

TO: EILEEN CASHMAN

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SUBJECT: AMWWTP TRIP MEMO

DATE: OCTOBER 7<sup>TH</sup>, 2016

**Purpose:**

The purpose of the following trip memo is to review last week's field trip to Arcata Marsh Wastewater Treatment Plant. The trip took place on Thursday, September 29<sup>th</sup>, 2016.

**Discussion:**

The field trip to Arcata's Wastewater Treatment Plant was informative to aspiring engineers in that it illustrated what kind of systems environmental engineers are expected to design. The purpose of seeing the wastewater treatment plant in person, as well as listening to a tour by the plant operator, was so that we could better understand the processes that occur in each part of wastewater treatment "train".

The tour started with a brief overview of the plant and the operations therein. Wastewater treated at the AMWWTP consists of all water that goes down the drain in households, industries and other buildings in the area. The operation of the plant is sufficient, though it lacks in some areas due to the lack of upkeep. The system consists of traditional pretreatment and primary treatment; the headworks and the primary clarifier, respectively. Walking along the headworks, we saw how large items were impeded from moving through the plant further. About twenty-five yards from the headworks was the primary clarifier; primary treatment portion of the plant. This consisted of a skimming device that gets floating items off the top of the wastewater. This includes liquids that have floated to the top. In addition, the primary clarifier tank utilizes settling to separate heavy particles from the water.

The next stop on the tour was the secondary treatment portion of AMWWTP; the element that sets it apart from the traditional wastewater treatment plant design. The secondary treatment consisted of oxidation ponds that then flowed into treatment wetlands. Biological processes within these ponds and wetlands continue to treat the wastewater by processing certain compounds that are in solution. Operators have no influence on the processes within this portion of the plant.

The last portion of AMWWTP is the polishing ponds, located across a small channel from the headworks of the plant. The tour did not stop there, however this portion of the plant is similar to the secondary treatment portion. The only difference is

the wastewater flowing into the tertiary treatment portion (polishing ponds) has already been chlorinated then dechlorinated. The wastewater is treated by biological processes in the polishing ponds. These ponds also create an ideal recreational area for the community's runners, bicyclists and birders. After the wastewater has been through the pretreatment, primary, secondary and tertiary treatment, most of the excess nutrients have been utilized through biological processes. The wastewater is then chlorinated again, dechlorinated again and released. The tour of the plant did not go to the discharge point, but it was expressed that it was located at the end of the narrow channel behind the headworks.

**Conclusion:**

The field trip to AMWWTP illustrated exactly how the designs of all aspects of the "treatment train" work in reality. The class was going through the designs of these different kinds of systems in the curriculum at the time, so seeing the processes in action was pertinent to understanding the material at the time. Seeing the designs studied in class, working in person puts a career in environmental resources engineering in perspective. Experiencing the treatment plant and learning more details about its processes may even help an aspiring engineer eliminate a possible future career.