Memo

To: Kristen Radecsky
From: Lukas Kennedy
Subject: Review of the Arcata Wastewater Treatment plant
Date: 11/30/12

Purpose

The purpose of this memo is to describe the field Trip taken on November 16, 2012 to the Arcata Wastewater Plant, as well as to describe the plant processes, as I understood by myself.

Discussion

The trip began with the introduction of the Plant Manager, and after a brief discussion of the plants history we preceded to begin the tour at the beginning of the treatment process, at the head works. The primary influent arrives at the headworks with variable rates of flow. These variations are primarily seasonally dependent, with additional influences resulting from populous fluctuations. The influent is elevated via corkscrew pumps, where a particle separator then removes the larger objects in the liquid. A small clarifier follows directly after the separator to capture the larger particles in the form of sludge settled on the bottom. The waste then flows to the primary clarifier where finer particles are further settled out; oil is also collected from the surface during this process. From here we left the wastewater flow to see the Anaerobic Digester. This digester is fed the sludge from the Primary clarifier we through careful management, the waste is digested to compostable material. Co-generation complements the digester by heating it through burning reclaimed methane. Returning to the waste water flow, we next visited the oxidation ponds. The oxidation ponds serve the purpose of reducing the BOD through natural decomposition processes, with algae as a primary contributor. Unique to Arcata's WWTP are the treatment wetlands following the oxidation ponds. The flow into these wetlands is currently controlled manually through multiple valves, however and project is underway to replace the system with a computer-controlled system allowing for higher precision. The treatment wetlands serve to further reduce the BOD to levels established by the Clean Water Act. Chlorination sterilizes the effluent leaving the wetlands and releases it into a second wetlands deemed the Enhancement Wetlands. After this third reduction in BOD, the wastewater is chlorinated a second time, dechlorinated, and then finally released into the bay.

Conclusion

The Arcata Wastewater Treatment Plant is a functional representation of innovative design, and appropriate technology. Seeing the processes in action allowed for a further qualitative understanding of the involved processes in wastewater treatment. I found the anaerobic digester to be the most interesting part of the system, primarily due to its co-generation qualities. I hope see more these industry leading designs.