Teacher's Guide Alafia 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 50 Minutes)

Grades: 9-12

Objective: Using context clues and relevant facts in the excursion, students will understand the importance of a watershed's health, the characteristics of local watersheds and how human actions affect the environmental quality of valuable habitats and the species of plants and animals in them.

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.
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Common Core Curriculum Standards:

Grades 9-10	LACC.910.WHST.1.1e LACC.910.RST.1.1 LACC.910.RST.1.2 LACC.910.RST.2.4	Text Types and Purposes Key Ideas and Details Key Ideas and Details Craft and Structure
Grades 11-12	LACC.1112.WHST.1.1e LACC.1112.RST.1.2 LACC.1112.RST.2.4 LACC.1112.RST.2.6	Text Types and Purposes Key Ideas and Details Craft and Structure 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
	Karst Terrain Reservoir:		The land surface produced by water dissolving the bedrock; characterized by sinkholes, caverns and disappearing springs
			An area where surface water is collected and stored for future use. Reservoirs can be natural or constructed lakes
Restoration :		1:	Returning a natural habitat to its previous condition
	Springs:		Area where groundwater flows out of a natural opening in the earth's surface
Engage: (15 mit beginn the foll		(15 min beginn the foll	nutes) Students will take the pretest provided prior to ing the lesson. Review the vocabulary terms and ask aloud owing questions to activate prior knowledge:
			 Describe what type of living and nonliving things you would find in a typical Florida ecosystem.
			• What is the aquifer made of?
			• Why do land and water need to be protected?
			• How can environmentally important lands be protected?
Explore/Explain (20-23 to go t webpa studen while o		(20–25 to go to webpag studen while c	b minutes) Pass the student worksheet out and ask students b WaterMatters.org/Watersheds, scroll to the bottom of the ge and click on the Alafia River Watershed Excursion. Instruct ts to read each page and navigate through the excursion completing the worksheet.
Extend: (10 min some of conside another their an		(10 min some o conside anothe their an	nutes) Bring the class together after 20-25 minutes to discuss f the questions on the student worksheet. If time allows, er using "Think-Pair-Share" and pair students with one r to share their answers. Then ask each pair to share one of nswers with the class.
Evaluat	te:	(5 min viewin	utes) Students will take the posttest (same as pretest) after g the excursion and completing the worksheet and lesson.

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 *Alafia River Watershed Excursion*

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Pre-/posttest Answer Key

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

Student Worksheet Answer Key

- (1) 25 miles
- (2) 270,000 acres
- (3) Polk
- (4) acidic water
- (5) Lithia Springs and Buckhorn Springs
- (6) blackwater river
- (7) Live Oak and Sabal Palm
- (8) "Alive"
- (9) Alafia Banks
- (10) 12,000
- (11) Indian mounds
- (12) limestone
- (13) Paleo-Indians
- (14) Panfilo de Narvaez
- (15) Cattle, Citrus and Logging
- (16) 1920s
- (17) C.W. "Bill" Young Regional Reservoir
- (18) habitat degradation, invasive plant infestation and poor water quality
- (19) removed 23 acres of invasive Brazilian pepper and replaced it with freshwater wetland habitat, low-salinity tidal creeks, marshes and uplands
- (20) fisheries, shorebirds, mangrove species and upland wildlife

Student Pre- and Posttest *Alafia River Watershed Excursion*

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1) The history of the Alafia River watershed includes the following events **except**:

- a. European Settlers tried to colonize the land many times unsuccessfully.
- b. Aboriginal explorers found large mammals including mastodons, mammoths, camels and giant sloths.
- c. The Indians helped the Spanish explorers settle on the land.
- 2) The Alafia River watershed has karst terrain which means:
 - a. Its waters are filled with tannins, leaf detritus and other organic materials.
 - b. Its land surface is caused by acidic water dissolving bedrock.
 - c. The river provides a vast amount of phosphates.
- 3) Which of the following statements about the Alafia River watershed is true?
 - a. The Alafia River does not get water supply through springs.
 - b. The Alafia River watershed is dominated by pine trees.
 - c. The Alafia River watershed is the largest watershed in Hillsborough County.
- 4) What mineral is the Alafia River watershed known for?
 - a. Phosphate
 - b. Limestone
 - c. Nitrate
- 5) What strategy is used to restore the Alafia River watershed?
 - a. Protecting and restoring lands.
 - b. Improving water quality.
 - c. Both A and B are correct.

Student Guide Alafia River Watershed Excursion

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Go to Alafia River Watershed Excursion at WaterMatters.org/Watersheds

Directions: Proceed through the pages of the excursion as you fill in the blanks on this worksheet and complete the tour.

Tab 1: Intro

The Alafia River is (1)______ miles long.

Tab 2: What's a Watershed?

The Alafia River Watershed, the largest in Hillsborough County, is **(2)**______acres. A portion of this watershed is in **(3)**______ County while the majority lies in Hillsborough County.

Tab 3: Geology

This watershed is an example of karst terrain where (4)	dissolves
bedrock. Springs are a common feature of karst topography. Which two sp	prings contribute
flow to the Alafia River? (5)	What type of
river is the Alafia considered? (6)	

Tab 4: Ecology

Many species of trees thrive in flatwoods and sandhills. What two species dominate along the river and in lowlands? **(7)**______ and _____

Live Oaks are evergreens which is how they got their name, appearing to be **(8)**______ in the dead of winter.

The **(9)**______ is the most productive nesting colony in Florida.

Tab 5: History

Click on the white arrow on the right of the image to follow the history of the watershed:

The Earliest Human Inhabitants- Archaeologists believe humans occupied Southwest Florida **(10)**______ years ago.

Archaic- Southwest Florida's earliest (11) were found in the Archaic Period from 10,000-6,000.

A Land of Megafauna- The lands of the Alafia River watershed are known as being rich in (12) _______ yielding fossil material and animal bones and teeth.

Student Guide continued from page 5 Alafia River Watershed Excursion

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The Orange Period- Which group developed agriculture in the region? (13)_____

Spanish Landfall- In 1528, Spanish explorer (14) ______ made landfall near the mouth of the Alafia River.

Early Settlers- What were the region's main industries in the period from 1850-1900? (15) ______ and ______.

Phosphate Mining- The mining of phosphate provided an essential ingredient in fertilizer, and mining companies became popular throughout the watershed. Mining proved to be too expensive and labor-intensive and by the **(16)** _____ most mining companies were out of business.

Reservoir- The (17)_______ is a large water storage area in the watershed that can store 15 billion gallons of water to provide drinking water for the region and reduce the reliance on groundwater pumping.

Tab 6: Restoration

Name the environmental problems the Cockroach Bay land tract suffered from before undergoing one of the largest, most complex coastal ecosystem restoration projects ever completed for the Tampa Bay estuarine ecosystem. (18)_____

(19) Describe what restoration actions were taken at Ekker Preserve.

The Shultz Preserve was restored to mangrove forest, coastal and freshwater marsh, coastal dunes and uplands to provide important habitat for (**20**)