

# Lab 1: Field Methods

---

**To:** Prof. Andrea Achilli and Andrew Harris

**From:** Jeremy Potter

**Subject:** Field methods and intro to sampling/testing equipment

**Date:** 1/28/2015

---

## Introduction

Testing the water quality of a watershed involves the use of various pieces of testing equipment and adequate knowledge of how to use the equipment in the proper way. Another important factor is the careful selection of testing sites to determine the source, if any, of contamination entering the system. In this lab we tested the water in three different locations along the Jolly Giant Creek in Arcata to familiarize ourselves with the testing equipment and determine if the antecedent conditions at the various sites contributed to any fluctuation in conditions of the water supply. We tested for DO, Temperature, pH, Conductivity, and turbidity. Each of these tests can tell us a variety of things about the water supply, such as its ability to sustain aquatic life and whether or not any contaminants are entering the water supply.

## Materials and methods

Our group tested the water of Jolly Giant Creek in three different locations. We performed the first test above the college near the walking path along the creek at 8:41 AM. The second test was below the ball fields across the freeway from the college at 9:21. The third and final test was performed near 9<sup>th</sup> and K Street downstream from the carwash. Our group conducted the tests in the same manner at all three sites. The tests included temperature, DO, pH, Conductivity, and turbidity. The flow was determined at the first two sites but not the third due to lack of safe access to the water supply. More detailed information of these processes can be found in the lab handout (Achilli lab 1 handout).

## Results

The results from the tests are presented in table 1. There was little fluctuation in the readings of the three sites.

Table 1: Individual readings at selected sites

Location	Time	Temp (C°)	DO mg/L	pH	Conductivity (Sp. µS)	Turbidity (NTU)	Velocity (fps)
Above HSU	8:41	8.6	10.9	5.3	128.8	7.9	0.83
Below ball field	9:21	8.5	9.9	5.1	165.5	12.2	0.33
9 <sup>th</sup> and K	10:00	8.5	9.4	5.5	129.0	9.2	N/A

## Discussion

## Lab 1: Field Methods

---

These results show that there is little difference between the testing sites. Through this we can presume that the water supply is not seeing any significant pollution from any of the sites. The day was clear and there was no rain fall immediately preceding the tests. The distance covered between the sites was also relatively short. The greatest discrepancy was below the ball field in conductivity and turbidity. Both were slightly higher than the other sites. This correlation between turbidity and conductivity is a good indication that the two share some properties (as turbidity increases, conductivity increases). This would be expected due to the fact that conductivity shows dissolved solids and turbidity shows suspended solids.

Without further experience and test results it is difficult to determine what factors contribute to different readings in the water supply. Further testing after a variety of weather and other conditions will be required to make an adequate determination on how these factors can affect the different levels tested. One assumption is that the levels will have a greater fluctuation after a period of rain causing runoff from the separate sites to enter the water system.

### Conclusions

- Turbidity and Conductivity can be used together to determine suspended and dissolved solids
- The water supply along Jolly Giant Creek has no significant pollution and is relatively healthy.
- Further testing is required after varying conditions to determine if there is any fluctuation in water quality in Jolly Giant Creek.

### Appendix

# Lab 1: Field Methods

## Raw data

(

FIVE STAR \*\*\*\*\*

Date 1/21/2018 8:35 Am  
Antecedent cond.: Walking path upstream  
Weather conditions: Clear, 36°F

above Location: Jolly Creek

FIVE STAR \*\*\*\*\*

Time 8:41 am  
Temp: 8.6°C  
DO: 10.9 mg/L  
PH: 5.3  
~~conductivity:~~

Conductivity: 128.8 <sup>µmhos/cm</sup> microsiemens  
Turbidity: 7.9 NTU  
Velocity: 10 ft in 12 sec  
Channel width: 3.5 ft  
Channel depth: 1 ft

FIVE STAR \*\*\*\*\*

Time: 9:21  
DO: 9.9 mg/L  
PH: 5.1  
~~conductivity:~~

Salinity: 165.5 <sup>µmhos/cm</sup> microsiemens  
Turbidity: 12.2 NTU  
Velocity: 6 ft 18 sec  
width: 5.8  
Depth: .4

FIVE STAR \*\*\*\*\*

Loc.: 9th & K Post cut wash  
Time: 10:00  
Temp: 8.5  
DO: 9.4 mg/L  
PH: 5.48

Conductivity: 124.45 <sup>µmhos/cm</sup> microsiemens  
Turbidity: 9.2 NTU  
width:  
depth:

FIVE STAR \*\*\*\*\*

(