping the lake level by 350ft. The lake continued to drop through evaporation. As it did so, it became saltier and saltier, leaving a “puddle” that is now the Great Salt Lake. Evidence of Lake Bonneville, and its various levels can be seen in prominent shorelines throughout the area.

Another reason the lake is so salty is because of our mountains. Utah's mountains have many minerals and salts in them. As rain water and snow melt run down the mountains, minerals and salts are eroded and eventually end up in the Great Salt Lake. Since the lake is a terminal lake, the only way water can leave is through evaporation, leaving the salt and minerals behind.

Different parts of the lake are saltier than others. Because of causeways or small man-made dams, sections of the lake are cut off from other parts of the lake. Farmington bay has on average 5% salt, Carrington Bay is about 14% salt, and the North Arm sits around 25 % salt.

Inventory Items

Containers of Salt (4)

Chunk of Salt (1)

Container of North Arm Water (1)

Pipettes

Salinity Tester (Refractor)

Plastic Cups

Small Great Salt Lake Maps (4)

Large GSL Puzzle Map (16)

Lake Bonneville Map (4)

Activity

Part 1

1. Pull out small GSL maps. Help them orient themselves with the lake and its features: islands, mountains, cardinal directions, and the major bays (Gunnison, Gilbert, Farmington, and Willard)
2. Pull out envelope with giant map puzzle. Have students grab a puzzle piece. There are fun facts on the opposite side of the puzzle pieces. Have students read aloud to the class their fun fact. Then let students assemble the puzzle.

Part 2

1. Go to the water (beach/marina).
2. Why is the Great Salt Lake so salty? Explain the two reasons why the lake is salty. Have students look at the mountainside. Can they find the four major shorelines of Lake Bonneville?
3. Pull out the Salt Containers. Go through the different salinities of the Great Salt Lake. Pull out the chunk of salt and explain that this came from the North Arm or Gilbert Bay. There is so much salt at the north end of the lake, that the salt forms in large chunks on the beaches.
4. Ask students why there are different amounts of salt at different points of the lake? Explain that humans caused this by creating causeways or small dams for cars and trains to travel on. By changing the percentages of salt, we have altered the ecosystems of the various parts of the lake. This is not necessarily good or bad, it just is.
5. Sample some water and test it with the Salinity Tester. Put a drop of water on the blue oval and place the plastic slide on top. The scale you see in the view finder are percentages. What is the percentage of salt at the beach? Marina? Farmington Bay? Drinking water? Take out container of North Arm water and test that as well.