LAB 6 MEMO

TO: PROFESSOR ARCHIBALD

FROM: CORTLAND NAVARETTE

SUBJECT: ARCATA WASTEWATER TREATMENT PLANT

DATE: 11 OCTOBER 2019

Purpose

The purpose of the memo is to give a review of what I learned about the Arcata Wastewater Treatment Plant.

Discussion

When we got to the Wastewater Treatment Plant we were greeted by a former engineer for the plant. She first explained to us how the plant is affected by seasonal variations in water volume. In the summer the plant receives about 1 million gallons per day. Then in the fall when students show up the plant receives 1.5-2 million gallons per day, and in the winter during heavy rains the plant can receive up to 14 million gallons per day. Overall it averages to about 2.3 million gallons per day. We were then taken to the headworks, which reduces the pollutant level in the water. However, our presenter informed us that the headworks would need to be replaced soon. Next our presenter explained to us what happens with the sludge created during the treatment process. She explained that 4000 gallons of sludge per day go to an anaerobic digester, where methane is produced, and that there have been proposals to create a methane generator, but that they have fallen through. Our presenter then took us out to the treatment wetlands and explained their purpose. She told us how the wetlands obstruct algae and bacteria and block sunlight which allows them to act like filters to treat the water. Finally, our presenter explained the limits that the plant has to meet. She described how the plant was allowed an average BOD5 of 30 mg/L per week over the course of a month, and how there were also nitrate and ammonium levels that could not be exceeded. She further explained that the BOD5 coming into the plant was on average 200 mg/L per week in the fall and 100 mg/L in the winter months, but could go to 500 mg/L during dryer months. After primary treatment the plant gets the BOD5 down about 60% and on average releases the water with a BOD5 of less than 30 mg/L.

Conclusions

Despite water being an important part of our lives, I had no idea what happens to it after I use it until we started this unit and visited the plant. It was a good learning experience to be able to connect what I learned in class to something real, and also meaningful since the plant we visited is ours. Furthermore, getting to learn the story behind the marshes was interesting as well, because to me at first, they just looked like another piece of nature.