

# Lesson 3: California's Water Systems

## Focus Questions:

Where do Californians get their water?

How did California develop into a network of dams, aqueduct and reservoirs?

How has water helped California develop into an agricultural and industrial power?

## Activity # 1 Development of California's Water System

**Preparation:** Using a document camera, a transparency or large butcher paper chart, display a copy of the graphic organizer **Development of California's Water System (Handout #3.1)** Duplicate a copy for each student. For the California Aqueduct group, provide copies of **State Water Project (California Aqueduct) Handout #3.2**. Have available copies of a Grade 4 textbook, such as *Reflections California: A Changing State*, other reference materials, and access to the internet.

### Development of California's Water System

How did California's water system help it become an agricultural power?

	Location	When? Key dates	Key People	Interesting Information
Imperial Valley				
Los Angeles Aqueduct (Owens Valley)				
Hetch Hetchy Aqueduct				
California Aqueduct				

**Note:** One of the goals of this unit is to have students locate information in reference texts by using organizational features such as prefaces and appendices, tables of content, and indexes.

### Procedure:

**General Discussion of the Topic:** To pre-access student's knowledge of the topic, begin by asking them where they get their water. Discuss tap water, bottled water, wells, water fountains, lawn sprinkler systems, showers, etc. This is a good time to also teach the water cycle. Find out the sources of the water in your local community.

**Divide your students into groups of 3 to 4.** Assign one of the water systems to each group. Depending upon the number of students, two or more groups may share the same water system.

**Note:** You may wish to assign more advanced students to the California Aqueduct group. Make copies of **State Water Project (California Aqueduct) Handout #3.2**. Additional information may be found at <http://www.publicaffairs.water.ca.gov/education/catalog.cfm>.

**Textbook Walk:** Using the available social studies textbook, have your students refer to the *Index*. Explain that the index lets you know where information about important people, places and events

appear in the book. All entries are listed in alphabetical order. For each entry, the page reference indicates where information about that entry can be found in the text. Page references for illustrations are set in *italic* type. An italic *m* indicates a map. Guide words at the top of each page help you identify which words appear on each page.

Together, look for the words “Imperial Valley.” Turn to the first page listed. Demonstrate how to “preview” or “skim” through the text when reading to locate specific information. Include illustrations, titles, topic sentences and key words as clues. Skim to look for the words “Imperial Valley.”

**Complete the chart for your water system.** Begin by having students look for the location, dates, key people and interesting information. Does any of this information fit on our chart? If yes, record the pertinent information and note the page number where it was found. If the information found does not fit on the chart, return to the *Index* and refer to the next page number listed.

Have each group use the *Index* to locate the pages for their topic and record the location, dates, key people and interesting information on their copy of the graphic organizer. The objective is for each group to use the *Index* to locate the sections of the text related to their topic. Groups are each responsible for one part of the water system.

**Startling Statements.** Review some of the Startling Statements presented in Lesson 2. Record any information from the startling statements that are not already on the chart. Ask, “How can we find out more information about these water systems to add more information to the organizer?”

**Gallery Walk** (Optional dependent upon the resources available.) In advance, gather together resources that relate to water systems in California. Check with your local water retailer for resources they have to teach about water issues in California. Place these resources in different parts of the classroom. Posters, historic photographs or artwork can be displayed in a gallery fashion. Materials might include books, maps, videos, primary source documents, brochures, encyclopedias, and artifacts related to the topic.

Discuss gallery “manners” with students: speaking in quiet voices, studying objects for information, sharing information. Students visit the gallery walk in small groups.

The question “How did California’s water system help it become an agricultural power?” can serve as a guide for their gallery walk. Following completion of the walk, the students discuss what they have seen and what they now know about each of the water systems of California. Each group then shares their ideas. The teacher records the information on the class-size graphic organizer and students record the information on their personal copy of the organizer.

Some interesting websites include:

<http://score.rims.k12.ca.us/activity/whosewater/index.html> Who’s Water is It? Hetch Hetchy

<http://score.rims.k12.ca.us/> SCORE web site. Go to Grade 4, Unit 4, Topic 6.

## **Activity # 2 Cause and Effect**

Explain to students that a “cause” is something that makes something else happen. An “effect” is what happens as a result of something else happening. Sometimes an effect has more than one cause. Ask students to think about something that has happened at your school – you got a good grade or you won an award. List the causes of that effect.

### Create a two-column chart titled “Cause and Effect”

Write the following statement in the “effect” column. *For more than 50 years, California has been the #1 farming state.* Ask students why they think farming or agriculture has been so successful in California. Record their responses in the “cause” box.

Read the following information and record it in the proper column as a “cause” or an “effect”.

- In 1901, George Chaffey built a canal to bring water from the Colorado River to the Imperial Valley. The irrigated land of the Imperial Valley became one of the richest farming regions in the United States.
- The Los Angeles Aqueduct was built to bring water from the Owens River to Los Angeles. The aqueduct supplied water for about 2 million people. The water was used to irrigate farms and ranches.
- Water was used to create hydroelectric power. Los Angeles took so much water there was not enough water for the crops and animals in the Owens Valley.

### A “Sample” of Cause and Effect Questions

Ask a series of cause and effect questions.

- Why did Californians build a network of dams, aqueducts and reservoirs? What affect did these water systems have on the growth of California?
- In the early 1900s, William Mulholland engineered the Los Angeles Aqueduct and brought water over 200 miles to Los Angeles. How did this affect Los Angeles? How did this affect the Owens Valley?
- How did the dam on the Tuolumme River affect the Hetch Hetchy Valley? How did the reservoir affect San Francisco?
- How did the opening of the Hoover Dam in 1936 affect the nearby states?
- How did the Central Valley Water Project affect the San Joaquin Valley?
- How did California’s water system help it become an agricultural and industrial power?
- What would happen to California’s agriculture industry if there were a drought? What if there was too much rain?

### Activity # 3 Write Information Reports - California’s Water Systems

<p>Materials needed: For each student, a copy of <b>Information Reports (Handout #3.3)</b> (Optional) <b>California Water’s Systems (Handout #3.4)</b></p>
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Students will use the information from their graphic organizer to create an information report. The **Information Reports (Handout #3.3)** should be completed by each student. Fourth graders need guidance so plan on making this a direct instruction lesson where you model the process step-by-step. Do not worry if each student’s report is the same. They are learning the process of taking information from an organizer and putting it into a written form.

Students should write an information report describing one of the California water systems, **or** you may have them write about all of the water systems. With your guidance, the writing will get easier each time the students complete the process!

**Prompt: Write an information report describing California’s Water Systems.** Include topics such as “the Imperial Valley,” “Los Angeles Aqueduct,” “Hetch Hetchy,” and “the California Aqueduct.”

(Optional) If desired, provide a “screen” for the water writing assignment. The screen provides the first and last sentence for the information report. Students use the guidelines listed below to complete the middle parts of the report. Refer to **California Water’s Systems (Handout #3.4)**.

It is recommended the teacher **model** how to write the information report.

The information report should include the following details:

- The area/location of California affected
- Key events when the events occurred
- Key people
- Why the changes occurred (cause)
- Impact of the change (effect)

Write an information report:

- Frame a central question about an issue or situation.
- Include facts and details for focus.
- Draw from more than one source of information (e.g., speakers, books, newspapers, other media sources).

Follow stages of the writing process and revise selected drafts to improve coherence and progression by adding, deleting, combining and rearranging text. Following the writing of the information reports, have groups of students make information presentations.

Make information presentation:

- Frame a key question.
- Present effective introductions and conclusions that guide and inform the listeners’ understanding of key ideas.
- Include facts and details that help listeners to focus.
- Incorporate more than one source of information (e.g., speakers, books, newspapers, television or radio reports).
- Use appropriate volume, pitch, phrasing, pace and gestures expressively to communicate meaning.

### **Assessment:**

The assessment of this unit is integrated with the instruction and occurs throughout the lesson. The focus questions provide a framework for the evaluation of the unit.

- Locate information in reference texts by using organizational features such as prefaces, appendices, table of contents and index
- Distinguish between cause and effect
- Using a variety of resources, conduct research and complete a graphic organizer on California’s Water Systems (Handouts #3.1)
- Write an information report describing how water helped California become an agricultural power and present the information report (Refer to Handout #3.3).

## Development of California's Water System

How did California's water system help it become an agricultural power?

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Hetch Hetchy Aqueduct				
California Aqueduct				

## State Water Project (California Aqueduct)

Despite the opening of the Central Valley Project in 1951, the rush of people to California in the years after World War II created a new interest in state development of additional water supplies to serve California's growing population. A plan was made to divert water from the Feather River to a multi-purpose dam, reservoir, and power facility near Oroville.

That winter, a devastating flood hit Northern and Central California, causing loss of life and extensive damage. This disaster highlighted the need for flood control on the Feather River. By 1959, the State Legislature passed the Burns-Porter Act, authorizing \$1.75 billion in bonds to build the Project's initial facilities. Voter approval was won in 1960.

The purpose of the State Water Project is to store water and distribute it statewide. There are approximately 660 miles of canals and pipelines. Other purposes are flood control, power generation, water quality improvement, recreation, and the enhancement of fish and wildlife. Parts of the Project have been serving Californians since 1962.

Additional information may be found at

<http://www.publicaffairs.water.ca.gov/education/catalog.cfm>.

## Write an Information Report and Make an Information Presentation

Prompt: Write an information report describing California's Water Systems. Include topics such as "the Imperial Valley," "Los Angeles Aqueduct," "Hetch Hetchy," and "the California Aqueduct." Guidelines include:

The information report should include the following details:

- The area/location of California affected
- Key events when the events occurred
- Key people
- Why the changes occurred (cause)
- Impact of the change (effect)

Write an information report:

- Frame a central question about an issue or situation.
- Include facts and details for focus.
- Draw from more than one source of information (e.g., speakers, books, newspapers, other media sources).

Follow the stages of the writing process and revise selected drafts to improve coherence and progression by adding, deleting, combining and rearranging text. Following the writing of the information reports, make an information presentation.

Make an information presentation:

- Frame a key question.
- Present effective introductions and conclusions that guide and inform the listeners' understanding of key ideas.
- Include facts and details that help listeners to focus.
- Incorporate more than one source of information (e.g., speakers, books, newspapers, television or radio reports).
- Use appropriate volume, pitch, phrasing, pace and gestures expressively to communicate meaning.

(Note: The *California English/Language Arts Standards* state that Grade 4 students should write an information report and make an information presentation. The above prompt and guidelines are based on the standards.)

## California's Water Systems

California has a complex water system of natural and man-made features that has allowed growing communities, productive farms, and industry to co-exist in a state that receives little or no rain for months at a time. One of these water systems is called the \_\_\_\_\_.

California's water system has evolved over time into a network of dams, aqueducts and reservoirs. The \_\_\_\_\_ water system has helped California to become an agricultural and industrial power.