Water Quality Memo

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SUBJECT: Water Quality

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Introduction:

The purpose of this laboratory activity is to gather and compare data reflective of water quality from various locations in respect to the onsite fishery at HSU. Four different locations were selected to show a range of conditions in relation to the fishery. Water was tested at the fishery itself in the indoor hatchery that contains the younger fish. The other tested sites are Fern Lake that feeds the fishery, the stream that flows into the lake and the Jolly Giant Creek that combines with the water that exits the lake. All four of the locations were subject to tests to determine the dissolved oxygen content, temperature, pH and turbidity of the water. Our team rotated responsibilities during the test in order to give each student an opportunity to perform tests with the different measuring techniques.

Materials and Methods:

DO meter: The DO meter is used to measure the amount of dissolved oxygen in a body of water while also providing the temperature of the water in degrees Celsius. To operate the meter, turn it on and select the correct setting. Place it into the water for a few seconds and wait for the numbers of the meter to stop changing to get an accurate measurement.

pH meter: The pH meter is used to measure the acidity of a body of water. The group measured the pH of the four different locations by making sure the pH meter was turned on, placing it in the water for a few seconds and swirling in the water to ensure a proper reading. This gave the group an accurate measurement of the acidity of the water.

Turbidity meter: The turbidity meter is used to measure the clarity of a sample of water. To calibrate the turbidity meter, take a base sample of a known amount of water that comes with the turbidity meter. This known water sample represents a NTU value of 10. Once a base sample is read, the reading can be used to determine how far off the meter readings are. A sample of the water being measured is put it in the empty flask that comes with the meter. Take the NTU by pressing 'read.' Depending on the measurement given, subtract or add the value determined from the base sample to adjust the reading. The group repeated these steps for each of the four locations.

Results:

The data measured reflects the overall quality of the water. Each measurement results in different type of water quality measurement. At the different sites the measurements were different which reflected the different qualities of water around the HSU campus. The Raw Data can be found in the appendix.

Discussion:

Water samples were taken from four different locations. The dissolved oxygen, temperature, pH, and turbidity were measured. Prior to visiting each site the team made hypotheses about the measurements for each location. Typical values for each measurement are: turbidity between 10 and 50 NTU, dissolved oxygen between 7 and 8 mg/L, acidity level between 5.6 and 6.5pH, temperature less than 20 degrees Celsius. The first location tested was the fish hatchery. Based on the data gathered, the water from the fish hatchery is of very high quality. The dissolved oxygen was high compared to typical values which is normal for a fish hatchery. For fish to thrive there needs to be a high level of dissolved oxygen in the water, especially when growing fish. The water needs to be aerated so the fish can grow fast and healthy. The temperature and pH levels were standard for sustaining aquatic life. The turbidity level was low

indicating clear water. The results gathered reflected the hypothesis. The second location tested was upstream of Fern Lake, which yielded measurements typical of a small stream. From the data gather the turbidity level was high which did not reflect the hypothesis. It is possible that the unusually high turbidity could have been caused by our presence in the river. The third location tested was an outlet of Fern Lake. The data gathered reflects the hypothesis. The dissolved oxygen was high and the temperature, pH and turbidity levels were standard. It was raining which could have been one reason the dissolved oxygen level was high. The last location tested was the Jolly Giant Creek. The data gather reflected our hypothesis. The fast moving creek had low turbidity and low temperatures. The objective for this lab was to gather and compare data from four different locations. Each location will have different environmental impacts, for example: pollution, quality of the storm water runoff, foot traffic. There was not much, if any, visible pollution. Considering that it was raining when we took these samples, storm runoff was a big contributor to the turbidity of the water.

Conclusion
Throughout testing the various locations, our group gathered information that led to the conclusion that our original hypothesis about the data was very similar to the final findings. In all of the outdoor water that the group tested, the DO, temperature, and turbidity were all higher than that of the fish hatchery. w The DO for the outdoor water was about 10 (mg/L) in all cases. Overall the waterways do not seem to be heavily impacted by any obvious pollutants, although the turbidity upstream of Fern Lake was higher than that all of the other sites sampled.

Water Quality Results
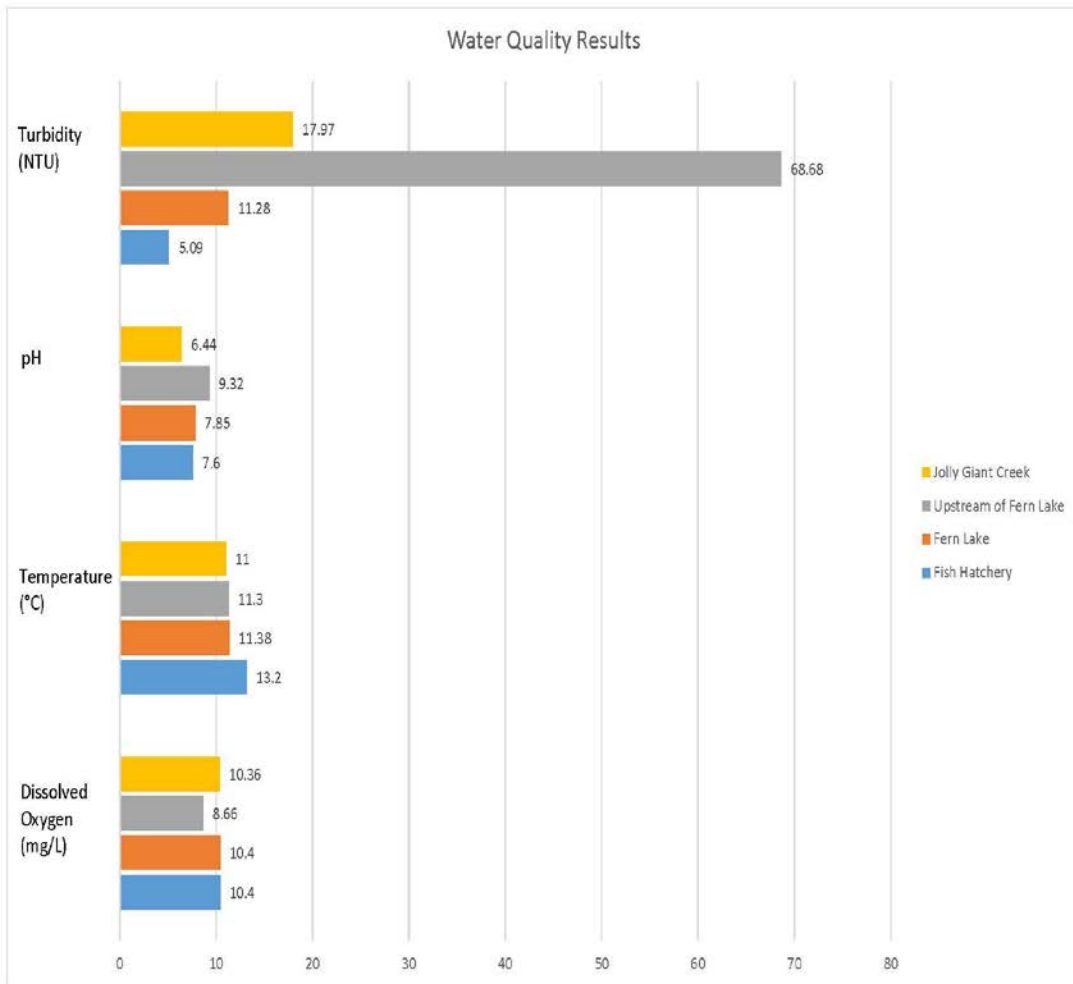
Team Name: Team Winners
Date of Samples: 2/12/2016

Location	DO [mg/L]	temperature [c]	pH	turbidity [NTU]
Hatchery	10.4	13.2	7.6	5.09
Upstream of Lake	10.4	11.38	7.85	11.28
In Lake	8.66	11.3	9.32	68.68
Jolly Giant Creek	10.36	11	6.44	17.97

turbidity calculations

	base (10 NTU)	reading	adjusted	three reading
Hatchery	8.63	3.72	5.09	3.54
Upstream of Lake	6.32	65	68.68	3.46
In Lake	9.36	10.64	11.28	4.17
Jolly Giant Creek	7.55	15.52	17.97	3.72333333