

## Grade 9 Science - Student Designed Water Study

Name: \_\_\_\_\_

Introduce your experiment (What are you doing, what materials are you using?):

Research Question (What are you trying to find out through conducting this experiment?):

Hypothesis/Predictions:

Pre Lab Questions:

Using a Knowledge Building Circle, discuss as a class “How might we make connections to The Seven Grandfather Teachings and their relationship to our aquatic ecosystems and sustainability?”

Connection	Teaching

Materials:

- Plastic (clear) cups
- Potting soil
- White play sand
- Clean pebbles
- Various colours of food coloring
- Water
- Oil
- Salt
- Vinegar

\*\*As the scientist, you are to determine what amounts of materials you will need.

Procedure:

- Determine ratio of amounts needed for 'soil', 'sand', and 'sand and gravel'. Copy materials and corresponding amounts in a table.
- Determine which materials will be used for soil, sand and sand/gravel. With your group, collect the appropriate "chemical" (salt water, oil, vinegar-for acidity, or pesticide-food colouring and water).
- Collect all materials and place in the area that you intend to use to perform the lab. Confirm you have all needed materials in your list.
- Build your groundwater system using determined amounts and in the system of layering provided.
- Using the determined food colours and water mixture, pour through the groundwater system. Pour each liquid with measured amounts. Determine how much liquid will be used of each. Record observations in a chart.

Create an observation table in the space below.

Analysis Questions:

1. How would results vary in a rainy season?
2. How would results vary in different seasons?
3. How can this lab be adjusted for different seasons?
4. What results did the other groups (acidity, oil, salt residue and pesticide) each encounter? What were their conclusions?
5. What were the results of the lab? Did your hypothesis support your results?
6. Were there any possible errors made in the lab, or errors you could see occurring within the context of this lab?
7. Do you feel the outcome of the lab can be related to real world use of pesticides and insecticides?
8. What adjustments can be made to make this lab more applicable to a real world situation?
9. How would a farm become more sustainable to prevent groundwater contamination?
10. How can pesticides spread from the countryside to the city?
11. How does this groundwater system (or a real one) act as a filtration system (cleaning system) for water?

