

## Where Our Drinking Water Comes From:

Everyone lives in a watershed and most of us live near a river or stream. A watershed is an area of land that drains into a stream, lake or river. We live in the Boulder Creek and St. Vrain watersheds.

Front Range communities get their water from streams, lakes and reservoirs that are supplied by snowmelt and rainfall. The amount of water that is available for use varies from year to year and depends on snowpack in the mountains.

Many Front Range communities receive a portion of their drinking water supply from the Northern Colorado Water Conservancy District's Colorado Big Thompson and Windy Gap projects, which bring water from the Western Slope of the Rocky Mountains to the Eastern Slope through a series of tunnels, canals and reservoirs. The water is stored in reservoirs, including Carter Lake and Boulder Reservoir, before it is treated and distributed to people living in our communities.

### Our Water Sources:

<b>Boulder:</b>	Reservoirs on North Boulder Creek, Barker Reservoir, and Boulder Reservoir sources (including Carter Lake)	<b>Louisville:</b>	South Boulder Creek and Carter Lake
<b>Broomfield:</b>	Carter Lake	<b>Niwot:</b>	Lefthand Creek Basin and Carter Lake
<b>Erie:</b>	Carter Lake and Erie, Prince and Thomas Reservoirs	<b>Lyons:</b>	North and South St. Vrain Creeks, St. Vrain Creek and Carter Lake
<b>Frederick:</b>	Carter Lake	<b>Mead:</b>	Little Thompson River and Carter Lake
<b>Gold Hill:</b>	Individual private wells	<b>Nederland:</b>	Middle Boulder Creek
<b>Jamestown:</b>	James Creek	<b>Superior:</b>	Carter Lake and Terminal Reservoir
<b>Lafayette:</b>	South Boulder Creek and Carter Lake		
<b>Longmont:</b>	North and South St. Vrain Creeks, St. Vrain Creek, Carter Lake, and the Ralph Price Reservoir (Button Rock Preserve)		

#### WATER TIP:

Less than 1% of all the water in the world is available for human use. Visit [www.KeepitCleanPartnership.org](http://www.KeepitCleanPartnership.org) for ways to protect and conserve this precious resources.



## Unit 1:



# Basic Water Intelligence

(Special Teachers' Guide)



### Type of Activity:

In-class activity  
Teacher demonstration  
In-class discussion

### Classroom Time:

25-35 minutes

### Creative Materials:

Colored pencils, markers or crayons - 4 colors per student  
(2) one gallon jugs - one filled with water, one empty  
One teaspoon  
Water

### Printed Materials:

Basic Water Intelligence student activity sheet

### Lesson Objectives:

- ◆ Initiate class discussion on the different types of water and why it's important to take care of this precious resource.
- ◆ Make and test predictions about water distribution and sources.
- ◆ Understand how and why water is important to human life.

### Activity Procedure:

There are two parts to this activity:

1. Basic Water Intelligence student activity sheet.
2. Water composition demonstration and discussion.

## Activity Directions:

**Hand out** Basic Water Intelligence student activity sheet and ensure all students have 4 colored markers, pencils, or crayons. Review information about each type of water listed. Have students complete side one of the activity where they will provide a best-guess estimation of what percentage of each type makes up the world's water.

Then, have students **complete** side two, where they use colored markers, pencils or crayons to fill in the chart with their predicted percentages of each type of water source. The diagram will show students' prediction of what part of the total amount of water on Earth each water type comprises.

Next, **complete** the teacher demonstration.

Finally, using the background information provided, **initiate** class discussion on the importance of water and why students need to take care of water.

### Activity Answers:

**97% of the Earth's water is salt water - oceans, seas, some lakes and rivers**

**2% is ice - glaciers, ice caps**

**0.8% is ground water**

**0.2% is surface water - rivers, lakes, wetlands, clouds, etc.**

**Less than 1% of all water in the world is available for human use.**

## Background Information for Class Discussion:

### Basic Water Intelligence Information:

Clean water helps keep our planet and the life on it alive and healthy. Many things depend on clean water including human life, animal life, business, farming, recreation, tourism, and day to day activities. The Earth is about 75% water. Of that water, 97% is salt water. The remaining 3% is fresh water. Of this fresh water, 2% is locked up in glaciers and ice caps, 0.8% is ground water and 0.2% is surface water (fresh water in rivers, swamps and lakes). Surface water is an important natural resource used for many purposes, especially irrigation and public drinking water. Rivers make up a very small percent of this surface water - yet this is where we get most of the water for our everyday uses.

Fresh water and ground water sources are not always accessible, or clean enough for use without treatment. For example, ground water is sometimes difficult to locate or to measure. As a result, less than 1% of all the water in the world is available for human consumption.

Communities in Colorado get their water from streams, lakes and reservoirs that are supplied by snowmelt and rainfall. Snow is a valuable water source for our state. About 80% of our drinking water comes from snow melt. A low snow year can greatly affect how much water is available for people to use for irrigation and drinking water.

For more information on water distribution, please visit <http://ga.water.usgs.gov/edu/waterdistribution.html>

### Teacher Demonstration:

Fill a one gallon jug 97% full with water and explain that this water represents salt water.

Add another splash to represent the 2% of water that is in the form of ice (glaciers, ice caps). At this point the jug should be just about full.

Add a smaller splash of water to represent the 0.8% of water that is ground water.

Finally, take one teaspoon of water and add it to the gallon. Explain to students that this represents all the surface water (including rivers) in the world. Most of the water we use in our everyday lives comes from rivers.

After you demonstrate the correct percentages of water in the world, have students fill in the correct amounts on the actual chart on their activity sheet. Once complete with the correct information, facilitate a discussion about their predictions and actual findings.

Discuss with students the fact that less than 1% of all the water in the world is available for human use. (Not all ground water and surface water is available for use by humans).

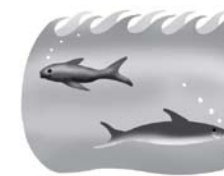
### Composition of Water:

**97% Salt Water:** Water that contains a relatively high percentage of salt minerals (oceans, seas, some lakes and rivers).

**2% Ice:** Frozen water (glaciers, ice caps).

**.8% Ground Water:** Water stored underground in rock crevices and in the pores of geologic materials that make up the Earth's crust.

**.2% Surface Water:** Water that is on the Earth's surface, such as in a stream, river, lake, swamp, creek or reservoir.



### Water Cycle:

The water cycle includes the movement and existence of water on Earth. It is essential to our own and the Earth's life cycle. For additional information and activities on the Earth's water cycle, please visit:

<http://ga.water.usgs.gov/edu/watercycle.html>