**HOW DO HUMANS AFFECT THE ENVIRONMENT AND HOW DOES THE ENVIRONMENT AFFECT HUMANS?**

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| **Overview:** | Student will understand the five themes of geography, focusing on Human-Environment Interaction and applying its concepts to Idaho and our local watershed |
| **Keywords:** | 5 Themes of Geography, Human-Environment Interaction (HEI), depend, modify, adapt, ecosystem services, watershed, basin, irrigation, canal, fertile, arid, reservoir, desert, snowpack |
| **Subject:** | World Studies |
| **Age / Grade Range:** | 7th Grade |
| **Background:** | The 5 Themes of Geography help geographers discuss the world. Location, Place, Region, Movement, and Human-Environment Interaction (HEI) are used throughout the year to discuss different locations all over the world. Today’s lesson focuses on the theme of HEI. Introduce keywords prior to lesson depending on your students’ vocabulary. |
| **Common Core and Idaho Content Standards:** | *Idaho Content Standards*  6-9.WHC.1.7.1 Explain how man adapted the environment for civilization to develop.  6-9.WHC.2.4.1 Explain the impact of waterways on civilizations  6-9.WHC.2.5.4 Describe how the conservation of resources is necessary to maintain a healthy environment.  *Common Core State Standards*  W.H.6-8.7Define and provide examples of human environmental interaction. |
| **Goals:** | The goal of this lesson is to reinforce an understanding of the five themes of geography, in particular- Human-Environment Interaction. Students will learn about water management in for the Treasure Valley and how humans have impacted it.  Essential Questions:  What is Human-Environment Interaction?  How do humans affect the environment and how does the environment affect humans?  Where does our water come from? |
| **Objectives:** | * Students will be able to define and provide examples of Human-Environment Interaction. * Students will understand the impact of Arthur De Wint Foote and Mary Hallock Foote on the Treasure Valley. * Students will be introduced to the Boise Watershed and where our water comes from. |
| **Materials:** | Pencils, paper, Smartboard file with pictures of Arthur and Mary Foote, Foote Park, Arrowrock Dam, New York Canal, student devices, classroom iPads, AppleTV (optional), Guided Notes (see below)  Treasure Valley Water Atlas <https://boisestate.maps.arcgis.com/apps/Cascade/index.html?appid=11e5a118e5794c5fa1b574b91853ca9c>  Images for SmartBoard   * <https://education.boisestate.edu/irrigatedwest/files/2014/03/14-Desert-and-Sown-Foote-art.jpg> * <https://education.boisestate.edu/irrigatedwest/files/2014/03/15-Pretty-Foote-art1.jpg> * <https://education.boisestate.edu/irrigatedwest/files/2014/03/07-Foote-House-B-River-ISHS.jpg> |
| **Set up:** | Turn on Smartboard, open Notebook file with images, pull up Treasure Valley Water Atlas, post opening question the white board- “Where does our water come from?” |
| **Time/ Duration:** | 45 minutes class period |
| **Introduction (Engage):** | Ask a student for the definition of Human-Environment Interaction. Remind students that HEI is how humans affect the environment and how the environment affects humans- in particular, how humans depend, modify, and adapt to the environment. Explain that we also benefit from the environment through ecosystem services and generate a few from your class.  Explain that today’s lesson is going to focus on the theme of HEI but within the Treasure Valley. Go over objectives and point to the board saying the opening question, “Where does our water come from?”  Allow students 5 minutes to think, pair, share on the question. As a class, listen to a few people’s theories and move the lesson forward by reiterating that today, they will learn the answer so they can impress their families later! |
| **Activity (Explore):** | Show the next slide or a picture the Arthur and Mary Foote and ask students if they know who these two people are? Play a quick game of “Analyze the Primary Source” with your class. What do they notice? Where do they think this picture takes place? What can the image tell us? Allow a minute to discuss ideas and what theories your historians may have come up with. Entertain a few guesses, and then let students know that these two people were very important in shaping Idaho’s environment and today they get to learn their story!  Today’s activity is going to start with some guided notes and a quick presentation about the Treasure Valley’s waterways. Pass out guided notes and allow students to take notes as you review the story map and key elements. Skip parts that are not pertinent to lesson. Show the Treasure Valley Water Atlas and explain to students about our local watershed, reservoirs, and water management in Idaho. Stop at Arrowrock Dam and discuss Arthur and Mary Foote, the people from the picture earlier. When the slide show is over, ask students to discuss possible challenges for the future of water management in Idaho. Brainstorm possible solutions. Discuss the importance of HEI both locally and internationally. |
| **Explanation:** | (Give students a three minute Brain Break. Play a quick game of Simon Says)  Pull the picture of the Footes back up on the board. Ask students if they can now explain how these two affected Idaho’s environment? Discuss the story of Arthur De Wint Foote and Mary Hallock Foote. Tell the how they moved to Idaho, dreamed up the idea for Arrowrock Dam, the New York Canal, and ultimately permitted our arid climate to become a flourishing agricultural arena.. Without their vision and perseverance, our region would have never seen such successes in agriculture. It is said that the Footes’ goal was to “make the desert bloom.” Arthur and Mary Foote are icons in Idaho’s history, yet few know of their dramatic impacts on our environment. Show students more pictures, primary sources of Mary’s writing and art, and the Foote Park Project. Invite students to theorize what Idaho might look and be like without the Foote family’s involvement in HEI. |
| **Elaboration:** | Ask students to record a 30 second video with a partner explaining where our water comes from and how it is managed. ***Each response must use at least three statistics or terms from the guided notes.*** Have students record each other's responses, and switch. Send to teacher and share a few using Apple TV and Smartboard in front of the the whole class. |
| **Evaluation/ Assessment:** | To close the lesson, post the following prompt on the board, “Explain how Arthur and Mary Foote “made the desert bloom”? What was their lasting impact on the environment? How did they depend, modify, and adapt to the environment? (pick one question, use information from guided notes!)  Hand out exit tickets, and allow students to think (work independently for 1-3 minutes), then pair (discuss answers with a partner for 1 minute), and finally share out to the class as a whole. Collect tickets as they exit for further evaluation. |

**Additional resources:**

<https://en.wikipedia.org/wiki/Arthur_De_Wint_Foote>

<https://www.google.com/search?q=arthur+de+wint+foote&rlz=1CAACAG_enUS597US601&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwjZu5G_k5PVAhUH1GMKHQsHBnMQsAQINA&biw=1366&bih=654#tbm=isch&q=arthur+de+wint+foote+mary+hallock+foote>

<http://www.footeparkprojectboise.org/arthur-de-wint-foote.html>

<http://www.idahostatesman.com/news/local/article40852818.html>

<http://www.idahostatesman.com/outdoors/hiking/article40684662.html>

<http://www.ktvb.com/news/local/boise-park-set-for-new-development/449741712>

**Family/ Community Connections:** Students will be invited to visit local dams and reservoirs, especially Arrowrock Dam near Boise. Also, invite students to visit Foote Park near Lucky Peak and enjoy the water and hiking opportunities. Finally, students and families can visit the Foote Park Project site and watch as this iconic couple is memorialized with a recreation of their original home. Remind students that whenever they see the New York Canal system and all of the agricultural from Boise to Caldwell, they are seeing the work of the Foote’s as well as a local example of HEI.

**Extension:** To provide an extension/alternate lesson for accelerated learners ask them to research another local person of significance. Ask students to create a demonstration (PowerPoint, poster, diorama) about that person and how they depended, modified, or adapted to the environment.

Name:

Date:

Period:

Guided Notes for the Treasure Valley Water Map

Where does our water come from?

The Boise River Basin can be divided into \_\_\_\_\_\_\_\_\_\_\_\_\_ parts. The\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Basins. The Upper Basin in larger, measuring \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ square miles. The Upper Basin is very mountainous and gets an average of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ inches of precipitation annually which accounts for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ % of the surface water used in the basin.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_reservoirs (Anderson Ranch, Arrowrock, and Lucky Peak) have a combined storage capacity of almost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acre-feet of water, and store precipitation and snowmelt for use in the \_\_\_\_\_\_\_\_\_\_\_\_ Basin. Very few people live in the Upper Basin.

The Lower Basin is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the two regions, at approximately 1,328 square miles. The lowest elevation in this region is 2,185 feet. With an average of about \_\_\_\_\_\_\_\_\_\_\_inches of precipitation falling here annually, the Lower Basin has a dry, high desert climate.

The three largest cities in Idaho (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) are located here. Twenty-five percent of the lower basin, [220,000 acres](https://www.nass.usda.gov/Research_and_Science/Cropland/Release/index.php), is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ land. Agricultural, manufacturing, and municipal demands account for approximately \_\_\_\_\_\_\_\_\_% of the use of surface water stored in Upper Basin reservoirs.

Unlike the \_\_\_\_\_\_\_\_\_\_\_ Basin, the Lower Basin is a highly engineered system. Dam construction beginning in the early \_\_\_\_\_\_\_\_\_, along with river channelization, allows water managers today to store water, manage for floods, and deliver water for various uses including \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_ control, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and municipal water. Similar to the heart it resembles in the images below, this complex \_\_\_\_\_\_\_\_\_\_\_\_\_\_ water distribution system pumps life in the form of water into the Treasure Valley.

Storing Water

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plays an important role in the Boise River system. There are six reservoirs in the Boise River Basin: two naturally occurring, and \_\_\_\_\_\_\_\_\_\_ built by humans. One of the largest natural reservoirs is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Our water starts out as snowfall in the mountains where it is stored, frozen, until spring temperatures trigger melt and it begins flowing down towards the Lower Basin. The average total water stored in the upper watershed as snow on April 1st is not directly measured, but can be estimated from models to be about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acre-feet. After being released from snowpack as melt, some of this water is captured and stored in four [reservoirs](https://www.usbr.gov/pn/hydromet/boipaytea.html)—\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Despite having a combined storage capacity of over 1,000,000 acre-feet, these reservoirs can only capture \_\_\_\_\_\_\_\_\_\_\_\_ of the total precipitation that falls in the Upper Basin annually.

The \_\_\_\_\_\_\_\_\_\_\_ dams in the Upper Basin can store nearly 1,000,000 acre-feet of water which allows agriculture and cities to flourish in the Treasure Valley. Even though this seems like a lot of water, these reservoirs only capture about \_\_\_\_\_\_\_\_\_\_\_\_ of the available water from snowmelt.

Future Considerations

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_