

# **Tampa Bay - The Centerpiece Of A Region**

**Purpose:** The students will develop a working knowledge of the geography of the Tampa Bay region and discover problems created by human growth and development.

**Objectives:**

- Students will label geographic features on a map of the Tampa Bay watershed.
- Students will describe problems created by human growth and development in the Tampa Bay watershed.
- Students will list common organisms found in the Tampa Bay watershed.

**Correlation To Sunshine State Standards:**

- SC.G.2.4.4** Describe the different aquatic ecosystems and their organisms, emphasizing Florida’s wetlands, estuaries, coral reefs and Everglades.
- SC.G.2.4.4** Explain how abiotic factors can affect each of Florida’s aquatic systems.
- SC.G.2.4.6** Explain how human population growth can negatively impact our biosphere.

**Correlation To Curriculum:**

- Chapter 4 section 4.1 and 4.2 of the IS 1 curriculum.
- Chapter 6 section 2.6 and 2.7 of the IS 1 curriculum.
- Chapters 34, 35, and 36 Biology Honor’s curriculum.

**Background Information:**

The huge Tampa Bay area is dominated by a water landscape that provides life, recreation and, for some people, a refuge from everyday stresses. The bay is important to both the industry and tourism of the region. The Port of Tampa contributes greatly to Florida’s economy. Yet with mounting development, stress to natural habitats, and damaging air pollution, Tampa Bay’s ecosystems have been greatly altered.

**Activities:**

**Activity 1 – What Do You Know About Tampa Bay?**

**Purpose** - This activity will allow you to assess the students’ prior knowledge about Tampa Bay.

**Components/materials** - 3x5 cards, chart paper

**Duration** - 20 minutes

**Teacher Directions** – Use either the “Word Grouping” or “KWL” process.

**Word Grouping:** Use the 3x5 cards to make vocabulary note cards from the vocabulary list in each chapter. Distribute these to your students. Ask them to write down words, phrases or examples that come to mind when they read the words and their definitions. When they have finished, have the students take turns attaching their cards to a sheet of chart paper. The students should group the words on the chart paper. Encourage the students to add cards or notes to the chart as they learn more about Tampa Bay.

**KWL:** Make a KWL chart like the illustration below. Ask them what they know about Tampa Bay. Record the students oral responses directly on a sheet of chart paper. Then ask them what they would like to know about the Bay and record this information. Leave the results of this activity in a visible spot in the room for the duration of this unit. Revisit the chart at the end of the unit.

What do you know about Tampa Bay?	What would you like to know about Tampa Bay?	What did you learn about Tampa Bay?

**Activity 2 – Video Viewing: Introducing Tampa Bay**

**Purpose** - This activity will provide your students with an overview of Tampa Bay.

**Components/materials** - *Tampa Bay: Living Legacy* DVD - Chapter 1, Student-made “Video Analysis: Introducing Tampa Bay” (p.10).

**Duration** - One class period

**Teacher Directions** - Divide your students into six groups. Have each student make a video analysis guide like the example on page10. Have them watch Chapter 1 -“Introducing Tampa Bay.” They should discuss the film within their groups. Each group should summarize on their video analysis guides what they saw and heard. Next, groups could take turns sharing parts of what they learned with the entire class.

**Activity 3 – Student Reading: Introducing Tampa Bay**

**Purpose** - This activity will provide your students with a reading and writing exercise on the geography of Tampa Bay.

**Components/materials** -” Student Reading: Introducing Tampa Bay” (p.11) and “Reading Analysis: Introducing Tampa Bay” (p.13).

**Duration** - 30 minutes

**Teacher Directions** - Divide your students into six groups. Assign the students in each group to read the selection “Introducing Tampa Bay ( p.11).” They should discuss the reading within their groups then use the Reading Analysis Sheet to summarize what they read.

## Activity 4 – Mapping The Tampa Bay Watershed

**Purpose** - This activity will help the students visualize the geographic features of Tampa Bay and its watershed.

**Components/materials** – PowerPoint copy of the “Tampa Bay Watershed Map” and “Contaminated Sediments Map,” student copies of the “Tampa Bay Watershed Map,” ( p. 15), colored pencils or markers, overhead projector or LCD projector.

**Duration** - 20 minutes

**Teacher Directions** - Distribute the “Tampa Bay Watershed Maps” (p.15) to your students. Project your copy of the map. Ask them to read the directions. Use the PowerPoint slides or overhead sheets made from the slides to help them find features on the map. Using the USGS “Contaminated Sediments Map,” determine the most contaminated areas of Tampa Bay.

Finally, determine 5 biotic organisms that are currently abundant in the Tampa Bay watershed area as well as 5 extinct/endangered organisms found in Tampa Bay and write them in the spaces provided.

## Assessment Components:

- Individual reading analysis sheet
- Individual watershed maps
- Individual assessment questions

## Relevant Vocabulary:

- **abiotic** – nonliving physical or chemical condition in an environment.
- **biosphere** – all the parts of the planet that are inhabited by living things.
- **brackish** - a mixture of fresh and salt water.
- **biotic** – any living part of an environment.
- **ecosystem** – community of living things plus the nonliving features of the environment that supports them.
- **estuary** – area where fresh water from rivers mixes with salty ocean water.

## Relevant Vocabulary: (cont.)

- **food chain** - a series of energy and materials transfers from producers to consumers in the natural environment.
- **habitat** – an organism’s specific environment with characteristic abiotic and biotic factors.
- **phytoplankton** - microscopic floating photosynthetic organisms that form the basis of many marine food chains.
- **population** – group of individuals of the same species living in a particular area at the same time.
- **shore birds** - short-legged birds that feed in or at the edge of the intertidal zone.
- **wading** - long-legged birds that are able to wade out into the water to catch their food.
- **watershed** - the land area that drains water into a particular stream, river, lake or bay.
- **web of life** - all of the interconnections in an ecosystem.

## Additional Resources:

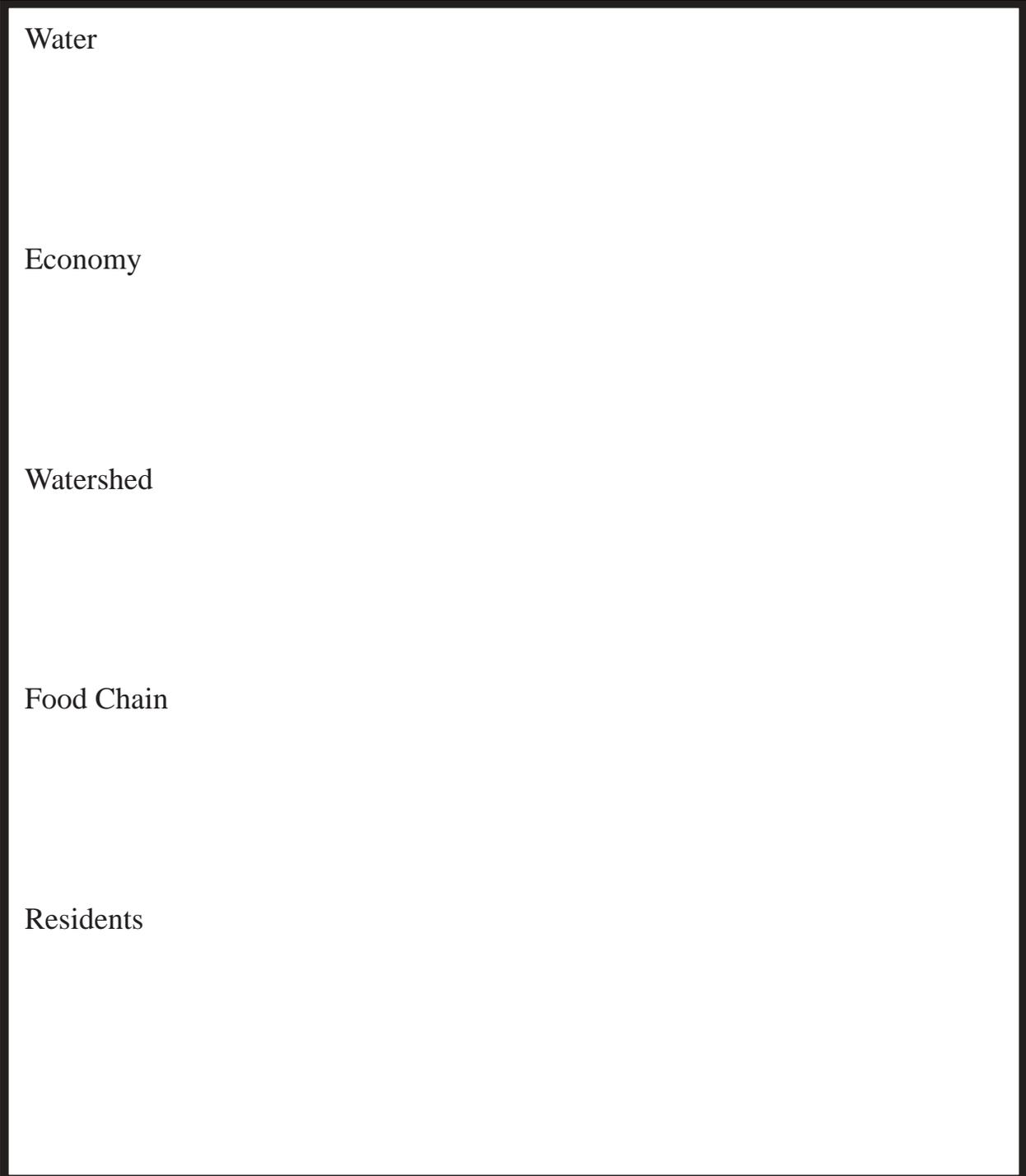
Chapter 1 PowerPoint presentation

**USGS Tampa Bay Study**  
[gulfsci.usgs.gov/tampabay](http://gulfsci.usgs.gov/tampabay)

**Tampa bay Estuary Atlas**  
[www.tampabay.wateratlas.org](http://www.tampabay.wateratlas.org)

**Tampa Bay Estuary Program**  
[www.tbep.org](http://www.tbep.org)

**Video Analysis: Introducing Tampa Bay**



Water

Economy

Watershed

Food Chain

Residents

**Reading: Introducing Tampa Bay**



When we think about the Tampa Bay area, we think about the water which dominates our landscape. It's a source of natural beauty and enchantment. For some people the bay provides their livelihood, for others it is a place to play. Still other people feel a spiritual connection that draws them to live close by or to visit, a refuge away from urban pressures.

We're drawn to the bay and to the life it sustains. It's the economic centerpiece of the region with the Port of Tampa contributing \$13 billion to the economy. These natural systems are the source of the region's largest industry, tourism.

However, with mounting development, stress to natural habitats, and damaging air pollution, how can we protect this valuable and precious ecosystem and pass it down to future generations?

The bay covers some 400 square miles, and its shores are home to nearly 3 million people in Hillsborough, Pinellas, and Manatee counties. Every week 500 more people become residents.

The bay receives its life-nurturing fresh water from more than 100 creeks and four major rivers. The land area that drains into the bay, its **watershed**, is nearly six times the size of the bay and stretches from Pasco County in the north to Polk County in the east, Pinellas in the west and Manatee County in the south. Anything that happens in that huge area ultimately affects the bay.



So, what is Tampa Bay? Is it a city, a football team or what? Tampa Bay is an **estuary**, a place where fresh water from rivers and streams meets and mixes with the salty waters of the Gulf of Mexico.

When fresh water mixes with salt water it creates **brackish** water. This mixing of fresh and salt water in the bay produces a fertile **habitat** that supports a complex **web of life**. This web extends from **phytoplankton**, microscopic floating plants that form the basis of the **food chain**, to more than 200 species of fish.

Tampa Bay is also home to the state's largest and most diverse colonies of **wading and shore birds**. Dolphins and manatees reside in the bay year-round. It is a critical nursery supporting creatures as diverse as the blue crab and the hammer-head shark. The estuary supports a spectacular abundance and diversity of wild-life.

More than two-thirds of bay area residents have moved here within the last twenty-five years. As a result, few people remember what the Bay used to look like before the dramatic urbanization, how polluted it became and how far it has come in its recovery.

To fully appreciate the bay is to understand its fragility and how life on it has ebbed and flowed with the quality of our stewardship.

**Reading Analysis: Introducing Tampa Bay**

A. Vocabulary Analysis – Use the context clues in the reading to help you define the following terms.

1. Estuary
  
2. Brackish
  
3. Watershed

B. Number Analysis - Fill in the numbers from the video and the reading.

1. \_\_\_\_\_ creeks drain into the bay.
2. \_\_\_\_\_ major rivers drain into the bay.
3. \_\_\_\_\_ people move into the area weekly.
4. \_\_\_\_\_ square miles are covered by the bay.
5. More than \_\_\_\_\_ species of fish are found in the bay.
6. More than \_\_\_\_\_ of the bay area residents moved here within the last \_\_\_\_\_ years.

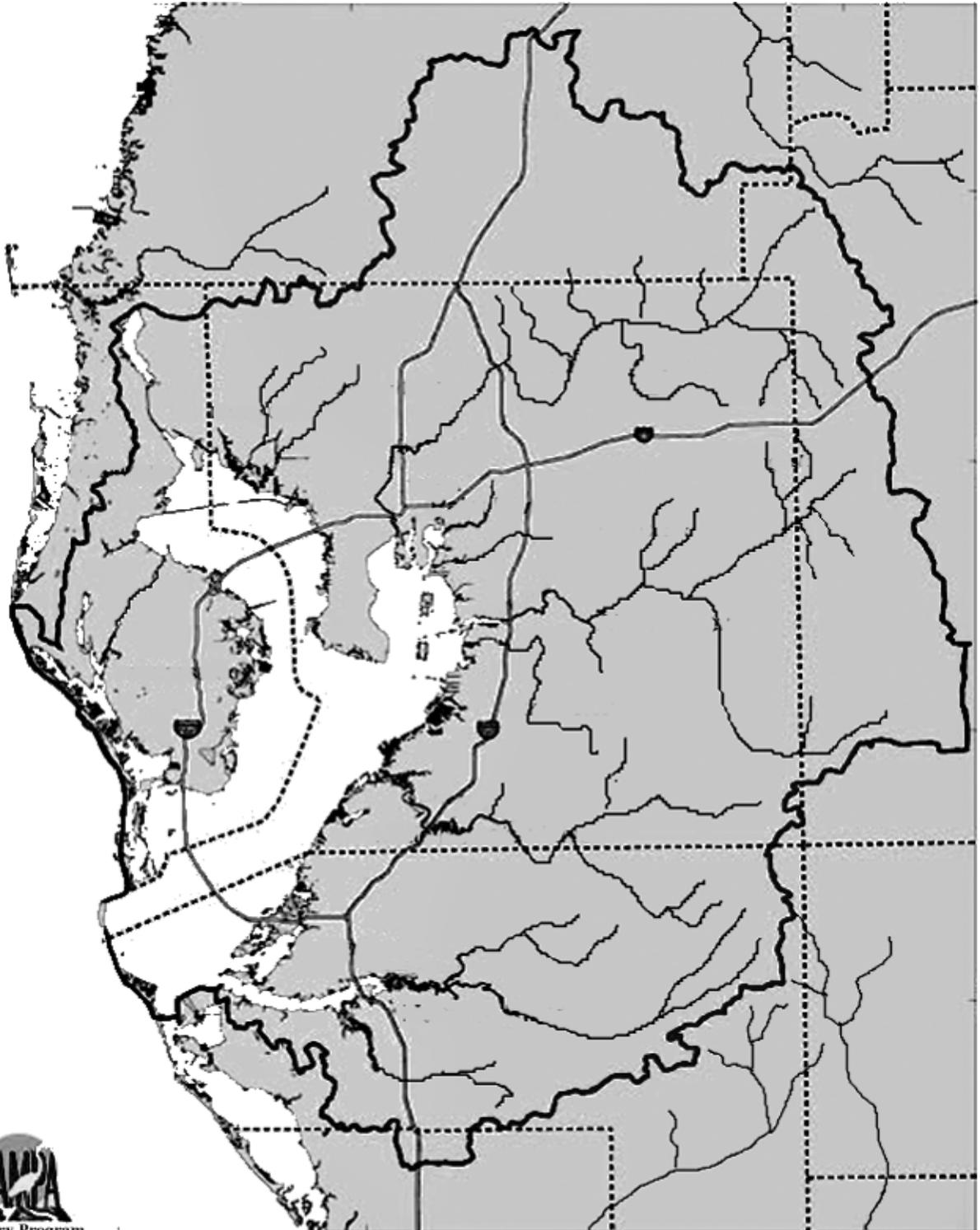
C. Cause and Effect Analysis - Answer the questions below to describe the relationships in the reading.

1. What is the relationship between Tampa Bay and its watershed?
  
  
  
  
  
  
  
  
  
  
2. Why is the mixing of fresh water and salt water in the bay important?
  
  
  
  
  
  
  
  
  
  
3. Why is the word “**nursery**” used to describe the bay?

**Student Directions: - Mapping the Tampa Bay Watershed**

1. Outline Hillsborough County in yellow.
2. Label the counties surrounding Hillsborough including Pasco, Pinellas, Polk, and Manatee Counties.
3. Outline the Tampa Bay watershed area in red.
4. Color all waterways blue.
5. Label the major waterways of Tampa Bay including: Hillsborough River, Alafia River, Little Manatee River, Manatee River, Tampa Bay, Gulf of Mexico.
6. Label the 4 major Tampa Bay Area cities including: Tampa, Clearwater, St. Petersburg, Bradenton.
7. Outline the major interstates of the Tampa Bay Area in orange.
8. Using the Contaminated Sediments Map provided, color the most contaminated areas of Tampa Bay in dark blue.
9. At the bottom of the worksheet create a labeled color key of your map.
10. On the back top half of your worksheet list 5 organisms abundant in Tampa Bay and 5 endangered/threatened organisms found in Tampa Bay.

**Student Copy - Tampa Bay Watershed Map**



**TAMPA BAY WATERSHED**



**Assessment Questions:**

1. What counties make up the Tampa Bay watershed area?
2. What is a watershed?
3. What are the four major rivers that make up the Tampa Bay watershed?
4. Tampa Bay is an estuary. Why is it considered an estuary?
5. Why is an estuary so important to the ecosystem?
6. Where are contaminated soils most abundant in Tampa Bay? Why do you think so?
7. Are there many endangered or threatened species in Tampa Bay? Why do you think so?
8. How do you think Tampa Bay will look 100 years from now?

**Teacher Answers:****Reading Analysis**

- A1. Estuary - a place where fresh water mixes with salty water from the Gulf of Mexico.
- A2. Brackish - salt water mixed with fresh water.
- A3. Watershed - the land area that drains into the bay.
- B1. More than 100 creeks drain into the bay.
- B2. 4 major rivers drain into the bay.
- B3. 500 people move into the area weekly.
- B4. 400 square miles are covered by the bay.
- B5. More than 200 species of fish are found in the bay.
- B6. More than two-thirds of the Bay area residents moved here within the last twenty five years.
- C1. The watershed drains into the bay. Anything that happens in the watershed usually affects the bay.
- C2. It creates a fertile habitat that supports a web of life.
- C3. It gives small creatures a safe place to grow up.

**Assessment Questions**

- 1. Hillsborough, Polk to the east, Pasco to the north, Manatee to the south, Pinellas to the west
- 2. The land area that drains into a bay.
- 3. Hillsborough River, Alafia River, Little Manatee River, Manatee River
- 4. It is where the freshwater rivers meet the salt water of the Gulf of Mexico – brackish water.
- 5. An estuary provides a fertile habitat for organisms to live and reproduce.
- 6. Just south of the city of Tampa at the mouth of the Hillsborough River. Answers will vary.
- 7. Yes. Answers will vary.
- 8. Answers will vary.