



# Goin' with the Flow: Aqueducts and Canals

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**Grade Level** 3  
**Duration** 2 class periods

## National Standards

### GEOGRAPHY

#### Essential Element 4: Human Systems

9. The characteristics, distribution and migration of human populations on Earth's surface

12. The processes, patterns, and functions of human settlement

#### Element 5: Environment and Society

14. How human actions modify the physical environment.

#### Element 6: The Uses of Geography

17. How to apply geography to interpret the past

## AZ Standards

### ELA

#### Reading

##### Informational Text

##### Key Ideas and Details

**3.RI.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

##### Integration of Knowledge and Ideas

**3.RI.7** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

#### Writing

##### Production and Distribution of Writing

**3.W.4** With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.

## Arizona Social Science Standards

### GEOGRAPHY

**Human-environment interactions are essential aspects of human life in all societies.**

3.G2.1 Explain how people modify and adapt to the Arizona environment.

**Global interconnections and spatial patterns are a necessary part of geographical reasoning.**

3.G4.1 Describe how Arizona has changed over time.

### HISTORY

**The development of civilizations, societies, cultures, and innovations have influenced history and continue to impact the modern world.**

3.H1.1 Utilize a variety of sources to construct a historical narrative exploring Arizona's cultures, civilizations, and innovations.

**Economic, political, and religious ideas and institutions have influenced history and continue to shape the modern world.**

3.H3.2 Use primary and secondary sources to analyze the changes that have taken place in Arizona which could include the use of current events.

## Overview

Students should be encouraged to ask geographic and historic questions. Instruction in geography and history will provide opportunities to reach out in time and place, beyond their "here and now." A geographic theme that young students can easily explore across space and time is how do civilizations meet the needs of the people.

## Purpose

In this lesson, students will learn about aqueducts, the water delivery system of the ancient Romans and compare the aqueducts to an early system in

Arizona, the canals of the Ancestral People of the Sonoran Desert.

## Materials

- Images 1--Ancestral People of the Sonoran Desert Canal Images
- Images 2--Roman Aqueduct Images
- World map  
<https://geoalliance.asu.edu/sites/default/files/maps/World-at.pdf>
- Prehistoric Cultures of the Southwest  
<https://geoalliance.asu.edu/sites/default/files/maps/sw-prehistoric.pdf>
- Student Reading

- Writing Prompt and Answer Key
- Colored pencils or crayons
- Projection device

## Objectives

The student will be able to:

1. Describe Roman and the Ancestral People of the Sonoran Desert water systems.
2. Describe how ancient civilizations have changed from past to present.

## Procedures

**Note to the teacher:** *Chronologically, historians date the Roman Republic and Empire between 500 B.C. and A.D. 476. The Ancestral People of the Sonoran Desert came on the scene in present-day Arizona between 300 B.C. and A.D. 500 and lasted until A.D. 1450. This cultural time period is now referred to as Hohokam while the people are called Ancestral People of the Sonoran Desert. (National Park Service 2018) There is no historical or cultural connection between the two civilizations. The point of this lesson is to emphasize that all civilizations must meet the needs of the people in order to survive and all civilizations contribute innovations which make survival possible.*

### SESSION ONE

1. Begin the lesson by projecting Images 1 and 2. Encourage student thinking by eliciting questions they have about the pictures. Tell students they are going to be thinking like geographers and historians. Possible questions include:

- What is pictured?
- Why were they built and what were they used for?
- How do you think that they were built? What were the tools like?
- What materials from their natural environment did the people use?
- When do you think they were built?

Write the class's questions on the board or chart paper to guide student learning during this lesson. Identify the images as Roman aqueducts and the Ancestral People of the Sonoran Desert canals.

2. Emphasize that the Ancestral People of the Sonoran Desert and the Romans lived in different times and on different continents but like all people, they had similar needs to get water. They had to depend on their natural environment.

3. Project the World map and the Prehistoric Cultures of the Southwest map. Point out the southwestern United States (Ancestral People of the

Sonoran Desert) and the region surrounding the Mediterranean Sea (Roman Empire).

4. Tell the class that they will be answering the geographers' and historians' questions about the two water systems pictured in Images 1 & 2 as they read the Student Reading.

5. Before reading, familiarize the students with content vocabulary, defining and pronouncing the words: ancient, aqueduct, canal, civilization, concrete, culture, irrigate (irrigation), network, and system.

6. Use the Student Reading as a read-aloud, as a partner read/share, or as a group read/share. Share pictures of both civilizations so students have a better visual impression the Ancestral People of the Sonoran Desert and the Romans. (See Sources.)

7. Close this session with a class discussion based on the Student Reading. Guide the discussion with the following questions:

- What are two reasons given on why the Romans needed water?
- What made the Roman aqueducts strong?
- Where did the water come from that the Romans used?
- Are there any aqueducts standing today?
- What was the main reason given on why the Ancestral People of the Sonoran Desert needed water from the rivers?
- How did the Ancestral People make their canals?
- One of the Ancestral People's canals was very long. How long was it?
- Are there any Ancestral People's canals left today?

### SESSION TWO

1. At the beginning of Session Two, review what was learned about both ancient cultures and their water delivery systems. Revisit the geographers' and historians' questions from Session One.

2. Explain the Writing Prompt drawing and writing assignment.

3. As closure, ask several students to share their pictures and writings with the entire class.

## Assessment

### Social Science and ELA

The Ancestral People of the Sonoran Desert/Roman drawings and descriptions will be assessed using the Writing Prompt scoring guide. Mastery will be considered 14 points or higher.

## Extensions

1. Students could write a short journal entry from the perspective of a worker who built the aqueducts or the canals.
2. Students can visit the Pueblo Grande Museum in Phoenix to learn more about the Ancestral People of the Sonoran Desert canal system.
3. Discuss as a class how many ways humans depend on water, emphasizing the basic human need for water in the past and today.
4. Students can research other ancient civilizations or early North American people. How did they use water? How did they get their water?

## Sources

### **Ancestral People of the Sonoran Desert:**

Andrews, John P. and Bostwick, Todd W. *Desert Farmers at the River's Edge The Hohokam and Pueblo Grande*. City of Phoenix Parks, Recreation and Library Department: Phoenix, AZ, 2000. ISBN 1-882572-30-0.

Houk, Rose. *Hohokam Prehistoric Cultures of the Southwest*. Tucson, AZ: Western National Parks Association, 1992. ISBN 1-877856-10-X.

### **Roman:**

Supples, Kevin. *Civilizations Past to Present Rome*. Washington, D.C.: National Geographic Reading Expeditions, 2002. ISBN 0-7922-8681-2

Gedacht, Daniel C. *Technology of Ancient Rome*. New York: Rosen Publishing Group, Inc., 2004. ISBN 0-8239-8947-X

Nardo, Don. *Roman Roads and Aqueducts*. San Diego, CA: Lucent Books, Inc. ISBN 1-56006-721-7

"Roman Empire." *National Geographic* Vol #192 (July 1997): 2-41.

"Roman Empire." *Kids Discover Magazine*. 1998.

### **Water usage throughout history:**

[http://www.waterhistory.org/histories/Ancestral People of the Sonoran Desert/](http://www.waterhistory.org/histories/Ancestral%20People%20of%20the%20Sonoran%20Desert/)

[http://www.waterhistory.org/histories/Ancestral People of the Sonoran Desert2/](http://www.waterhistory.org/histories/Ancestral%20People%20of%20the%20Sonoran%20Desert2/)

<https://www.nationalgeographic.org/encyclopedia/roman-aqueducts/>

[https://en.wikipedia.org/wiki/Roman\\_aqueduct](https://en.wikipedia.org/wiki/Roman_aqueduct)

<https://www.britannica.com/technology/aqueduct-engineering>

### **Maps:**

<http://alliance.la.asu.edu/azga/>

### **Graphics:**

Pueblo Grande Museum for their images of the Ancestral People of the Sonoran Desert ruins

Jerrold VanNocker <http://www.TravelingInSpain.com>

Arizona State Museum, The University of Arizona, Photography Collections  
[www.statemuseum.arizona.edu](http://www.statemuseum.arizona.edu)

[www.waterhistory.org/](http://www.waterhistory.org/) for their graphics and images