

MONTEREY COUNTY

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Conny Mitterhofer, P.E.
State Water Resources Control Board, Division of Financial Assistance
1001 I Street, 16th Floor
Sacramento, CA 95812



Dear Ms. Mitterhofer:

Monterey County would like to express our support for conducting the nitrate treatment pilot study for disadvantaged communities in Monterey County. Nitrate contamination is a significant problem for many small water systems in Monterey County resulting in many residents not having potable drinking water. Disadvantaged communities are even further impacted by nitrate contamination due to their limited resources. Monterey County currently has 969 permitted small water systems and 171 (i.e. 654 connections) have elevated nitrate levels.

Treatment plants can be very problematic for all small water systems due to the high costs of installation, maintenance, and waste disposal. Therefore, this pilot study is a promising and important step towards having a viable treatment option that will benefit not only disadvantaged communities, but all small water systems.

The Monterey County Health Department through its Environmental Health Bureau has a proactive drinking water program that is highly regarded by the staff of the State Water Board's Drinking Water Program. The County is committed to helping our disadvantaged communities to have access to potable drinking water as demonstrated by providing financial and staff resources despite constrained County resources to help the communities of Chualar, San Jerardo, and recently San Lucas to find and develop potable water sources.

We are excited at this opportunity and urge you to conduct this nitrate treatment pilot study in Monterey County.

Sincerely,

Nicholas E. Chiulos
Assistant County Administrative Officer

DISTRIBUTED POTABLE WATER TREATMENT INFRASTRUCTURE FOR REMOTE COMMUNITIES: A UCLA and State Water Board Pilot Project.

BACKGROUND ON THE PROBLEM

In Fall, 2012, there was widespread discussion and publicity surrounding the problems of poor rural communities without safe drinking water due to nitrate pollution of their wells. The health impacts of drinking nitrate polluted water are extremely serious and so some of these communities had not been able to drink water for years while they either sought solutions or had solutions that had failed.

This has been a high priority problem for the Governor and Legislature both in policy and funding. CDPH and the State Water Board were asked to document the scope of the problem and develop interim drinking water and long term fixes.

My job at UCLA, both as Assistant Director of the Institute of the Environment and Sustainability (IoES) and as the Director of the UCLA Water Resources Group at the IoES is to work closely with faculty to connect them with agencies and decisionmakers trying to address a serious problem like this which is connected to their expertise and research. The Water Resources Group is composed of more than 35 faculty experts on water science, technology and policy across the campus.
<http://www.environment.ucla.edu/water/>. One faculty member I work with is Dr. Yoram Cohen, Professor of Biochemical Engineering at UCLA and a joint faculty at the IoES.

I accompanied him to CDPH and the State Water Board to talk about a technical and governance solution to the nitrate groundwater pollution problem that we believe is cheaper and better for DAC communities.

THE TECHNICAL AND GOVERNANCE SOLUTION

Dr. Cohen has designed new membrane technology to improve the efficacy of standard reverse osmosis treatment for nitrates, which is a long established treatment method for nitrates. He has also developed a "smart" treatment system that allows a major advance for these communities: sophisticated treatment modules sized to the community needs, treating well water in the community. These systems are self-adjusting and managed remotely through a virtual centralized system.

While current strategies call for physical consolidation of water systems with larger systems, that is very costly in capital improvements, high energy users and does not work for many communities too far to consolidate physically. This system would treat onsite water to drinking water standards and allow many systems to be "virtually consolidated" run by experts. The cost and expertise to operate and maintain treatment systems in small communities have been a major impediment for treatment as a solution for DAC's. Under this paradigm, many geographically separate systems would be maintained remotely by a regional centralized, expert staff that a large water district might be able to maintain. Other features of this smart water treatment system are:

1. Capacity to self-adjust automatically to changing volumes of water and changing levels of pollutants to produce drinking water that meets water standards.
2. A simple Interface and internet connection that allows users and managers to monitor water quality on a real time basis 24/7 on a cellphone and at a remote central operating site. This will increase community confidence and insure the water is safe to drink.
3. A sensor system that detects and communicates small changes in system operation before parts can fail, so that centralized system managers can make remote adjustments to the system, and then, if necessary, go to sites to replace parts. This means reduced hours of onsite maintenance.

Dr. Cohen has successfully operated a system at Pt. Hueneme for several years and has recently installed a large mobile system for the Panoche Irrigation District to treat agricultural runoff to drinking water standards which would be sold to public water systems. This mobile system will be moved around the Central Valley to other agricultural districts to calibrate to local conditions so that permanent systems can be designed in several locations. We think that this proven technology, with a new operation and governance paradigm could be the solution to nitrate polluted drinking water statewide. But it needs to be proven through a drinking water pilot project.

Feasibility Study and Pilot Community Site Selection

A feasibility study has been completed and UCLA is ready to apply this technology directly to DAC communities on wells, who are not good candidates for physical consolidation. We have worked with CDPH (now the Division of Drinking Water at the State Board) and the State Board division to identify three to four pilot project sites in the Salinas Valley or Tulare Basin, where these systems would be installed and managed remotely by UCLA for up to three years. We have worked with local health departments, Regional CDPH and Regional Water Boards to brief them on the technology and seek pilot project candidate sites. We worked with community based environmental justice groups (California Rural Legal Assistance in Salinas, Self Help Enterprises and Community Water Center in Visalia) to help them understand and judge this alternative. The State Water Board contracted with CRLA and CWC to identify, visit and take us on a field trip to candidate sites to meet the communities and review their current infrastructure. From this we identified four sites in Salinas Valley and two sites in the Tulare Basin who were good candidates and interested in participating.

We have also identified existing "satellite" water companies who currently manage many geographically separate systems in a centralized operation. In the pilot study UCLA will monitor operation and maintenance costs to see if there are adequate economies of scale to bring these costs down to levels that the communities can afford. Having existing private companies who already do basic maintenance on many different geographically separate wells using some basic remote technology gives a path to a central management entity for these systems after the pilot.

Implementing the Pilot Project

The State Water Board is now considering allocating funding for a three to four pilot community project, networked into a virtual system. These systems would be designed, permitted and installed, and then operated and maintained by UCLA for three years. Environmental justice community outreach experts will work with the communities help them understanding the project, help UCLA address their concerns and give their final agreement to proceed. UCLA will work with the health departments on water system permitting and the Regional Water Boards on permitting for disposal of residues.