

# Proposition 13 Groundwater Grants and Loans

Program Summary



2000 - 2004

The Resources Agency  
Department of Water Resources  
Division of Planning and Local Assistance



# Proposition 13 Groundwater Program

On March 7, 2000, California voters approved Proposition 13, the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act, which authorized a total of \$1.97 billion in bonds and included funding for groundwater storage and recharge projects. The Proposition 13 Groundwater Storage Program authorized the California Department of Water Resources (DWR) to provide grants for feasibility studies and construction projects to facilitate conjunctive management of surface water and groundwater to improve water supply reliability. A total \$200 million was authorized for the Groundwater Storage Program. The Proposition 13 Groundwater Recharge Program authorized DWR to provide grants and loans for groundwater recharge feasibility studies and projects. The sum of \$30 million was authorized for the Groundwater Recharge Program.



*Groundwater recharge basin*

including spreading ponds and injection wells; and 2) in-lieu recharge, which involves reducing the need to pump groundwater by increasing available surface water supplies. The funded groundwater recharge projects utilized similar means to recharge the groundwater. However, the recharge projects were not required to include a groundwater extraction component.

Funds appropriated for these two programs went toward: 1) construction grants and loans; 2) grants for feasibility studies and pilot projects; 3) DWR implementation and administration of the program; and 4) bond issuance costs. DWR awarded a total of approximately \$206 million in grant and loan funds to 62 projects whose total cost exceeded \$1 billion. ☞

*Preparing trench for pipe*



This document provides an overview of the DWR Proposition 13 Groundwater Storage and Groundwater Recharge Programs. It contains information on the solicitation and selection process, a summary of awards, a description of each award including project status to date, detailed information on selected projects, distribution of awards in California, and other statistics reflecting amount of funds awarded and number of applications submitted.

DWR funded groundwater storage programs designed to conjunctively manage water supply, which, in general, involves storing surface water in aquifers during wet years when water is plentiful; then retrieving it by pumping wells in dry years when surface water is sparse. Recharge will be accomplished by various means including: 1) direct recharge of an aquifer by conducting surface water into the ground by artificial means

*Pipeline Installation*



## Application Workshop and Solicitation

Public outreach to increase awareness of the program and assist applicants was a major focus of staff efforts on the program. DWR conducted 12 informational workshops on the program throughout the state and three public meetings on grant awards (below), in addition to speaking at conferences and other venues. Interested parties were notified of the workshops and public meetings by notices placed on the DWR web site, flyers, and through news releases. ☞

### Winter 2001

Ontario/Jan. 2001  
Fresno/Jan. 2001  
Chico/Jan. 2001

### Fall 2001

Monterey/Oct. 2001  
Fresno/Oct. 2001  
Ontario/Oct. 2001  
Chico/Oct. 2001

### Spring 2003

Colusa/April 2003  
Gustine/April 2003  
Lancaster/April 2003  
Sacramento/May 2003  
Glendale/May 2003

### Public Meetings


Sacramento/June 2001  
Sacramento /May 2002  
Sacramento/Sept. 2003

## Review and Approval Process

For each funding cycle and program, DWR identified the criteria for project review, evaluation, and selection in documents known as a Proposal Solicitation Packages (PSPs). The eligible applications were evaluated and scored by DWR based on the ranking and scoring criteria contained in the PSPs. Using

the evaluations and scoring, DWR developed preliminary funding recommendations. As prescribed in Proposition 13, DWR then consulted with a Conjunctive Use Advisory Committee made up of representatives of water interests and other stakeholders from throughout the State. That committee con-

sidered the applications and developed final recommendations for project funding. The list of recommended projects was also subject to review and comment by the public and considered by the California Bay-Delta Authority. The final funding determinations were made by the Director of DWR. ☞



# Three Funding Cycles Statistics

Over three funding cycles, DWR reviewed 190 applications and funded 62 applicants for a total of \$205.6 million for projects totaling over \$1 billion. Tables 1, 2 and 3 provide a summary of the awards amount and types.

In Fiscal Year (FY) 2003-2004, after considering 43 proposals, 18 projects were awarded grants totaling \$91 million. In FY 2001-2002, after considering 43 proposals, 16 projects were awarded grants and loans totaling \$96.1 million. In FY 2000-2001, after considering

104 proposals, 28 projects were awarded grants and loans totaling \$18.4 million.

Below are three tables showing the number of applications received and the total grant and loan awards for the three funding cycles of the Proposition 13 Groundwater Storage and Recharge Programs.

Table 1 shows the three funding cycles, the total number of applications received, number of projects awarded funding, and the total

grant or loan amount. Subsequent to funding awards, three grants, one from each funding cycle, were declined and funds were subsequently awarded to other qualified grant or loan projects.

Table 2 shows the number of grant or loan awards for each of the three funding cycles by project category.

Table 3 shows the funding breakdown by project type and funding cycle. ☛

**Table 1 — Proposition 13 Groundwater Grant and Loan Funding by Fiscal Year**

Year	Number of Applications Received	Actual Number of Projects Funded	Total Grants and Loans Amount	Total Cost of Projects Funded
2003-2004	43	18	\$91,036,664	\$392,763,856
2001-2002	43	16	\$96,164,356	\$616,713,701
2000-2001	104	28	\$18,400,000	\$29,202,262
<b>TOTALS</b>	<b>190</b>	<b>62</b>	<b>\$205,601,020</b>	<b>\$1,038,679,819</b>

**Table 2 — Proposition 13 Groundwater Grant and Loan Awards by Project Type**

Year	GW Storage Construction Grant	GW Storage Feasibility Grant	GW Storage Pilot Projects	GW Recharge Construction Loan	GW Recharge Feasibility Study	Total # of Projects Funded
2003-2004	15	0	0	3	0	18
2001-2002	12	3	0	1	0	16
2000-2001	0	2	8	3	15	28
<b>TOTALS</b>	<b>27</b>	<b>5</b>	<b>8</b>	<b>7</b>	<b>15</b>	<b>62</b>



*Table 3 — Proposition 13 Groundwater Grant and Loan Funding by Project Type*

Year	GW Storage Construction Grant	GW Storage Feasibility Grant	GW Storage Pilot Projects	GW Recharge Construction Loan	GW Recharge Feasibility Study	Total Awards
2003-2004	\$77,336,664	\$0	\$0	\$13,700,000	\$0	\$91,036,664
2001-2002	\$90,664,556	\$499,800	\$0	\$5,000,000	\$0	\$96,164,356
2000-2001	\$0	\$565,394	\$8,934,606	\$7,500,000	\$1,400,000	\$18,400,000
<b>TOTALS</b>	<b>\$168,001,220</b>	<b>\$1,065,194</b>	<b>\$8,934,606</b>	<b>\$26,200,000</b>	<b>\$1,400,000</b>	<b>\$205,601,020</b>





# Groundwater Storage Program


This map reflects the geographic distribution of Groundwater Storage Program awards for all three funding cycles. This distribution includes grants for Storage Pilot Projects, Storage Feasibility Studies, and Storage Construction Projects.



**Funded Projects**

- Storage Feasibility Studies (5)
- Storage Construction Grants (27)
- ▲ Storage Pilot Projects (8)



Completed and on-going groundwater storage construction, feasibility, and pilot projects are shown in Tables 4, 5, 6, and 7, which list the funding cycle, the agency name, the project description, the county, the project cost, and the total award for each applicant. The project cost and total awards for each funding cycle are summed separately. 

**Table 4 — 2003-2004 Proposition 13 Groundwater Storage Construction Grant Projects**

Agency	Project Description	County	Project Cost	Total Awards	Status
Golden Hills Community Services District	Existing facilities would be used for increased surface water recharge. The stored water would be recovered and conveyed through the proposed extraction well and transmission pipeline.	Kern	\$1,481,000	\$740,500	Complete
Arvin-Edison Water Storage District	Expand the Sycamore Spreading Works by about 90 acres, expand the N1 Balancing Reservoir by about 30 acres, and construct four recovery/extraction wells.	Kern	\$4,000,000	\$2,000,000	Ongoing
Butte Water District	Develop two production wells and a monitoring program to track changes in groundwater levels due to groundwater extraction & natural recharge.	Butte/ Sutter	\$1,397,149	\$1,397,149	Ongoing
East Bay Municipal Utility District	Construct three aquifer storage and recovery (ASR) wells and new treatment, blending, transmission, and monitoring of groundwater levels and subsidence in the East Bay Plain sub-basin aquifer system.	Alameda	\$21,650,000	\$2,000,000	Ongoing
Eastern Municipal Water District	Construct 15 recharge ponds and appurtenant facility additions and improvements in the San Jacinto River channel.	Riverside	\$10,757,731	\$5,000,000	Ongoing
Fresno Irrigation District	Construct 13 new recharge basins with diversion structures and delivery pipelines, eight recovery wells, five monitor wells, and improvements to the canals delivering water to the facility.	Fresno	\$9,230,144	\$4,615,072	Ongoing
Inland Empire Utilities Agency	Construct six wellhead treatment facilities for perchlorate, Upland Recharge Basin improvements, expansion of the Chino II Desalter, and Phase III recycled water conveyance facilities.	San Bernardino	\$81,701,011	\$15,500,000	Ongoing
Kern Delta Water District	Construct six new wells, modification of two existing wells, and construct approximately 660 acres of spreading basins along the Buena Vista canal.	Kern	\$10,355,900	\$5,177,950	Ongoing
Kings River Conservation District	Construct two recharge basins and three extraction wells.	Fresno	\$2,974,651	\$2,737,753	Ongoing
Los Angeles County Department of Public Works	Rehabilitation improvements to Big Tujunga Dam to capture, detain, and recharge additional storm water in the San Fernando Basin.	Los Angeles	\$67,000,000	\$6,600,000	Ongoing
Lower Tule River Irrigation District	Increase in-lieu and direct groundwater recharge by enhancing surface water conveyance from the Tule River at North Canal.	Kings/ Tulare	\$1,465,711	\$700,000	Ongoing
Pajaro Valley Water Management Agency	Construct a 22-mile pipeline, 17 supplemental wells along the pipeline, and a 26 mile coastal distribution system to deliver piped water to coastal properties.	Santa Cruz	\$126,587,157	\$16,250,444	Ongoing
Stockton East Water District	Construct a pipeline to convey surface water to existing and future recharge facilities and to deliver water that is recovered from groundwater storage using proposed and existing wells.	San Joaquin	\$7,401,260	\$3,700,630	Ongoing
Sutter Extension Water District	Construct two groundwater production wells, a recharge program, monitoring program, and a conjunctive use education program.	Sutter	\$1,534,104	\$1,510,897	Ongoing
West Basin Municipal Water District	Expand and upgrade of the West Basin Water Recycling Plant to receive and treat more water and injection of recycled water for the seawater barrier intrusion.	Los Angeles	\$33,918,000	\$9,406,269	Ongoing
<b>2003-2004 Groundwater Storage Construction TOTALS</b>			<b>\$ 381,453,818</b>	<b>\$77,336,664</b>	



# Groundwater Storage Program

*Table 5 — 2001-2002 Groundwater Storage Construction Grant Projects*

Agency	Project Description	County	Project Cost	Total Awards	Status
Buena Vista Water Storage District	Construct three new extraction wells and associated conveyance pipelines to deliver additional banked groundwater.	Kern	\$1,000,000	\$500,000	Complete
United Water Conservation District	Construct a well field to manage groundwater storage in the Oxnard Forebay basin.	Ventura	\$1,825,740	\$1,423,595	Complete
Cawelo Water District	Construction of diversion facilities from Poso Creek to Poso Reservoir for recharge.	Kern	\$2,978,178	\$1,430,000	Ongoing
City of Clovis	Construct four groundwater recharge basins on eight parcels.	Fresno	\$4,273,745	\$2,031,245	Ongoing
Goleta Water District	Recharge spill water from Lake Cachuma, available every three to five years, to the groundwater basin, and modify existing wells to allow injection.	Santa Barbara	\$3,604,039	\$1,802,019	Ongoing
Kern County Water Agency	Construct an 800 cfs tie between the Cross Valley Canal (CVC) and the Friant-Kern Canal, install pump stations on the Friant-Kern Canal to convey from the CVC to northern Kern County, and raise the lining of the CVC to reliably convey 500 cfs of water.	Kern	\$44,023,100	\$22,000,000	Ongoing
Kern Water Bank Authority	Construct 16 additional recovery wells and a conveyance pipeline to route water to the California Aqueduct. Construct a lift station to convey water for recharge purposes.	Kern	\$6,750,000	\$3,375,000	Ongoing
Los Angeles County Dept. of Public Works	Construct two inflatable dams on the San Gabriel River to capture local runoff for in-stream recharge and provide storage for downstream spreading.	Los Angeles	\$6,503,000	\$2,150,000	Ongoing
North Kern Water Storage District	Provide water banking services to neighboring agencies and maintain groundwater resources underlying North Kern. New facilities include a turnout from the Friant-Kern Canal and four extraction wells.	Kern	\$2,262,487	\$1,131,000	Ongoing
Orange County Water District	Construct Advanced Water Treatment facilities and pumping stations and pipeline connection from the treatment facilities to existing recharge basins.	Orange	\$487,000,000	\$30,000,000	Ongoing
Sacramento Regional Water Authority	Expand surface water treatment plant capacity, improve water transmission system, such as pipelines, a pump station, and an aboveground water storage tank for flow equalization, and groundwater extraction wells.	Sacramento/ Placer	\$43,343,395	\$21,671,697	Ongoing
Yuba County Water Agency	Construct a canal to deliver surface water in lieu of groundwater pumping. Construct two pumping plants.	Yuba	\$6,300,000	\$3,150,000	Ongoing
<b>2001-2002 Groundwater Storage Construction Projects TOTALS</b>			<b>\$609,863,684</b>	<b>\$90,664,556</b>	
<b>Groundwater Storage Construction Program TOTALS</b>			<b>\$944,017,502</b>	<b>\$168,001,220</b>	





*Table 6 — Groundwater Storage Feasibility Study Grant Programs*

Agency	Project Description	County	Project Cost	Total Awards	Status
<b>2001-2002</b>					
Madera Irrigation District	Evaluate potential increased recharge using Madera Lake and construction of additional recharge basins.	Madera	\$885,000	\$150,000	Ongoing
Placer County Water Agency	Develop a conceptual hydrologic model of the study area and define groundwater storage project alternatives.	Placer	\$119,600	\$59,800	Ongoing
San Juan Basin Authority	Identify and develop a conjunctive use project whereby carryover storage is provided to increase safe yield of the groundwater basin.	Orange	\$445,000	\$290,000	Ongoing
<b>2001-2002 Storage Feasibility Study Grant Program TOTALS</b>			<b>\$1,449,600</b>	<b>\$499,800</b>	
<b>2000-2001</b>					
Eastern Municipal Water District	Evaluate the technical, economic, and environmental issues associated with groundwater storage and identify a preferred alternative for a recharge and recovery scenario.	Riverside	\$400,000	\$200,000	Complete
Yolo County Flood Control & Water Conservation District	Evaluate canal improvements and construction of new canals to deliver surface water to agricultural lands currently served by groundwater.	Yolo	\$427,800	\$365,394	Complete
<b>2000-2001 Storage Feasibility Study TOTALS</b>			<b>\$827,800</b>	<b>\$565,394</b>	
<b>Storage Feasibility Study Program TOTALS</b>			<b>\$2,277,400</b>	<b>\$1,065,194</b>	



*Semitropic canal lining height augmentation*



# Groundwater Storage Program

*Table 7 — 2000-2001 Groundwater Storage Pilot Projects*

Agency	Project Description	County	Project Cost	Total Awards	Status
Coachella Valley Water District	Build a direct recharge pilot facility to test and evaluate recharge feasibility.	Riverside	\$1,629,521	\$1,121,712	Complete
Three Valleys Municipal Water District	Construct a connection from an existing imported water pipeline to deliver supplementary water to an existing recharge basin.	Los Angeles	\$500,000	\$400,000	Complete
Wheeler Ridge-Maricopa Water Storage District	Install five deep monitoring wells and one supply well to assist in the regulation of the District's State Water Project (SWP) supplies, provide capacity for the storage of surplus SWP water, and provide a dry year water supply in the event of shortages in the delivery of SWP water.	Kern	\$1,583,094	\$1,333,094	Complete
Yuba County Water Agency	Install eight wells in the Yuba-South Basin to improve water supply reliability for in-basin needs and provide greater flexibility in the operation of the surface water management facilities.	Yuba	\$1,500,000	\$1,500,000	Complete
Elsinore Valley Municipal Water District	Collect sufficient information to assure technical feasibility of a full-scale recharge and recovery facility.	Riverside	\$1,664,750	\$1,493,250	Ongoing
Pleasant Valley Water District	Study up to three groundwater storage banking/extraction locations and construct one full-scale groundwater storage pilot project.	Fresno	\$590,550	\$495,550	Ongoing
Stockton East Water District	Development and two-year operation of a demonstration-scale groundwater recharge facility.	San Joaquin	\$1,788,000	\$1,341,000	Ongoing
San Diego County Water Authority	Refine and verify the findings of a previously completed "Phase I" Feasibility Study, using actual field data, and provide information needed to develop and design a groundwater storage project.	San Diego	\$2,500,000	\$1,250,000	Ongoing
<b>2000-2001 Storage Pilot Project TOTALS</b>			<b>\$11,755,915</b>	<b>\$8,934,606</b>	
<b>Groundwater Storage Program TOTALS</b>			<b>\$898,050,817</b>	<b>\$178,001,020</b>	

## Advisory Committee

DWR would like to recognize the contributions of the Conjunctive Use Advisory Committee to the Proposition 13 Groundwater Grants and Loans Program. The dedicated service to the collaborative work of the Committee assisted DWR in awarding \$205.6 million in grants and loans to 62 public agencies. The Committee participated on both development of evaluation criteria and recommending projects for funding. Below are the Committee members and the organizations they represented:

Brenda Soulliere  
Charles Willard  
Curt Aikens  
David Fullerton  
Donn A. Wilson  
Gary Bobker  
Greg Thomas  
Kevin Kauffman

Cabazon Band of Mission Indians  
Regional Council of Rural Counties  
Yuba County Water Agency  
National Heritage Institute  
Yuba County Water Agency  
The Bay Institute  
Natural Heritage Institute  
Stockton East Water District

Krista Clark  
Martha Guzman  
Martin McIntyre  
Peter Vorster  
Richard A. Nagel  
Rick Iger  
Terry Erlewine  
Todd Manley

Association of California Water Agencies  
United Farm Workers  
Fresno Department of Public Utilities  
The Bay Institute  
Central & West Basin Municipal Water Districts  
Kern County Water Agency  
State Water Contractors  
Northern California Water Association

## Funding Web Sites

### *DWR Grants and Loans:*

<http://www.grantsloans.water.ca.gov/grants/index.cfm>

### *Small Community Groundwater Grant Program:*

<http://www.waterboards.ca.gov/funding/scg-gw.html>

<http://www.waterboards.ca.gov/funding/index.html>

### *State Water Resources Revolving Fund Loans*


<http://www.waterboards.ca.gov/funding/srf.html#funding>

### *Other websites related to project and development funding opportunities:*

[http://www.ibank.ca.gov/state/ibank/ibank\\_homepage.jsp](http://www.ibank.ca.gov/state/ibank/ibank_homepage.jsp)



# Groundwater Recharge Program


This map shows the geographic distribution of Groundwater Recharge Program awards for all three funding cycles. This distribution includes loans for construction projects and grants for feasibility studies. 



## Funded Projects

- \* *Recharge Construction Loans (7)*
- *Recharge Feasibility Studies (15)*



Completed and on-going groundwater recharge construction and feasibility projects are shown in Tables 8 and 9, which list the funding cycle, the agency name, the project description, the county, the project cost, and the total award for each applicant. The project cost and total awards for each funding cycle are summed separately. 

**Table 8 — Proposition 13 Groundwater Recharge Construction Loan Projects**

Agency	Project Description	County	Project Cost	Total Awards	Status
<b>2003 - 2004</b>					
Monte Vista Water District	Construct two new ASR wells, refurbishment of an existing well to an ASR well, and the rehabilitate another existing well for injection.	San Bernardino	\$4,667,136	\$3,700,000	Ongoing
Pajaro Valley Water Management Agency	Construct a 22-mile pipeline, 17 supplemental wells along the pipeline, and a 26 mile coastal distribution system to deliver piped water to coastal properties.	Santa Cruz	0 <sup>(1)</sup>	\$5,000,000	Ongoing
Semitropic Water Storage District	Store additional groundwater by supplying surface water to an area that is currently reliant on groundwater by expanding surface water service area.	San Joaquin	\$6,642,902	\$5,000,000	Ongoing
<b>2003-2004 Groundwater Recharge Construction Loan Projects TOTALS</b>			<b>\$11,310,038</b>	<b>13,700,000</b>	
<b>2001 - 2002</b>					
Buttonwillow Improvement District, Semitropic Water Storage District	Enhance Existing recharge, storage, and recovery capability with the construction of an additional surface water delivery service area for use in place of pumping groundwater.	Kern	\$5,400,417	\$5,000,000	Ongoing
<b>2001-2002 Groundwater Recharge Construction Loan Projects TOTALS</b>			<b>\$5,400,417</b>	<b>\$5,000,000</b>	
<b>2000 - 2001</b>					
Buttonwillow Improvement District	Construct facilities necessary to deliver surface water in-lieu of pumping groundwater.	Kern	\$5,763,410	\$1,691,259	Complete
James Irrigation District	Construct a recharge basin and turnouts that will deliver water for recharge.	Fresno	\$2,145,750	\$1,578,950	Complete
Pond-Poso Improvement District	Construct facilities necessary to deliver surface water to 3,040 acres of land in-lieu of pumping groundwater.	Kern	\$6,524,697	\$4,229,791	Complete
<b>2000-2001 Groundwater Recharge Construction Projects TOTALS</b>			<b>\$14,433,857</b>	<b>\$7,500,000</b>	
<b>Groundwater Recharge Construction Program TOTALS</b>			<b>\$31,144,312</b>	<b>\$26,200,000</b>	

<sup>(1)</sup> See Table 4 on page 7.



# Groundwater Recharge Program

**Table 9 — 2000-2001 Groundwater Recharge Feasibility Study Programs**

Agency	Project Description	County	Project Cost	Total Awards	Status
Angiola Water District	Study the feasibility of constructing an in-lieu groundwater recharge project within the Angiola Water District.	Kings	\$97,500	\$97,500	Complete
Elsinore Valley Municipal WD	Evaluate the feasibility of developing a pilot recharge program and ultimately implementing a long-term groundwater storage program.	Riverside	\$198,000	\$99,000	Complete
Fresno Irrigation District	Identify a site for a groundwater recharge basin.	Fresno	\$97,500	\$97,500	Complete
Friant Water Users Authority	Evaluate how to best intercept floodwaters along Strathmore and Frazier Creeks and determine where to convey and use this water to recharge over drafted groundwater areas.	Tulare	\$82,984	\$75,000	Complete
Gravelly Ford Water District	Evaluate developing a new surface recharge basin to store and recharge excess surface water when available.	Madera	\$69,000	\$69,000	Complete
Kaweah Delta Water Conservation District	Evaluate the Hannah Ranch site in order to assess the optimum recharge design configuration and operational characteristics.	Kings/ Tulare	\$94,000	\$94,000	Complete
Mojave Water Agency	Determine the most efficient and cost effective way to supplement the natural water supply to lessen the current basin overdraft.	San Bernardino	\$200,000	\$100,000	Complete
Monte Vista Water District	Evaluate up to five alternatives involving the use of existing and new wells for groundwater injection and compare the alternatives with the development of new recharge basins for surface water spreading.	San Bernardino	\$145,000	\$100,000	Complete
Root Creek Water District	Analyze and evaluate the construction of a conveyance system to connect a Madera Irrigation District Canal to the Root Creek Water District.	Madera	\$68,000	\$68,000	Complete
Sacramento North Area Groundwater Management Authority	Evaluate the feasibility of replacing current groundwater sources with surface water using existing Natomas Mutual Water Company's surface water rights.	Sacramento	\$189,750	\$100,000	Complete
Water Replenishment District of Southern California	Conduct a groundwater storage feasibility study and pilot project to expand the existing In-Lieu Recharge Program with injection at the Dominguez Gap and West Coast Barriers to increase groundwater storage and reduce operational costs.	Los Angeles	\$176,446	\$100,000	Complete
San Geronio Pass Water Agency	Extend the East Branch Extension and convey untreated SWP across the Beaumont/Banning sub-area, and provide surface water recharge facilities at the forebay of the Cabazon Basin.	Riverside	\$152,260	\$100,000	Complete
City of Greenfield	Evaluate alternatives for recharging the groundwater to enhance the sustainability of domestic water supply.	Monterey	\$100,000	\$100,000	Ongoing
Indian Wells Valley Water District	Construct two 1-acre test infiltration basins equipped with sensors to monitor discharge, depth, and evaporation rates; drill two test borings including associated borehole geophysics and piezometer installation.	Kern	\$280,000	\$100,000	Ongoing
Kings River Conservation District	Evaluate the development of a recharge program to alleviate groundwater overdraft in a portion of the District	Fresno	\$136,500	\$100,000	Ongoing
<b>2000-2001 Groundwater Recharge Feasibility Study Projects TOTALS</b>			<b>\$2,184,690</b>	<b>\$1,400,000</b>	
<b>Groundwater Recharge Program TOTALS</b>			<b>\$33,329,002</b>	<b>\$27,600,000</b>	



# Project Benefits

Proposition 13 Groundwater Storage and Recharge Grants and Loans Program funded 62 projects that provided a variety of benefits. The primary project benefits were enhanced groundwater management and improved water supply reliability. DWR gave preference to projects located in over-drafted groundwater basins; projects that met critical water supply needs; and projects that are subject to a formal groundwater management plan or program. In evaluating proposals, DWR looked at the increase in local water supplies or “yield” based on the average annual increases in water deliveries. Based on the estimates provided by project proponents and evaluated by reviewers, the Proposition 13 Groundwater Grants and Loans Program has funded projects that would provide, on average, an additional 300,000 acre-feet/year (AFY) to local water supplies.

In addition to increased water supplies and; hence, local water supply reliability, the Proposition 13 Groundwater Grants and Loans Program Awards have produced other important project benefits. Many of the projects funded by this program will provide one or more of the following benefits: 1) improved drinking water quality; 2) protection of existing groundwater quality by preventing seawater intrusion; 3) reduced wastewater discharges; 4) dedicating water supplies to environmental purposes, such as in-stream flows or to meet water quality requirements for the Sacramento-San Joaquin Bay-Delta; 5) wetlands restoration; 6) seasonal habitat for waterfowl; and 7) increase water protection benefits to groundwater management include the use of grant and loan funds to monitor and track groundwater levels and to collect and analyze groundwater quality data. ☞



# Funded Project Highlights



The Proposition 13 Groundwater Recharge and Groundwater Storage Programs authorized the use of feasibility studies, pilot projects, and construction projects to improve the reliability of water supply for all sectors of California. The following projects were selected from the various projects awarded grants and loans to show the full spectrum of project types for the two programs and the results of the projects after their completion. Other projects will be highlighted in ensuing years when this document is updated.





FY 2001-2002

# Orange County Water District

## *Groundwater Replenishment System*

*Grant Amount: \$30,000,000*

*Total Project Cost: \$487,000,000*

*Project Status: Construction Ongoing*



The Groundwater Replenishment (GWR) System is the largest water purification project of its kind in the world and is designed to provide a drought-proof supply of safe, high-quality water. The GWR System comprises three major components: 1) a major 13-mile pipeline in the west levee of Santa Ana River connecting the purification facilities to existing recharge basins; 2) an advanced Water Purification Facility and pumping stations; and 3) new injection and monitoring wells for an expanded seawater intrusion barrier. The Proposition 13 Groundwater Storage grant funding is supporting the first component, construction of the 13-mile pipeline.

A mix of federal, state, and local funds is supporting this project, which has an estimated total cost of \$487 million. Grants of \$92.5 million have been secured, which includes \$30 million in Proposition 13 Groundwater Storage grant funding from

DWR and \$42 million in funding from the State Water Resources Control Board. The California Energy Commission, the U. S. Environmental Protection Agency, U.S. Bureau of Reclamation, and Metropolitan Water District of Southern California have provided additional grants.

When completed and fully operational in 2007, the GWR System will generate approximately 140,000 AFY of advanced treated wastewater (recycled water). The first phase will supply approximately 72,000 AFY and provide the backbone facilities for future expansion. The GWR System will supplement existing water supplies by providing a new, reliable, high-quality source of water to recharge the Orange County Groundwater Basin and protect the basin from further degradation due to seawater intrusion. It

will also postpone the need to construct a new ocean outfall by treating excess storm flows.

The GWR System takes highly treated waste water and further purifies it using a state-of-the-art, three-step process: 1) micro-filtration, 2) reverse osmosis, and 3) ultraviolet light with hydrogen peroxide disinfection. Roughly half of the water from the GWR System will be injected into the Orange County seawater barrier, an underground pressure ridge of water formed by injection wells along the Orange County coast. The remaining water will be piped to recharge lakes in Anaheim, where the water will recharge the deep aquifers of the groundwater basin. The GWR System has been under construction since 2003 and the project is expected to be completed in August 2007. ☪



FY 2000-2001

# Pleasant Valley Water District

Pleasant Valley Water District (PVWD) investigated the feasibility of a future Pleasant Valley Water Bank (PVWB), by undertaking a comprehensive hydrogeologic investigation and studied the potential to recharge surface water supplies. The total cost of the 15 month project was \$495,550.

The general objectives of the PVWD Groundwater Management Plan are to monitor and—if necessary and feasible—take actions to enhance and preserve the long-term viability of groundwater quantity and quality. PVWD has seen a dramatic decline in groundwater levels over the past 50 years. The improvement of both water levels and quality are critical to agriculture in the Pleasant Valley.

The purpose of a future PVWB would be to pump imported surface water supplies into the valley when plentiful and intentionally recharge the aquifer. In times when surface supplies are not available, groundwater would be extracted from the water bank and delivered back to the Coalinga Canal where the water would be used by local farmers or by other project participants/banking partners.

PVWD constructed a quarter acre pilot infiltration basin and two monitoring wells. Water levels were measured and samples collected for chemical analyses at the new monitoring wells and other existing irrigation wells. In addition, PVWD completed a hydrogeologic investigation of the Zapato Chino area of Pleasant Valley and preliminary designs of the full scale water bank.

The feasibility study concluded that surface recharge should be the primary mechanism for banking water and that mounding of groundwater in the vicinity of the recharge activities will occur. New recovery wells should be designed to provide the maximum production possible while maintaining water quality. The maximum delivery and extraction capability should be a total of approximately 5,400 AF a month, or 64,000 AFY with the same pipeline

used to deliver surface water and extracted groundwater.

The full scale project would comprise constructing a new turnout on the Coalinga Canal, connecting to a new 3,000 hp pump station, which will provide water to approximately 46,000 feet (8.7 mile) of 60-inch pipeline and recharge at 125 acres of recharge basins. Eighteen new extraction wells would be constructed near the recharge basins.

Since the PVWD does not have a long-term water supply, it will need to partner with other public agencies that can supply water to be banked. Water could be delivered to the PVWD via the Coalinga Canal during wet hydrologic periods and when

a banking partner has excess water to store. The estimated construction costs may be as high as \$22 million.

## *Groundwater Storage Pilot Project and Feasibility Study*

*Grant Amount: \$495,550*

*Total Project Cost: \$525,550*

*Project Status: Construction Complete*



*A partial view of the pilot recharge basin with the inlet shown in the background.*

FY 2001-2002

# United Water Conservation District

The Saticoy Groundwater Storage Management Project (GWSM)—a component of United Water Conservation District’s “Lower Aquifer Recovery Program”—will help mitigate the conditions causing saline intrusion into the Lower Aquifer by decreasing the amount of water pumped from the Lower Aquifer, particularly in the Oxnard Plain and the Pleasant Valley Basin. The Saticoy GWSM calls for the construction of a well field to more effectively manage groundwater storage in the Oxnard Forebay basin. It consists of the following principal components: 1) Planning/Design/Engineering; 2) Well Pad Construction; 3) Well Construction; 4) Pump Installation; 5) Manifold Construction/Site work; and 6) Field Test/Commissioning. The total budget is approximately \$1.8 million with the DWR grant covering approximately 78% of the costs.

Portions of the Lower Aquifer Recovery Program are already in place (river diversion structure, spreading grounds, in-lieu conveyance pipelines). However, because of the lack of a storage transfer capability (well field) between storage in the Forebay basin and users, the Oxnard Plain and Pleasant Valley basins limit the use of the present system to periods when there is significant winter storm runoff or a release from the agency’s upstream reservoir. The project will pump stored groundwater from the Forebay adjacent to existing spreading grounds, and deliver the water several miles to users in the overdrafted areas. Currently, storage in the



*Saticoy spreading grounds recharge facility*

Forebay basin is restricted by high groundwater levels beneath the recharge facilities during the winter that limits recharge capacity and restricts the amount of storage available. This new pumping will: 1) create storage space in the Forebay beneath the spreading grounds so that additional river water can be diverted and recharged during the winter and spring runoff; and 2) transfer the stored water to users in the Oxnard Plain and Pleasant Valley basins where there are significant overdraft and associated saline intrusion problems.

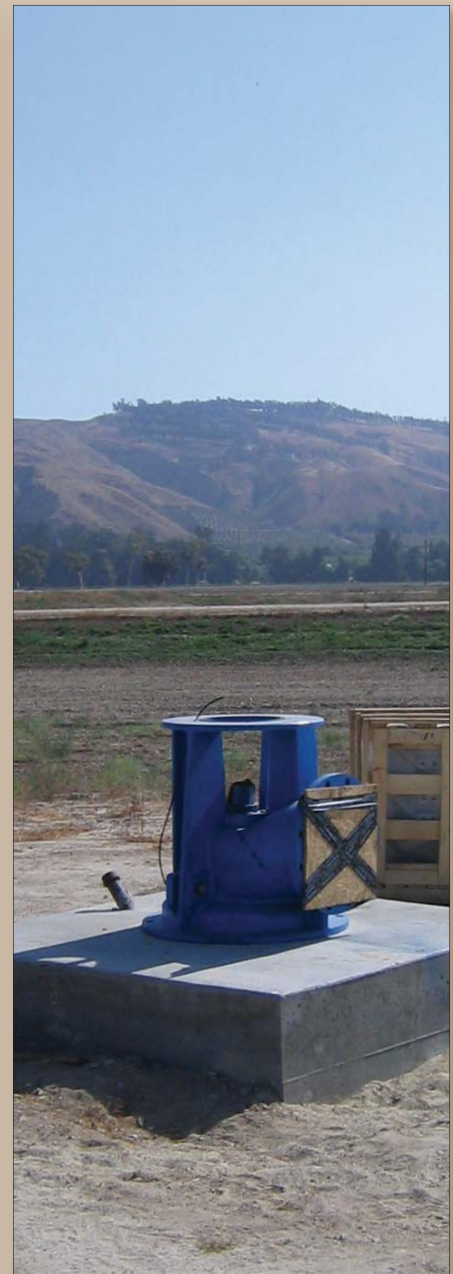
The construction of the project is complete. A ribbon cutting ceremony was held on October 15, 2004. Remaining work is limited to field testing and commissioning. The project is proceeding as designed and was completed on schedule. ☪

## *Saticoy Groundwater Storage Management Project*

*Grant Amount: \$1,423,595*

*Total Project Cost: \$1,825,740*

*Project Status: Construction Complete*



*Recovery well head*



FY 2000-2001

# Fresno Irrigation District

Fresno Irrigation District (FID) investigated the feasibility of expanding its existing 20 acre Waldron Pond facility into a 270-acre groundwater banking facility. The feasibility study examined the groundwater conditions of the area; described the results of site specific studies including a pilot basin recharge test; investigated construction alternatives and configurations; identified potential water supplies; and determined whether the project will operate in the intended manner and be economically viable.

The study was designed to evaluate increasing the overall water supply yield of the FID by developing a groundwater bank with extraction capabilities. In addition to the water supply benefits, the study also considered whether expansion of Waldron Pond could provide the following benefits: 1) assisting in establishing a fishery on the Kings River, by providing a beneficial place of use for waters diverted from storage for that purpose;

2) improving groundwater quality by recharging higher quality surface waters; 3) dedication of project yield to recharging the aquifer to reduce overdraft; 4) extending

over a period of six months. Recharge rates averaged more than one foot per day during the pilot testing. As a result of these tests and other investigations, the recharge rate of the expanded facility is estimated at 0.25 feet per day.

## Waldron Pond Expansion Feasibility Study

Grant Amount: \$97,5000

Total Project Cost: \$97,5000

Project Status: Study Complete

the agricultural irrigation season in dry years if needed; 5) reducing water costs; and 6) creation of waterfowl habitat. The pilot testing on the recharge capability of the existing recharge basin was conducted

awarded for this project in FY 2003-2004 for \$4,615,072. The total construction costs for expansion of Waldron Pond is \$9,230,144 and construction is expected to be complete by the end of 2006. ☞

The feasibility study was completed in 2003 and used to support a Proposition 13 Groundwater Storage Construction Grant application that same year. A Proposition 13 Groundwater Storage Construction Grant was subsequently



Recharge basin monitoring well



Water flowing from turnout canal into recharge basin



FY 2000-2001

## Eastern Municipal Water District

The purpose of Eastern Municipal Water District's (EMWD) Hemet/San Jacinto Recharge and Recovery Program Feasibility Study was to compare various alternatives for recharging groundwater. A comparative analysis was conducted to evaluate potential alternatives to the initial preferred option. The preferred option involved the construction of approximately 15 recharge ponds on a 100-acre site in the San Jacinto River channel to recharge imported water, construction of new pipeline facilities, upgrading existing pump stations, and construction of new extraction wells. Potential alternatives evaluated in the feasibility study included: 1) increasing direct use of treated water from the Metropolitan Water District of Southern California (MWD) Mills Filtration Plant; 2) using treated water from the MWD Skinner Filtration Plant; 3) increasing the capacity of a proposed local treatment plant; and 4) adding raw water recharge by injection well field using untreated MWD water.

The overall goal of the Hemet/San Jacinto Recharge and Recovery Program is to provide up to 43,750 AFY of conjunctive use/drought management groundwater storage to reduce annual overdraft, meet the water rights claim of the Soboba Indian Reservation, and provide short- and long-term water storage for the EMWD service area. The feasibility study evaluated the engineering and operational feasibility, groundwater basin objectives, environmental impacts, CALFED Bay-Delta program compliance, and ability to meet the overall program goal. In addition, the objectives of the feasibility study included development of a preliminary design and cost estimate for the final recommended alternative and development of an application for construction grant funding.

The feasibility study resulted in a final recommended alternative – recharge imported water

within the flood channel of the San Jacinto River which would be constructed in two phases. EMWD submitted a Proposition 13 Groundwater Storage Construction Grant application for the first phase of that project and was awarded \$5,000,000 in grant funds. The total cost to complete Phase 1 is \$13,735,537.

EMWD is pursuing implementation of the Phase 1 project. EMWD approved an Environmental Impact Report and is acquiring the necessary property to commence construction of the wells. The resulting project is proceeding as designed and should be completed on schedule. ☛

### *Hemet/San Jacinto Recharge and Recovery Program Groundwater Storage Feasibility Study*

*Grant Amount: \$200,000*

*Total Project Cost: \$400,000*

*Project Status: Study Complete*



*Conjunctive use project recharge basin*

FY 2000-2001

# Semitropic Water District

The Semitropic Water District (SWD) P667 Distribution System (P667 System) is an in-lieu groundwater recharge project, which includes construction of additional facilities necessary to deliver surface water to 3,053 acres of land, in-lieu of pumping groundwater. The project will allow up to 10,690 AF of water to be recharged annually in this manner. Project components includes: 1) purchase of land/easements; 2) construction of pipelines of 15" to 48" diameters; 3) 20 farm turnouts; 4) pump plant improvements; and 5) the purchase and installation of pumps, motors, and other related components. These new facilities will help alleviate demands in surface water supplies during times of need, expand SWD's existing conjunctive use program, and allow for additional flexibility in the management of its water resources.

The work commenced on the P667 System in the summer of 2002. There were very few dif-

ficulties during the pipeline construction and most operations were completed on schedule. In February 2003, the pipeline and farm turnouts were sufficiently complete to commence off-season deliveries, utilizing an interconnection with an adjacent District's delivery system. Final cleanup and acceptance of work was completed

March 2003 and the P667 System was deemed fully operational as of June 2003.

The P667 System will increase the surface water supply to SWD's Pond-Poso Improvement District by an average of 951 AFY and will reduce overdraft, lower pumping costs. ☛

## *P667 Distribution System*

*Grant Amount: \$4,229,791*

*Total Project Cost: \$6,524,697*

*Project Status: Project Complete*

*Excavating for turn out and pump basin*



*Framework for pumping plant and basin*



*New lining raised the canal to increase capacity*



FY 2001-2002

# Sacramento Regional Water Authority



*Diamond Creek Well  
Groundwater Storage  
and Recovery Project,  
City of Roseville.*

groundwater within the basin. In “dry-years,” portions of the facilities will be used to recover the banked water through groundwater extraction in areas that have historically used surface water, making possible the forbearance of up to 25,000 AFY of surface water diversions. The average annual yield of the program is 21,400 AFY. The forbore surface water diversions will be made available for other purposes including increased dry-year Delta exports, improvement of Bay-Delta water quality, or enhancement of in-stream flows for environmental and recreational purposes.

Five of the twelve program components are complete, three program components are currently under construction, and four program components will commence construction in 2006. The project is proceeding as scheduled and it is anticipated that all program components will be completed by late 2006. ☛

Over the last eight years, the members of the Sacramento Regional Water Authority (RWA), through a progression of regional planning efforts that includes the Sacramento Area Water Forum, the American River Basin Co-operating Agencies Regional Water Master Plan, and the formation of the RWA and the Sacramento Groundwater Authority, have developed the American River Basin Conjunctive Use Program (ARBCUP), which received a Proposition 13 Groundwater Storage Construction Grant. That grant provided funding for 12 program components of the ARBCUP, including expansion of surface water treatment plant capacity; improving water transmission systems, including pipelines, a pump station, and an aboveground water storage tank for flow equalization; and groundwater extraction wells. These facilities will facilitate a groundwater banking and surface water exchange program integrating operation of Folsom Lake and the

groundwater basin underlying the boundaries of the RWA, primarily in the northern portion of Sacramento County and in western Placer County.

In “wet years,” portions of the facilities will be used to deliver treated surface water to areas that have historically utilized groundwater, resulting in the in-lieu banking of up to 40,200 AFY of

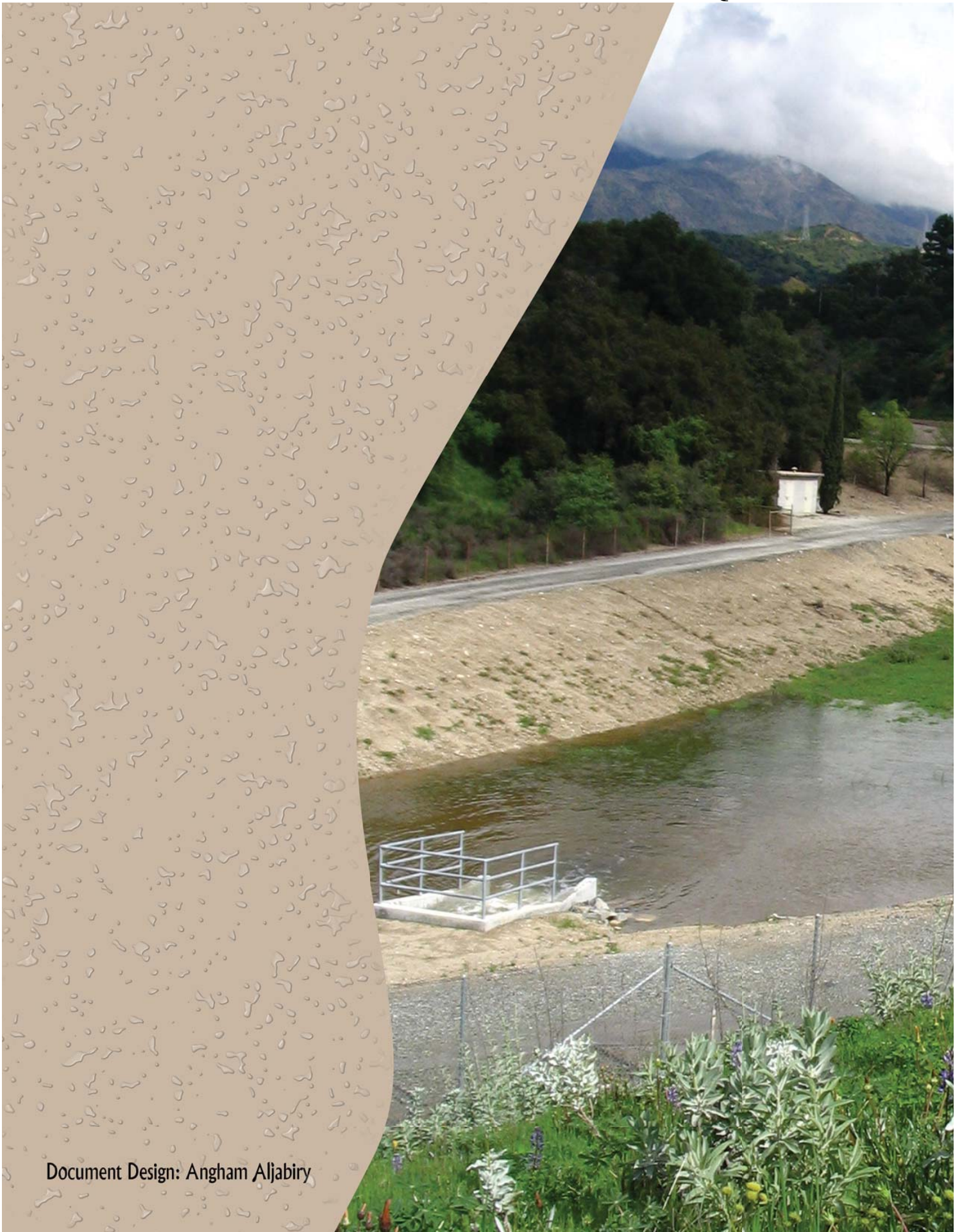
## *American River Basin Regional Conjunctive Use Program*

*Grant Amount: \$21,671,697*

*Total Project Cost: \$43,343,395*

*Project Status: Construction Ongoing*





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