

# Waterworks Around the World

How are waterworks projects influenced by the geography of the regions where they are located?

## Overview

Students investigate how the geography of an area influences and determines waterworks projects.

For the complete activity with media resources, visit:

<http://education.nationalgeographic.org/activity/waterworks-around-world/>

## Directions

### 1. Review basic map features on a world map.

Divide the class into groups of three to four students each. Distribute one world political map set to each group of students. Have students assemble the map using tape. As needed, give a brief whole-class review of longitude/latitude and other basic map features.

### 2. Use context clues to identify potential waterworks project locations.

Tell students that they will be using geographic clues to determine where various waterworks projects are located around the world. Distribute one Waterworks Project Clue handout to each group, giving a copy of the clue to each group member. Ask each group member to read the clues and underline geographic context clues within the text. Students should underline words that will help them to identify possible locations of their group's project. Then, have students share the clues they underlined with their group members.

Using the geographic clues they identified, have students work in their groups to identify areas on their maps that meet their clue requirements. Groups should circle these areas on their maps with a single colored marker, create a map key, and record that this color indicates a possible location in the map key. As groups work, walk around the room and check on their progress. Prompt students with questions about ecosystems, climates, and locations.

### 3. Reveal the specific location of each waterworks project.

Have each group share with the class about their waterworks project and where they think it's located. It's fine if they have many areas circled on their map. Be sure that each group shares their reasoning during their presentation. Ask: *What context clues did you use to guide you?*

After each group has presented, reveal the actual latitude and longitude of their project using the Waterworks Project Clues Answer Key. Have groups find their locations on their maps, mark the locations with a star, and identify the location name. Have groups add the star symbol to their existing map keys. Ask if any of the areas they had circled coincide with the actual location.

#### **4. Students research and add additional information to their maps.**

Now that groups know where their project is located, ask them to investigate the geography of the project area. Have them use different colored markers and symbols of their choosing to indicate the following on their maps:

- Nearby bodies of water, such as lakes, rivers, and oceans
- Various ecosystems that the project is located in
- Nearby cities and populations
- Any nearby political borders
- Any nearby mountains, cliffs, and valleys

Be sure to have students add this information to their map keys. Students may indicate features not on the list above.

#### **5. Engage students in a wrap-up discussion.**

*Ask: What populations and bodies of water are near your group's project? How might the geography of your project's location have determined the type of project that exists there? How are projects that are located in different areas different from each other?*

### **Modification**

For a class with fewer than 25 students, students may work in pairs to discuss the waterworks project clues.

### **Informal Assessment**

Assess each group's map for completeness and accuracy of information. Be sure that groups have added the required information to their map key.

Throughout the activity, walk around the room and ensure that each student is applying map skills to identify locations. Also ensure that each student is participating in the group activity of investigating a particular waterworks project. Assess students based on level of engagement and competence in the closing discussion, whether they understand the tasks and apply the understanding verbally.

## **Extending the Learning**

Have students research the current status of their group's waterworks project. With the new information, reengage the discussion about the possible reasons why particular projects are chosen for particular regions.

## Objectives

### Subjects & Disciplines

#### Geography

- [Physical Geography](#)

#### Science

- Earth science

#### Social Studies

- Technology and civilization

### Learning Objectives

Students will:

- Use textual context clues to identify geographic information on a world map
- Create map keys
- Discuss how the geography of an area guides and determines waterworks projects

### Teaching Approach

- Learning-for-use

### Teaching Methods

- Cooperative learning
- Discussions
- Hands-on learning

### Skills Summary

This activity targets the following skills:

- 21st Century Themes
  - [Global Awareness](#)
- Critical Thinking Skills
  - Analyzing
  - Applying
  - Creating
- Geographic Skills
  - [Answering Geographic Questions](#)
  - [Organizing Geographic Information](#)

### National Standards, Principles, and Practices

## National Council for Social Studies Curriculum Standards

- **Theme 3:**

People, Places, and Environments

## National Geography Standards

- **Standard 1:**

How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

- **Standard 14:**

How human actions modify the physical environment

- **Standard 15:**

How physical systems affect human systems

- **Standard 4:**

The physical and human characteristics of places

## National Science Education Standards

- **(9-12) Standard F-1:**

Personal and community health

- **(9-12) Standard F-6:**

Science and technology in local, national, and global challenges

## Preparation

### What You'll Need

#### Materials You Provide

- Markers
- Pencils
- Tabletop World Political MapMaker Kit for each small group of students
- Tape

#### Required Technology

- Internet Access: Required

#### Physical Space

- Classroom

#### Setup

In the small groups, students should face one another to work together rather than sitting in rows.

#### Grouping

- Large-group learning
- Small-group learning

## Resources Provided: Handouts & Worksheets

- [Waterworks Project Clues](#)

# Background & Vocabulary

## Background Information

**Waterworks** are the system of reservoirs, channels, mains, and pumping and purifying equipment by which a water supply is obtained and distributed (as to a city) (Merriam Webster, “Waterworks”). Some students may have never questioned the ability to get water since they probably get their water from a tap or fountain. Consider reviewing National Geographic’s “[Freshwater Stories](#).” The availability of freshwater is an issue of global significance. It is important to emphasize this to students as you consider why particular projects were developed in certain areas.

This resource was developed for Geography Awareness Week 2010. Each third week of November, students, families, and community members focus on the importance of geography through events, lessons, games, and challenges; and often meet with policymakers and business leaders. Visit the [Geography Awareness Week website](#) to find out more about this program.

## Prior Knowledge

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## Recommended Prior Activities

- None

## Vocabulary

Term	Part of Speech	Definition
<b>aquifer</b>	<i>noun</i>	an underground layer of rock or earth which holds groundwater.
<b>degree of latitude</b>	<i>noun</i>	measurement of distance from the equator. The first degree of latitude is 111 kilometers (69 miles), decreasing in size to points at the North and South Poles.
<b>drought</b>	<i>noun</i>	period of greatly reduced precipitation.
<b>ecosystem</b>	<i>noun</i>	community and interactions of living and nonliving things in an area.
<b>key</b>	<i>noun</i>	an explanation of symbols and abbreviations used on a map, also known as a legend.
<b>longitude</b>	<i>noun</i>	distance east or west of the prime meridian, measured in degrees.
<b>wetland</b>	<i>noun</i>	area of land covered by shallow water or saturated by water.

## For Further Exploration

## Reference

- [Freshwater](#)
- [National Geographic Education: Earth's Freshwater](#)

## **Websites**

- [Engineers Without Borders](#)



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