

Title XVI Research Study Funding - FY 2016

California

State of Irrigated Agriculture Water Reuse - Impediments and Incentives State Water Resource Control Board

Federal Funding: \$75,000

Non-Federal Funding: \$252,372

The California State Water Resource Control Board will conduct a research study that assembles a global inventory of successes, delays, and set-backs in the process of switching from various traditional sources of irrigation water to recycled water. For successful cases, the study will identify incentives that gave rise to adoption of recycled water. For cases that experienced set-backs, the reasons will be identified. The final products of this research will be a white paper on the efficient ways to promote use of recycled water for agricultural irrigation, and a guidance document for utilities and agricultural enterprises in need of alternative sources of water.

Scorecard for Evaluating Opportunities in Industrial Reuse State Water Resource Control Board

Federal Funding: \$75,000

Non-Federal Funding: \$326,190

The California State Water Resource Control Board will conduct a research study to better understand the true cost of water that is needed to complete a comprehensive evaluation of project return on investment and identify opportunities for water reuse. The study will provide decision makers with information to make informed decisions from an economic perspective through an assessment tool. This tool will enable the company to understand how water impacts their operations, where their greatest water risks lie, and prioritize sites for water reuse focus. The tool will also include a mechanism to determine the true cost of water, and help ensure that the predicted project benefits are correctly integrated in the implementation process.

Mission Basin Groundwater Purification Facility Third Stage Reverse Osmosis Pilot Testing

City of Oceanside

Federal Funding: \$39,905

Non-Federal Funding: \$107,719

The City of Oceanside will investigate adding a third stage reverse osmosis system to the City's Mission Basin Groundwater Purification Facility to recover up to 45 percent of the brine that is currently discharged to an ocean outfall. Research study activities will include development of a pilot test plan, installation of a reverse osmosis pilot unit at the facility, running of the pilot unit to determine whether water quality goals can be met at the desired recovery rate, decommissioning of the pilot unit, and development of a final report. If successful, this project could result in recovery of an additional 1 million gallons per day of potable water without an increase in the amount of pumping from the Mission Basin, which is part of the larger San Luis Rey Valley Groundwater Basin.

Reverse Osmosis Membrane Performance Demonstration Project

West Basin Municipal Water District

Federal Funding: \$56,969

Non-Federal Funding: \$170,909

West Basin Municipal Water District will document the ability of the current reverse osmosis membrane market to meet groundwater recharge regulations, specifically in cases where ozone is included in the pretreatment process. The study will generate data that other agencies can use for membrane selection, and be particularly useful to those agencies considering ozone as a treatment step. Testing parameters which will be monitored will include membrane permeability as well as removal rates of total nitrogen, total organic carbon, total dissolved solids, and select constituents of emerging concern.

Custom Engineered Membrane Filtration Pilot Test Project

West Basin Municipal Water District

Federal Funding: \$150,000

Non-Federal Funding: \$513,046

West Basin Municipal Water District has constructed a Custom Engineered Membrane Filtration Pilot System which is capable of independently operating up to three different pressurized membrane filtration modules in parallel. The pilot system will be used to carry out research to evaluate pressurized hollow fiber microfiltration or ultrafiltration membranes for future consideration at West Basin's facilities. Pilot testing for 6 membranes will be conducted over the course of a year in two different phases. The purpose of the two phases is to determine if the manufacturer specified strategy, or alternatively a common West Basin preferred backwash strategy provides acceptable results.

Hyperion Water Reclamation Plant's Water Reclamation Demonstration Facility

City of Los Angeles, Bureau of Sanitation

Federal Funding: \$300,000

Non-Federal Funding: \$13,795,048

The City of Los Angeles will design, construct, and operate the Hyperion Water Reclamation Plant Demonstration Facility to produce 1 million gallons per day of nitrified-denitrified, reclaimed water using Advanced Water Treatment. The Advanced Water Treatment process will have the following stages: Membrane bioreactors, reverse osmosis, and advanced oxidation process. Assessments will be made on various treatment components and alternative process trains based on effectiveness, reliability, operational requirements, design criteria, and cost. The 1 million gallons per day demonstration facility will form the basis of design for a future, full-scale 70 million gallons per day water reclamation facility on the Hyperion site by the year 2025.

Colorado

Total Dissolved Solids Research for Reuse

Cherokee Metropolitan District

Federal Funding: \$150,000

Non-Federal Funding: \$450,000

Cherokee Metropolitan District will perform a detailed evaluation of treatment technologies and establish preliminary design criteria for a facility needed to reduce total dissolved solids from treated wastewater effluent. This effluent currently exceeds a restrictive discharge permit requirement for total dissolved solids and is currently discharged into a groundwater basin prior to being reused for agricultural irrigation and potable drinking water. The research study will include bench and pilot scale testing to identify a cost-effective means of total dissolved solids reduction to continue water

reclamation/reuse in the basin while complying with State requirements and minimizing water lost to brine disposal.

Texas

Feasibility of Water Recovery from Filter Backwashing and Rewashing Operations

El Paso Water Utilities Public Service Board

Federal Funding: \$10,600

Non-Federal Funding: \$33,143

El Paso Water Utilities Public Service Board will investigate the viability of recovering water that is used for filter backwashing and filter re-washing operations at El Paso's surface water treatment plants. The main concern regarding recycling of these waters is the number of Giardia and Cryptosporidium parasitic cysts that might be present in them. To monitor for these parasitic cysts, this research study will collect and analyze weekly samples from these streams during a two-month operating period. In addition, other parameters of interest will be measured including turbidity and suspended solids.

Potable Water Reuse Research Pilot Study

City of San Angelo

Federal Funding: \$300,000

Non-Federal Funding: \$1,094,849

The City of San Angelo will perform pilot scale testing to assess technologies to advance a direct potable reuse project. The purpose of the proposed research is to enable full-scale implementation of direct potable reuse by evaluating approaches to maximize water recovery; verify the performance of advanced treatment processes; and assess the viability of reverse osmosis concentrate disposal using deep injection wells at an inland location. The research will advance the industry knowledge related to implementation of direct potable reuse projects with a focus on three specific issues: Evaluation of the benefit of including biological nutrient removal upstream of membrane treatment to improve reverse osmosis recovery, evaluation of pretreatment processes and/or concentrate treatment to improve reverse osmosis recovery and concentrate water quality, and evaluation of the impacts of increasing reverse osmosis recovery on concentrate quality and disposal options.