Regional Water Quality Control Board
North Coast Region

Executive Officer's Summary Report
Thursday, December 15, 2016
Regional Water Board Office
Santa Rosa, California

ITEM: 2

SUBJECT: Public Hearing on Order No. R1-2016-0041 to consider adoption of proposed Waste Discharge Requirements for College of the Redwoods Wastewater Treatment Facility, WDID No. 1B80121OHUM, NPDES No. CA0006700 *(Justin McSmith)*

BOARD ACTION: The Regional Water Board will consider adoption of Waste Discharge Requirements Order No. R1-2016-0041 (Proposed Permit). The Proposed Permit will serve as a National Pollutant Discharge Elimination System (NPDES) permit for a period of five years.

BACKGROUND: The College of the Redwoods (hereinafter Permittee) is a public, 2-year community college and is the owner and operator of the College of the Redwoods Wastewater Treatment Facility (Facility). The Permittee owns and operates the Facility and associated wastewater collection, treatment, and disposal facilities that serve a population of approximately 5,000 users at the Eureka campus of the College of the Redwoods. The Facility is located in the southern portion of the City of Eureka, east of the Humboldt Bay National Wildlife Refuge and near the southern portion of Humboldt Bay.

The Facility is currently regulated under Waste Discharge Requirements Order No. R1-2010-0003, which serves as an NPDES permit for waste discharges to surface waters.

Wastewater is treated in a package plant by activated sludge and clarification processes, then disinfected with sodium hypochlorite, and dechlorinated with sodium metabisulfate prior to discharge. The design treatment capacity of the Facility is 0.1 million gallons per day (mgd). Treated wastewater is discharged year round from Discharge Point 001 to White Slough, tidally influenced estuarine water that is a tributary to Humboldt Bay.

Sludge is conveyed to the sludge drying beds once per week using a movable hose that is rotated to evenly distribute the sludge. The Facility has sludge removed every five years by a septic service, as solids accumulation at the site has been very low.

The effluent flows overland through a transitional wetland area into an unnamed creek that flows from the storm water collection reservoir on the college campus and then commingles with White Slough.

The discharge of secondary effluent to White Slough will continue to be permitted under the Proposed Permit. The Permittee was under a Cease and Desist Order (CDO) that required the permittee to cease discharging effluent in violation of Order No. R1-2010-0003. The CDO established a compliance schedule to meet effluent limitations for copper, lead and silver.

The Permittee was granted an extension until December 1, 2015, to meet final effluent limits. The Permittee was able to implement source control to reduce the loading from lead and silver and meet final effluent limitations for these constituents but was unable to meet the limits for copper and will be unable to meet copper effluent limits in the Proposed Permit. In addition, based on existing Facility performance, the Permittee is unable to meet the ammonia and nitrate effluent limits in the Proposed Permit. An updated CDO is also proposed for adoption (Agenda Item 3) (Proposed CDO R1-2016-0043) concurrent with the adoption of the Proposed Permit in order to allow the Permittee time to investigate and implement measures to achieve compliance with final effluent limitations for copper, ammonia and nitrate.

The Permittee plans to upgrade its collection system and upgrade the Facility to a septic tank, recycling gravel filter, and leach field system; thus, eliminating surface water discharge. The Permittee expects the upgraded facility to be finished by 2020 and at that time will no longer require an NPDES permit. Water Board staff plans to rescind the Proposed Permit once the new facility comes online and enroll the Permittee under State Water Resources Control Board General Waste Discharge Requirements for Small Domestic Wastewater Treatment Systems, Order WQ 2014-0153-DWQ (General Order).

ISSUES: The Proposed Permit continues to prescribe water quality based effluent limitations (WQBELs) for copper and implements ammonia and nitrate WQBELs for discharges to White Slough at Discharge Point 001. The following paragraphs describe the most significant issues addressed in the Proposed Permit.

Basis for Nitrate Effluent Limitations. The reasonable potential analysis (RPA) identified reasonable potential for nitrate to exceed water quality standards. The Facility is a package plant that was constructed in the 1960s and the performance has declined over time. The Facility has no anaerobic area where denitrification can occur to transform nitrate into nitrogen gas.

Nitrate is known to cause adverse health effects in humans. For waters designated as domestic or municipal supply, the Basin Plan incorporates the drinking water standards established by State Water Board Division of Drinking Water for the protection of public water supplies as applicable water quality criteria. The drinking water standard for nitrate is 10 mg/L as nitrogen. Because nitrate levels in effluent have been measured at concentrations greater than 10 mg/L, the discharges from the Facility have a reasonable potential to cause or contribute to exceedances of applicable water quality criteria for nitrate in the receiving water.

The upgraded facility will have denitrification capabilities in the septic tank and the recirculation tank. The operator will also have the ability to control flow from the gravel filter underdrain to the septic tank to aid in the denitrification process prior to disposal at the leach field. Once the upgraded facility is completed and the Permittee is enrolled in the General Order, nitrate monitoring will also be required to determine the threat to beneficial uses.

Basis for Ammonia Effluent Limitations. The RPA identified reasonable potential for ammonia to exceed water quality standards. The Facility performs aeration to oxidize ammonia into nitrate. The plant performs well for the most part, but seasonal spikes in the

fall are high enough to have potential toxic effects on aquatic organisms. Ammonia toxicity increases with increasing temperature and pH. Ammonia criteria are established by U.S. EPA based on the presence of sensitive aquatic organisms including salmonids and freshwater mussels. The ammonia effluent limitations in the Proposed Permit are established based on the presence of early life stage salmonids which are found throughout Humboldt Bay.

The upgraded facility will have nitrification capabilities in the recirculating gravel filters. The filters provide an aerobic environment, which promotes nitrification. The operator will also have the ability to adjust the recirculation rate to further promote nitrification.

Basis for Copper Effluent Limitations. The RPA identified reasonable potential for copper to exceed water quality standards. In 2010, the Permittee believed that compliance with copper effluent limitations would be achieved with source control, process changes and upgrades to the treatment plant. Source control did decrease the concentrations of copper in the effluent as there has been a downward trend since Order R1-2010-003 became effective. Process changes and plant upgrades did not occur due to staff and funding shortfalls. The highest copper concentration of 26 ug/L was detected on September 29, 2011, and the lowest concentration of 4.2 ug/L was detected on January 5, 2016. Copper effluent limitations in the Proposed Permit are more stringent than those established in Order No. R1-2010-0003 because the 2010 permit has floating effluent limitations that are calculated based on the hardness of the effluent, while the Proposed Permit establishes discrete copper effluent limitations based on worst case conditions (the maximum observed copper concentration and lowest hardness concentration in the receiving water). The change from floating limits to discrete limits is being made in all renewed permits at the request of U.S. EPA.

As part of the proposed CDO (Agenda Item 3), the Permittee will develop, submit and implement a copper monitoring and reduction workplan to identify and reduce/eliminate any sources of copper throughout the campus. The upgraded facility will discharge to the subsurface with groundwater elevations greater than 30 feet deep. Due to metal attenuation in the subsurface soil, copper concentrations should not be a threat.

No comments were received from the Permittee or members of the public. Minor errors, however, were identified by Regional Water Board staff in the chronic toxicity and compliance determination language. The Permittee was contacted and alerted to these minor corrections. The Permittee had no objections, and therefore, Regional Water Board staff made the minor corrections.

Adoption of the Proposed Permit is uncontested by the Permittee.

RECOMMENDATION: Adopt Order No. R1-2016-0041, as proposed.

SUPPORTING DOCUMENTS:

1. Proposed Order No. R1-2016-0041
2. Public Notice