Name _____ Date _____

Hydrofracking Data

1. Your teacher will give you a handout or Excel file with data collected by the scientists. Use those data to create a graph showing the difference between the control forest and the experimental forest area (the experimental forest is where the hydrofracking fluid was sprayed). You should graph the variable that you identified yesterday in question #3.

   Answers for the graphs can be found in the resource: Chloride Data Excel Answers.

2. Describe the changes you see in the variable you graphed over the course of the three year experiment.
   Depending on the variable that students chose, this answer will vary. Both sodium and chloride show decreases over time, as the flowback water that was applied leaches out of the soil. The other parameters do not appear to be affected, although statistical analyses would have to be performed.

3. List the potential sources of variability in the investigation.

Real *– what might be some sources of variability that are due to the ecosystem?*	***Human/experimental*** *– variability due to human error, design etc*
• *Rainfall events could dilute the chloride concentrations in the summer* • *Drought might increase the concentrations in the summer* • *The contaminant could leach out into the soil* • *Vegetation cover might affect the variable*	• *Sampling during different times of year might provide different results* • *The sampling equipment might have been different throughout the year* • *Researchers may have collected data in different areas* • *Data might not have been collected often enough* • *The sampling equipment might have been working incorrectly or someone used the equipment incorrectly*

4. Share your results with your classmates. Based on what you learned, which component(s) of the fracking flowback water had the greatest impact on soil chemistry in the forest? Which component(s) did not seem to have an impact on soil chemistry?
   The sodium and chloride levels changed the most – the treatment plots had an increase after application of the flowback water, and then decreased over time.

5. How confident are you with your answers to #4?
   Somewhat confident.

6. What additional information would you like to have in order to feel more confident?

   I would like additional data for more sites, and for more time.

7. What impact do you think the change in soil chemistry will have on the forest ecosystem?

   Explain your claim.

   I think the change in soil chemistry could:

   - *affect the organisms living in the soil,*
   - *Kill some organisms*
   - *Stunt the growth or reproduction of some organisms*
   - *Cause predation patterns to change*
   - *Etc*