

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

RESOLUTION R5-2014-0400

REQUEST FOR CLEANUP AND ABATEMENT ACCOUNT FUNDS
FOR
DEMONSTRATION PILOT PROJECT FOR BIOLOGICAL
DENITRIFICATION OF RURAL COMMUNITY GROUNDWATER
PARADISE COLONY, TULARE COUNTY

WHEREAS, the Executive Officer of the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board), acting in accordance with the authority delegated to her by the Central Valley Water Board, finds that:

1. The Central Valley Water Board recognizes the importance of groundwater within the Central Valley.
2. The Central Valley Water Board approved the *Groundwater Quality Protection Strategy A "Roadmap" for the Central Valley Region* in August 2010. In this strategy the Central Valley Water Board stated that groundwater is a critically important resource that accounts for almost 50 percent of the domestic (private) and public drinking-water supply in the Central Valley and that some groundwater supplies throughout the Central Valley have been degraded or polluted due to historical practices of the agriculture and dairy industries; commercial, industrial, and military discharges; failing septic systems; and other discharges to land.
3. In the State Water Board February 2013 report to the Legislature *Recommendations Addressing Nitrate in Groundwater*, the State Board found nitrate pollution in groundwater is a widespread water quality problem that can pose serious health risks to pregnant women and infants if consumed at concentrations above the Maximum Contaminant Level (MCL) of 45 milligrams per liter (mg/L) (as NO₃) set by the California Department of Public Health. Nitrate contaminated groundwater is a particularly significant problem in the Tulare Lake Basin and Salinas Valley areas, where about 2.6 million people, including many of the poorest communities in California, rely on groundwater for their drinking water. Many other areas of the State, however, also have nitrate contaminated groundwater making it the most frequently detected anthropogenic chemical above an MCL in drinking water sources.
4. The report *Addressing Nitrate in California's Drinking Water with a Focus on Tulare Lake Basin and Salinas Valley Groundwater. Report for the State Water Resources Control Board Report to the Legislature* by Harter et al. (2012) identifies that from 2006 – 2010, 57 percent of the population in the Tulare Lake Basin and Salinas Valley relied upon a public water system with one or more raw water nitrate tests above the MCL. Of the 51 community public water systems in the study area with a raw water nitrate test above the MCL, 40 systems were found to be located in disadvantaged communities. In the Tulare Lake Basin, 81 percent of the water systems were identified as very small (15-500 connections) or small water systems (501-3,300 connections); such systems can be disproportionately affected by nitrate contamination, as they lack a rate payer base to afford the cost of treatment.
5. The Drinking Water Program and the Central Valley Regional Water Quality Control Board have a shared desire to identify drinking water treatment technologies that are simple, reliable, economical, and easy to operate, especially for small communities, and whose waste discharge does not pose a threat to water quality. Biological denitrification as an emerging

drinking water treatment technology has an advantage over other more conventional treatment technologies, such as anion exchange and reverse osmosis, in that nitrate is converted to atmospheric nitrogen gas rather than displaced to a concentrated brine waste stream. As such, biological nitrate removal holds significant promise in dealing with nitrates in drinking water supplies while reducing salt discharges in the Tulare Lake Basin.

6. The City of Delano has taken a lead in finding solutions to the growing problem of nitrates in groundwater supply for both urban and rural residents of the Southern San Joaquin Valley. The City is currently in the process of evaluating biological denitrification of its groundwater supply funded by a Proposition 50 Chapter 6(b) Grant through the California Department of Water Resources. The City is proposing that once the pilot phase of the demonstration project in Delano is complete, the pilot unit could be shipped to a very small disadvantaged community to investigate the feasibility, advantages, and limitations of using remotely operated biological denitrification at small disadvantaged communities in the Central Valley.
7. The City of Delano has requested \$359,100 in Cleanup and Abatement Account funds to conduct an eight month biological denitrification pilot test at Paradise Colony, a very small rural unincorporated community located near the City of Lindsay. The goal of the Paradise Colony pilot study will be similar to the City of Delano study in that they will both be looking at efficiency and practicality. However, they differ in that the Paradise Colony pilot study will be looking at the suitability of biological treatment at a much smaller, more rural community.
8. Paradise Colony consists of a row of five houses on the west side of Road 203 between 23023 and 22875 Road 203 and is home to approximately 12 residents (versus the City of Delano with a population of approximately 54,000). Based on 2008-2012 census data, Tulare County is disadvantaged with a median household income (MHI) of \$43,803 which is below the disadvantaged community (DAC) threshold of 80 percent of the statewide MHI of \$61,400.
9. The water system at Paradise Colony is not regulated as a public water system due to its small size. However, the nitrate impacts to its groundwater supply typify the problems facing very small rural disadvantaged communities in the Tulare Lake Basin in that its water system is a simple well and pressure tank configuration lacking any type of water treatment. Mr. Larry McCord, a retiree and resident of Paradise Colony who voluntarily administers the water system, and Mr. Atilano Arguelles, who is also a resident and owns the parcel where the community's well is located, have both agreed to assist with the pilot study.
10. During the eight month pilot test, treated water from the pilot unit will not be consumed by the public, but rather will be used to demonstrate that the technology is capable of being remotely operated while meeting the same performance requirements required by the Drinking Water Program for public water systems (e.g., treated water must be coliform free). If the pilot is successful it will demonstrate the viability of this technology to deliver safe drinking water with a nitrate concentration below the nitrate MCL to the subject community. The project's goal is to assist the multitude of small disadvantaged communities with water supply systems impacted by nitrate. If the pilot demonstrates that the technology is viable, a multitude of such remotely operated systems could potentially be deployed in small communities throughout the Region. Such a regional approach could lower both capital and operation and maintenance (O&M) costs to individual communities.

11. The project work contemplated by the City of Delano's funding request is expected to take approximately sixteen months to complete. The City will request Central Valley Water Board review and approval of all project work prior to implementation to ensure effective utilization of Cleanup and Abatement Account funds. Board staff will review work plans, progress reports, technical reports, and invoices for reimbursement of costs. In addition, Board staff will conduct site inspections, make phone calls and hold meetings as needed to keep informed on the progress of the pilot study.

THEREFORE, BE IT RESOLVED THAT the Executive Officer of the California Regional Water Quality Control Board, Central Valley Region, acting in accordance with the authority delegated to her pursuant to Resolution R5-2009-0027, supports the City of Delano's funding request for an award of \$359,100 from the Cleanup and Abatement Account for the purposes set forth herein.

Original signed by:

PAMELA C. CREEDON, EXECUTIVE OFFICER

July 8, 2014

(Date)