TO:	INSTRUCTOR KRISTEN RADECSKY
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SUBJECT:	WATER QUALITY IN THE COMMUNITY FOREST
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Introduction

The objective of this lab was to test different locations of Humboldt State's upstream, downstream, and in stream locations scattered around campus. We tested each location, College Creek, Fern Lake (upstream, and in stream), and Jolly Giant Creek, to determine the impacts on the streams from the campus, as well as its residents and visitors. Also, this assignment incorporates collaboration between peers to produce a lab memo based on our field data. The purpose of this lab was to become familiar with HSU's streams, as well as the instruments for testing dissolved oxygen, temperature, turbidity, and pH levels. Below is a detailed description of both the steps we took as well as the data concluded from our water quality experiment.

Methods and Materials

We used a YSI model 55 dissolved oxygen meter to test the DO and the temperature of the water at the test sites. We also used an instrument to determine the turbidity of the water and a pH meter to test the pH of the water. We used each of these meters to determine the overall water quality at our various test sites in the Community Forest.

Results

The following table shows the results of our water quality analysis of the on campus locations listed below. The analysis includes measurements of DO, temperature, pH and average of three turbidity readings.

Table 1: Data from Water Quality Analysis at the Community Forest

Location	DO (mg/L)	Temperature (C)	pH	Turbidity (NTU)
In College Creek	10.19	14.3	5.63	2.75
Upstream of Fern Lake	10.81	10.3	5.82	5.85
In Fern Lake near the outlet	10.30	14.9	5.76	21.76
In Jolly Giant Creek upstream of the dorms	10.89	10.7	6.08	5.00

Discussion

One of our group's hypotheses was that out of all the places we tested the turbidity results for Fern Lake would be the highest. We formed this hypothesis on the basis of our knowledge of Fern Lake and its appearance. We also thought the turbidity would be high due to the soil type and erosion from human activity around Fern Lake. After testing the water at Fern Lake are hypothesis proved true that the turbidity was the highest of all the test locations. Another hypothesis are group formed was that the dissolved oxygen levels in college creek would be much lower than the other test sites due to the fish hatchery. We reasoned that the fish would use the dissolved oxygen and that their excretion would create a high biological oxygen demand in the water. After we tested this site it did prove our hypothesis true but it was surprising how little deviation from our other results there was. We expected the fishery to have a larger impact on the DO of college creek. We predicted that the pH of Jolly Giant Creek would be medium/low compared to the other test sites due to pine needles from the forest adding acidity to the water. After testing the water at this site we found to our surprise that the water had the most basic pH of all the test sites.

Based on our findings the average turbidity of water in creeks should be around 4.9NTU (Watershed Humboldt, 2014). We compared our average turbidity findings to the creeks we measured; we believe they are accurate because they were within 2NTU of the average. The average temperature we measured from all our water sources was around 13 degrees Celsius and the average temperature for local water sources is around 16 degrees Celsius (Water boards, 2014). Based on these comparisons to major bodies of water we believe that our overall data is moderately accurate even though we thought our data was going to be flawed because of human activity around the testing site.

Some errors could stem from our equipment and how we were using them. There was one test location where we could not reach the water so in turn the data we collected might have been skewed. Other examples include similar factors of not being able to reach appropriate locations for testing data for our equipment; either not being able to physically reach or the location itself might have had limiting resources. Some places were not easily accessible which made it difficult testing, especially for collecting dissolved oxygen and pH levels. A few specific errors in our data came from fellow classmates slipping into the water at college creek, and items thrown into Fern Lake that caused sifting within the water -- which altered some of our turbidity runs giving us extreme outliers.

Conclusion

This lab was very good for hands on experience learning to use the various instruments to determine the quality of water. It gave us good practice formulating hypotheses and reasoning skills for the conditions of the water which can be applied in future engineering projects. Based on our data, Fern Lake has the worst water quality overall.

Works Cited

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