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## INTEROFFICE MEMORANDUM

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**TO:** PROFESSOR JO ARCHIBALD

**FROM:** DUSTIN HELLIWELL

**SUBJECT:** ENGR 115 ARCATA WWT FIELD TRIP

**DATE:** 10-14-19

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### PURPOSE

The purpose of this memorandum is to review the ENGR 115 field trip to Arcata Waste Water Treatment Plant on October 4<sup>th</sup>, 2019. Information about the plant as a whole and details about various locations within the plant are included.

### DISCUSSION

The initial part of the field trip covered general information about the plant. Flow rate at various times during the year, the various pumps used to deal with these flow rates, treatment of influent in the headworks, and anticipated plant improvements are covered. Flow rates ranged from about 1 million gallons per day in the summer up to about 9 gallons per day in the winter. Maximum instantaneous flow rates could briefly get as high as 14 million gallons per day. The screw pumps in the headworks are only capable of handling about 4 million gallons per day. During high flows storm pumps are used to handle extra flow. An improvement that is expected in the near future is a UV disinfectant system. This UV system will reduce, or perhaps eliminate, the need for chlorine treatment.

The first areas we visited were the headworks and the primary clarifier. In the headworks, screw pumps move sludge to screens and a grit basin. Here larger items are removed for composting and in some cases land fill disposal. At the primary clarifier more material is removed and sent to a primary digester. The material processed by the digester is stored for composting and eventual use by the city of Arcata. One interesting fact, that we learned about the clarifier, was the need for wires to keep seagulls away.

The remainder of the field trip took us through the oxidation ponds, the treatment wetlands and ended in the chlorination / dichlorination facilities. While moving through the ponds and wetlands we discussed the role of algae and various shade producing plants in reducing BOD. The field trip ended at a maze of canals that were used to chlorinate the water before it was dechlorinated and released into Humboldt bay.

### CONCLUSIONS

Although the Arcata WWT plant is ageing and in need of constant maintenance it is doing a good job of accommodating Arcata's waste water needs. The plans for near future improvements should greatly increase the efficiency of the plant which will both save money and improve the environmental impact of the plant.