Hillsborough County Watershed Atlas Learning Kit

Clean Water Volunteers *Teacher's Guide*

Students practice for the FCAT and learn about volunteer watershed clean-up and monitoring programs

GRADE LEVEL: 6th-8th

SUBJECT AREA/COURSE: Reading, Writing (Language Arts), and Math

SUNSHINE STATE STANDARDS:

- The student identifies the author's purpose and/or point of view in a variety of texts and uses the information to construct meaning. (LA.A.2.3.2)
- The student recognizes logical, ethical, and emotional appeals in texts. (LA.A.2.3.3)
- The student locates, organizes, and interprets written information for a variety of purposes, including classroom research, collaborative decision making, and performing a school or real world task. (LA.A.2.3.5)
- The student selects and uses appropriate formats for writing, including narrative, persuasive, and expository formats, according to the intended audience, purpose, and occasion. (LA.B.2.3.3)
- The student adds, subtracts, multiplies, and divides whole numbers, decimals, and fractions, including mixed numbers, to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator. (MA.A.3.3.3)
- The student uses algebraic problem-solving strategies to solve real-world problems involving linear equations and inequalities. (MA.D.2.3.2)
- The student analyzes real-world data by applying appropriate formulas for measures of central tendency and organizing data in a quality display, using appropriate technology, including calculators and computers. (MA.E.1.3.3)
- The student formulates hypotheses, designs experiments, collects and interprets data, and evaluates hypotheses by making inferences and drawing conclusions based on statistics (range, median, and mode) and tables, graphs, and charts. (MA.E.3.3.1)

ACADEMIC OUTCOMES/LESSON OBJECTIVES:

- Students will read a selection accessible from the Hillsborough Watershed Atlas.
- Students will respond to FCAT-type questions or prompts in Reading, Writing, and Math.

DURATION: One Instructional period.

TEACHER BACKGROUND INFORMATION: Resources like the Hillsborough County Watershed Atlas rely on volunteers to collect water samples, measure water levels, and participate in local cleanup activities. A primary goal is to regularly assess indicators of water quality and generate long term water quality trends so environmental problems can be identified quickly. Effective use of volunteer hours means improved health for our water bodies, our planet, and our families.

TEACHER WEBSITE RESOURCES:

- Sunshine State Standards can be found at http://firn.edu/doe/menu/sss.htm
- Information about FCAT can be found at http://www.firn.edu/doe/sas/fcat/pdf/fcatfact.pdf
- Rubric for grading FCAT writing prompts http://www.firn.edu/doe/sas/fw/fwaprubr.htm
- Rubric for grading FCAT reading questions http://www.firn.edu/doe/sas/fcat/pdf/rubrcrdn.pdf
- Rubric for grading FCAT math questions http://www.firn.edu/doe/sas/fcat/pdf/rubrcmat.pdf
- More FCAT-Friendly Activities, visit http://pelotes.jea.com

Name: Date:

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MATERIALS NEEDED: Internet access with www.Hillsborough.WaterAtlas.org book marked, student pages for "Clean Water Volunteers"

SAFETY: N/A

VOCABULARY: volunteer, resource, monitor, aquatic, wetland, campaign, conservation, erosion, sediment, watershed, biochemist, entomologist, sensitive, tolerant

KEY:

Reading

1. c. LA.A.2.3.2, Bloom's Taxonomy Level Two
2. b. LA.A.2.3.3, Bloom's Taxonomy Level One
3. c. LA.A.2.3.2, Bloom's Taxonomy Level Two
4. Use the rubric for Extended Response Reading Questions – 4 points
LA.A.2.3.5 Bloom's Taxonomy Level Two

Example of a Top-Score Response:
I could organize a volunteer cleanup of the retention pond on the school grounds. First, I would research how to organize a cleanup campaign by using the two websites in the article. I would also find out if there are already cleanup teams in the area and ask for their assistance. I would ask a hardware store to donate garbage bags and plastic gloves. Then I would ask student service clubs to volunteer their time either for the cleanup or for bringing food for the celebration party afterwards. We can also get photos for the school paper like the ones in the article to make sure the whole school learns about the project.

Writing
For All – Use the rubric for FCAT Writes! – 6 points

1. LA.B.2.3.3
2. LA.B.2.3.3
3. LA.B.2.3.3
4. LA.B.2.3.3

Name: Date:

Math

1. Use the rubric for Extended Response Math Questions – 4 points
MA.E.1.3.3

Example of a Top-Score Response:

Watershed Name	*Volunteer Coverage per square mile*
Alafia River	0.01
Curiosity Creek	0.62
Hillsborough River	0.07
Little Manatee River	0.03
Pemberton Creek/Baker Canal	0.05
Rocky/Brushy Creek	0.42
Tampa Bypass Canal	0.06
Brooker Creek	0.36
Bullfrog/Wolf Branch Creek	0
Anclote River	0.14

1. a.Curiosity Creek & b. Rocky/Brushy Creek have the best volunteer coverage.

2. Use the rubric for Short Response Math Questions – 2 points
MA.E.1.3.3
Example of a Top-Score Response:
The average volunteer coverage is 0.176. Average = Add together all of the volunteer coverage values and divide by 10, the total number of watersheds. The 7 watersheds that have values of less than 0.176 for volunteer coverage include Alafia River, Hillsborough River, Little Manatee River, Pemberton Creek/Baker Canal, Tampa Bypass, Bullfrog/Wolf Branch Creek, Anclote River.

3. b. MA.E.3.3.1

4. Use the rubric for Short Response Math Questions – 2 points
MA.D.2.3.2

Example of a Top-Score Response:
Recruit 12 more volunteers. Bullfrog/Wolf Branch Creek has 0 volunteer coverage with 0 volunteers. The county average is 0.17 volunteer coverage. To find out how many volunteers Bullfrog/Wolf Branch Creek would need to meet the county average, set up the following algebraic equation:

0.17 = x volunteers / 69.1 square miles

x = 11.747 = # volunteers to meet county average. In whole people, that's 12; also that surpasses the county average as the question stated.

PROCEDURE:

1. Preview this FCAT-Friendly activity. Print copies for your students.

2. Preview the Hillsborough Watershed Atlas.

   a. Go to www.Hillsborough.WaterAtlas.org > The Atlas > Visit several different watershed pages from the pop-down menu. Look over the General Info including volunteers, watershed size, and land use.
   b. Find your school's watershed. On the website, > Atlas > View a List of all Water bodies. If you know your watershed, choose it from the list. If not, scroll down and find the name of a lake, river, or stream near your school. Beside it, you will see the name of the watershed it is in. Click on the watershed. Click on and read "Learn more about watersheds."

3. Have your student's research volunteer opportunities in your area, particularly those with environmental impacts.

4. Using the information learned in the FCAT practice and the Watershed Atlas, discuss a volunteer opportunity that might be appropriate for your class.

AUTHOR: Kelley G. Weitzel – Modified from the original lesson plans created for the Seminole County Watershed Atlas.