

# DWR

FALL 2014

a magazine  
from the  
California  
Department  
of Water  
Resources



New  
legislation  
expands  
DWR's  
role on

# Groundwater

Page 10

# Safety on the Job

To understand why on-the-job safety is one of my top concerns, consider these dangers faced by DWR employees, sometimes in remote, hard-to-reach places: High-voltage power lines. Cranes lifting tens of thousands of pounds. Rattlesnakes. Ticks. Irate landowners. Duck hunters. Under-inflated tires. Poorly-maintained vehicles. Stairs. Power hand tools. Arc welding. Tripping hazards. Dehydration. Sunburn.

Stored chemicals. Open trenches. Construction blasting. Confined spaces. Controlled burns on levees. Heavy equipment on steep embankments. Swift water. Extreme weather. Night boating.

Depending on what you do, you could probably add a few hazards to this list. We are mechanics, electricians, engineers, hydrologists, inspectors, biologists, chemists, analysts, information system experts, office managers, planners and a host of other kinds of workers. The risks we face reflect that variety – and the job of operating one of the world's largest water and power systems.

Despite the danger inherent in DWR's work, accidents and close calls are not inevitable. We can collectively change the way we think and work to be safe on the job.

Starting in 2011, the Department began putting in place a comprehensive Safety System to protect not only employees but also contractors, cooperating agencies and the visiting public.

We're building momentum toward a world-class safety system in which all employees are smart about the hazards they face, quick to report or fix hazards and empowered to stop work if necessary to avoid danger. That's our goal. We've made good progress this year building the structure that will reinforce to every employee, every day, that safety comes before any other consideration.

For example, the list of key policies that every new DWR employee gets and that every employee must read annually has been amended to state something extremely important: Employees are not only empowered, but *have the responsibility* to stop unsafe work acts and conditions.

Under the leadership of Chief Safety Officer Mike Donlon, DWR employees are getting together regularly at all levels and workplaces to talk about safety. They are identifying hazards, figuring out how to mitigate risk and motivating their co-workers. They are drafting protocols for dealing with such especially dangerous situations as boating and swift water.

This year, the Legislature and Governor agreed to fund 23 new safety positions across the Department. The infusion of expertise will help ensure that hazards are assessed, employees have the correct protective gear and knowledge they need to stay safe, and that safety is discussed and planned for in all we do.

A robust safety structure matters, but no less than the attitude of each employee. Report any hazards you notice to your supervisor or to Mike Donlon, and please make your work reflect the fact that safety is a core value of DWR.

— Laura King Moon, Chief Deputy Director  
California Department of Water Resources



# What's INSIDE



*A Vital Resource . . . see page 10*

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An illustration of Governor Edmund G. Brown Jr. signing historic groundwater legislation on September 26, 2014.

## Photo above:

Groundwater provides 46 percent or more of California's water during droughts.

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# The Big One

## Carley V. Porter Tunnel Reaches Golden Anniversary

The Carley V. Porter Tunnel, the fourth and final tunnel traversing the Tehachapi Mountains in the San Joaquin Valley, was dedicated on October 2, 1964 in honor of the Compton Assemblyman who was instrumental in making the State Water Project a reality.

A longtime chairman of the Assembly Committee on Water, Porter was co-author of the Burns-Porter Act that was approved by voters in 1960 to finance construction of the State Water Project (SWP), the nation's largest state-built, multi-purpose water storage and delivery system.

"Porter was instrumental in getting the SWP," said California 3rd District Court of Appeal Justice Ronald B. Robie, who served as a legislative staff member for Porter from 1961 to 1969 and as DWR Director from 1975 to 1982. "He was very important in the sense that he was one of the point persons

in regards to the legislation. He was in charge of getting the bill passed through the Assembly. When the bonds were authorized, he was the one that led the way on that."

The 25,075-foot-long Carley V. Porter Tunnel connects with other tunnels by siphons or cast-in-place pipe sections that provide worker access to the system at critical fault crossings. Water flows by gravity through a series of four tunnels during a 10-mile journey from Edmonston Pumping Plant to Tehachapi Afterbay.

"It's an important tunnel," said Robie. "It's the big one. The main thing about the SWP that made it so wonderful compared to other projects that had been proposed was that it pumped water 2,000 feet over the Tehachapis, all the way from the valley to the plains of Los Angeles in Southern California." ♦

(Above) Carley V. Porter (center) with wife Marie Porter (left) and former DWR Director William Warne at dedication event for Carley V. Porter Tunnel. (Below) Carley V. Porter Tunnel is the longest of the four tunnels constructed from 1964 to 1971.



# Features

## Wild Weeds

By Jennifer Iida

### San Joaquin Field Division Prevents Clogging of Coastal Branch Aqueduct

Along the arteries of the Coastal Branch Aqueduct (CBA), tangled green globs of vegetation are extracted by DWR's San Joaquin Field Division maintenance crews working two shifts to prevent clogging of trash racks leading to the pumps.

The aggressive and invasive growth, known as horned pondweed (*Zannichellia palustris*), is one of the most common aquatic weeds in the CBA and is a huge problem.

"These weeds are seasonal and temperature driven," said Ron Wolfe of the Division of Operations and Maintenance's (O&M) Civil Maintenance Branch in the San Joaquin Field Division. "The hotter it gets, the more they grow. They can grow a foot a day and can have a mass the size of a car."

As the heat rises, crews operate excavators day and night to prevent the aqueduct's pumps from automatically shutting down due to reduced water flow because of weeds. The weeds are pushed into piles, dried and hauled off to the dump every two weeks.

"Controlling pondweeds in the CBA is challenging because there are few aquatic

herbicides approved for use in California that are effective at killing pondweed, safe to use in a drinking water supply (there is a water treatment plant at the end of the CBA), safe for crops and have a short contact time," said Tanya Veldhuizen of O&M's Aquatic Nuisance Species Program.

According to Veldhuizen, many of the herbicides claiming to be effective on pondweeds require a contact time of at least six to eight hours (some require two days), and downstream water users cannot always go that long without water during the summer months, when water demand for irrigation is greatest.

"In order to effectively combat the issue,

it's necessary for crews to 'drag' the CBA, two to three times a year from the forebay at Badger Hill to the coastal inlet at Las Perillas," said Wolfe. "Dragging is a team effort with one crew member cutting the pondweed loose against the flow of the water while another person waits to scoop it up with the excavator. This maintenance is extremely necessary because just a six-inch piece of pondweed can rapidly replant and start to grow." ♦

Utility Craftworker David Beasley of San Joaquin Field Division near Las Perillas Pumping Plant pulls horned pondweed that can grow a foot a day.





# Parched, California Mandates Water Conservation



*Comparison of Lake Oroville water levels in July 2011 (page 6 below and page 7 above) with September 2014 low level of 30 percent, close to the all-time low of 26 percent, in drought year 1977.*



**Simple water-saving actions such as turning off the faucet when you brush your teeth and cleaning your driveway with a broom instead of a hose are critically important as California enters a fourth year of drought.**

“The drought is having a huge impact across the state, and recent reports tell us that all of us can conserve more,” said DWR Director Mark Cowin. “It’s important to understand that even things that seem relatively small will add up to have a big impact when it comes to water conservation.”

California has struggled through record-breaking warm weather this year with seriously low reservoir storage, scant snowpack and dropping groundwater levels. Hundreds of thousands of acres of agricultural land have been fallowed, thousands of people dependent on the agricultural economy are out of work and drought-fed wildfires threaten much of the state.

In November 2013, California’s driest year in 119 years of record, DWR set its initial allocation of State Water Project water for calendar year 2014 at five percent of requested amounts. DWR dropped that initial allocation to zero on January 31, 14 days after Governor Edmund G. Brown Jr. declared a drought state of emergency. Rain and snow briefly returned in February and March, allowing DWR to boost the SWP allocation back to five percent – still the record low – where it remains. During the “0” allocation period, DWR was only delivering water to meet health and safety needs and “carryover water” stored by contractors from previous allocations.

Dry conditions returned and deepened after the brief spike of rain and snow in February and March, prompting Governor Brown on April 25 to issue an Executive Order triggering mitigation and conservation measures. Among his actions, Governor Brown directed DWR and the State Water Resources

Control Board (Water Board) to expedite water transfers, and he directed Californians to the Save Our Water campaign managed by DWR and the Association of California Water Agencies for conservation tips.

The Governor urged all Californians to reduce their water usage by 20 percent. This would cut 39 gallons a day from the state's per capita use of 196 gallons per day.

But with conservation lagging – California's overall water use was 1 percent higher this May than in May last year – the Water Board on July 15 enacted mandatory conservation measures, including the authorization of fines for waste.

As mandated in the emergency water conservation regulation for urban water suppliers to report water usage by the 15th of each month, the first surveys of water suppliers showed urban water use decreased by 7.5 percent for July and 11.5 percent for August. The suppliers responding to the survey serve 33 million Californians and the percentage drop in water usage equates to 27 billion gallons in August and 18 billion gallons in July.



Most Californians use more water outdoors than indoors. To curb waste and avoid penalties, homeowners should abide by lawn watering restrictions, sweep rather than hose sidewalks and driveways, use shut-off nozzles when washing cars, and check Save Our Water (saveourwater.com) for dozens of other tips. Beyond homes, large urban water suppliers now report water use on a monthly basis.

To ensure Californians were not punished for conserving water, Governor Brown signed AB2100 on July 21. The law blocks homeowners associations from fining residents who stop watering their lawns during drought emergencies. It also encourages Californians to reduce watering of lawns and allow grass to go brown.

**Teaching Ways to Save Water**

All summer, DWR demonstrated ways to save water inside and outside of homes.

Fair-goers from July 11 to 27 at Cal Expo viewed a new indoor exhibit simulating a house with three rooms in the Counties Building. The "Californians Don't Waste" exhibit created by DWR's Graphic Services Branch of the Public Affairs Office displayed examples of how to save water in the kitchen, bathroom and laundry room. In the fair's Farm section, DWR's award-winning and colorful outdoor exhibit featured water-wise garden beds with drought-tolerant plants.

Throughout the state, DWR held landscaping workshops in English and Spanish titled "Get Ahead or Get Parched: Six Ways to Survive the Drought" to help boost irrigation conservation.

Senior Environmental Scientist Julie Saare-Edmonds of DWR's Water Use and Efficiency Branch assisted the California Center for Urban Horticulture at the University of California, Davis in conducting workshops for professional landscapers. Senior Land and Water Use Scientist Sergio Fierro of DWR's Southern Region assisted with the Spanish language workshops by translating information and presenting drought updates. More than 1,500 landscape professionals have attended 10 English and three Spanish workshops. Workshop staff explained water conservation rebate programs and irrigation management for mature trees.

"We have heard almost universally positive feedback from those who attended," said Saare-Edmonds. "Many participants came up to me to say how much they





**(Page 8)** At the California State Fair, Michael Miller of DWR's Public Affairs Office teaches children how to save water at home.

**(left)** The California Department of Transportation supports the "Save Our Water" campaign by displaying water conservation message on California's more than 700 electronic highway signs.

**(below)** In August outside of AT&T Park in San Francisco, Michelle Ramirez of DWR's Public Affairs Office urges baseball fans to save water by using shower timers and following water conservation tips.

learned, that it 'connected the dots' and 'filled in blanks.' This showed to me how the attendees were able to build on what they already knew, learned new techniques and clarified things they weren't sure about--all of these are good outcomes."

Sessions also included understanding precipitation rates to reduce runoff, improving sprinkler distribution uniformity to reduce water use, improving controller programs during mandatory water restrictions, determining application rates and precipitation rates of drip/micro irrigation, understanding soils to reduce runoff or deep percolation and understanding water meters to improve irrigation efficiency.

"Many told me they would put the information into practice right away," said Saare-Edmonds. "For example, the landscape maintenance staff from a large university attended and reported back that the university staff have since met and formed a strategic plan to conserve water and improve efficiency based on what was presented in the workshop."

Workshops were held in Roseville, Santa Rosa, San Luis Obispo, Walnut Creek, Fresno, Riverside, San Diego, Arcadia, Irvine, La Jolla and Truckee.

"Originally, we planned only about four or five workshops," said Saare-Edmonds. "They were so successful and once word got out, agencies were asking us to come to their area next. When finished, we will have held at least twice the number originally anticipated."

### Boosting Water Conservation

Joining the effort to boost water conservation this summer, a pop star, talk show host and major league baseball players joined "Save Our Water."

Four Major League Baseball team pitchers helped spread the Save Our Water message to their fans. From July to September, the campaign aired 30-second radio spots on the teams' English and Spanish broadcast networks. Spots were recorded by Javier Lopez of the San Francisco Giants, Sean Doolittle and Fernando Abad of the Oakland A's, Hector Santiago of the Los Angeles Angels and retired Trevor Hoffman of the San Diego Padres. The radio commercials urged listeners to take shorter showers and reduce outdoor watering. They are available at [http://www.water.ca.gov/spotlight\\_archive/](http://www.water.ca.gov/spotlight_archive/).

On July 16, international pop superstar and five-time Grammy winner Lady Gaga released a public service announcement asking Californians to help save water.

The Lady Gaga video showing Hearst Castle and impacts of the drought marked the launch of a new public awareness campaign from Save Our Water urging Californians to join the conservation crusade. The campaign stressed that "Brown is the New Green" and asked Californians to let their lawns go brown by cutting back watering to twice a month.

In August, comedian and TV talk show host Conan O'Brien and his sidekick Andy Richter released six public service announcements to teach Californians simple water



saving tips at home and at work as part of the Save Our Water campaign. The tips featured statewide across digital, social media, television and radio networks included checking toilets for leaks, using pool covers, washing dishes in the dishwasher, washing cars at a car wash, taking shorter showers and planting drought-tolerant landscapes. 💧

**Save Our Water** is sponsored by DWR and the Association of California Water Agencies. To view spots and learn ways to save water, visit <http://www.water.ca.gov/waterconditions/droughtmedia.cfm> and <http://saveourh2o.org>

# A Vital Resource

By Doug Carlson

## Drought Increases Need for Groundwater

**California's water resources have become more precious by the day during the three-year drought.**

Whether it's for drinking, boating, swimming, sailing, floating, farming or manufacturing, the state's 38 million residents are dependent on a diminished water supply.

That includes groundwater, which traditionally has been a dependable source for urban and agricultural needs. Perhaps more than any time in California history, groundwater's status today is a cause for alarm.

Concern about California's groundwater reached a tipping point as Water Year 2014 neared its close with no rain in the forecast. On the closing day of its 2014 Session in August, the State Legislature reflected the changing attitudes about groundwater

by approving legislation to create the first-ever mechanism to regulate it. Governor Edmund G. Brown Jr. signed the package on September 16.

Following the signing, DWR Director Mark Cowin said, "We've always known that managing groundwater sustainably is in our best interests as Californians. The new laws will fundamentally advance integrated water management in California, and DWR will play an important role as implementation unfolds over the next decade."

Virtually everyone with a point of view about the drought and California's water needs had something to say about groundwater as the legislation came together – especially how it's managed and divvied up.

Groundwater is in demand during wet years and dry, but the drought has increased society's reliance on this underground re-

source. California's largest reservoirs received far less water than usual from rainfall and snowmelt during water year 2014 – less than 60 percent of what's normal.

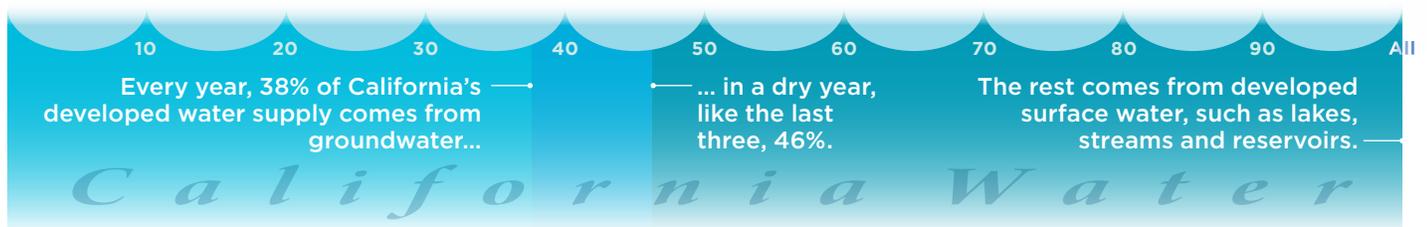
In wet years, groundwater satisfies 30 percent of the state's average annual demand for water, with groundwater reliance increasing to 46 percent or more during time of drought.

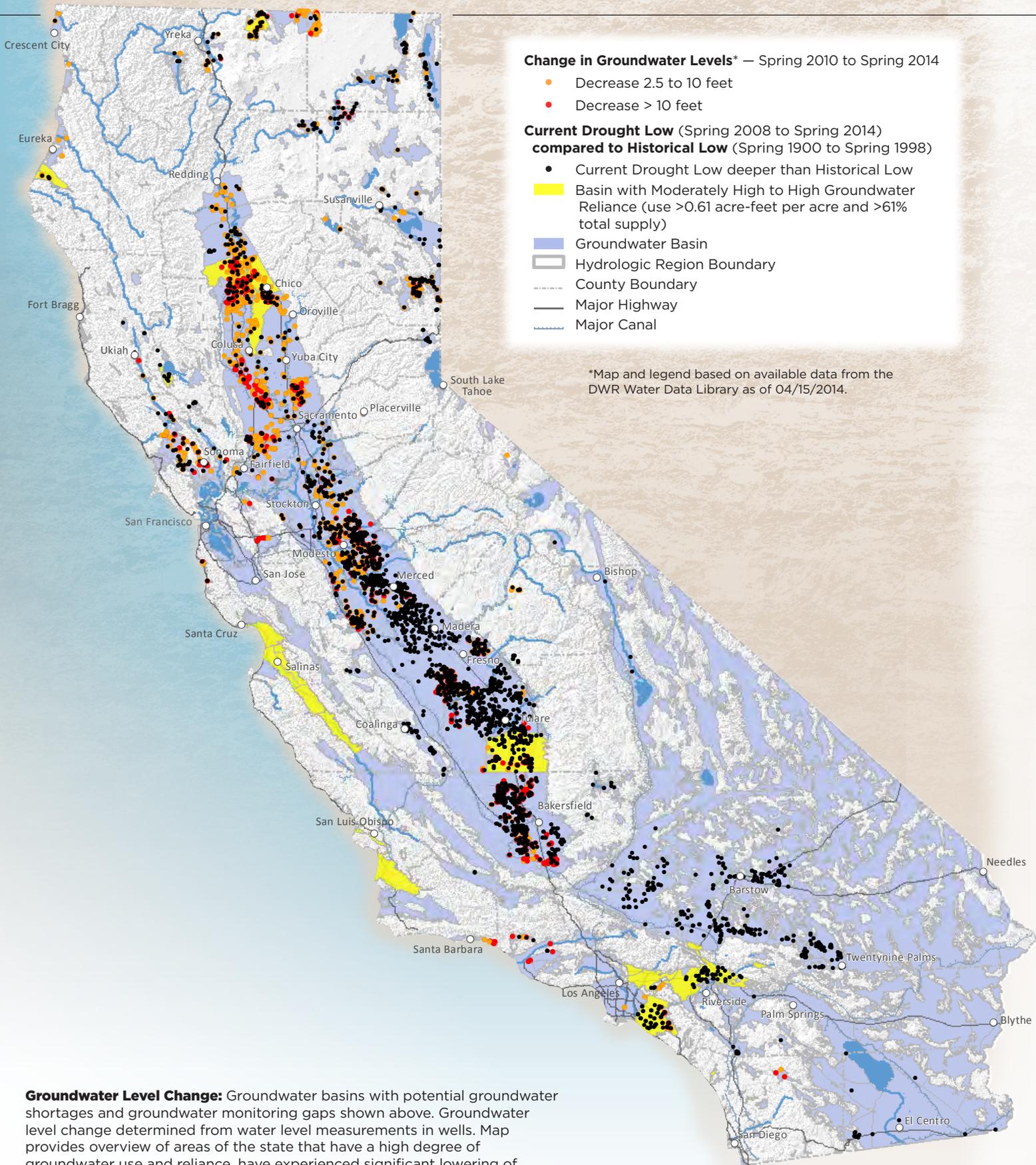
The University of California, Davis Center for Watershed Science released a study in July that found the drought is responsible for the greatest water loss ever seen in California agriculture, with river water for Central Valley farms reduced by roughly one-third. According to the Center, groundwater is expected to replace most river water losses.

A "slow-moving train wreck" was what the study's lead author called the continuing loss of groundwater, both in wet years and dry.

Surface water has become scarce in many

### How Much Groundwater?





of California's 515 water basins during the drought. About 25 percent of those basins account for 96 percent of the state's groundwater usage. Groundwater is now the primary source of water for numerous communities, water districts and agricultural interests in those basins.

Applying best management practices to that resource is widely supported, but don't use the "R" word.

Mary Scruggs, a supervising engineering geologist who's been with DWR since 2003 and works in the Regional Planning Branch of the Division of Integrated Regional Water Management, was quick to note that DWR is not a regulatory agency.

"It took us a while to get where we are even about monitoring groundwater," said Scruggs. "Now that groundwater has dropped to an all-time low for some areas, people are saying the resource must be here for future generations. If California is to prosper environmentally and economically, we need to preserve groundwater."

Scruggs and Dan McManus and nearly 30 other DWR employees are working to achieve a better understanding of California's groundwater. With 24 years at DWR, McManus also is a supervising engineering geologist; he's based in Red Bluff as the Regional Planning Branch Chief in DWR's Northern Region.

Perceptions of groundwater are changing. A Sacramento County Superior Court held this summer that the public trust doctrine applies if navigable waters are adversely affected by extracting groundwater.

"The assumption over the years was that groundwater was there and always would be there, and everything would be fine," said Scruggs. "We're now at a tipping point, and people recognize that. There are different factions that never would have been caught in the same room talking about groundwater, and now they are. It's exciting, but there's a lot more work to do."

Those factions include agriculture interests in the Central Valley, where tens of thousands

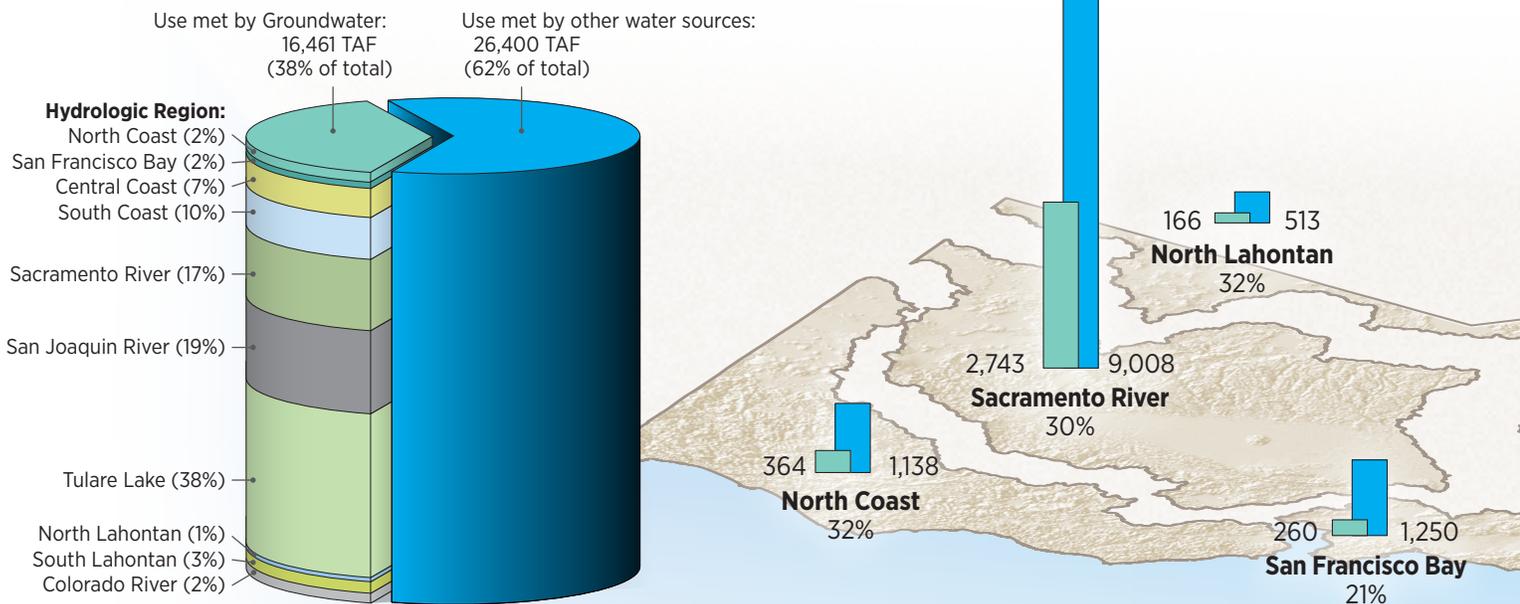
of acres of row crops have been replaced by trees and grapes that require ongoing irrigation to keep them alive. Unlike row crops, orchards and vineyards can't be fallowed during dry weather, and groundwater is increasingly tapped to sustain them.

McManus gave "a big shout-out" to DWR's team that prepares updates of the California Water Plan every five years for helping bring needed attention to groundwater. The update is a massive effort that records the status of the state's water resources and envisions meeting California's future water needs with a variety of resources and strategies.

During the most recent Water Plan update, the team recognized that groundwater data was sorely lacking. Mary said that as recently as November 2013, there was no money in DWR's Fiscal Year 2014-2015 budget for groundwater management.

Long considered almost an afterthought, groundwater has moved onto the front burner and has come to a boil among California's policy-

**Total water supply<sup>1</sup> in California, 2005-2010 average annual data: 43,000 thousand acre-feet**



<sup>1</sup> Total water supply represents the sum of surface water and groundwater supplies, and local reuse.

Mary Scruggs, program manager of the California Statewide Groundwater Elevation Monitoring Program and Supervising Engineering Geologist with the Division of Integrated Water Management, is working on DWR's implementation of the new sustainable groundwater management legislation.



makers. If the ongoing drought has had any benefit, perhaps it's the increased focus on the importance to understand groundwater and create tools for its management at the local level.

DWR's California Statewide Groundwater Elevation Monitoring (CASGEM) program is a player in the new appreciation of groundwater and its problems. CASGEM is a collaborative effort between local monitoring agencies and DWR to collect groundwater elevation information statewide.

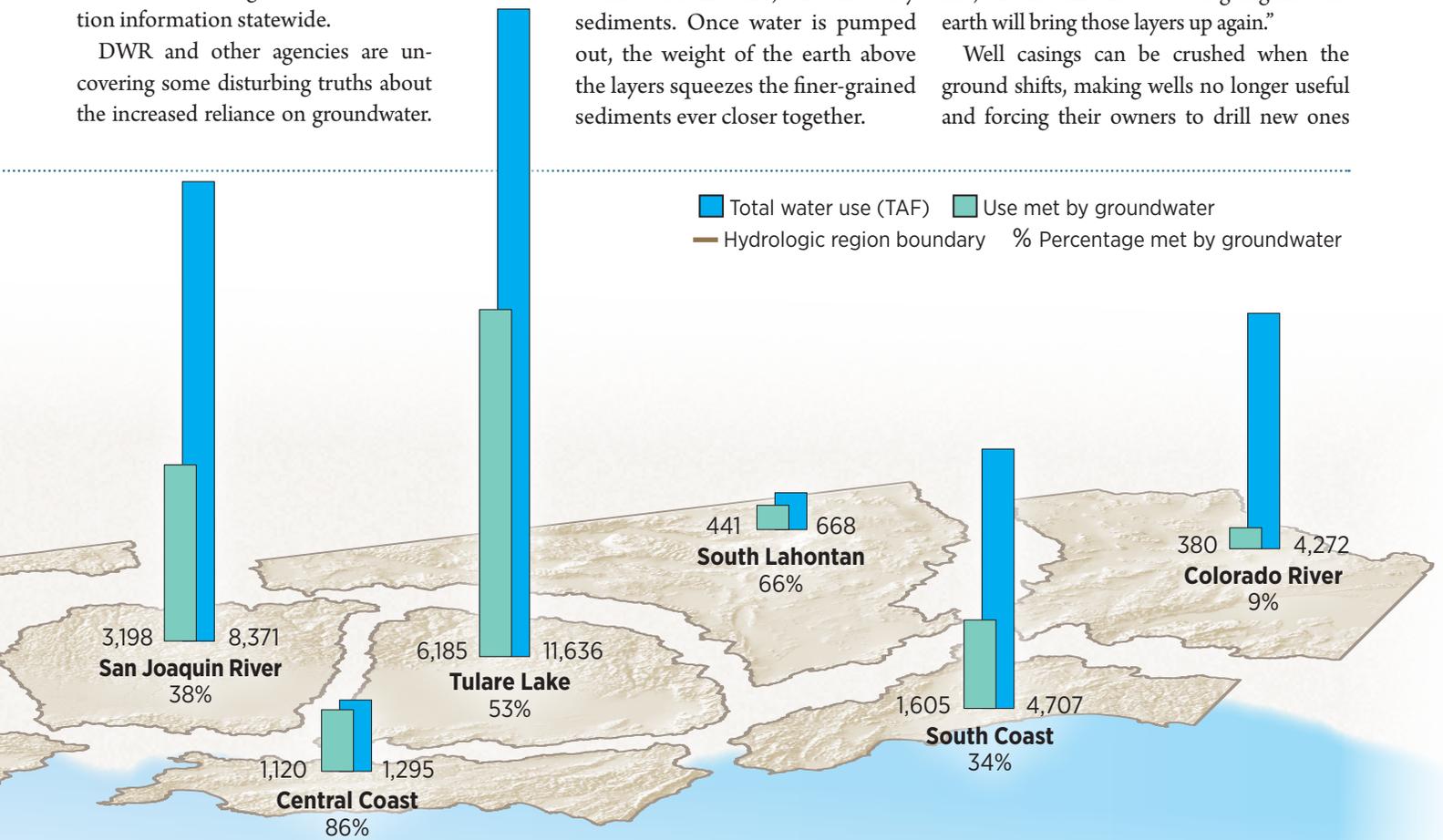
DWR and other agencies are uncovering some disturbing truths about the increased reliance on groundwater.

Ground subsidence is one of them.

McManus said California's groundwater doesn't congregate in vast sub-surface pools or lakes. Groundwater collects in tiny amounts between the fine grains of material in sand, silt and clay sediments. Once water is pumped out, the weight of the earth above the layers squeezes the finer-grained sediments ever closer together.

"We're drawing groundwater down in some areas to levels deeper than we've ever seen before," said McManus. "Once those fine-grained aquifer layers compress, that space is gone forever. Inelastic subsidence is irreversible, and no amount of water going into the earth will bring those layers up again."

Well casings can be crushed when the ground shifts, making wells no longer useful and forcing their owners to drill new ones





Supervising Engineering Geologist Dan McManus, who has 24 years of geological experience at DWR, leads integrated water resources management and groundwater management planning and development for the Northern Region Office. Dan works on the implementation of the regional coordination program and the statewide groundwater resource assessment.

deeper, thereby leading to even more over-draft of the resource.

The effects of subsidence are far-reaching and long-lasting. Buildings, bridges, aqueducts, roads and railroad tracks all are threatened and potentially damaged when the ground sinks. That's why DWR is working with new technologies supplied by the National Aeronautics and Space Administration to better understand where subsidence is happening and to what extent.

The accumulation of alarming news about groundwater is no surprise to Scruggs, McManus, DWR's CASGEM staff or the Water Plan updaters. They knew the groundwater story all along, and now they're hopeful others will appreciate the importance of monitoring this critical resource.

Under the new law, groundwater basins have two years to form local management

agencies that will create sustainable management plans that include monitoring groundwater extraction. They'll have 20 years to achieve sustainability.

Not surprisingly, DWR personnel will be in the thick of the action. By early next year, DWR will reevaluate CASGEM's groundwater basin prioritization to consider adverse impacts on habitat and stream flows. New regulations will be needed to revise basin boundaries by the start of 2016, and by middle of that year, new guidelines will be in place to evaluate Sustainable Groundwater Management Plans (GSP) or alternative plans.

DWR will have published an updated version of Bulletin 118, California's Groundwater, by the start of 2017. It will update the basins' boundaries, basin prioritization, the status of the GSPs and identify

over-drafted basins.

Also due early in 2017 will be Best Management Practices for implementing sustainable water management of groundwater and a report on the amount of water that's available for groundwater replenishment.

Dan McManus reflected on the challenges ahead: "Successful implementation of DWR's newly acquired groundwater responsibilities will require a new level of data collection, assessment and reporting of California's groundwater conditions. A significant increase will be needed in the fiscal and staffing resources the Department dedicates toward the sustainable management of this vital resource." 💧

DWR's Groundwater Information Center is available at <http://www.water.ca.gov/groundwater/>



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# A Green

## Advancing Integrated Water Management at the Regional Level

Since 2002, great investments of public funds have been made to advance integrated water management at the regional level, thanks to bond measures Proposition 50 and 84. The return on that investment also has been tremendous.

With guidance and support from DWR, the 48 established regional water management groups have invested their own time and resources to leverage grant funds. They've built partnerships, collaborated to develop common visions and strategies, prepared comprehensive integrated regional water management plans and initiated or completed innovative multifaceted water resources projects to deliver multiple benefits to their region and the State.

Two successful IRWM projects include the completion of the Elmer Avenue "Green Street" project in Los Angeles and the work of the Tuolumne-Stanislaus Regional Water Management Group in South Central California.

## Los Angeles Showcases Benefits of Integrated Regional Water Management

The effects of the drought here in California have been felt for months and it has become more important than ever to pursue strategies for increasing water use efficiency and reusing and recycling water that was once considered a waste stream. The Elmer Avenue "Green Street" projects in Los Angeles, funded in part by DWR's grant programs, are excellent examples of sustainable multi-benefit municipal infrastructure retrofits that use landscape water efficiently while capturing and infiltrating stormwater runoff to recharge groundwater. The projects also are aesthetically pleasing and captivate the public's attention.

## A Collaborative Effort

The Los Angeles Basin Water Augmentation Study team, led by the non-profit group Council for Watershed Health (Council), was looking for a location to implement a green infrastructure demonstration project which could improve surface water quality and increase local groundwater supplies through infiltration of urban stormwater runoff.

The team identified Elmer Avenue as an ideal candidate for a multi-benefit demonstration site.

Originally built during the World War II era, this street in the Sun Valley Community had no sidewalks, no street lights, no storm drains and no curbs. With 60 acres of residential land draining to Elmer Avenue and the alleyway to its south, the area was prone to flooding even after minimal rainfall. And most importantly, the neighborhood residents were willing to host a regional and statewide demonstration project in their community.

The success of the project was due in large part to the collaboration of the Council for Watershed Health, TreePeople and the Urban Semillas non-profit groups, the U.S. Bureau of Reclamation, DWR and several local agencies. DWR, the single largest financial contributor to the \$2.7 million Phase I project, provided nearly \$860,000 in Proposition 50 Funding. The Elmer Projects were designed and built by the Los Angeles Department of Public Works, with conceptual designs developed by the Council for Watershed Health, TreePeople and the local residents. The Phase I project was completed in 2010, with the Phase II project reaching completion in 2012.





# Street

## A Sustainable Solution

A concept for a two-phase project that would ultimately become the first “Complete Green Street” in Los Angeles and a real world model of practical sustainable design emerged after meetings with residents and design consultants.

The project design utilizes Low Impact Development strategies to minimize water use and infiltrate and reduce runoff, including:

- Drought-tolerant native landscaping and trees on the private properties and public right of way.
- Retrofitting to drip irrigation with smart controllers.
- Permeable surfaces (porous driveways and walkways).
- Under-street infiltration galleries and open-bottom catch basins.
- Street side bio-swales in front of residences to capture stormwater.
- Rain barrels and rain gardens with overflow directed to landscaping and bio-swales.

Phase I of the project involved retrofitting the 24 homes on the 7700 block of

Elmer Avenue to incorporate these features. Phase II of the project, dubbed “Elmer Street Paseo,” expanded the project features south of the Phase I site along a previously undeveloped alleyway. The intent was for the alleyway to become a welcoming park-like public path and provide central gathering space for the community.

## Full of Benefits

The successful Elmer Avenue projects represent the culmination of a 10-year collaborative research project to demonstrate the significant potential to reduce water use and to capture, filtrate and infiltrate urban runoff before it pollutes surface waters. The projects also demonstrate the potential of green street improvements to recharge groundwater. Other benefits include increased flood protection, reduced polluted discharge to creeks, rivers, and oceans, increased green space, general community enhancement, reduced environmental maintenance, increased wildlife habitat, safer and more walkable neighborhoods, aesthetic improvement of the neighborhood, improved private prop-

erty values, reduced utility bills, sustainable design and sustainable landscaping.

by Clark Churchill,  
Southern Region Office

erty values, reduced utility bills, sustainable design and sustainable landscaping.

Even after completion, the projects continue to be the subject of active research. The Council is tracking and quantifying the multiple benefits of the project so that lessons can be applied towards future projects. Today, the average annual runoff of 13 million gallons that once flooded this Sun Valley community is now captured, treated, reused and infiltrated into the San Fernando Groundwater Basin on-site—the way nature intended. The under-street infiltration galleries are designed to recharge 16 acre feet of groundwater annually, and 60 acres of the community has been reconnected to the natural hydrology of the Los Angeles River watershed. Elmer Avenue is the first block in Los Angeles with solar-only streetlights. This project is a truly sustainable “Green Street” that should serve as a model for future Low Impact Development projects in urbanized settings. 💧



Located in northern Los Angeles, “Green Street” known for being a real-world model of practical sustainable design includes porous driveways, drought-tolerant native landscapes and solarpower street lighting. The project completed in 2012 involved retrofitting 24 homes with these features.

# Watershed Solutions:

## Realizing the Value of Integration during Times of Crisis

by Michelle Dooley, Northern Region Office

The reality of California's drought is illustrated in Tuolumne County, where the Tuolumne Utilities District (TUD)—which serves 44,000 customers—estimated in February 2014 that it could run out of water within 150 days.

In response, the Chicken Ranch Rancheria of Me-Wuk Indians elected to buy 2,400 acre-feet of water from the South San Joaquin Irrigation District and re-sell the water at cost to TUD. These groundbreaking actions of the Tribe on behalf of the larger community likely would not have occurred but for the preceding six years of Tuolumne-Stanislaus integrated regional water manage-

ment planning and capacity building. The relationships, transparency, and flow of information fostered by DWR's technical and financial assistance are proving to be valuable during times of crisis.

Covering Tuolumne County and portions of Alpine and Calaveras counties, the Tuolumne-Stanislaus' Integrated Regional Water Management (IRWM) region includes most of Stanislaus National Forest and Hetch Hetchy, New Melones and New Don Pedro reservoirs. The region is home to more than 70,000 people and Yosemite National Park.

A long-term and defining characteristic of the Tuolumne-Stanislaus IRWM region is

that 98 percent of the abundant water originating from the region is not available for use within the region. Regional water supplies are controlled by downstream senior water rights holders. Water supply, storage and hydroelectric agreements are very complex, with some dating back to the late 1800s.

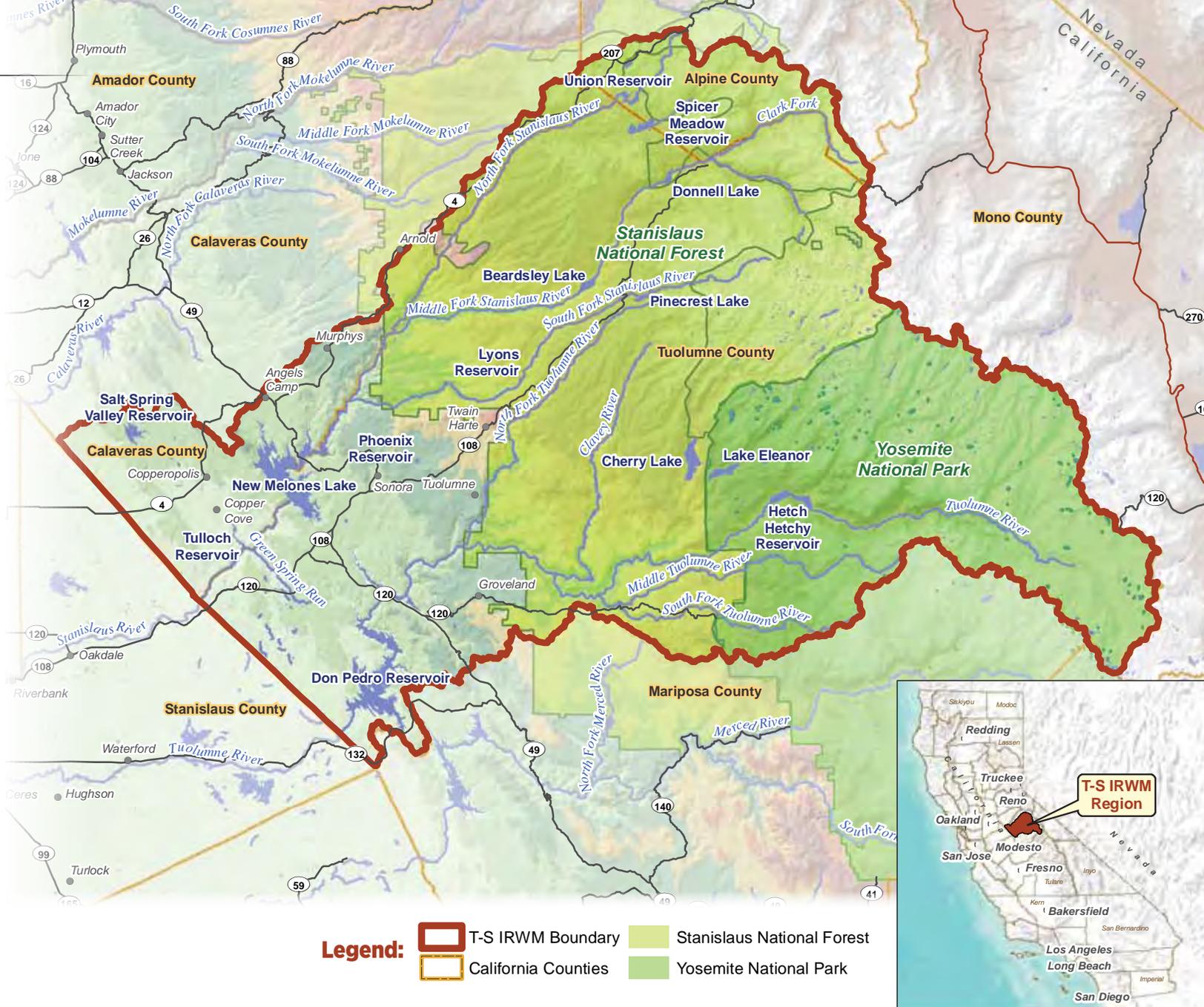
Since August 2007, the Tuolumne-Stanislaus Regional Water Management Group (T-S RWMG) has met regularly to develop its IRWM Plan, aided in part by a 2011 Proposition 84 Round 1 Planning grant awarded to the TUD by DWR. The Plan was approved by DWR in September 2014.

In 2013, the Tuolumne County Resource Conservation District, on behalf of the T-S RWMG, was awarded a Proposition 84 Round 2 Implementation grant by DWR. This grant provides \$3,640,000 to implement eight multi-benefit projects that address water storage, water quality, water conservation, watershed restoration and education, and improving wastewater treatment facilities. The grant application was prepared entirely "in-house" by the members, participants and project proponents of the T-S RWMG.

DWR's South Central and North Central Region offices (SCRO and NCRO) have supported the Tuolumne-Stanislaus IRWM efforts from the beginning. Michelle Dooley formerly from SCRO has served T-S RWMG since 2010, both as Regional Service Representative (RSR) and as project manager for the planning grant. Dooley assisted the group in obtaining facilitation support services so that a facilitator could help the group

Ernie Taylor, SCRO Regional Coordinator, views water conveyance flume for Tuolumne County Drought Response in February 2014





work through what proved to be difficult planning issues, such as governance, decision-making and project selection criteria.

Facilitation support services ultimately led to the formation of the Tuolumne-Stanislaus IRWM Joint Powers Authority. Today the Tuolumne-Stanislaus IRWM Authority Board of Directors consists of a primary and alternate representative from the following local public agencies: Chicken Ranch Rancheria of Me-Wuk Indians; City of Angels Camp; Groveland Community Services District; Murphys Sanitary District; County of Tuolumne; Tuolumne Utilities District; and Twain Harte Community

Services District. This is the first time in California that a federally-recognized Tribe (the Chicken Ranch Me-Wuk) has been signatory to a JPA for IRWM.

In February, gripped by drought, Tuolumne County (County) and TUD requested immediate drought assistance from the state's Drought Task Force/drought emergency response team. The County and TUD presented representatives from DWR, the Governor's Office of Emergency Services and Governor's Office of Planning and Research with projected regional water shortages and possible operational and supply scenarios that could be implemented.

In response, DWR SCRO committed to help the County perform a preliminary assessment of its groundwater supplies. SCRO worked with the California Department of Public Health in Fresno to obtain well data to create a Geographic Information Systems (GIS) - based map of groundwater resources, with much of this work being performed by Siran Erysan, SCRO's GIS Research Analyst. 💧

For more information on the T-S RWMG and the Tuolumne-Stanislaus IRWM Plan visit <http://www.tudwater.com/projectsdevelopment/integrated-regional-watermanagement-plan/>

# Gravel Helps Fish

By Christina Jimenez

## DWR Enhances Spawning Habitat for Salmon and Steelhead

**DWR this summer enhanced spawning habitat for salmon and steelhead in a stretch of the Feather River below Oroville Dam in Butte County.**

Some 8,300 cubic yards of gravel was strategically placed in the bed of the river that will shelter fish eggs during annual spawning runs.

“The upstream dams have blocked all natural import of sediment-size classes that the fish need for spawning, thus the river bed has coarsened and armored over time as high flows have scoured the channel bottom,” said Northern Region Office Engineer Scott Kennedy. “By placing appropriately sized gravel to recreated spawning riffles and runs that have disappeared over time, the heavily used spawning area within this reach of the Low Flow Channel will be greatly enhanced.”

The Feather River Gravel Supplementation and Improvement Project adds gravel at key locations, contours riffles and reconnects a side channel with the lower Feather River in accordance with the DWR’s 2006 Settlement Agreement developed as part of the application for a renewed Federal Energy Regulatory Commission (FERC) license to operate the Department’s Oroville Facilities, including Oroville Dam.

Chief of DWR's Feather River Program Section Jason Kindopp and Contractor Christine McDade perform water testing during the Feather River Gravel Supplementation and Improvement Project in Oroville.



Since 2007, DWR environmental scientists, geologists and engineers from the Division of Operations and Maintenance, Integrated Regional Water Management's Northern Region Office, Environmental Services Office and the Division of Engineering worked together to develop a design that would meet the fishery needs of the project that could be implemented in-channel.

Gravel was added to five spawning sites -- Moe's Side Channel, Cottonwood, Hatchery, Upper Auditorium, and Auditorium riffles. Due to their close proximity to the fish barrier dam, these areas receive the largest numbers of spawning salmon and steelhead.

"With this project, we are hoping to increase the quantity and quality of suitable spawning habitat in the Feather River as well as to improve rearing habitat and restore a semblance of natural sediment transport allowing for the production of naturally reproducing Chinook salmon and steelhead in Feather River," said Kennedy.

### A Closer View

Oroville Field Division environmental scientists monitored the project site daily, keeping a close eye on water quality, fish and any environmental impacts the project might have.

"Any in-river project, especially like this one where the work takes place on salmon

spawning grounds, is a big deal, particularly because you are working with heavy equipment in the river," said Senior Environmental Scientist Julie Brown with Oroville Field Division. "We are required to abide by certain water quality and other environmental requirements, enforced by permits. These help to protect the water, habitat and fish."

Permits from the National Marine Fisheries Service, Department of Fish and Wildlife and State Water Resources Control Board were required prior to starting the project and equipment operators received environmental training from DWR environmental scientists prior to the start of construction.

Before dumping the gravel into the river, a DWR biologist examined the pre-washed gravel, ensuring it was clean enough to enter the water.

"If the gravel was not clean enough, with the combination of the equipment moving around in the water, it could have caused too much turbidity," said Brown. "Turbidity is one thing we were to keep a close watch on. Too much turbidity -- murky water -- can damage the gills of a fish. We measured for it every hour, ensuring the levels kept below the enforced limit."

After a biologist approved the cleanliness of the gravel, the team swept the edges of

the river to ensure no fish were in harm's way when the tractor drove through the area.

### Facing Challenges

From higher-than-expected flows to special equipment requirements, biologists and engineers encountered several project challenges.

"Higher flows made the water deeper and swifter than expected, which caused added difficulty for the equipment and equipment operators who were working in the river," said Kennedy. "The added water depth and flow rate made some portions of the project area inaccessible and we needed to make changes to the design in the field to get the project done."

In addition to protecting water quality and fish, DWR scientists monitored conditions for nesting birds in the area.

"There was only one red-shouldered hawk nesting nearby, and it was our responsibility to ensure the equipment was not disturbing it," said Brown. "Two to three times a day, a DWR environmental scientist visited the nest and checked for distressed sounds, or them fleeing the nest and not returning." ♦

Funded by the State Water Project/Central Valley Water Project Construction Fund, the project cost an estimated \$800,000.

# Briefing

## DWR Climate Team Ties Art with Science at California Adaptation Forum

**M**ore than 600 climate change leaders and experts, including 12 DWR experts, offered innovative ideas for climate change and adaptation at the first annual California Adaptation Forum.

Led by the Local Government Commission and the State of California, the downtown Sacramento event on August 19 and 20 was created based on the success of the National Adaptation Forum in Colorado in 2013.

Topics included public health, energy, water, emergency management, agriculture, biodiversity, conservation and coastal management issues associated with climate change and adaptation. Tours for participants included the Sacramento-San Joaquin Delta, Sacramento's Farm-to-Fork movement and Folsom Dam and reservoir.

Members of DWR's Climate Change Team from the Division of Integrated Regional Water Management (IRWM) made a presentation on connecting land-use, water and ecosystem adaptation planning.

### Artwork Shows Climate Change

As the changing climate brings about a global struggle to maintain balance, artists of all ages from Sacramento to San Diego — including DWR and local Sacramento youth — showcased their artwork at the Forum inspired by nature's vulnerability to a changing climate.

Among DWR's six artwork pieces, Senior Environmental Scientist Qinqin Liu contributed four colorful paintings, including a water color and oil pastel painting of endangered Delta smelt. DWR also created a 45 minute video highlighting aerial views of California habitats susceptible to climate change and Department employees working hand-in-hand with local youth to create their own climate art.

In addition to creating their own art, DWR employees who led the Art at Climate Adaptation program displayed art and music created by the Natomas Charter

# The Connection

By Christina Jimenez



Qinqin Liu  
Untitled, 2007

Performing and Fine Arts Academy, as well as the Crocker Art Museum, Powerhouse Science Center, Discovery Museum and the Sacramento Public Library summer camp.

“Aside from the hand paintings, one of the more unique pieces created by the students is the climate animation music,” said DWR Program Manager II Elissa Lynn of the Climate Change Adaptation section. “Basing music on temperatures is an unusual way of composing.”

Originally composed at the University of Minnesota, climate animation music is created by using historical data of the rising temperatures dating back to the 1880s, and creating musical notes that mimic the rise in temperature.

“The teacher and student at the Natomas Charter Performing Arts school were able to arrange their own version of the instrumental song,” said Lynn. “If temperatures continue to rise as projected, this music will be beyond the range of human hearing by the end of the century.”

## Sharing DWR’s Climate Change Approach

The Forum also offered nearly 40 breakout sessions in which attendees could hear climate change leaders and veterans discuss a wide variety of topics, including financing resources, engaging communities and case studies.

DWR’s Michelle Selmon, a Senior Environmental Scientist with the IRWM Division’s South Central Region Office, was one of the four featured speakers in a land-use, water and ecosystem adaptation planning session.

Michelle gave an overview of current and future climate change impacts to water resources. She highlighted DWR’s dedication to helping local water agencies factor those impacts into their water management plans.

“We cannot rely on the past to plan for our future,” said Selmon. “We must assess our vulnerabilities to understand the risks and help us prepare for what is coming next.”

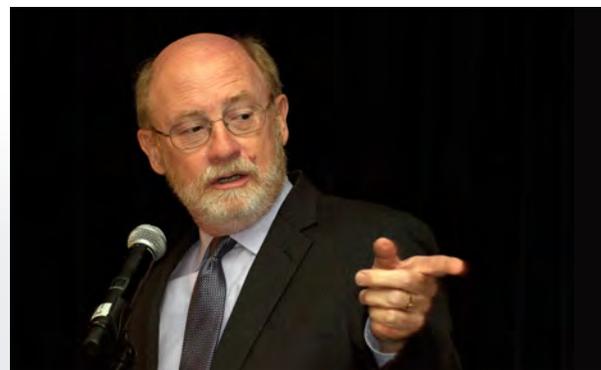
Moderated by DWR Senior Environmental Scientist Erin Chappell, the session also featured speakers from the California Department of Fish and Wildlife, EcoAdapt and a California Polytechnic State University professor.

Representing State agencies among the 14 keynote speakers were Secretary John Laird



of the California Natural Resources Agency, Vice Chair Frances Spivy-Weber of the State Water Resources Control Board, Chief and Director Ken Pimlott of the California Department of Forestry and Fire Protection and Chairman Mary Nichols of the California Air Resources Board. 💧

**For more information on the 2014 California Adaptation Forum, visit <http://www.californiaadaptationforum.org/>.**



**Top to Bottom:** Art camp students at Crocker Art Museum take inspiration from the book, “The Earth has a Fever,” to create climate change artwork. California Secretary for Natural Resources John Laird makes the keynote speech at the California Adaptation Forum on August 20, 2014. **(left)** Erin Chappell of North Central Region Office moderates a panel on ecosystem adaptation planning. **(right)** Michelle Selmon of South Central Region Office speaks about land use and climate change. **(Left to Right- counterclockwise)** DWR’s Climate Change Program includes Qinqin Liu, Emily Alejandrino, Elissa Lynn, Lauma Jurkevics, Erin Chappell, Matt Correa, Pete Coombe, Michael Healey, Soren Nelson, John Andrew and Aaron Cuthbertson.





In August, Governor Edmund G. Brown Jr. (center) signs water bond legislation. Photo Courtesy of Kelly Huston (California Governor's Office of Emergency Services)

# Water Bond Legislation

By Kasey Schimke

## On the Ballot:

Water Quality/ Drinking Water	<b>\$520m</b>
Rivers, Lakes, Streams, Watersheds	<b>\$1,495m</b>
Regional Water Security, Climate, Drought	<b>\$810m</b>
Statewide Water System Operation	<b>\$2,700m</b>
Recycling	<b>\$725m</b>
Groundwater	<b>\$900m</b>
Flood Management	<b>\$395m</b>
<b>Total Bond Package</b>	<b>\$7,545m</b>

In August, the California Legislature passed Assembly Bill 1471, by Assemblymember Anthony Rendon (Lakewood), that removed from the November 2014 ballot the \$11.14 billion water bond originally passed by the Legislature in November 2009. The bill replaces that bond with a smaller, \$7.545 billion bond - the Water Quality, Supply, and Infrastructure Improvement Act of 2014.

If passed by the voters at the November General Election, this smaller bond will provide funding for a number of local, regional, and statewide water-related activities.

The categories support the 10 actions identified earlier this year by the Governor in the California Water Action Plan, and are distributed across multiple state agencies. The funding would support activities to improve water quality and recycling efforts, protect and restore watersheds across the state, support regional water management activities, advance

both urban and agricultural water conservation, groundwater management and cleanup, support the public benefits associated with groundwater and surface storage projects, and continue support for flood management in the Delta and Sacramento and San Joaquin valleys as well as statewide.

If passed by the voters, the funding for statewide water system operation would be available to the California Water Commission directly. The remaining funding is subject to appropriation by the Legislature and approval by the Governor.

As a public agency, the Department is permitted to provide fair and impartial information regarding proposed ballot measures, but may not stray into advocacy - either for or against - a measure. 💧

**Information for employees on public funds and ballot measure campaigns is available at <https://current.water.ca.gov/ExecutiveCommunications/SitePages/Home.aspx>**



By Elizabeth Scott

# California Silver Jackets Team Nails Top National Honor

**The California Silver Jackets, a statewide interagency flood preparedness team led by DWR, is the 2014 National Silver Jackets Team of the Year. The Golden State's team won the recognition in its first year of participation in the national program.**

The National Silver Jackets Program, developed by the U.S. Army Corps of Engineers

(Corps) and other federal partners, offers each state the opportunity for federal, State and local agencies to collaboratively address flood risk management issues and implement solutions in their own backyard.

Flood Management Division Chief Keith Swanson said California provided a good example of successful interagency collaboration to address challenges in flood management.

"We appreciate the support we've seen at both the State and local levels", said Swanson. "That support made the California initiative a success."

California officially joined the Silver Jackets Program at the start of last year's California Flood Preparedness Week in November 2013.

DWR is the team's lead coordinating agency. The winning roster includes representatives from the California Office

of Emergency Services, Delta Stewardship Council, Floodplain Management Association, as well as California staff from the Federal Emergency Management Agency (FEMA), National Weather Service, U.S. Bureau of Reclamation, U.S. Forest Service, U.S. Geological Survey, and Natural Resources Conservation Service. Representatives from the Santa Clara Valley Water District and 15 counties and cities brought local perspective to the team collaboration.

The Corps presented the award in August at its Strategic Leaders' Conference in Virginia. When presenting the award, the Corps acknowledged California's Flood Preparedness Week outreach campaign, participation in FEMA's "Know Your Line" Initiative which publicized high water marks from historic floods in Roseville and Sacramento, and development of "California's Flood Future Report: Recommendations for Managing the State's Flood Risk." 💧



**(Above)** The 2013 High Water Mark event was one of several flood preparedness events that led California to being awarded as Team of the Year in 2014. Participants included Cindy Matthews of the National Weather Service (second from left), Judy Soutiere of the Army Corps of Engineers (second from right) and DWR employees (left to right) Nikki Blomquist, Patricia Clark and Maria Lorenzo-Lee.

**(Left to Right)** DWR Deputy Director Gary Bardini and Lt. Col. Braden LeMaster sign Silver Jackets memorandum making California the 40th member of the National Silver Jackets program last year.

# People

## New Hires

**Sid Adel**  
Operations and Maintenance  
Mechanical Engineer

**Cari Alspaugh**  
Executive  
Legal Secretary

**Eleazar Anguiano**  
Technology Services  
Data Processing Manager III

**Douglas Bertran**  
Public Affairs Office  
Director, TV Communications Ctr. (Supv)

**Adam Bollinger**  
Operations and Maintenance  
Precision Electronics Specialist

**Ian Brown**  
Technology Services  
Staff Information Systems Analyst

**Nathan Buchholz**  
Engineering  
Transportation Surveyor

**Laura Burris**  
Environmental Services  
Environmental Scientist

**Maria Cabrera**  
Engineering  
Staff Services Analyst

**Christine Callinan**  
Environmental Services  
Environmental Scientist

**Raymont Carter**  
San Luis Field Division  
HEP\* Technician I

**Roberto Cervantes**  
Safety of Dams  
Engineer

**Gavin Chan**  
Fiscal Services  
Office Technician (Typing)

**Joseph Cirigliano**  
Southern Field Division  
HEP\* Electrician I

**Michael Clark**  
Technology Services  
Systems Software Specialist II

**Margaret Collins**  
Executive  
Associate Governmental Program Analyst

**Raquel Corrin**  
Engineering  
Office Technician (Typing)

**Albert De Leon**  
Engineering  
Transportation Surveyor

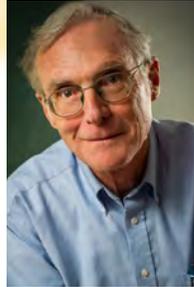
**Bryan Dussell**  
Engineering  
Engineering Geologist

**Kristen Eddings**  
Delta Field Division  
Staff Services Manager II (Supv)

**Tina Elledge**  
Northern Region Office  
Office Technician (Typing)

## State Service Anniversary

### Forty Years of Service



**Brian Smith**  
Flood Management  
Supervising Engineer  
July 2014

### Twenty-five Years of Service



**Melody Baldwin**  
Environmental Services  
Research Analyst  
(Geographic Info. Systems)  
July 2014



**Lydia Barnum**  
Oroville Field Division  
Business Services Officer  
November 2014



**Matthew Chinakwe**  
Operations and Maintenance  
Senior  
Telecommunications  
Engineer  
September 2014



**Concepcion Cobos**  
San Joaquin Field Division  
Water Resources  
Technician II  
October 2014



**Laura Delphina**  
Southern Field Division  
Administrative Officer II  
October 2014



**Michael Dooley**  
Southern Field Division  
Business Service Officer  
September 2014



**Kevin Faulkenberry**  
South Central Region  
Office Chief  
August 2014



**Janet Gee**  
Operations and Maintenance  
System Software  
Specialist III  
June 2014



**Tina Glorioso**  
Safety of Dams  
Office Technician  
September 2014



**Karen Hull**  
Flood Management  
Sutter Maintenance Yard  
Chief  
August 2014



**Lauma Jurkevics**  
Southern Region Office  
Senior Environmental  
Scientist  
July 2014



**John Leahigh**  
Operations and  
Maintenance  
Principal Engineer  
October 2014



**Ray McDowell**  
Floodsafe Environmental  
Stewardship and Statewide  
Resources Office  
Program Manager  
June 2014



**Deborah McEwan**  
State Water Project  
Analysis Office  
Research Writer  
July 2014

### No Photo:

**Kristine Heller**  
Business Services Office  
Business Services Officer I  
September 2014

**Brent Lamkin**  
Engineering  
Senior Engineering Geologist  
October 2014

\* Hydroelectric Plant

## DWR's Newest Parents:



**Parviz Nader-Tehrani**  
Bay-Delta Office  
Supervising Engineer  
November 2014



**Douglas Nolan**  
Delta Field Division  
Utility Craftsworker  
November 2014



**Edward Perez**  
South Central Region  
Office  
Engineer  
June 2014



**Carol Rahner-Clark**  
Operations and  
Maintenance  
Staff Services Analyst  
September 2014



**Mark Rivera**  
Northern Region Office  
Land and Water Use  
Scientist  
September 2014



**Yvonne Simmons**  
Delta Field Division  
Staff Services Analyst  
November 2014



**Patrice Thomason-Bell**  
Fiscal Services  
Staff Services Manager I  
June 2014



**Dietlind Wiesner**  
State Water Project  
Analysis Office  
Engineer  
September 2014



**Lorna Wilson**  
State Water Project  
Analysis Office  
Research Writer  
June 2014

**Karina Bailey**, a Staff Services Manager I in the Management Analysis Office, has a son **Aiden Alexander**, who was born on January 30, 2014 weighing six pounds, 15 ounces and measuring 20 inches long.

**Tariq Chechi**, Engineer in Flood Management's Local Maintaining Agency Assessment Section, has a son named **Muhammed**, who was born on August 24, 2014 weighing six pounds and seven ounces.

**Vojislav Cvijanovic**, Engineer in the Division of Safety of Dams, has a daughter named **Angie**, who was born on June 14, 2014 weighing five pounds, 14 ounces and measuring 19 inches long.

## New Hires

**Heidi Ferrell**  
Business Services  
Associate Governmental Program Analyst

**Molly Ferrell**  
FESSRO\*\*\*  
Senior Environmental Scientist

**Beth Gatlin**  
Integrated Regional Water Mgmt.  
Associate Governmental Program Analyst

**Valentina German**  
Executive  
Legal Secretary

**Remy Gill**  
Central Valley Flood Protection Board  
Engineer

**Nitisha Gilra**  
Business Services Office  
Staff Services Analyst

**Scott Goebel**  
Executive  
Environmental Scientist

**Pascale Goertler**  
Environmental Services  
Environmental Scientist

**Jesus Gonzalez-Perez**  
Fiscal Services  
Accountant Trainee

**Eric Gulick**  
Delta Field Division  
HEP\* Electrician I

**Rose Harrelson**  
Environmental Services  
Senior Environmental Scientist

**Johnathon Havens**  
Southern Field Division  
HEP\* Operator

**Kira Haynes**  
Executive  
Office Technician (Typing)

**Craig Hepton**  
San Joaquin Field Division  
HEP\* Electrician I

**Cody Husted**  
Engineering  
Transportation Surveyor (Caltrans)

**Alexander Hvisc**  
Operations and Maintenance  
Electrical Engineer

**Adam Jones**  
Engineering  
Engineering Geologist

**Rhiannon Klingonsmith**  
Environmental Services  
Environmental Scientist

**Amber Kolb**  
Northern Region Office  
Office Assistant (Typing)

**Robert Lee**  
San Joaquin Field Division  
HEP\* Electrician I

**Sarah Lever**  
San Joaquin Field Division  
Staff Services Analyst

**Sean Liu**  
Operations and Maintenance  
Systems Software Specialist II

**Karen Louie**  
Fiscal Services  
Accounting Administrator III

**Eric Lundquist**  
Operations and Maintenance  
Electrical Engineer

**Robert Meek**  
Environmental Services  
Staff Programmer Analyst

**Dennis Navarro**  
Oroville Field Division  
HEP\* Operator

**Allan Nies**  
Oroville Field Division  
HEP\* Mechanic I

**Christopher Olvera**  
South Central Region Office  
Engineering Geologist

**Fred Oravillo**  
Technology Services  
Systems Software Specialist II

**Clint Parker**  
Flood Management  
Staff Services Analyst

**Dimitri Polis**  
Flood Management  
Research Program Specialist II  
(Geographic Info. Systems)

**Araya Rabidoux**  
Engineering  
Staff Services Analyst

**Gina Radieue**  
Environmental Services  
Environmental Scientist

**Terry Randolph**  
Business Services Office  
Staff Services Analyst

**Mark Redfield**  
Oroville Field Division  
HEP\* Technician II

**Clifton Rodriguez**  
Delta Field Division  
HEP\* Electrician I

**Edward Roza**  
Flood Management  
Engineer

**Matthew Schroeder**  
Technology Services  
Systems Software Specialist II

**Nancy Shaltes**  
Engineering  
Staff Services Analyst

**Menish Sharma**  
Operations and Maintenance  
Electrical Engineer

**Suzanne Smith**  
Southern Field Division  
Office Technician (Typing)

**Merlin Sorbito**  
San Luis Field Division  
HEP\* Technician I

**John Spendlove**  
Technology Services  
Systems Software Specialist II

\* Hydroelectric Plant  
\*\*\* Floodsafe Environmental Stewardship and  
Statewide Resources Office

## New Hires

**Charlotte St. Amant**

Flood Management  
Office Technician (Typing)

**Joshua Stenquist**

Oroville Field Division  
HEP\* Mechanic I

**Dung Tang**

Operations and Maintenance  
Electrical Engineer

**Robin Van Huis**

Operations and Maintenance  
Water & Power Dispatcher

**James Wilks**

Operations and Maintenance  
Water & Power Dispatcher

## Promotions

**Ghassan Alqaser**

SWP Power & Risk Office  
Supervising HEP\*\* Utility Engineer

**Kevin Backes**

Southern Field Division  
HEP\* Electrician I

**Sean Bagheban-Rezvan**

Executive  
Supervising Engineer

**Jessica Bair**

San Luis Field Division  
Management Services Technician

**Kathi Bristow**

Environmental Services  
Associate Governmental Program Analyst

**Andrea Buckley**

Central Valley Flood Protection Board  
Senior Environmental Scientist

**Katrina Burkett**

Business Services Office  
Associate Governmental Program Analyst

**Stacy Cepello**

FESSRO\*\*\*  
Program Manager III

**Daniel Clark**

Southern Field Division  
HEP\* Tech. Supervisor

**Robert Clarke**

Flood Management  
Senior Engineer

**Ryan Colquhoun**

Engineering  
Senior Engineer

**Vonda Coltrin**

Fiscal Services  
Accounting Administrator I (Supv.)

**Linda Cooper**

Public Affairs Office  
Associate Governmental Program Analyst

**Rachel Corbett**

Fiscal Services  
Accounting Administrator II

**Donald Crothers**

Operations and Maintenance  
Associate Control Engineer

**William Croyle**

Executive  
CEA

\* Hydroelectric Plant

\*\* Hydroelectric Power

\*\*\* Floodsafe Environmental Stewardship and Statewide Resources Office

## On The Spot

### Guide Enlightens Visitors

**Jana Frazier, a Tour Guide II at Oroville Field Division**, enjoys educating people of all ages about Lake Oroville.

“My work goes beyond just giving tours,” said Jana, a three-year DWR veteran. “My job is complex, dynamic and fun. This position is ever-evolving and changing with the seasons, the times and the school curriculum.”

Monday through Saturday, Jana guides visitors around Lake Oroville and the Feather River Fish Hatchery. She also gives presentations throughout Butte County on drought, water conservation and virtually all subjects related to water, including the history of the State Water Project highlighted by the construction of Oroville Dam.

“I absolutely love talking to groups about Oroville, the State Water Project, the history of gold mining in the area, the Oroville Dam, Feather River Fish Hatchery and the Visitor Center,” said Jana. “In particular, I love speaking to school kids who visit. I look at it as planting the seeds to grow future scientists, environmental stewards and hydrologists in the hopes that this next up-and-coming generation will have better ideas on how to care for the environment, water and land management.”

During salmon spawning season, Jana gives fish hatchery tours to some 200 people a day.

Prior to joining DWR, Jana was an historical and contemporary tour guide for 10 years in Alaska, where she gave summer tourists arriving on cruise ships an overview of the state’s wildlife, environment and history. She also conducted tours in Sitka National Historic Park, leading tourists to the Indian River to watch humpback salmon traveling through the river.

“Being a tour guide in Alaska certainly helped me be a better tour guide for DWR,” said Jana. “The job taught me how to look ahead and see what might be coming down the pipeline for future interests of visitors. I have learned to stay current with water-related news, which is invaluable to keeping me prepared for potential questions.”

Away from work, Jana enjoys water-wise gardening, photographing nature, collecting vintage jewelry and writing books. 💧

**Jana’s way to save water:** Placing a 20-gallon bucket under her swamp cooler to catch dripping water. Once the bucket is full, she uses it to water her garden.



# Retirements

## Steve Ambrose

Construction inspections, submittal reviews and provision of start-up expertise for pumping plant control system projects are among the many tasks retired Associate Electrical Engineer Steve Ambrose carried out with the Division of Engineering's Construction Branch Equipment and Materials Section during his three years with DWR.

"The camaraderie and work attitude of all of those that I worked with is what I enjoyed most about the Department," said Steve.

Born in Auburn and raised in Sacramento, Steve earned a Bachelor's of Science in Electrical Engineering in 1977 from California State University, Sacramento.

Prior to joining DWR, Steve spent 17 years with the Department of General Services.

Steve also worked outside State service as a

controls engineer, designing power plants, water and wastewater treatment plants and voice and mobile data systems for public safety, transit and water utilities nationwide.

"Of all the projects I have worked on, my most rewarding project was bringing to completion a 14-pump flood control rehabilitation project on a levee just east of Yuba City," said Steve. "I was the DWR inspector for construction, installation and startup. The project allowed me to become familiar with the DWR project process and the flood control system."

Steve also was the DWR construction, installation and startup inspector for the Weir #2 project, located along the levee near Yuba City.

When reflecting on retirement, Steve highlights day trips with his wife to the Gold Rush towns of the foothills, vintage radio restoration and wood working.

## Promotions

### Zachary Cunningham

Public Affairs Office  
Television Specialist

### Dawn Dance

Operations and Maintenance  
Associate Governmental Program Analyst

### Shervin Danque

Fiscal Services  
Accountant Trainee

### Cosme Diaz

Engineering  
Principal Engineer

### Cynthia Escobar

Executive  
Associate Governmental Program Analyst

### Tasmin Eusuff

State Water Project Analysis Office  
Supervising Engineer

### Desmond Feher

Operations and Maintenance  
Senior HEP\*\* Utility Engineer (Supv.)

### Pauline Felix

Technology Services  
Associate Information Systems Analyst

### Efren Flores

Delta Field Division  
HEP\* Technician I

### Scott Flory

North Central Region Office  
Environmental Scientist

### Daniel Garcia

Engineering  
Water Resources Technician I

### Gregory Garner

Engineering  
Associate Right of Way Agent

### Charles Geeter

Technology Services  
Systems Software Specialist II

### Robert George

Oroville Field Division  
HEP\* Tech. Supv.

### Teresa Gonzalez

Technology Services  
Senior Information Systems Analyst

### Damon Grimes

Engineering  
Senior HEP\*\* Utility Engineer

### Clayton Guiraud

Engineering  
Senior Land Surveyor

### Brian Hamman

Operations and Maintenance  
Associate Governmental Program Analyst

### Mark Herold

Engineering  
Supervising Engineer

### Matthew Hoffman

Flood Management  
Water Resources Technician II

### Jennifer Hogan

FESSRO\*\*\*  
Environmental Program Manager I (Supv.)

### Laura Hollender

Executive  
Attorney III

\* Hydroelectric Plant

\*\* Hydroelectric Power

\*\*\* Floodsafe Environmental Stewardship and Statewide Resources Office

## Promotions

**Mitchell Howard**  
Southern Field Division  
Water Resources Technician II

**Eileen Hue**  
Technology Services  
Systems Software Specialist II

**Carlous Johnson**  
FESSRO\*\*\*  
Engineer

**Jodi Johnston**  
San Joaquin Field Division  
Management Services Technician

**Woon Jung**  
Operations and Maintenance  
Senior HEP\*\* Utility Engineer (Supv.)

**Sultan Khan**  
Technology Services  
Systems Software Specialist III

**Jennifer Kofoid**  
Statewide Integrated Water Mgmt.  
Senior Engineer

**Lori Lay**  
Fiscal Services  
Accounting Administrator I (Supv.)

**Mason Leach**  
Delta Field Division  
Senior HEP\* Operator

**Yolanda Lemence-Lantin**  
Executive  
Accounting Administrator I

**Keith Louie**  
SWP Power & Risk Office  
Associate HEP\*\* Utility Engineer

**Kevin Loutensock**  
North Central Region Office  
Water Resources Technician II

**Lisa Ma**  
Human Resources Office  
Personnel Specialist

**Satwinder Mahil**  
San Luis Field Division  
HEP\* Technician II

**Jagruti Maroney**  
State Water Project Analysis Office  
Senior Engineer

**Jennifer Marr**  
Statewide Integrated Water Mgmt.  
Supervising Engineer

**Jacob Martinez**  
San Joaquin Field Division  
Water Resources Technician II

**James Matsuda**  
Delta Field Division  
Business Service Assistant

**Tommy Matthews**  
San Joaquin Field Division  
HEP\* Electrician II

**Joanalyn Moyle**  
Southern Field Division  
Staff Services Analyst

**Erik Murphy**  
North Central Region Office  
Staff Information Systems Analyst

**Prashil Nand**  
Business Services Office  
Associate Governmental Program Analyst

\* Hydroelectric Plant

\*\* Hydroelectric Power

\*\*\* Floodsafe Environmental Stewardship and Statewide Resources Office

## Barbara Graham

Barbara Graham knows DWR's Division of Technology Services (DTS) is one of the best places to work. After 27 years of State service with most of that time served with DTS, Barbara retired in October as an Assistant Information Systems Analyst.

"The people are very friendly, helpful and fun to work with," said Barbara. "Many people who leave DTS to find work elsewhere often return."

While attending American River College for a degree in Commercial Graphic Art, Barbara got her first job working for the Franchise Tax Board. She worked as a Key Data Operator, entered tax returns for the Board and then keyed election results for the Secretary of State before she transferred to DWR, where she keyed various documents.

As a Computer Operator, Barbara ran backups of files for employees' file recovery and stored back-

ups of critical files offsite for disaster recovery.

In 2010, Barbara was promoted to Assistant Information Systems Analyst. As a member of the DTS Operations Center Team, Barbara helped monitor and maintain the facility, systems and security of the California Natural Resources Agency Data Center.

Her duties included monitoring Data Center temperature, programming employee badges to access secured areas and notifying various teams of critical error alerts.

Barbara's retirement plans include volunteering at the California Highway Patrol, where she will be entering criminal record information. Barbara plans to help with Habitat for Humanity, add more years to her 20 years of line dancing and delve into painting and woodcarving. Barbara, who loves dogs, also will volunteer at Sacramento animal shelters.





## Richard Oravetz

By the time Richard Oravetz joined DWR 29 years ago, he had already had a rigorous course in engineering self-sufficiency.

"When you're on a ship and out of sight of land, you're in survival mode," Dick recalled after his recent retirement. "If something breaks, you have to figure out what's wrong and how to fix it."

Dick began sailing as a marine engineer after graduating from the California Maritime Academy in Vallejo in 1973. A friend at Sacramento's Hiram Johnson High School had interested him in the Academy.

Dick spent the next decade on the high seas, starting as a third assistant engineer and working his way up to chief engineer by the time he was 30. Australia, Tahiti, Central and South America, ports in the Caribbean and Mediterranean, northern Europe - you name it, and Dick's probably had a port call.

Some stops were especially unforgettable. On one Panama Canal transit, the local pilots had a labor dispute with the canal's management about overtime pay. A pilot refused to work beyond eight hours when Dick's ship was half-way through the canal's transit.

"We had to anchor right in the middle of the Gaillard Cut," he said, referring to one of the many engineering wonders of the Panama Canal. "Nobody had ever done that before, and it was probably the only time in the past century that a ship anchored in the center of the Cut."

A decade of four-hour shifts and three-months-on, three-months-off work was enough, and Dick joined DWR as an associate hydroelectric power utility engineer. He retires as a senior engineer specialist in the classification.

Most of his DWR career has been spent in the field divisions doing inspections, evaluating operations and implementing reporting programs to track equipment service rate and service interruptions. The work was varied but never boring, he said, and a highlight was helping transition DWR from the Unisys OMTS information system to the SAP system.

Dick laughed that he's "Polish by marriage" to Barbara, who contributes his time to fix things at the Polish American Club of Greater Sacramento in Roseville. He figures that between the club and home improvement projects, retirement won't be boring.

## Promotions

**Jacqueline Nelson**  
Human Resources Office  
Staff Services Manager I

**Jason Newton**  
Oroville Field Division  
HEP\* Electrician I

**Thu Nguyen**  
Fiscal Services  
Associate Accounting Analyst

**Thien Nguyen**  
Technology Services  
Staff Information Systems Analyst

**Michael Nolasco**  
Operations and Maintenance  
Water Services Supervisor

**Felix Nuno**  
San Joaquin Field Division  
HEP\* Electrician I

**Chris O'Toole**  
Operations and Maintenance  
Staff Information Systems Analyst

**John Paasch**  
Flood Management  
Supervising Engineer

**Jeffrey Parsons**  
Executive  
Senior Engineer

**Richard Pech**  
San Joaquin Field Division  
HEP\* Technician II

**Todd Percival**  
North Central Region Office  
Water Resources Technician II

**Glenda Porter**  
San Luis Field Division  
Staff Services Manager II (Supv.)

**Donald Price**  
San Luis Field Division  
HEP\* Mechanical Supv.

**Cynthia Puccinelli**  
San Luis Field Division  
Staff Services Analyst

**Mary Ramirez**  
Fiscal Services  
Accounting Administrator II

**Christopher Ridley**  
Operations and Maintenance  
Associate HEP\*\* Utility Engineer

**Melissa Roberts**  
FESSRO\*\*\*  
Associate Governmental Program Analyst

**Christina Sabala**  
Technology Services  
Staff Information Systems Analyst

**George Samarin**  
San Joaquin Field Division  
HEP\* Mechanic II

**Anil Satyal**  
Operations and Maintenance  
Associate HEP\*\* Utility Engineer

**Daniel Schwartz**  
Engineering  
Senior Land Surveyor

**David Shakhunov**  
SWP Power & Risk Office  
Electrical Engineer

\* Hydroelectric Plant

\*\* Hydroelectric Power

\*\*\* Floodsafe Environmental Stewardship and Statewide Resources Office

## Promotions

**Tikan Singh**

SWP Power & Risk Office  
Associate HEP\*\* Utility Engineer

**Gina Skurka Darin**

Environmental Services  
Senior Environmental Scientist (Supv.)

**David Smith**

Engineering  
Associate Right of Way Agent

**Harry Spanglet**

Environmental Services  
Program Manager II, CA Bay-Delta Authority

**Darren Suen**

Flood Management  
Supervising Engineer

**Elli Sweeten**

Technology Services  
Systems Software Specialist II

**Sudhakar Talanki**

Flood Management  
Supervising Engineer

**Bich Hien Thach**

Flood Management  
Engineer

**Edwin Thompson**

Technology Services  
Associate Information Systems Analyst

**Zachariah Trublood**

Operations and Maintenance  
Associate Control Engineer

**Jeanet Uy**

Fiscal Services  
Accounting Administrator I

**Sanita Velagic**

Executive  
Associate Governmental Program Analyst

**Robert Wayne**

Operations and Maintenance  
Associate Information Systems Analyst

**Oleg Yakimov**

Flood Management  
Water Resources Technician II

## Retirements

**Cheryl Atkinson**

Flood Management  
Associate Governmental Program Analyst

**Charles Azeltine**

Operations and Maintenance  
Associate Control Engineer

**Reynaldo Ballesteros**

Engineering  
Construction Supv II

**Ronald Barrow**

Operations and Maintenance  
Water Resources Engineering Associate

**David Grant**

Northern Region Office  
Environmental Scientist

**Lorraine Hall**

Business Services  
Staff Services Manager I

## Bill Sutcliffe

Bill Sutcliffe recently retired as a mechanical construction supervisor in the Construction Engineering Branch of DWR's Division of Engineering, about 29 summers after leaving high school already knowing with certainty how the world worked.

"As a teenager, I knew I was a lot smarter than my parents and teachers, so I wasn't much of a student," he laughed. "By the time I was 23, I learned that my parents were much smarter than I'd given them credit to be."

His parents had instilled a strong work ethic in Bill. He said he was confident he could make his way and learn just about anything, and he did - drafting, welding, sandblasting and coating, machinery repair and the operation of various machine shop equipment.

Bill became a project manager and then the Machinery Group Superintendent at a ship repair company in San Diego until layoffs.

Bill applied at DWR because the job description sounded similar to work in the machinery department he'd been running for 20 years, but the job turned out to be much more. "At the DOE, we dealt with all phases of a project - civil, electrical, concrete, piping, not just mechanical," he said.

Bill said he enjoyed his 20 years with DWR because the work was never routine. "Every time we opened a new contract, it was different," he said. "That's what kept it interesting to me. We were out in the sunshine one day and in rain and mud the next, and it wasn't a hardship. It was interesting and different, and just about everybody within DOE had a can-do attitude."

In retirement, Bill's wife JoNell has plenty of things he can do around the house.

Both enjoy golf, and Bill said they have short trips planned to the north and central coasts for golf and sightseeing. "I'm not that guy you read about going around the world in a rowboat," he said. "I'm into simpler endeavors - family, friends, short trips and golf." Now he can do them any time he wants.



\* Hydroelectric Plant  
\*\* Hydroelectric Power

## Lupe Vargas

Senior Delineator Lupe Vargas knows more than a little about the State Water Project (SWP). Over a period of 13 years, Lupe became intimately familiar with the SWP as he created computer-automated drawings that helped keep California's water flowing.

"I was part of the team responsible for creating schematics in Auto CAD – better known as drawings – for all of the SWP's pumping stations," said Lupe, who retired in September from DWR's Operations and Maintenance Drawing Management Section of the Plant Management Asset Office. "I worked on many, many machine drawings. I'd be tasked with drawing up a new part to fix the pump, and then we'd have the part built."

Lupe worked on Operations and Maintenance's relay replacement project. He focused on creating new schematics for the circuit breakers, which are located in every DWR field division, pumping station and power plant.

With his impressive drafting expertise, Lupe also crossed over into DWR's Information Technology world, where he spent six months alongside a special team that developed DWR's Business 2000-Phase 2B project, an accounting computer software program used to bill SWP water contractors.

"Working at the JOC on the Phase 2B project was one of my most rewarding and memorable projects with the Department," he said. "It was challenging, but I enjoyed it."

While Lupe's position usually required him to create Auto CAD drawings for newer projects throughout DWR, he sometimes converted older SWP drawings done by hand long ago by scanning and redrawing them in Auto CAD.

Prior to DWR, Lupe spent 12 years with Systems Integrators Incorporated, producing drawings and schematics for computer systems used by The Los Angeles Times, Sacramento Bee and San Jose Mercury News newspapers.

Born and raised in the small town of New Braunfels, Texas near San Antonio, Lupe joined the United States Air Force after high school and spent 20 years drafting for civil engineering squadrons.

Reflecting on his DWR career, Lupe said, "Of all the wonderful things at DWR, I enjoyed the friendly people I worked with and the low stress of my job the most."

He plans to spend a lot of retirement time watching his seven grandkids play sports, but he'll also be running, playing cards with friends and volunteering with the Knights of Columbus organization.

With all his drafting experience, it looks like Lupe has sketched out a pretty nice future. ♦



## Retirements

### Carolyn Harris

Southern Field Division  
Senior HEP\* Operator

### Patricia Huckabay

Northern Region Office  
Engineer

### Dennis Johnson

Environmental Services  
Associate Governmental Program Analyst

### Stephanie King

California Energy Resources Scheduling  
Associate Governmental Program Analyst

### Carrol Leong

Engineering  
Senior Land Surveyor

### Guyla McCurry

Statewide Integrated Water Mgmt.  
Office Assistant (Typing)

### Kevin Mefford

Oroville Field Division  
HEP\* Electrician I

### Kathye Miller

Executive  
Associate Governmental Program Analyst

### Gordon Moody

Oroville Field Division  
Utility Craftworker

### Gary Moore

Southern Field Division  
Guide I

### Richard Mora

Flood Management  
Control System Technician I

### Michael Neff

San Joaquin Field Division  
HEP\* Electrical Supervisor

### Alan Olson

Bay-Delta Office  
Engineer

### Marilea Patrick

North Central Region Office  
Administrative Officer II

### Ronald Pereira

San Luis Field Division  
HEP\* Mechanical Supv.

### Kathleen Perry

Fiscal Services  
Accounting Administrator III

### Michael Rayfuse

Environmental Services  
Control System Technician II

### Rodney Rodriguez

Operations and Maintenance  
Staff Information Systems Analyst

### Pamela Ryan

Executive  
Senior Librarian

### David Williams

Central Valley Flood Protection Board  
Senior Engineer

\* Hydroelectric Plant

# In Memoriam

**Jerry Torres**, a retired Computer Operations Supervisor, passed away at age 79 on August 17, 2014.



Born in Marysville on December 25, 1934 and raised in Wheatland, Jerry attended Yuba College. He later joined the U.S. Army, working in Personnel Services while stationed at Fort Ord.

After being discharged from the Army and taking classes at Sacramento State, Jerry joined DWR in 1962. He worked as a Computer Operations Supervisor for the

Information Systems and Services Office (now known as Division of Technology Services) until his retirement in 1999. He also worked as a retired annuitant.

“I remember Jerry when I first started in the mid 70’s,” said Chris Navarrete, DWR Chief Information Security Officer. “Jerry was a dedicated and conscientious worker. He maintained personal friendships with the people he had either supervised or worked with, and would meet them for lunches. Jerry will be missed.”

Many of his co-workers remember Jerry as a “strict but fair” supervisor who cared for his staff and was respected. Jerry’s job included ensuring that equipment worked correctly, checking equipment maintenance and making sure maintenance contracts were in place and up-to-date while also managing Technology Services employees.

“Jerry encouraged us to go for promotions and to strive for bigger and better things,” said Barbara Graham, DWR Assistant Information Systems Analyst.

Jerry is survived by his wife of more than 50 years, Evelyn, a son, step-sons, and a brother and sister.

**Armando “Herm” Raimundo**, former snow surveyor and retired Engineering Associate, passed away at the age of 87 on September 21, 2013.

As part of the snow survey team for DWR’s Division of Flood Management, Armando helped with the maintenance of the 50 snow courses measured by the department during that time. This included installing snow sensors and telemetering equipment throughout the state at different mountain ranges and snowy summits for data to be transmitted back to Sacramento.

During the 1960s, the Snow Survey Office was in search of a high-elevation snow sensor and test site in the American River Basin. Armando not only helped to locate a test site 7,600 feet in elevation, but also took it upon himself to build an A-frame cabin with little assistance. This cabin would also shelter recording equipment used to transmit data back to Sacramento.



While working with DWR, Armando attended events, such as a Soil Conservation Service and a Snow Surveyors Training Conference in Park City, Utah.

“I remember that training conference in Park City, which Bill Fong and I also attended,” said Ray Barsch, DWR retiree. “Herm didn’t know how to ski, but he tried under some extremely poor conditions. It had rained up to 13,000 feet and then turned very cold and the snow was like concrete. Herm had

bruises, but he kept on skiing every day with his usual determination to get the job done and became a proficient skier. He was my good friend for about 50 years and I know he was also a good friend to a lot of his fellow workers in DWR.”

He received a Meritorious Service Award in 1989 for his dedication to DWR’s hydrologic data program.

After working with the Snow Survey Office for many years, Armando transferred to the California Data Exchange Center until his retirement in March of 1992.

Armando was an active member of the DWR Alumni Club.

## Memoriams:

<b>Sam Brandon</b>	Flood Management	September 1, 2014
<b>Sherry Huffstutler</b>	Fiscal Services	July 10, 2014
<b>Robert McDonnell</b>	Central District (North Central Region Office)	July 30, 2014
<b>Muhammad Rashid</b>	Engineering	July 6, 2014
<b>Virgil Whiteley</b>	Fiscal Services	June 10, 2014

# Using Water Wisely



**Gail Chong doesn't mind taking her work home with her because it's all about conserving water.**

Gail is the Finance and Administrative Chief of DWR's Drought Management Team at the office and super water-saver at home.

"Tracking costs and budgets for activities to respond to the state's drought and being part of DWR for more than 25 years, I have become more aware of how water as a commodity can be taken for granted and the severity of

the drought taking place in California," said Gail. "During my entire career, I've never seen drought this bad."

From washing only full loads of dishes and laundry to unplugging unused household utilities, Gail deems conservation an essential part of her life. She even waters her neighbor's lawn with buckets full of water from her showers. Her own landscaping? It's drought-resistant. Back in 2009, Gail switched from thirsty lawn grass to artificial turf, river rock and drought-

tolerant plants. She even uses mulch made from recycled tires.

Though the changes were initially expensive, budget expert Gail believes the benefits outweigh the costs, as the landscaping requires less work, never fades and has cut her water bill in half.

"I want to do my part by making the people around me aware of the drought crisis" said Gail, who most of her time works for DWR as the Deputy Assistant of Bond Accountability in DWR's Executive Division. 💧

# DWR Mission Statement

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To manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments.

Senior Environmental Planner Jackie Wait helps protect archaeological sites, like at Dutch Slough, on state property as well as restore and enhance both natural and human environments. Jackie and her team often consult and work with Native American communities to identify and protect places of cultural significance. Assuring that DWR complies with the National Historic Preservation Act is a key responsibility of the Division of Environmental Services.

