

**STATE WATER RESOURCES CONTROL BOARD
BOARD MEETING SESSION – DIVISION OF FINANCIAL ASSISTANCE
JANUARY 20, 2015**

ITEM 2

SUBJECT

CONSIDERATION OF A PROPOSED RESOLUTION TO ALLOCATE \$2,000,000 FROM THE CLEANUP AND ABATEMENT ACCOUNT (CAA) TO THE UNIVERSITY OF CALIFORNIA, LOS ANGELES (UCLA) FOR THE DISTRIBUTED SMART WATER TREATMENT (DSWT) SYSTEM FOR DISADVANTAGED COMMUNITIES PILOT STUDY (PROJECT)

DISCUSSION

UCLA is requesting \$2,000,000 from the CAA to conduct a pilot study using DSWT systems at up to four disadvantaged communities for a period of approximately three years. These disadvantaged communities will be located in the Monterey/Salinas area and/or the Central Valley and will have drinking water systems that have been impacted by nitrate at concentrations above the Maximum Contaminant Level (MCL) of 45 mg/L.

The overall goals of the Project are to: 1) evaluate whether remotely, but centrally managed, DSWT systems can provide reliable water treatment and deliver high-quality drinking water to disadvantaged communities at affordable operation and maintenance costs; 2) assess the extent to which operational costs can be reduced while increasing reliability through improved treatment process control systems and advanced satellite/remote operation; and 3) find ways to reduce the cost of handling treatment system residuals while addressing concerns associated with residuals.

The DSWT systems are self-adjusting ('smart') and use modular membrane-based technology (reverse osmosis) integrated with ultrafiltration, disinfection, and ion-exchange (for the treatment of residuals for disposal). DSWT systems use centralized remote monitoring and operational control and, as necessary, utilize local satellite operators. The UCLA Water Technology Research (WaTeR) Center has implemented similar smart membrane-based systems for the treatment of groundwater and agricultural drainage water in the San Joaquin Valley, and for seawater desalination at Port Hueneme. As part of the Project, UCLA plans to demonstrate reduced operational and maintenance costs due to the ability to remotely monitor and operate the DSWT systems. The Project will also demonstrate the benefits of having these systems self-adjust.

If approved, the requested funding from CAA will be used for: 1) site-specific evaluations of water quality; 2) initial system design; 3) close collaboration with permitting agencies to acquire the necessary permits; 4) design and construction of the treatment systems (in a phased approach); 5) operation of up to four treatment systems; 6) monitoring and detailed reporting; and 7) planning/ transitioning for long-term governance of continuous system operations. During the pilot study, the UCLA team will operate the DSWT systems and monitor and report water quality data, treatment information, and operational and maintenance costs to the State Water Board. When necessary, local satellite operators will service the treatment systems during the pilot study. The Project team will work closely with the selected communities and with environmental justice groups to engage the communities. The team will provide education regarding water quality issues and water treatment using DSWT systems, and will provide

access to water quality information. The Project team will also work with stakeholders to develop a governance structure for operating a water treatment system that will position the communities for a suitable long-term solution.

During the Project, UCLA will analyze the following information: 1) data to document the benefits of remote monitoring and control including the impacts on water treatment efficiency and reduced operation and maintenance costs; and 2) data and operational experience related to treatment system performance achieved by advanced satellite operations. UCLA will summarize the information and resulting recommendations in a Final Project Report.

UCLA previously received \$99,191 in funding from the CAA (division-level approval) for the evaluation and site selection phase of the Project. Previous tasks included the evaluation and identification of potential suitable candidates in the Monterey and Salinas area as well as the Central Valley. As part of the previously allocated funding, UCLA also completed an assessment of existing satellite small water systems and interviewed satellite operators that have successfully served several geographically-distributed communities at the same time. The findings from this assessment will be incorporated into the design and governance structure of the Project.

The UCLA project, if approved, will minimize further drought impacts in the selected communities, with the goal of solving drinking water problems for small remote and disadvantaged communities. To the extent that local water suppliers can use local water sources, there will be less demand placed on imported supplies.

This Project is designed to improve the ability of smaller water systems to effectively treat contaminated local supplies, thus increasing the ability to use local water supplies. Local supplies are typically of lower cost and higher reliability and generally much more energy-efficient than the use of imported supplies. For water systems that have access to imported water supplies such as from the California Aqueduct (examples include many Central Valley towns), the ability to use the local groundwater (with effective treatment if necessary) - rather than being completely dependent on the imported supplies - provides a benefit to the local water system. Imported surface water supplies might also require water treatment to meet drinking water standards, with potential additional infrastructure costs for a distribution system.

The State Water Board established Program Preferences for CAA funds based on statewide priorities and Strategic Goals outlined in the Strategic Plan Update 2008-2012. The Project meets the following CAA program preferences:

- Preference # 2: Projects that address Disadvantaged Communities Environmental Justice infrastructure needs.
- Preference #5: Cleanup and/or abatement of pollution in high-use groundwater basins.
- Preference #6: Cleanup and/or abatement of contaminated site when the viable responsible party has not been identified.
- Preference # 8: Completion of a Study/Plan and/or monitoring addressing significant statewide water quality problems.

Overall, the Project is consistent with the goals outlined in the State Water Board's Strategic Plan Update 2008-2012.

The allocation from the CAA for the Project is consistent with purposes of section 13442 of the Water Code. Section 13442 provides that the State Water Board may order moneys to be paid from the CAA to, among other entities, a public agency with the authority to clean up or abate the effects of a waste in order "to assist it in cleaning up the waste or abating its effects on waters of the state."

POLICY USE

Should the State Water Board:

1. Approve \$2,000,000 from the CAA to fund the Project?
2. Make the funds available until July 31, 2020, and revert any unexpended funds to the CAA as of October 31, 2020, unless the Deputy Director or Assistant Deputy Director of the Division of Financial Assistance authorizes an extension?

FISCAL IMPACT

The uncommitted balance in the CAA as of December 9, 2014 was \$5.7 million. There are sufficient funds available to fund the Project and maintain the Board's emergency reserve.

REGIONAL WATER BOARD IMPACT

Yes. Central Coast Regional Water Quality Control Board, the Central Valley Regional Water Quality Control Board, and the Division of Drinking Water.

STAFF RECOMMENDATION

The State Water Board should adopt the proposed Resolution.

State Water Board action on this item will assist the Water Boards in reaching Goal 2 of the Strategic Plan Update: 2008-2012, to improve and protect groundwater quality in high-use basins by 2030. It will also assist the Water Boards in reaching Goal 3: Increase sustainable local water supplies available for meeting existing and future beneficial uses by 1,725,000 acre-feet per year, in excess of 2002 levels, by 2015, and ensure adequate flows for fish and wildlife habitat. Finally, it will assist the Water Boards in reaching Goal 4: To comprehensively address water quality protection and restoration, and the relationship between water supply and water quality, and describe the connections between water quality, water quantity, and climate change, throughout California's water planning processes.

DRAFT

STATE WATER RESOURCES CONTROL BOARD RESOLUTION NO. 2015-

ALLOCATE \$2,000,000 FROM THE CLEANUP AND ABATEMENT ACCOUNT (CAA)
TO THE UNIVERSITY OF CALIFORNIA, LOS ANGELES (UCLA) FOR THE
DISTRIBUTED SMART WATER TREATMENT (DSWT) SYSTEM FOR
DISADVANTAGED COMMUNITIES PILOT STUDY (PROJECT)

WHEREAS:

1. UCLA is requesting \$2,000,000 from the CAA to conduct a pilot study using DSWT systems at up to four disadvantaged communities for a period of approximately three years;
2. These disadvantaged communities will be located in the Monterey/Salinas area and/or the Central Valley and will have drinking water systems that have been impacted by nitrate at concentrations above the Maximum Contaminant Level (MCL);
3. The overall goals of the Project are to: 1) evaluate whether remotely, but centrally managed, DSWT systems can provide reliable water treatment and deliver high-quality drinking water to disadvantaged communities at affordable operation and maintenance costs; 2) assess the extent to which operational costs can be reduced while increasing reliability through improved treatment process control systems and advanced satellite/remote operation; and 3) find ways to reduce the cost of handling treatment system residuals while addressing concerns associated with residuals;
4. The DSWT systems are self-adjusting ('smart') and use modular membrane-based technology (reverse osmosis) integrated with ultrafiltration, disinfection, and ion-exchange (for the treatment of residuals for disposal). DSWT systems use centralized remote monitoring and operational control and, as necessary, utilize local satellite operators;
5. As part of the Project, UCLA plans to demonstrate reduced operational and maintenance costs due to the ability to remotely monitor and operate the DSWT systems. The Project will also demonstrate the benefits of having these systems self-adjust;
6. The requested funding from the CAA will be used for: 1) site-specific evaluations of water quality; 2) initial system design; 3) close collaboration with permitting agencies to acquire the necessary permits; 4) design and construction of the treatment systems (in a phased approach); 5) operation of up to four treatment systems; 6) monitoring and detailed reporting; and 7) planning and transitioning for long-term governance of continuous system operations;
7. The Project team will work closely with the selected communities and with environmental justice groups to engage the communities. The team will provide education regarding water quality issues and water treatment using DSWT systems, and will provide access to water quality information. The Project team will also work with stakeholders to develop a governance structure for operating a water treatment system that will position the communities for a suitable long-term solution;

8. The UCLA project, if approved, will minimize further drought impacts in the selected communities, with the goal of solving drinking water problems for small remote and disadvantaged communities;
9. UCLA previously received \$99,191 in funding (division-level approval) from the CAA for the evaluation and site selection phase of the Project; and
10. The allocation from the CAA for the Project is consistent with purposes of section 13442 of the Water Code. Section 13442 provides that the State Water Resources Control Board (State Water Board) may order moneys to be paid from the CAA to, among other entities, a public agency with the authority to clean up or abate the effects of a waste in order “to assist it in cleaning up the waste or abating its effects on waters of the state.”

THEREFORE BE IT RESOLVED THAT:

The State Water Board:

1. Approves \$2,000,000 from the CAA to fund the Project.
2. Makes the funds available until July 31, 2020, with any unexpended funds reverting to the CAA as of October 31, 2020, unless the Deputy Director or Assistant Deputy Director of the Division of Financial Assistance authorizes an extension.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Board held on January 20, 2015.

Jeanine Townsend
Clerk to the Board