ARCATA MARSH FIELD TRIP

TO: KRISTEN RADECSKY

FROM: LAYTHEN MARTINES

SUBJECT: ARCATA MARSH MEMO

DATE: 4/27/2012

Purpose

The Arcata Marsh and Wildlife Sanctuary is used for wastewater treatment, recreation, wildlife habitat, education, and research. The Wastewater Treatment Plant uses several treatment stages in order to clean Arcata's city water. The plant is mandated to clean the water to permitted levels before it is released to the Humboldt Bay. The main goal is to treat the Biological Oxygen Demand or the BOD in the water. The plant must keep the monthly average of BOD5 under 30 mg/L, the weekly average under 45 mg/L, and the daily maximum under 60 mg/L. Below is the discussion about the Arcata Marsh. I received much of the information concerning the information on a tour of tour of the Arcata Marsh given by an Arcata Marsh representative.

Discussion

The four steps of wastewater treatment include primary, secondary, tertiary, and disinfection treatment. Primary treatment removes large suspended solids, and is the first step in treatment at the Arcata Marsh. The primary treatment includes; the head works which utilizes an Archimedes screw to remove suspended solids, the clarifier which clarifies the water, and the digester which breaks down solids with a bio-digester. The digester uses some methane to help run processes at the Arcata Marsh, and the waste left over from the digester is used for composting. The compost is used in Arcata city projects as a fertilizer. Secondary treatment is sent to oxidation pond and treated naturally by the ponds. Algae in the ponds add dissolved oxygen to the ponds which creates microorganisms. The microorganisms remove BOD, and allows for more settling of solids into the oxidation ponds. After the oxidation ponds the wastewater reaches treatment wetlands. The treatment wetlands allow the algae from the oxidation ponds to settle out. The wetlands reduce BOD and breakdown algae. Tertiary treatment is next and that happens in the enhancement marshes. These marshes are open to the public and remove even more BOD. Before going to the enhancement marshes some of the wastewater is chlorinated and dechlorinated. These enhancement marshes also remove nitrogen and phosphorous. After tertiary treatment the water is sent for disinfection. Disinfection happens when the water chlorinated to remove bacteria. The water is dechlorinated before it is sent to the Humboldt Bay because it is against regulations to send chlorinated water to the bay.

Conclusion

The most interesting aspect of the Arcata Marsh was the digester. I think that it is interesting and revolutionary that Arcata uses the methane produced in the digester to run some of the equipment at the Wastewater Treatment plant. I also think that it is revolutionary to use the left over waste to make a composting pile. The compost can be used for different projects around Arcata as fertilizer. These two uses for waste show that the Wastewater Plant and Arcata look for ways to use what people would usually treat as waste. The one question I had was if there was a way to use all the methane that is created in the digester? If they could use all the methane maybe they could use the methane to further reduce the Arcata Wastewater Treatment Plant's on-grid power consumption.