

Teacher's Guide

The Peace River Watershed Excursion

Southwest Florida Water Management District

Grades 9-12

View excursions at: WaterMatters.org/Watersheds

Lesson time: One block or class period (approximately 55 Minutes)

Objective: Using context clues and relevant facts in the excursion, students will build an understanding of what a watershed is, the characteristics of local watersheds and how human actions affect the health of a watershed.

Next Generation Sunshine State Standards:

- SC.912.L.17.1:** Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution.
- SC.912.L.17.7:** Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.
- SC.912.L.17.8:** Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
- SC.912.L.17.10:** Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle.
- SC.912.L.17.12:** Discuss the political, social, and environmental consequences of sustainable use of land.
- SC.912.L.17.16:** Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.
- SC.912.L.17.18:** Describe how human population size and resource use relate to environmental quality.
- SC.912.L.17.20:** Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability.

Common Core Curriculum Standards:

Grades 9-10	LACC.910.WHST.1.1e	Text Types and Purposes
	LACC.910.RST.1.1	Key Ideas and Details
	LACC.910.RST.1.2	Key Ideas and Details
	LACC.910.RST.2.4	Craft and Structure
Grades 11-12	LACC.1112.WHST.1.1e	Text Types and Purposes
	LACC.1112.RST.1.2	Key Ideas and Details
	LACC.1112.RST.2.4	Craft and Structure
	LACC.1112.RST.2.6	Craft and Structure

Lesson Plan and Activities

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Vocabulary:

- Watershed:** an area of land that water flows across as it moves toward a common body of water, such as a stream, river, or coast
- Ecosystem:** a biological community of interacting organisms and their physical environment
- Tributary:** a small stream or river that flows into a larger one
- Estuary:** a semi-enclosed body of water where fresh water mixes with salt water
- Ecology:** the study of all the relationships in an environment

Engage:

(15 minutes) Students will take the pretest provided prior to beginning the lesson. Review the vocabulary terms and ask aloud the following questions to activate prior knowledge:

- Describe what would happen to humans and animals if a river dried up.
- What types of animals and trees would you find around a river in Florida?
- What are some recreational activities people can do along the river?

Explore/Explain

(20–25 minutes) Pass the student worksheet out and ask students to go to WaterMatters.org/Watersheds, scroll to the bottom of the webpage and click on the Peace River. Then ask students to complete the student worksheet while moving through the sections.

Extend:

(10 minutes) Bring the class together after 20 minutes to discuss some of the questions on the student worksheet. If time allows, consider using “Think-Pair-Share” and pair students with one another to share their answers. Then ask each pair to share one of their answers with the class.

Evaluate:

(10 minutes) Students will take a pretest prior to beginning the virtual watershed excursion and a posttest (same as pretest) after viewing the excursion and completing the worksheet.

Additional links:

Visit WaterMatters.org/Education/Teacher-Resources to view all seven virtual watershed excursions and the coordinating teacher’s guides. At this site, you can also view the Florida Watersheds video (11 minutes) under the “Water Education Videos” tab and download the coordinating middle or high school teacher’s guides.

Teacher Answer Key

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Pre-/posttest Answer Key

- 1) b.
- 2) c.
- 3) a.
- 4) c.
- 5) b.

Student Worksheet Answer Key

- (1) Polk County
- (2) Charlotte Harbor estuary
- (3) reenters the atmosphere
- (4) decomposing plant material
- (5) phosphate
- (6) estuary
- (7) Saddle Creek and Peace Creek
- (8) Payne Creek
- (9) brackish and tidally influenced
- (10) possible answers: palmettos, cypress, water locust, sweet gum, cabbage palm, live oak and mangroves
- (11) salty
- (12) possible answers: black bears, raccoons, opossums, armadillos, white-tailed deer, panthers, gray foxes, gopher tortoises, sandhill cranes and limpkins
- (13) Manatees
- (14) Peace, Myakka and Caloosahatchee rivers
- (15) ecological integrity
- (16) nutrients
- (17) facultative halophytes
- (18) Rio de la Paz
- (19) Big Cypress Swamp
- (20) phosphorus
- (21) "Bone Valley"
- (22) possible answers: natural factors, geology, rainfall, human influences, groundwater use, land use changes
- (23) Lake Hancock
- (24) natural buffers
- (25) conservation lands

Pre- and Posttest

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- 1) Which of the following statements about the Peace River is **false**?
 - a. It begins in Polk County.
 - b. It is an alluvial river.
 - c. It gets its fresh water from rainfall.

- 2) Which of the following is **not** a benefit of a mangrove ecosystem?
 - a. Mangroves stabilize shorelines and prevent erosion.
 - b. The leaves of mangrove trees supply nutrients to other organisms.
 - c. both a. and b. are benefits

- 3) Which of the following statements about the Peace River watershed is **true**?
 - a. Phosphate changed agriculture and brought value to the land along the Peace River.
 - b. Minimal land use changes over the past 150 years have prevented extensive groundwater withdrawals in the watershed.
 - c. One tributary feeds the Peace River.

- 4) Which of the following was **not** a goal of the Lake Hancock projects implemented by the Southwest Florida Water Management District?
 - a. Improved water quality.
 - b. Increased aquatic vegetation.
 - c. Increased water storage.

- 5) The Charlotte Harbor...
 - a. only receives water from the Peace River watershed.
 - b. is protected by the Coastal & Heartland National Estuary Program.
 - c. is one of the smallest estuaries in Florida.

Student Worksheet

The Peace River Watershed Excursion

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Go to the Peace River Watershed Excursion at WaterMatters.org/Watersheds and complete the worksheet while moving through the sections of the excursion.

Read the Introduction

Where the River Begins

The Peace River begins in northern (1) _____ and runs 105 miles to the (2) _____.

Hydrology

Most rainwater (3) _____ through evaporation and transpiration. A blackwater river has dark, stained waters from (4) _____.

Fossil layers in the riverbed contain (5) _____. The Peace River's fresh water helps fuel the Charlotte Harbor's productive (6) _____.

Tributaries

The Peace River is fed by many tributaries. The (7) _____ and _____ meet to form the Peace River northeast of Bartow. One of only a handful of waterfalls in Florida is found on (8) _____. Shell Creek is the southernmost tributary. Its outflow is controlled by a dam; above the dam is fresh water, while below it's (9) _____ and _____.

Ecological Diversity

List three types of trees that can be found along the Peace River.

(10) _____, _____, _____.

Mangroves increase in abundance as the water becomes (11) _____.

List three types of animals that you would find along the Peace River.

(12) _____, _____, _____.

(13) _____ are common in the Charlotte Harbor estuary where they congregate during the winter.

Charlotte Harbor

The following watersheds provide fresh water to the Charlotte Harbor:

(14) _____, _____ and _____. The Coastal & Heartland National Estuary Partnership was created to protect the estuary's water quality and (15) _____.

Student Worksheet *continued from page 5*

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Florida's Mysterious Mangroves *(sub-section under Charlotte Harbor)*

Mangroves stabilize shorelines, prevent erosion and provide a location for nesting seabirds. The mangrove leaves fall into the water, supplying **(16)** _____ to the multitude of food chains. Mangroves are **(17)** _____ meaning they can grow in fresh or salt water.

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Human History

In the 1500s a Spanish cartographer was drawing a meandering river and called it the **(18)** _____ which means the "Peace River." The Seminole Indians settled on the banks of the Peace River, and after years of fighting with the United States government, a band of warriors fled to the **(19)** _____ — where their descendants live to this day.

The Discovery of Phosphate

Agriculture was forever changed by the discovery that **(20)** _____ promotes plant growth. This nonrenewable resource was formed millions of years ago and ultimately became sedimentary layers of rock. During the nineteenth century, the Florida phosphate boom was sparked and the region was nicknamed **(21)** _____.

Restoration

List three things noted in the text that can impact the amount of water that recharges the aquifer: **(22)** _____, _____ and _____. In 1992, the Peace River and its watershed were designated a Water Use Caution Area— an area where water resources are or will become critical in the next 20 years. The Southwest Florida Water Management District implemented two projects that were critical to help restore the upper Peace River. These projects took place on the largest lake in the Peace River watershed named **(23)** _____.

Recreation

Lands surrounding water bodies serve as **(24)** _____ to filter out pollution before it reaches the nearest water body. The Southwest Florida Water Management District and other agencies and governments purchase **(25)** _____ to preserve and restore native ecosystems.