***Treasure Earth Data Sheet: Appalachian Mountains***

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**  Is the air moist? | *(\*Before doing the tests* ***guess*** *what you think the answers will be.\*)*  *Guess: Rainfall:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Humidity %:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  *(Hint: 70% is the general humidity in this area in the summer)*  Rainfall Amount:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Humidity %: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | How are **rainfall and humidity** indicators of the health of a watershed? |
| **Challenge #2**  Which substance is warmer? | Measure the air and the soil temperature.  *Which do you think will be warmer? Guess\_\_\_\_\_\_\_\_\_\_\_\_\_* / now test -  Air:\_\_\_\_\_\_\_\_\_\_\_\_\_ Soil: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Is this factor a biotic or abiotic factor of the watershed?  Biotic Abiotic |
| **Challenge #3:**  Will it rain today? | *Guess: \_\_\_\_\_\_\_\_\_ yes or no? (before) / (after)* Rain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Cloud Type:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Contrail Type:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | How is this data connected to the health of a watershed? |
| **Challenge #4:**  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 % \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Is this factor a biotic or abiotic factor of the watershed?  Biotic Abiotic |
| **Challenge #5:**  Which surface is coolest? | *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 Pervious Surfaces: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% | How is **surface temperature** related to the health of a watershed? |
| **Challenge #6:**  How much shade?  *(Tree canopy)* | The Tree Canopy covers and shades everything beneath it.  ***Estimate:*** *\_\_\_\_\_\_\_\_\_\_%* / **Actual** Canopy Cover percentage: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | How is **tree canopy** related to the health of a watershed? |
| **Challenge #7:**  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 is the **clarity of the water** an indicator of the health of a watershed? |
| **Challenge #8:**  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 #9:**  Evidence of Animals | 3 Signs of Wildlife: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  What animals **could** live in this habitat? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | How is **wildlife** an indicator of the health of a watershed? |
| **Challenge #10:**  Where is the diversity? | Record how many different species did you observe in each of your 1 foot square samples? 1st\_\_\_\_\_\_\_\_\_\_\_\_\_ 2nd\_\_\_\_\_\_\_\_\_\_\_\_\_ 3rd \_\_\_\_\_\_\_\_\_\_\_\_\_\_  Average number of species: \_\_\_\_\_\_\_\_\_\_\_\_\_  List some examples: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | How is **diversity of life** an indicator of the health of a watershed? |
| **Challenge #11:**  Which surface is coolest? | *Select and list 3 different surfaces:*  *1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  *Which surface will be coolest? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (guess)*  Surface 1: \_\_\_\_\_\_\_\_\_\_\_ Surface 2:\_\_\_\_\_\_\_\_\_\_\_\_ Surface 3:\_\_\_\_\_\_\_\_\_\_\_\_\_  Amount of Pervious Surfaces: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% | How is **surface temperature** related to the health of a watershed? |
| **Challenge #12:**  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 are **trees** related to the health of a watershed? |
| **Return** | Can you find your way back? ***Go to Treasure Earth 1***; 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?**