

**STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION**

STAFF REPORT FOR REGULAR MEETING OF April 17-18, 2025

Prepared on April 2, 2025

ITEM NUMBER: 14

SUBJECT: FIELD TRIP – TOUR OF MCFADDEN WOODCHIP BIOREACTOR AND CASTROVILLE WETLAND TREATMENT SYSTEMS

STAFF CONTACTS: Katie McNeill, Environmental Scientist, 805/549-3336, Katie.McNeill@waterboards.ca.gov and Daniel Ellis, Senior Environmental Scientist, 805/549-3889, Daniel.Ellis@waterboards.ca.gov

ACTION: Information and Field Trip

SUMMARY

This item consists of site visits to two locations where nutrient treatment systems reduce nutrient loading to surface water and groundwater in the lower Salinas River Watershed. The field trip will commence at the McFadden Woodchip Bioreactor and will include presentations at the site by the staff of the Resources Conservation District of Monterey County (RCDMC)¹ and Central Coast Water Quality Preservation, Inc. (Preservation, Inc.)² who will discuss this site and other examples of nutrient treatment bioreactor projects in the area. The field trip will also include a visit to the Castroville Treatment Wetland and presentations by the staff of the Central Coast Wetlands Group (CCWG).³

Guest Speakers will include the following people:

- Paul Robins, RCDMC Executive Director
- Adrienne Carter, RCDMC Civil Engineer
- Sarah Lopez, Preservation, Inc. Executive Director
- Kevin O'Connor, CCWG Program Director
- Jenny Balmagia, CCWG Watershed Coordinator

¹ RCDMC website: <https://www.rcdmonterey.org/>

² Preservation, Inc. website: <https://ccwgp.org/>

³ CCWG website: <https://mlml.sjsu.edu/ccwg/>

Background

The Salinas Valley is known as the “salad bowl of the world” because crops grown in the lower Salinas River watershed (Salinas Valley within Monterey County) supply large percentages of the nation’s leaf and head lettuce, celery, broccoli, spinach, cauliflower and strawberries (according to the Monterey County Farm Bureau).⁴ Nutrients in runoff from agricultural operations contaminate surface water and groundwater in the area and the Central Coast Water Board has adopted total maximum daily loads (TMDLs) that characterize the nutrient load sources and include implementation plans to address and reduce nutrient loading.⁵ The Central Coast Water Board regulates waste discharges from irrigated lands in accordance with Order R3-2021-0040.⁶

During the field tour, the following grant supported treatment systems will be discussed:

The RCDMC partnered with Tanimura & Antle to construct the McFadden Woodchip Bioreactor⁷ on irrigated agricultural lands adjacent to the Blanco Drainage. This project was funded, in part, by a United States Environmental Protection Agency (USEPA) Clean Water Act (CWA) section 319(h) grant for nonpoint source pollution. The State Water Resources Control Board administered the grant and the Central Coast Water Board managed the project. The bioreactor is currently reducing nutrient pollutant load and concentrations by approximately 75%. The RCDMC monitors the influent and effluent of the bioreactor to calculate pollutant load reduction.

The RCDMC also partnered with Tailwater Systems and Preservation, Inc., to purchase and install a container-based mobile denitrifying bioreactor (mobile bioreactor). Preservation, Inc. operates and maintains the CWA section 319(h) grant-funded mobile bioreactor to reduce on-farm nitrate loads and partners with agricultural landowners and operators to move the mobile bioreactor throughout the lower Salinas River watershed. This mobile bioreactor was first deployed on a ranch in the Chualar Creek watershed and treated over 12,000 gallons per day of irrigation return water, reducing nitrate concentrations by 80%.

The CCWG constructed an experimental treatment wetland on land leased by Pacific Gas & Electric (PG&E) to support ongoing research into effective and cost-efficient nutrient reduction methods for on-farm treatment of nutrient-contaminated runoff, also funded by State Water Resources Control Board funding (Proposition 84). The CCWG

⁴ Information from Monterey County Farm Bureau: <https://montereycfb.com/facts-figures-faqs/>

⁵ *TMDLs for Nitrogen Compounds and Orthophosphate in the Lower Salinas River Watershed* in the Water Quality Control Plan for the Central Coastal Basin, see section 4.9.15: https://www.waterboards.ca.gov/centralcoast/water_issues/programs/basin_plan/docs/2024_basin_plan_r3.pdf

⁶ Order R3-2021-0040:

https://www.waterboards.ca.gov/centralcoast/water_issues/programs/ilp/regulatory_information.html

⁷ Bioreactors are trenches used to treat nitrogen in water that passes through the bioreactor trench. The trenches are filled with a carbon source (e.g., wood chips), that serve as a substrate for bacteria that break down the nitrate through denitrification or other biochemical processes.

later installed a linear flow woodchip system adjacent to the PG&E wetland treatment system. These projects were funded in part by several grant programs. The project is designed to reduce nitrate by approximately 50%, reducing dry season nitrate concentrations to below 1 mg/L (nitrate as nitrogen), through the dual function of the treatment chambers and previously grant-funded treatment wetland downstream. The CCWG also anticipates that phosphates will be reduced below 0.2 mg/L.

The public is invited to participate in this field trip; however, space is limited, and transportation will not be provided. Reservations are required in advance. Please see the April [agenda](#)⁸ for information on the meeting and how to RSVP for the field trip. The field trip, and this item, will conclude at noon.

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⁸ Central Coast Water Board Agenda webpage:
https://www.waterboards.ca.gov/centralcoast/board_info/agendas/2025/2025_agendas.html