***Treasure Earth Data Sheet: Chesapeake Bay***

Challenge #’s

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Return Time:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When you have completed your data collection, you will be   
able to answer the following question with evidence:

**Is this a healthy watershed? Why or why not?**

***Rules****: Stay with your group; Come back on time; Be safe; Don’t leave your group; LEARN!*

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| **Challenge #1:**  How tall is a tall tree? | *Guess how tall this tree is:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* / (Do this by looking at the tree.)  Actual Measurements: Height of the tree? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Circumference? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Tree Moisture % \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | How is this test related to the health of a watershed? |
| **Challenge #2:**  How clear is that water? (water quality) | *Estimate clarity: \_\_\_\_\_\_\_\_\_\_\_\_ (before testing, guess how clear the water is?)*  Actual Clarity:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2nd test: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Did you observe any life?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | How are these tests an indicator of the health of a watershed? |
| \***Challenge #3**  Which substance is warmer? | Measure the air and soil temperature.  *Which do you think will be warmer – air or water? Guess\_\_\_\_\_\_\_\_\_\_\_\_* / now test!  Air:\_\_\_\_\_\_\_\_\_\_\_\_\_ Soil: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Is this factor a biotic or abiotic factor of the watershed?  Biotic Abiotic |
| **Challenge #4:**  How much shade?  *(Tree canopy)* | The Tree Canopy covers and shades everything beneath it.  *Estimate: \_\_\_\_\_\_\_\_\_\_%* / Actual Canopy Cover percentage: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | How is this test related to the health of a watershed? |
| **Challenge #6:**  How diverse is the area? | Record how many different species you observed in each of your 1 foot square samples? 1st\_\_\_\_\_\_\_\_\_\_ 2nd\_\_\_\_\_\_\_\_\_\_ 3rd \_\_\_\_\_\_\_\_\_\_\_  Average number of species: \_\_\_\_\_\_\_\_\_\_\_\_\_  List some examples: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | How is this test an indicator of the health of a watershed? |
| **Challenge #9:**  Which surface is cooler? | *Select and list 3 different surfaces:*  *1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  *Which surface will be coolest? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (guess)*  **Actual Temperatures:**  Surface 1: \_\_\_\_\_\_\_\_\_\_\_ Surface 2:\_\_\_\_\_\_\_\_\_\_\_\_ Surface 3:\_\_\_\_\_\_\_\_\_\_\_  Amount of Impervious Surfaces: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% | How is this test related to the health of a watershed? |
| **Challenge #10:**  Could you grow corn here? Apples? Tomatoes? | *Guess: yes or no?* Soil Consistency:\_\_\_\_\_\_\_\_\_\_\_ Soil Color: \_\_\_\_\_\_\_\_\_\_\_\_ *What is living in the soil?*  *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* | Is this factor a biotic or abiotic factor of the watershed?  Biotic Abiotic |
| **Challenge #12:**  Will it rain today? | *(\*Before doing the tests* ***guess*** *what you think the answers will be.\*)*  *Guess: Humidity %:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  *(Hint: 70% is the general humidity in this area in the summer)*  Actual Humidity %: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Cloud Type:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Contrail Type:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Based on the % humidity and cloud type - will it rain in the next 24 hrs? *Yes/No* *(Hint: Relative Humidity when it rains is 100%)* | How is this data connected to watershed health? |
| **Challenge #15:**  How fast is the wind blowing? | *Estimate: (how fast?) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_mph /* **Try this 3 times to confirm.**  Actual Speed: #1\_\_\_\_\_\_\_\_; #2\_\_\_\_\_\_\_\_\_\_\_; #3\_\_\_\_\_\_\_\_\_\_\_; Average:\_\_\_\_\_\_\_\_\_\_ | Is this factor a biotic or abiotic factor of the watershed?  Biotic Abiotic |

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| **Challenge #16:**  What signs of life are here? | See Hear | How is this test related to the health of a watershed? |
| **Challenge #17:**  How have humans impacted this area? (water quality) | List three things that you see that show human impact in this area:  East Side West Side | How is this test related to the health of a watershed? |
| Return Home | Can you find your way back? *Go to Treasure Earth 4*; Don’t be late! |  |

**Based on your team and class data, how healthy is this watershed?**

1. Where did you find moisture? Circle all that apply: Air Soil Trees
2. Is there diversity of plants and animals? Yes No
3. Are the majority of surfaces you observed impervious surfaces? Yes No
4. Is the water clear and suitable for life? Yes No

**Evaluating the data:**

**Based on these results is this watershed healthy? Why or why not?**

**What other tests could you do to evaluate a healthy watershed?**

**What specific actions can you take to help improve the health of the watershed?**