
MEMORANDUM

TO: KYLE SIPES
FROM: HANNAH GIDANIAN
SUBJECT: REVIEW OF ARCATA MARSH WATER TREATMENT PLANT
DATE: OCTOBER 7, 2016

Purpose

The purpose of this memo is to offer review on the Arcata Marsh Water Treatment Plant field trip held on September 30, 2016. How the treatment plant works and what I learned are included.

Discussion

We started off discussing the water treatment plant in general. The design flow is 2.3 million gallons per day while taking out an average of 1 million pounds of BOD and TSS annually. We then moved on to the actual plant. We started with the headworks, which is the pretreatment center. The waste water comes in here and the first thing it hits is a bar screen. This removes the large solids like toilet paper, trash and even money. But the workers there only pull it out if its fifty dollars or more. The water then moved on to the grit chamber and the clarifier. These sections are a part of the primary treatment center. The grit chamber removes the sand, gravel and dirt from the water, while the clarifier removes the organic material. The treatment plant doesn't just get rid of the organic material it utilizes it by removing the sludge from the clarifier and pumping into an aerobic digester and decomposes for about a month. It is then sent through the system again and is put through a second digester where it is sent to dry until it is available for fertilizer.

Our tour guide then showed us what makes the AMWTF really unique, the oxidation ponds and the treatment wetlands which serve as the secondary treatment center. I learned that the oxidation pond is shallow enough to let UV rays break down harmful bacteria, but deep enough for plants not to take root at the bottom. Algae grows in this pond and sucks up the nutrients like the nitrogen. The water usually stays in the pond for about a month and then is moved on to the treatment wetlands. Sunlight is blocked on this wetland with a surplus of vegetation like cattails which removes the algae and the suspended solids. It also aids in the removal of BOD and ammonia. I also learned that the treatment wetlands do remove the suspended solids, but it ends up just accumulating at the bottom. This is a huge problem that engineers are trying to solve. One possible solution are the blue frogs. No these are not actual frogs like one may think. They are actually a machine that churns the water and filters it. Further breakdown of nutrients and decomposing material through aerobic and anaerobic material is done in the enhancement wetlands which we were then taken to next. After the water has been sent there it then goes to the disinfection plant to become chlorinated to kill off the rest of the bacteria. The water is then sent into Humboldt Bay with less than 30 mg/L of BOD.

Conclusion

The tour guide allowed for any other questions about the treatment facility. We asked a few questions about the BOD levels and the blue frogs. All the information provided reflected that the AMWTF is a good treatment plant for a small population. It has its problems, but they are working hard to remedy them.