WATER QUALITY ASSESSMENT AND MEASUREMENTS MEMORANDUM

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SUBJECT: WATER QUALITY MEMO

DATE: 5/3/2012

CC: MARGRET LANG

Introduction

The purpose of this lab was to learn the water quality testing procedure and test the water quality of the bodies of water in and surrounding HSU. At the beginning, we hypothesized water quality around HSU, and then tested four locations for Dissolved Oxygen, Temperature, pH, and Turbidity.

Materials and Methods

We used a nephelometer to measure the turbidity of 3 samples of water from each site, a pH meter, and a Dissolved Oxygen meter to find the DO levels and the temperature. At each site we only took one sample of each except for the turbidity, in which case we took three samples and took the average of our findings to get our actual turbidity value in our table. We also had a calibration level we had to calculate in to the turbidity meter to get more accurate results.

Results

These results show our data from all 4 sites we took readings at.

Location	DO (mg/L)	Temperature (Celsius)	pH	Turbidity (NTU)
College Creek	9.77	14.3	5.9	13.73
Upstream of Fern Lake	10.75	9.9	6.11	16.61
In Fern Lake Near Outlet	3.92	10.8	6.10	7.68
Jolly Giant Creek Upstream from Dorms	11.01	9.4	6.23	16.19

Discussion

Most of our hypotheses did not match our data for a variety of different reasons. One reason is that we could not see the ecosystem and how the site looked before we went to each location. This affected us because we did not know what to expect and therefore our hypotheses were general guesses and not really educated guesses. One specific example is that we expected the fish hatchery to make the water's pH more basic, but instead the pH was lower than all of the rest. We factored in the fish hatchery to make a bigger impact than what it actually does and that small parts of the environment around that area affect the pH in a much greater way than the fish hatchery. Another example is at Jolly Giant Creek we thought the dissolved oxygen would have been high, but it just so happened that we took our readings in close proximity to a small waterfall and that could have skewed our data's dissolved oxygen to make it higher. If we did measurements at a different spot on the creek our data could have been different. The main point is that the knowledge you have on the location in which you take your readings matters when you need to make a good hypothesis. If one does not know a lot, than the hypotheses will just be general guesses from background knowledge of that general area and not specific to that location.

According to the City of Arcata Consumer Confidence Report 2010 the pH of Jacoby Creek is 7.4. This is reasonable because the pH of water is 7, but with this as a reference our pH levels are reasonable, they are more basic but that could be due to factors specific to the area that do not affect Jacoby Creek. For the nearby Mad River, the DO is 7.0 mg/L and pH ranges from 6.5 to 8.5, according to Krisweb.com. This puts our DO and pH readings in a reasonable range with the amount of water flow that they have.

At the Fern Lake location (near the outlet) we had an error with the DO meter. The meter was not reaching equilibrium or even an average range, so we picked a best guess based on the range that the meter was reading. The turbidity could have been affected by other groups collecting samples upstream from where we were collecting our samples. This is a possibility as there were three groups ahead of us collecting samples for our lab at each of the sites.

Conclusion

The collection of water data for the four sites on the campus of Humboldt State (College Creek, Upstream of Fern Lake, In Fern Lake near the outlet, and Jolly Giant Creek upstream from the dorms) showed that the DO was ranged from 3.92 to 11.01 mg/L, Turbidity ranged from 7.68 to 16.61 NTU, pH ranged from 5.9 to 6.23, and the water temperature ranged from 9.9 to 14.3 $^{\circ}$C. Our group's equipment worked without problems except for the Dissolved Oxygen meter only giving a wide range of a reading for Fern Lake near the outlet, the pH meter and the nephelometer worked just like they should.