DWR

WINTER 2014/2015

a magazine from the California Department of Water Resources

Taking Off

Waterfowl Surge in Suisun Marsh

Page 6

Shaping Sustainable Water Management

2014 was a year like no other in my long career with the Department. We witnessed important events that will shape sustainable water management in California for decades to come. This is truly an exciting time for all of us.

The year started with the Governor's release of the Water Action Plan. For the first time, all of the water agencies and organizations in the state are focusing on the same plan and the same 10 priority actions to address today's water management challenges. The value of this plan cannot be overstated. It provides a "roadmap towards water sustainability." It requires many state agencies—with DWR playing the most prominent role—to evolve from business-as-usual to truly integrated resource management. The plan commits us to grow beyond conventional budget-driven decision making towards outcome-driven decision making. Proving its worth, the plan informed the $7.5 billion Water Bond passed by voters last November.

2014 was the third year of our continuing drought and DWR was on the front lines responding to drought legislation and the Governor's Executive Orders. We quickly mobilized an internal drought team through matrix organization, actively engaging hundreds of staff from across the Department. We worked with other state agencies to establish the Governor's Drought Task Force and deliver aid to communities in critical need of water. We expedited the award of $221 million to regions across the state with the greatest drought need. These accomplishments demonstrate our ability to pull together and work in new ways to meet the challenges of the 21st century.

Another significant event for 2014 was the passage of the Sustainable Groundwater Management Act. This landmark law establishes a new structure for managing the state's groundwater more transparently and sustainably. DWR will play a major role by empowering local and regional agencies with technical and financial assistance to foster their success.

In late January, DWR assisted the Natural Resources Agency to produce an implementation report for the California Water Action Plan. The report acknowledges the accomplishments state agencies made in 2014 and highlights the work that lies ahead for the next four years, to move towards more sustainable management of our state's water resources. I encourage you all to read it.

Looking forward to 2015 and beyond, the challenges are great, but the opportunities are even greater. To be effective, we need to reach across organizational lines - internally and externally - to focus on common outcomes and measure our progress in achieving those outcomes. As California's primary water planning entity, and building on our 2014 story, DWR can help model and lead the way.

— Gary Bardini, Deputy Director
California Department of Water Resources

What's INSIDE

On the Cover: *Pintail ducks (Anas acuta) photographed by Norman West – www.normanwest4tography.zenfolio.com.*

Photo above: *White-fronted geese and pintail ducks resting in Susuin Marsh.*

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California Department of Water Resources

Study Room

New Skinner Fish Science Facility Offers More Space for Fish Studies

DWR's four-decade-long legacy of fishery studies will continue, but in a new home next to the John E. Skinner Delta Fish Protective Facility in Byron.

"The studies conducted in the Fish Science Building by the Bay-Delta Office (BDO) will reflect regulatory compliance mandates from the Biological Opinions for continued export operations of the State Water Project," said DWR Engineer Roger Padilla of BDO's Delta Conveyance Branch. Current studies include the Clifton Court Forebay Predator Study, Skinner Facility Efficiency and Improvements Study, Barker Slough Pumping Plant Entrainment Monitoring and the State Water Project (SWP) Fish Release Site Monitoring Studies that will be used in analyzing the effects of SWP export operations on Delta fishes.

The new facility opened for operation in December of 2014 and has more than 20,000 square feet (sf) available for fish holding tanks and storage equipment, including boats and lifejackets for crews deploying into Delta waters. This building replaces a much smaller building of 5,000 sf that was being shared with University of California, Davis for housing a refugia for Delta Smelt.

A portion of the new building contains a small laboratory for implanting fish with acoustic tags used to track their movements in the field. This building and grounds has space for fish rearing tanks both inside and outside. The site also includes restrooms, a break area and a storage room for study gear and equipment.

"This new facility provides essential space to conduct multiple studies simultaneously that we could not accomplish in the smaller building," said BDO Program Manager II Matt Reeve. "In addition, the overall facility will improve staff morale and provide a safe working environment."

DWR magazine

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Features

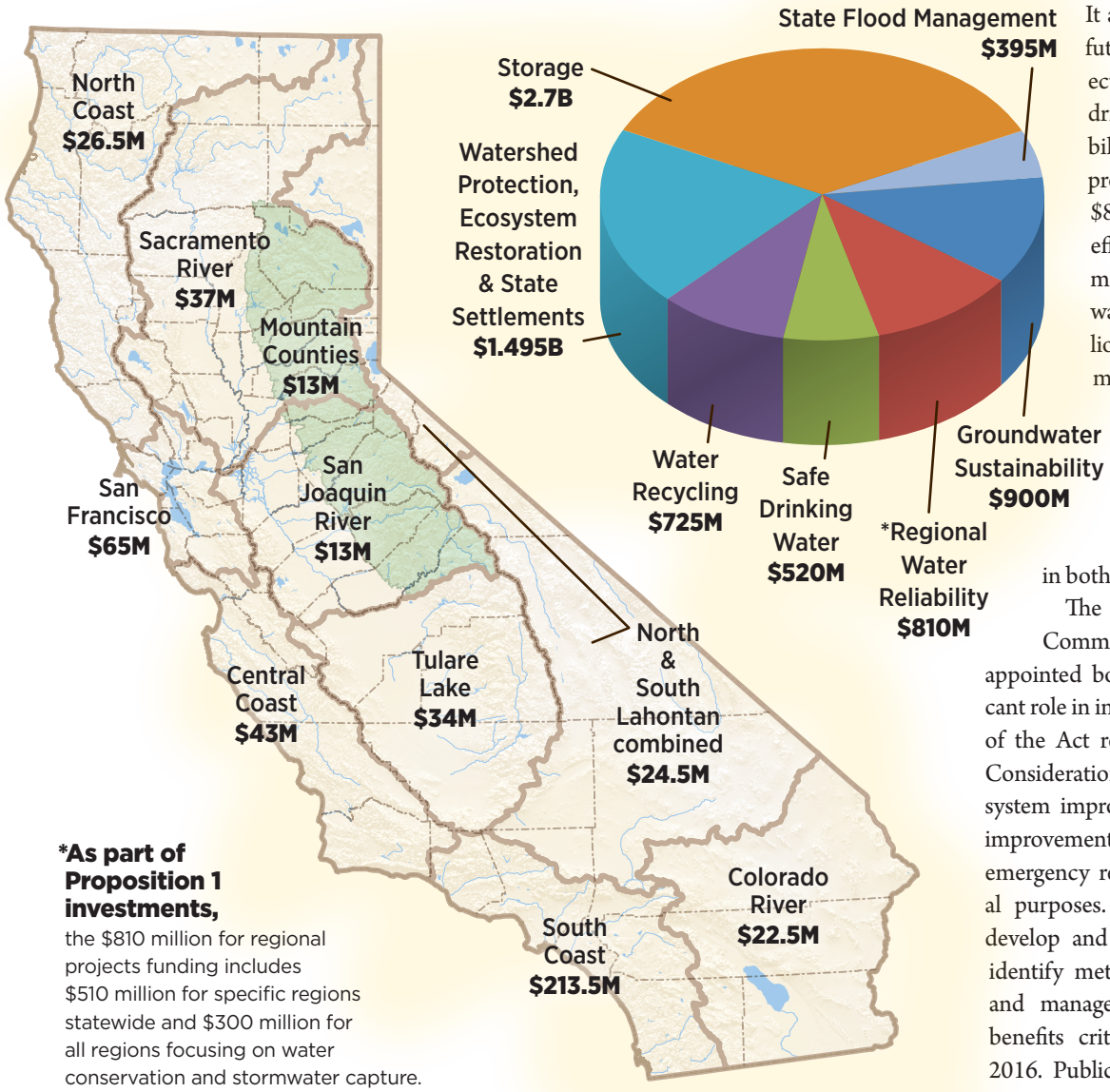
Water Bond Approved

California voters overwhelmingly approved the Water Quality, Supply and Infrastructure Improvement Act of 2014 in November, a $7.545 billion water bond that provides funding to improve California's water supply.

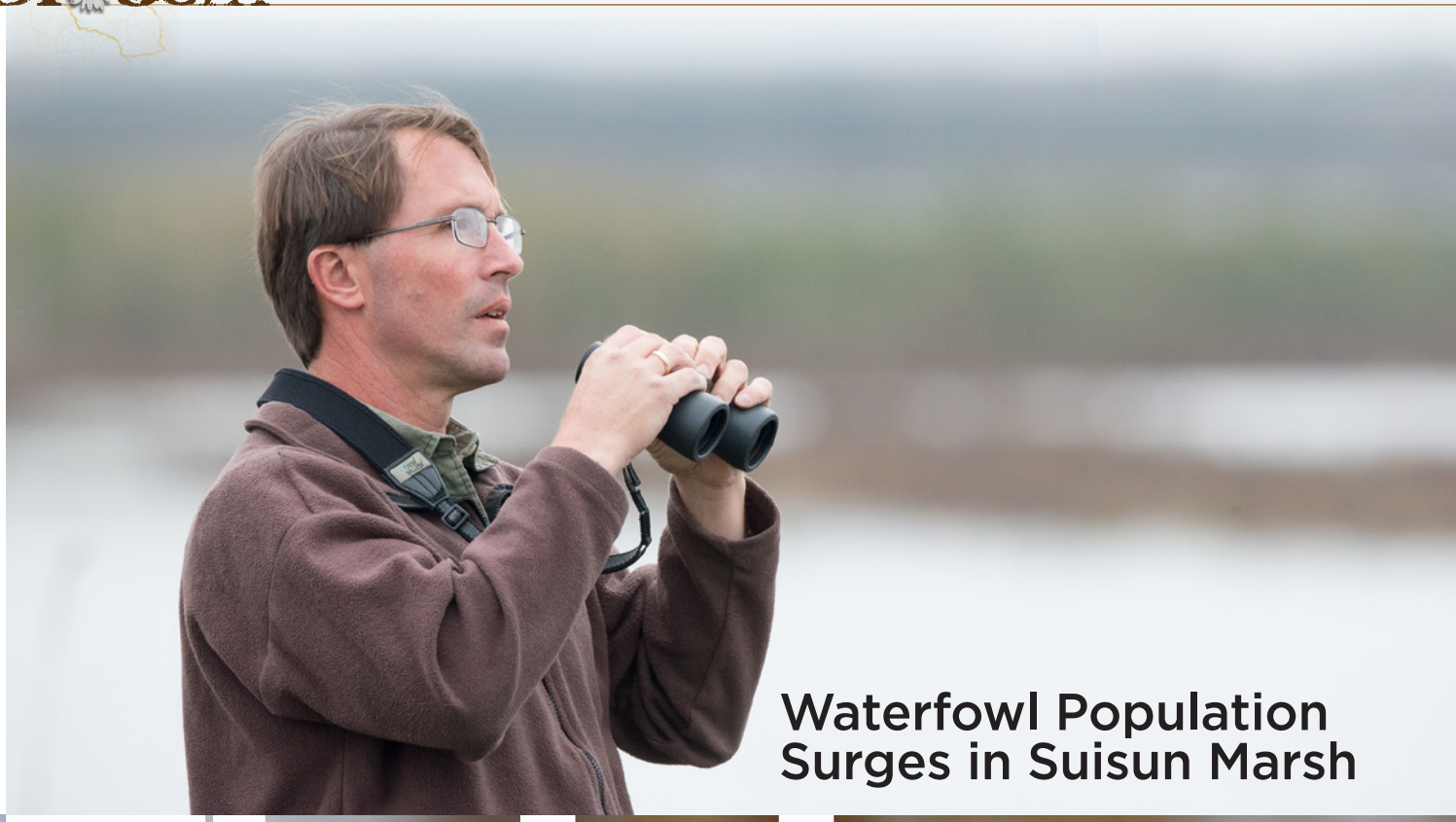
Governor Edmund G. Brown Jr. was a strong proponent of the bond, called Proposition 1 on the November ballot. "I've been around long enough to know the pendulum always swings in California, between wet years and drought, between booms and busts …," he said. "Propositions 1 and 2 will even out the boom and the bust."

Originally passed as Assembly Bill 1471 and carried by Assembly Member Anthony Rendon, the Act includes funding for ecosystems and watershed protection and restoration, water supply projects, including surface and groundwater storage, and drinking water protection. It allocates $2.7 billion for future water storage projects, $520 million for safe drinking water, $1.495 billion for environmental protection and restoration, $810 million for more effective water management, $725 million for water recycling, $900 million for cleaning up and maintaining groundwater and $395 million for flood management. The bond will fund projects to improve water management in both dry and wet years.

The California Water Commission's nine-member appointed board will have a significant role in implementing the portion of the Act related to water storage. Consideration will be given to ecosystem improvements, water quality improvements, flood control benefits, emergency response and recreational purposes. The Commission will develop and adopt regulations that identify methods for quantification and management of those public benefits criteria by December 15, 2016. Public meetings will be held and the regulations will be developed through a public process.



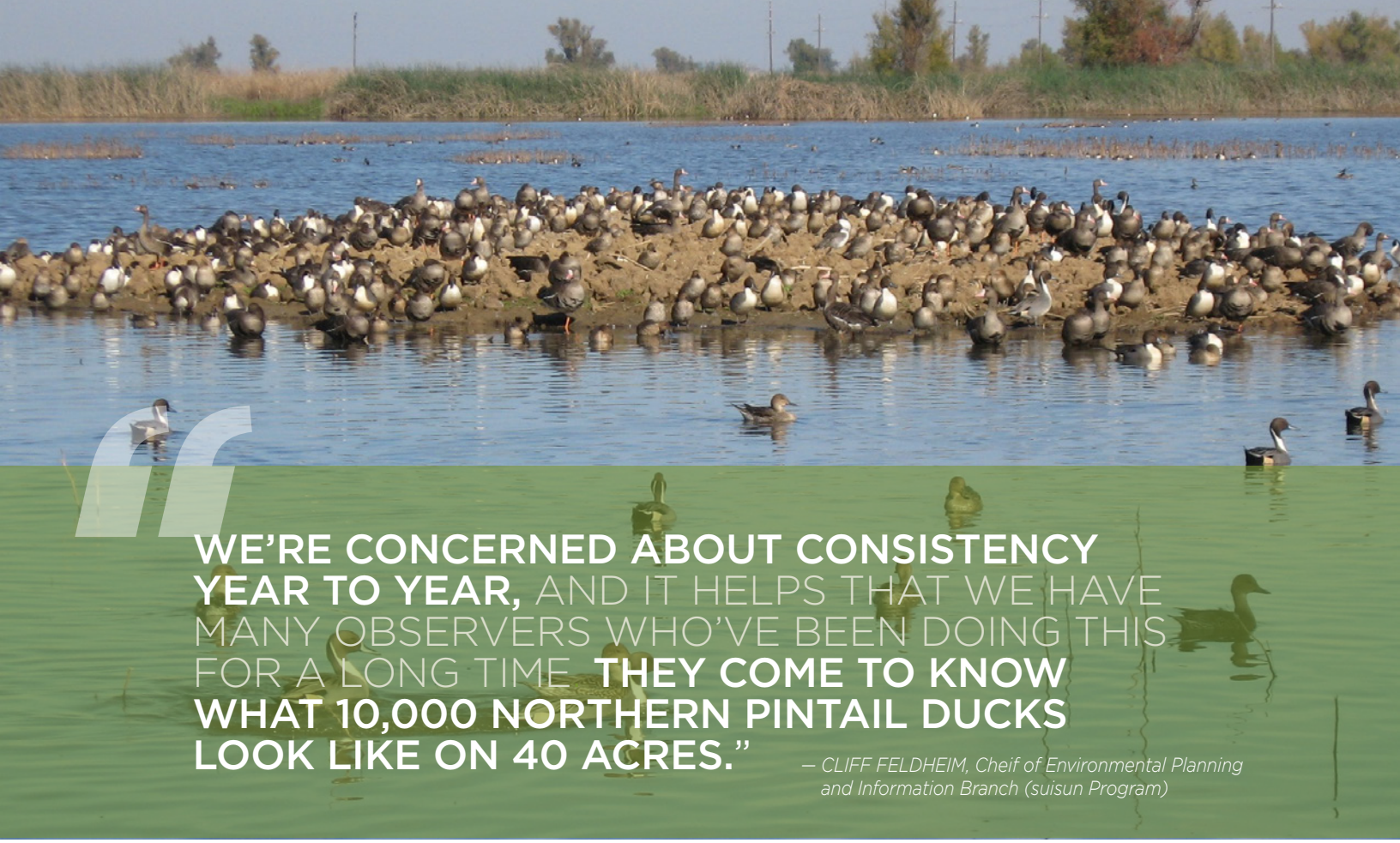
***As part of Proposition 1 investments,** the $810 million for regional projects funding includes $510 million for specific regions statewide and $300 million for all regions focusing on water conservation and stormwater capture.



Waterfowl Population Surges in Suisun Marsh

Thriving in the Drought

By Doug Carlson ∞ Photography by Florence Low and Cliff Feldheim, DWR, and Pete Blanchard



WE'RE CONCERNED ABOUT CONSISTENCY YEAR TO YEAR, AND IT HELPS THAT WE HAVE MANY OBSERVERS WHO'VE BEEN DOING THIS FOR A LONG TIME. **THEY COME TO KNOW WHAT 10,000 NORTHERN PINTAIL DUCKS LOOK LIKE ON 40 ACRES."**

— CLIFF FELDHEIM, Cheif of Environmental Planning and Information Branch (suisun Program)

(Page 6 above): Cliff Feldheim of the Division of Environmental Services conducts a waterfowl survey in the Suisun Marsh. **(Page 7)** Northern Pintail and other waterfowl species are most abundant in the Suisun Marsh between December and February.

Identifying the positives about California's drought can be tricky. Now well in its fourth consecutive year, the drought is a great concern to just about everybody, but optimists can still identify at least one positive thing.

For one thing, more people are conserving water in their homes and workplaces. "Brown is the new green," according to "Save Our Water," and lawns turned that color all over the state last summer.

The argument could be made that California's first-ever legislation to regulate groundwater usage passed last year was the result of new thinking about drought and water. Sustainable groundwater management is still a couple decades away, but at least the process is under way.

And here's another positive outcome:

More waterfowl are expected to be wintering in Suisun Marsh than have been seen there in recent years, and the reason underscores once again the philosopher's maxim that everything is connected to everything else.

Cliff Feldheim, Chief of the Environmental Planning and Information Branch (Suisun Marsh Program) in DWR's Division of Environmental Services, credits the drought for the Marsh's expected waterfowl population surge. Reduced water allocations to farmers during the drought have caused many Sacramento Valley rice growers to forego winter flooding their land to rid rice fields of post-harvest stubble.

With fewer water-filled acres in the valley, Feldheim said many waterfowl are expected to head to Suisun, the brackish marsh east of Benecia and Martinez that's part of the San Francisco Bay-Delta estuary ecosystem and is a critical stop for waterfowl migrating in the Pacific Flyway. It's one of the places where they rest, eat and spend the winter months

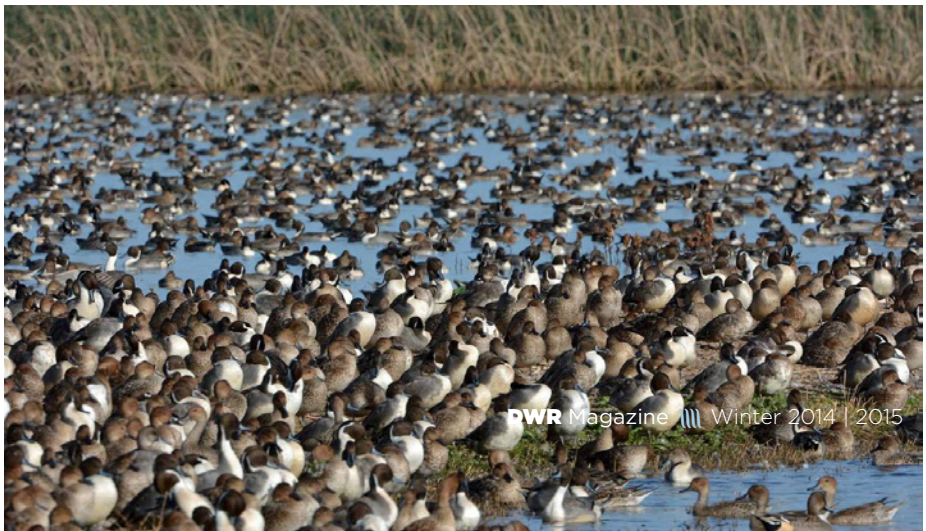


PHOTO (PAGE 6 BELOW): PETE BLANCHARD

Cliff Feldheim checking for radio-marked Tule White-fronted geese at Grizzly Island Wildlife Area within the Suisun Marsh. **Below:** Hand-carved American Widgeon decoys float in the water on a December morning at a Suisun Marsh duck club.

until spring, when they return to Canada and other northern destinations to breed.

Feldheim bases his assessment on direct observation of the Marsh's ecosystem, which comprises more than 10 percent of California's remaining natural wetlands. Confirmation is expected to come from flight and ground surveys conducted every three weeks and the Mid-Winter Waterfowl survey which has been conducted since the 1950s.

"The surveys aren't necessarily meant to be highly accurate as much as they allow us to track trends over time," he said. "We're concerned about consistency year to year, and it helps that we have many observers who've been doing this for a long time. They come to know what 10,000 northern pintail ducks look like on 40 acres."

One trend that's troubling is the lower pintail population in the Marsh within the expected overall increase in waterfowl numbers. Feldheim said there's been habitat loss in Prairie Canada, where most pintails nest in sparse cover on the open prairie. Agriculture's expansion there has reduced the breeding acreage, and increased predation. Pintail nest success has decreased dramatically because predators like red foxes, raccoons and skunks are now prevalent in areas where they were once scarce.

Pintails and other migratory birds that winter in Suisun Marsh experience an ideal habitat that is flourishing thanks in great measure to duck hunters.

Ducks Unlimited and the California Waterfowl Association are acknowledged wetlands and waterfowl conservation advocates. No habitat would mean no ducks and no duck hunting, a point appreciated a century ago by area enthusiasts who created scores of duck clubs in the Marsh.

"Generally speaking, the environmental community is a big proponent of waterfowl hunting and managed wetlands," Feldheim said. "People who own duck clubs tend to be good land stewards and can be good partners with environmental organizations. Duck clubs spend a lot of time and money to maintain levees and the wetland habitat, and in so doing, most hunters develop a great passion for the environment and conservation."

As the saying goes, everything is connected to everything else.

Easing the Drought

DWR Awards Drought Relief Grants

To help communities cope with the drought, DWR in November awarded $221 million in grants to help pay for 136 projects to provide immediate relief and prepare for future dry periods.

"The grants we announced to alleviate drought conditions throughout the state are outstanding examples of Governor Brown's commitment to addressing the water challenges facing California by having communities and regions work together on solutions," said DWR Deputy Director Gary Bardini. "Integrated water management as outlined in the Governor's California Water Action Plan and the California Water Plan Update 2013 is the collaborative, proven formula that will guide us in using, managing and developing our water resources to the advantage of the environment and all of our people."

On March 1, 2014, Governor Edmund G. Brown Jr. signed a $687.4 million package of drought-response legislation to assist drought-affected communities and expedite funding to improve local water supplies. The Governor and Legislature directed DWR to expedite the solicitation and award of Integrated Regional Water Management (IRWM) grant funding to support projects and programs that:

- provide immediate regional drought relief
- increase local water supply reliability and the delivery of safe drinking water
- prepare communities for extended drought impacts
- assist water suppliers and regions to implement water conservation programs and measures that are not locally cost-effective, yet reduce water quality conflicts or ecosystem conflicts created by the drought.

"The vast majority of the proposed projects either create a new water supply or conserve an existing water supply," said Zaffar Eusuff, IRWM Drought Relief Grants Program Manager. "These projects will help alleviate drought impacts throughout California. Projects include water conservation programs, recycled water programs, conjunctive water management programs, water treatment plant expansion projects, intertie projects and groundwater well projects."

(Left) Tracie Billington of DWR's Division of Integrated Regional Water Management speaks about the IRWM drought relief grants at September 30, 2014 public comment meeting in Sacramento.
(Right) DWR Deputy Director Gary Bardini (right) with General Manager of Yolo County Flood Control and Water Conservation District Tim O'Halloran announce $4 million for two YCFCWCD drought relief projects.

Photography by John Chacon and Kelly Grow

More than 25 DWR employees participated in the grant application review process that included verifying applications were complete and checking for eligibility of the applicants. Technical reviewers including engineers, geologists and scientists thoroughly scrutinized each application to confirm that the proposed projects are technically feasible, will yield real benefits, are reasonably priced and have a realistic schedule.

Grant funding comes from the Proposition 84 program, a $5.4 billion general obligation bond measure approved by voters in 2006. The funding authorizes $1 billion in funding for the IRWM Grant Program.

For more information on the IRWM grants, visit http://water.ca.gov/irwm/grants/implementation.cfm

The Challenge

Improving Drought Prediction

By Jeanine Jones, Deputy Drought Manager

Water years 2012 through 2014 ranked as the driest three-year period in the historical record based on calculated statewide precipitation, thanks in part to a blocking high pressure ridge that prevented storms from reaching California during much of our last winter. But will water year 2015 end up being wet, dry or average? The January 2014 drought emergency proclamation tasked DWR with "refining its seasonal forecasting and drought prediction" to improve the ability to answer such questions in the future.

Drought prediction for California is all about predicting the presence or absence of winter precipitation; on average half of California's precipitation occurs from December through February. Unfortunately, the scientific capability to make precipitation predictions beyond the short timeframe of a weather forecast is limited, and the skill of predictions at 30 days, 60 days or 120 days out is low.

The primary source for sub-seasonal or seasonal forecasts is presently the National Oceanic and Atmospheric Administration's Climate Prediction Center (CPC), which provides nationwide outlooks at various timescales (see figure). The areas of expected higher than average temperature shaded on this figure would represent continuation of the trend observed in many of the western states over the past year.

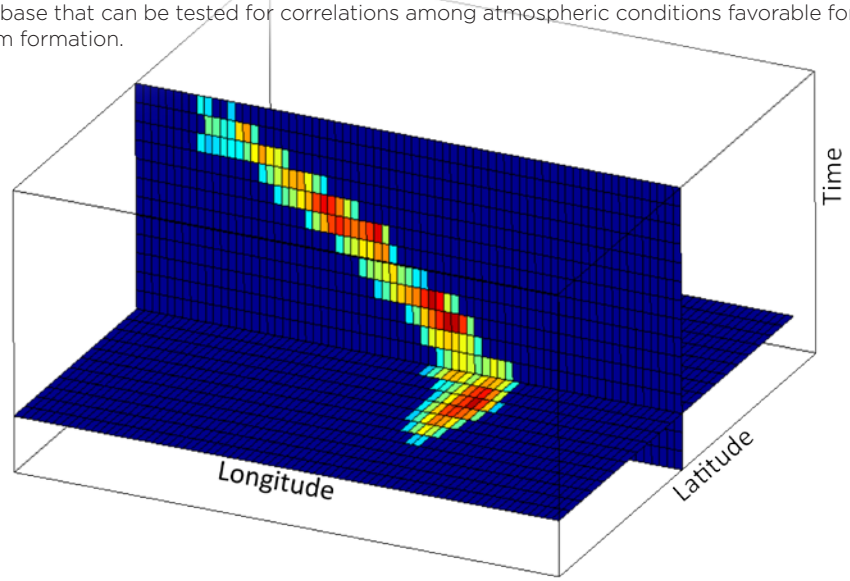
Recent trends and the status of El Niño-Southern Oscillation (ENSO) conditions are factors that CPC considers in preparing its outlooks, but ENSO conditions alone are not sufficient to determine California's water year; the weather we experience reflects complex ocean-atmosphere interactions that operate at varied spatial and temporal scales. For example, California's strongest correlation between a dry year and ENSO conditions occurs in Southern California, where La Niña favors dry winters.

However, 1977 – California's driest year in terms of statewide runoff – was an El Niño year, and the immediately past water year 2014 (fourth driest in statewide runoff) was an ENSO neutral year.

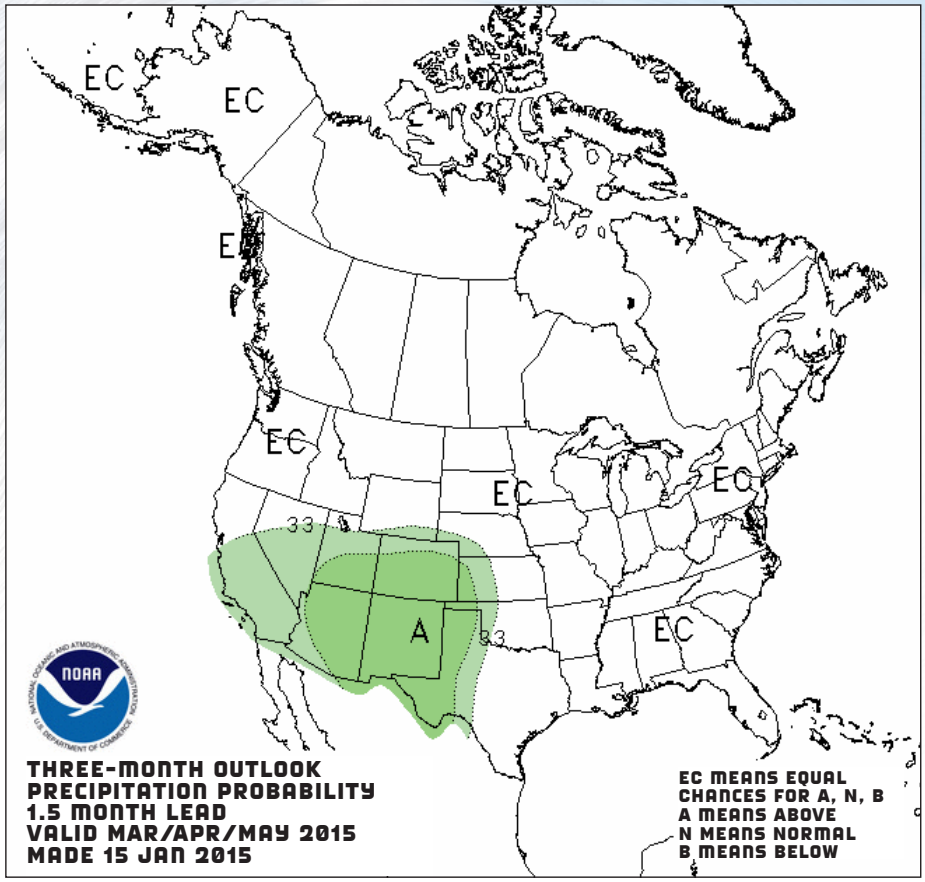
Taking a different approach, DWR is working with researchers at the Scripps Institution of Oceanography and at the University of California, Irvine to improve precipitation prediction by taking advantage of the fact that only a few larger winter storms constitute much of the state's water budget.

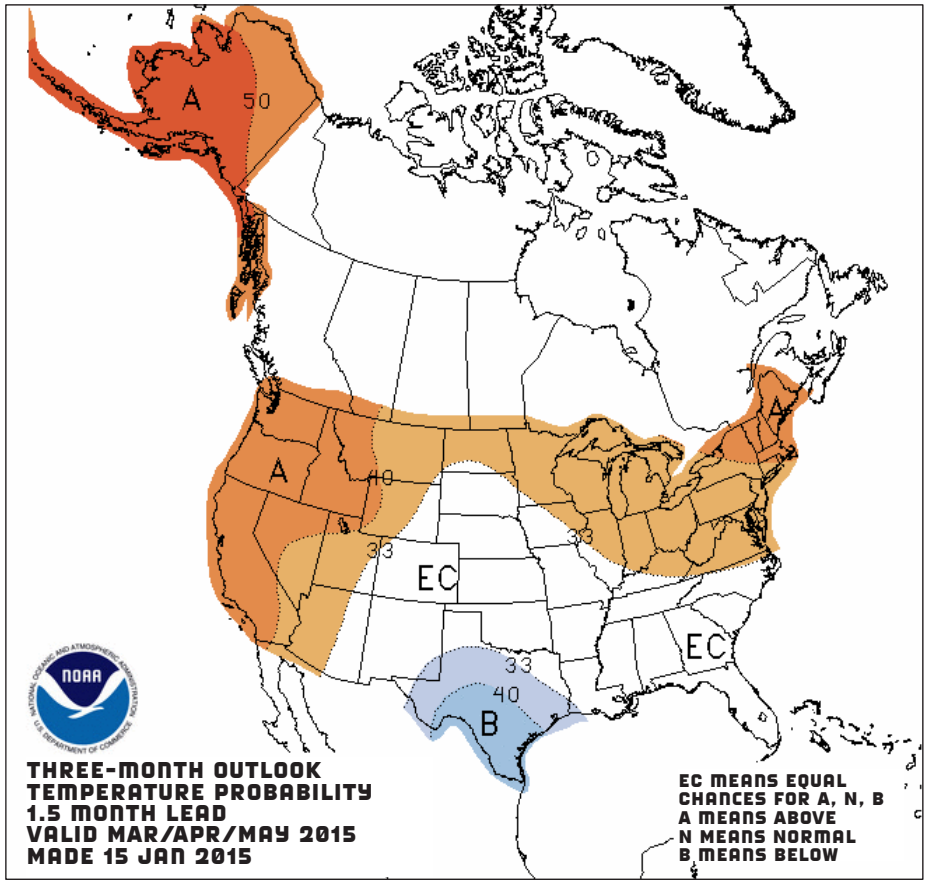
Identifying the atmospheric conditions favorable for formation of these large winter storms and for the storms to successfully travel across the Pacific Ocean to reach California is a key step toward improving prediction. In particular DWR's research

A **voxel (represented below)** is a unit on a grid in three-dimensional space. Voxel combines of "volume" and "pixel" while pixel combines a "picture" and "element." The ability to identify and track landfalling atmospheric river storms enables development of a database that can be tested for correlations among atmospheric conditions favorable for storm formation.



partners are focusing on the category of large storms known as atmospheric river storms, and on data mining techniques to develop a multidecadal catalog of the storms and the conditions under which they occurred. This work relies in part on the use of big data, a term broadly used to mean a collection of data sets so large and complex that they cannot be processed with conventional data processing applications. Using object-oriented data analysis (the statistical analysis of populations of complex objects), a three-dimensional object (for example, one measured by latitude, longitude, and precipitation intensity) or voxel can be visualized and its location can be tracked as a function of time. This ability allows for use of pattern recognition software to define the formation of an atmospheric storm and to track its progress across the Pacific to California, similar to the concept of tracking hurricanes in the Atlantic. Ultimately, researchers hope to be able issue seasonal forecasts for atmospheric rivers, much as is done for hurricanes or tropical cyclones. Such forecasts would be useful for flood preparedness activities as well as for gauging the likelihood that a water year would be dry.





National Oceanic and Atmospheric Administration's Climate Prediction Center outlooks for temperature and precipitation issued in mid-January. The white areas on the maps identified as "equal chances" represent areas lacking a strong signal for forecasting.

One of a Kind

Calaveras Dam Becomes Largest Dam Construction

By Doug Carlson

Photography by Florence Low

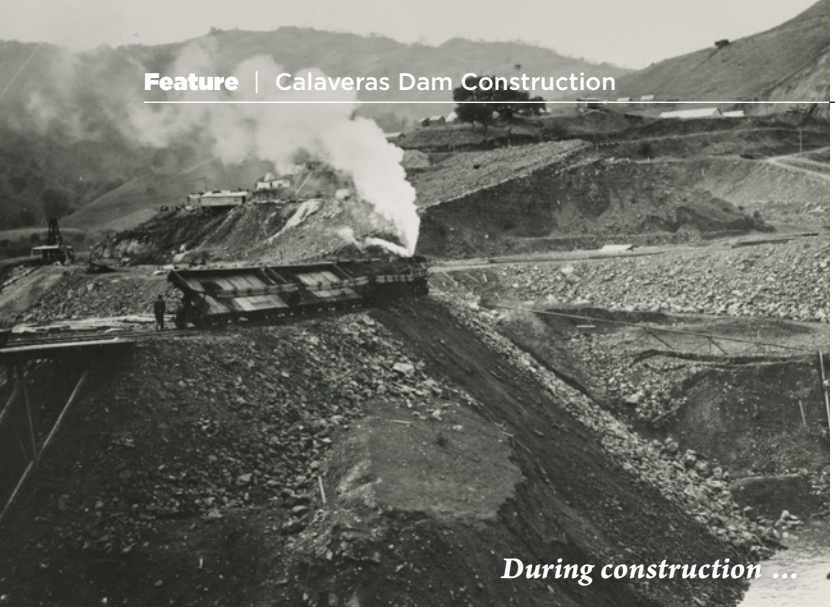
Dam failures are a part of California's water history and have had tragic consequences.

The failure of St. Francis Dam near Los Angeles in March 1928 sent a 140-foot high flood wave downstream that killed at least 430 people and perhaps more than 600.

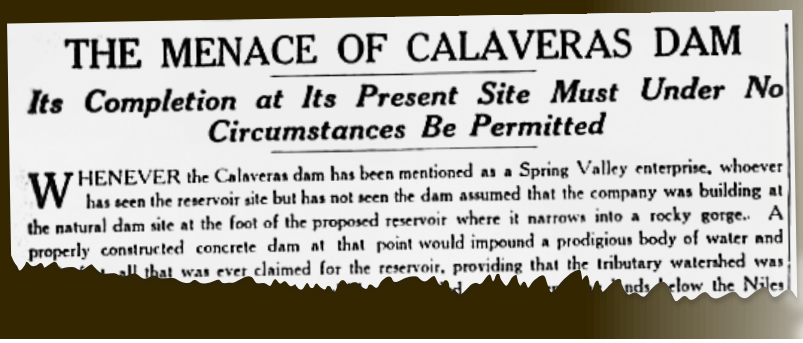
As a direct result of that failure, the State of California created the Division of Safety of Dams (DSOD) in the office of the State Engineer in 1929. That was nearly three decades before DWR itself was organized under its first director, Harvey O. Banks, and DSOD was brought into the department.

Other failures were more embarrassing than tragic. The Calaveras Dam collapse on March 24, 1918 killed no one but became a case study of what can happen when no central agency rigorously oversees dam construction and safety.

Overview of new foundation for Calaveras Dam. Spillway under construction at top left corner. More than seven million cubic yards of rock and earth are being moved for this project.



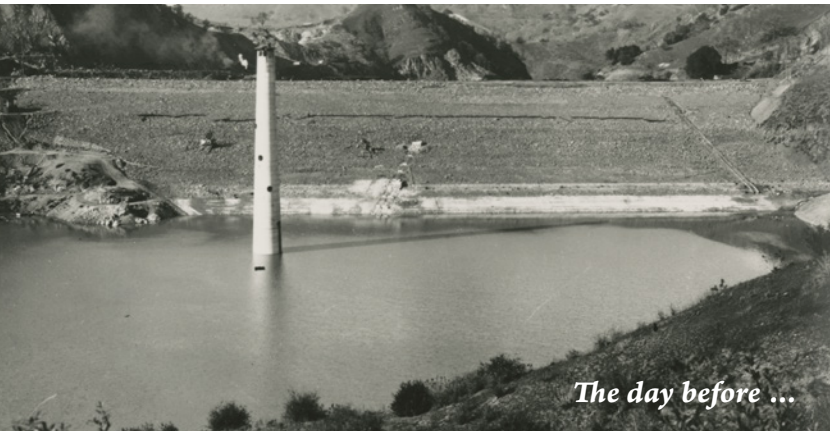
During construction ...



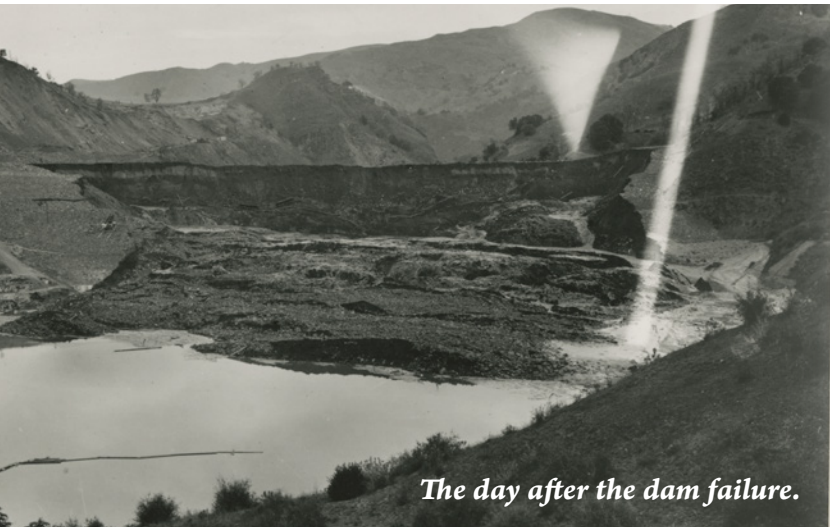
THE MENACE OF CALAVERAS DAM

Its Completion at Its Present Site Must Under No Circumstances Be Permitted

WHENEVER the Calaveras dam has been mentioned as a Spring Valley enterprise, whoever has seen the reservoir site but has not seen the dam assumed that the company was building at the natural dam site at the foot of the proposed reservoir where it narrows into a rocky gorge. A properly constructed concrete dam at that point would impound a prodigious body of water and [illegible] all that was ever claimed for the reservoir, providing that the tributary watershed was [illegible] below the Niles



The day before ...



The day after the dam failure.

Speculation and finger-pointing were rampant after the collapse of the dam near Fremont. The Santa Ana Register reported the next day: "The dam broke yesterday morning when, according to engineers, weight of the clay used for reinforcing its center became too great for the structure to resist."

Other California newspapers concluded the dam was too dangerous to be rebuilt, as the San Francisco Chronicle's April 18 edition editorialized (at left).

Despite the misgivings, Calaveras Dam was rebuilt by 1925 using rolled fill instead of the hydraulic fill method that had failed. For a time after its completion, Calaveras was the largest earth-fill dam in the world—210 feet high, 80 feet wide at its crest and 1200 feet long.

The dam has performed satisfactorily over the past 90 years, but after the near collapse of a similarly constructed dam in San Fernando Valley during the 1971 Sylmar earthquake, DSOD started evaluating dams for their vulnerability to seismic events.

Located near the Calaveras earthquake fault, Calaveras Dam was found to be potentially vulnerable to an earthquake and, in a worst case, could slump 40 feet in a seismic event. DSOD recommended reconstruction, and the City of San Francisco, which owns the dam, decided to reduce stress on the structure by lowering the reservoir's water level 50 feet while a new and stronger dam could be built.

Today, New Calaveras Dam is undergoing a massive transformation, and DWR's DSOD is prominently involved to ensure it's done correctly. This process began with a complex, interactive review and approval process for the design of the new dam under the direction of the DSOD Design Engineering Branch and Supervising Engineer Wallace Lam. Complicated engineering issues were studied and resolved before the final plans and specifications were approved for construction.

The project has been transferred to the DSOD Field Engineering Branch under the leadership of Supervising Engineer Y-Nhi Enzler. More than seven million cubic yards of rock and earth are being moved to create a new dam about 500 yards downstream of the existing barrier. DSOD Senior Engineers Bill Pennington and Russ Bowlus, and Senior Geologists Jim Lessman and Chris Tracy, and others within DSOD, have made dozens of inspection trips to the dam since reconstruction planning began in 2006.

Senior Engineers Bill Pennington (right) and Russ Bowlus review reinforcing steel near one of the slabs for the spillway.

"The first thing you have to do to build a dam like this is dig a hole," Lessman said. "A dam needs to be on solid ground. You just can't start dumping material. You start with the excavation to learn what you're dealing with."

During the ongoing excavation, foundation conditions were encountered that impacted the original design, the cost, and the schedule. In order to limit the project impacts, fast and decisive action was required by the DSOD design and field engineers, the owner, the owner's engineer, and the contractor. DSOD engineers and geologists have worked diligently to review major project revisions with an eye on dam safety during the next big earthquake.

The New Calaveras Dam excavation is truly prodigious. Originally planned with a 45-degree slope from the left ridge line (looking downstream) down to the level of the new dam crest, the plan changed when digging began and conditions were found deep in the rock foundation that hadn't been expected.

Lessman explained that ancient landslides tens of thousands of years ago couldn't be detected from the surface. "The problems often aren't fully recognized until you get down to the bottom, and we're not there yet," he said.

The angle from the edge of the narrow valley was flattened to a 30-degree slope, which meant removing an additional 1.3 million cubic yards of material. The reconstruction's cost has nearly doubled to more than $500 million, and the completion target slipped to 2018.

Spend some time with DSOD geologists and engineers and you quickly appreciate the gravity of their work. During frequent visits to the dam, Bill Pennington and Russ Bowlus cast a critical eye on engineering issues, from the biggest such as the adequacy of the excavated surfaces and mass concrete temperature control issues down to the smallest detail, such as whether reinforcing steel bars that will be buried in concrete have been spaced properly.

"Changes to the excavation plan caused a huge increase in cost and time," Pennington said, "and it's such a constricted space, the owner had to find other places to put all the material taken out of the ridge."

And it's not just the long-term safety of the dam that concerns DSOD. Hazards during the construction phase itself must be analyzed and mitigated.

"There can be safety issues like rock-fall hazards," Lessman said. "Our main concern is the safety and stability of what's being built, now and for the distant future."

The largest dam construction project of its kind in the State, Calaveras Dam will be under DSOD scrutiny long beyond its completion.

A Safer Trek Home

Curtis Landing Fish release site upgraded

By Christina Jimenez

Photography by Kelly Grow

Utility Craftsworker Mario Gomez of DWR's Delta Field Division connects fish release truck to new Curtis Landing Site.

Major improvements at one of the DWR's release sites for rescued Delta fish will help ensure that fewer get eaten by predators.

DWR salvages fish near State Water Project pumps in the Sacramento-San Joaquin Delta and trucks them to safer channels, but upon release, many succumb

Contractor releases secondary chain for steel pipe to be installed.

to predators such as striped bass. Major improvements at Delta release sites will help the Department's efforts to comply with the U.S. Endangered Species Act.

"In my mind, predation is the single biggest threat to salmon and steelhead, especially in these drought years," said Paul Marshall, Chief of the Bay-Delta Office (BDO). "This fish release facility retrofit was sorely needed to help protect a small portion of the population."

Located on a levee on the San Joaquin River on the south side of Sherman Island, the upgraded Curtis Landing Fish Release Site is one of two DWR release sites to which salvaged fish from the John E. Skinner Delta Fish Protective Facility are trucked every eight to 12 hours. The other site is on the west side of Sherman Island on the Sacramento River.

Anywhere between a handful to more than 100,000 fish, including Delta smelt, steelhead and salmon are transported per truckload to each fish release site.

"We had two primary objectives with this project: to reduce predation at the fish release sites and improve the overall survival of listed fish species salvaged at the Skinner Fish Facility," said Project Manager Kathleen Buchnoff, Senior Engineer in BDO. "These improvements were needed in order to keep DWR in compliance with the 2009 National Marine Fisheries Service Biological Opinion, as well as the 2009 California Department of Fish and Wildlife Incidental Take Permit."

Analysis of DWR's fish release sites began in 2007 and proceeded through 2010, when DWR began studying how to improve the survival rate of released fish.

Design of release site improvements began in 2010.

"We worked with many agencies to finalize the project design," said Buchnoff. "Primarily, the fish regulatory agencies – United States Fish and Wildlife Service, National Marine Fisheries Service and California Department of Fish and Wildlife – whose approval was needed to proceed with construction."

Construction at the site ran from May to December 2014.

A Smoother Pipe, More Flow

As part of the $2 million improvement project, two new parallel pipes – an intake pipe and a fish release pipe – were installed on new pilings and rest just above the levee. They run down from a new grated steel platform into the San Joaquin River, and sit four feet above the channel bed.

"Replacing the two original pipes was one of the biggest upgrades to this system," said Buchnoff.

The new 70-foot fish release pipe and 65-foot intake pipe are made of stainless steel and ensure a smoother ride and fewer injuries for fish being transferred from the truck into the river. The new pipes are expected to be more durable than the original steel pipe, and the fish release pipe will feature an added air vent to minimize the rapidly varying flows known as hydraulic jumps.

"Blowbacks – when the air, water and fish are expelled out from the top of the release pipe, littering the work platform with fish and debris and splashing the operator – were a major issue with the original pipe, particularly for biologists because it was harming fish," said Division of Engineering Supervising Engineer Ganesh Pandey, who helped solve the problem. "The hydraulics of the fish release pipe was complex because of the presence of full pipe flow, partially full pipe flow and hydraulic jumps. Though it was a complicated problem associated with the formation of hydraulic jumps and rapid changes in the water levels within the release pipe, the solution was simple, going back to the fundamentals of hydraulics. The pipe needed an air vent at the bend."

The new fish release pipe measures 16 inches in diameter and contours to 12 inches, and also is expected to help smooth flows within the pipe.

A new, stronger water intake pump – designed to draw water out of the river to wet the fish release pipe – was another key upgrade made to the system.

"We found that fish and debris frequently were not fully flushed from the original pipe and either became trapped in the pipe or slowly dispersed from the pipe long after the release," said BDO Senior Environmental Scientist Javier

Left to Right: Senior Engineer Kathleen Buchnoff and DWR Construction Inspector Robert Logan review the jobsite plans for the placement of steel piles.
Below: Environmental Scientist Erica Rhyne-Christensen prepares to take water quality sample.

Miranda, the lead fisheries biologist on the project. "These fish slowly trickling out of the pipe acted as an attractant for predators that hung around the area long after releases." To solve the issue, it was determined a flow of 3 ½ cubic feet per second (cfs) would fully flush the pipe. The original pump cycled 0.1 cfs.

"By fully flushing fish and debris from the pipe, we keep fish from getting trapped in the pipe, and more importantly, reduce the extent to which the release sites act as a 'feeding station' and reduce overall predation losses," said Miranda.

"While the fish are being released, the pump is throttled to a lower flow via a control valve, which receives a signal from a flow meter and adjusts accordingly," said lead DOE Mechanical Engineer Benjamin Scheeline. "After the fish have been released, the control valve opens to allow higher flow to flush out any debris that may be left in the release pipe. The pump also provides water to an overhead pipe, which has a hose connected to it to allow the operator to wash out the holding tank through a hatch on the top of the truck."

In addition to the new pipes and pump, the fish release site features a new grated steel-framed platform and concrete pad for trucks to drive on, new steel piles for supporting the pipes and an automated fish screen over the intake pipe.

"The new fish screen is installed at the end of the intake pipe to prevent fish from being drawn into the pipe," said DOE Engineer Yaling Liu, the project's lead designer. "The fish screen has an automatic interior and exterior brushed screen cleaning system and is removable via a track system that straddles the water intake pipe."

Minimizing Predation

To comply with the Biological Opinion, DWR made multiple improvements to reduce predation at the end of the pipe, working towards a combined 50 percent reduction at both DWR fish release sites.

"Our primary focus was to reduce in-water structures, which in turn would minimize potential hiding areas for predator fish," said Buchnoff.

Of eight total piles installed at the site, four sit in-water and act as a saddle to the pipes. They are used as support beams for the pipes, fish screen and track.

"We made the piles the smallest we could, 12 inches in diameter, to minimize in-water structure," said Buchnoff.

Another strategy to reduce predation near the fish release site was to remove approximately 50 abandoned wood piles in the river upstream from the end of the pipe.

"We know predator fish liked to use the wooden piles as hiding spots and prey on the salvaged fish, so we took those out," said Buchnoff.

Site security also was improved by replacing the original manual gate, with an automated vertical gate operated remotely or by key. Electrical power systems and site lighting for truck drivers also were updated.

"This project was a major first step in meeting the Biological Opinion and Incidental Take Permit requirements to reduce predation," said Victor Pacheco, Chief of the Delta Conveyance Branch. "This project provided an opportunity to learn and make improvements to other existing and proposed fish release sites."

Briefing

Boosting Water Conveyance

East Branch Extension Phase I Improvements Provide Water Delivery Flexibility

Six years in the making, a big project to improve the way DWR delivers water to San Bernardino and Riverside counties is now complete.

The Crafton Hills Reservoir Enlargement Project increases operational flexibility for the East Branch Extension (EBX) of the State Water Project's California Aqueduct, which conveys water to the San Bernardino Valley Municipal Water District and the San Gorgonio Pass Water Agency (SGPWA).

"Crafton Hills Reservoir was expanded from a capacity of 85 acre-feet to 240 acre-feet," said Richard Brewer, DWR Construction Supervisor II and the field engineer on this project. "This is the last project under EBX I Improvements, so for phase one, we made our mark to be completed by the end of 2014."

Located in the City of Yucaipa, the enlarged reservoir topped off in September 2014, providing more storage space in case of necessary repair work. It also will reduce on-peak energy demands, benefitting the San Bernardino, Redlands, Mentone, Yucaipa, Cherry Valley, Beaumont and San Gorgonio communities.

"We still have to monitor the reservoir and dam during the first year," said Robert Curry, DWR Engineer and Project Inspector of the Geotechnical Services Branch in the Dams and Canal Section. "We monitor the observation wells in this dam, we monitor seepage from this new dam and original dam and we also monitor the slopes to make sure everything is stable."

Prior to starting the project, a half-mile long, 48-inch diameter pipeline was constructed to connect the existing EBX Pipeline with the existing Yucaipa Pipeline. This connector pipeline shunted flows around the reservoir to allow continued deliveries of water in EBX while the reservoir was being enlarged.

Curry, who is based at DWR headquarters in Sacramento, spent more than two years living in Southern California overseeing the Crafton Hills Reservoir Enlargement. As he overlooked the reservoir from the top of the dam, he said it was time well spent.

"It's been amazing to me to be able to start from nothing, to get to this point to where I'm standing on it," said Curry. "It's a really good feeling!"

Just up the road from the Crafton Hills Reservoir sits the newly enlarged Crafton Hills Pump Station which the Division of Engineering continues to work on to increase pumping capacity from 60 to 135 cubic feet per second.

With the enlargement complete and the concrete poured to place the new pumps, the work now focuses on installing the pumps and the hydraulic and electrical controls, which will be finished under an EBX Phase II completion contract, yet to be awarded. This water ultimately will be delivered to SGPWA primarily for spreading the groundwater recharge.

Another new facility a few miles north of Crafton Hills is Citrus Reservoir, which has a storage capacity of 560 acre-feet and a surface area of 18 acres. It acts as a forebay to the Citrus Pump Station. Water comes in from Devil Canyon and is discharged into the reservoir through gravity flow. The Citrus pump station has a capacity of 160 cubic feet per second with eight pumps lifting water 667 feet through the Mentone pipeline to a new forebay tank at the Crafton Hills Pump Station.

Completion of the East Branch Extension Phase II will allow capacity for its full allotment to 17,300 acre-feet a year of State Water Project supplies to the SGPWA, which first received SWP water in 2003 after the completion of EBX Phase I. SGPWA had been a SWP contractor since 1962. In addition, the project would enable SBVMWD to increase its distribution system capacity to the Redlands and Yucaipa Valley service areas.

EBX Phase II construction is scheduled for completion in 2016.

Project Inspector Robert Curry (left) and Construction Supervisor II Richard Brewer view completed Crafton Hills Reservoir Enlargement Project.

Perris Dam Improvements

DWR Breaks Ground on Largest Capital Improvement Project in 57 Years

The largest capital improvement project undertaken by DWR since the construction of the State Water Project is under way. Work to upgrade the seismic safety of Perris Dam in Riverside County has begun, culminating years of studies and design since DWR in 2005 identified potential seismic safety risks in a section of the dam's foundation.

"We are beyond excited to have reached this milestone and to be partnering with our stakeholders and our contractor for a successful project," said Jeanne Kuttel, Chief of DWR's Division of Engineering.

DWR in August 2014 awarded Pulice Construction the contract for the dam remediation project, the first of a possible three projects that will be undertaken through DWR's Perris Dam Remediation Program to improve the Perris facilities. The design for construction of an emergency release facility downstream of the dam has begun and a draft environmental impact report is being prepared for release in spring 2015. DWR is conducting analyses to determine what level of improvements may be required to the outlet tower located in the southeast corner of the lake.

The dam remediation project is expected to be completed within three years. To date, the rock quarry lying dormant since construction of the dam in the early 1970s has been reactivated in order to process rock for a new stability berm. Initial blasting for a perimeter access road along the dam abutment also has begun.

DWR is working closely with State and federal fish and wildlife agencies to protect local wildlife and environmentally sensitive areas during the construction project and is coordinating with State Parks on recreation impacts.

DWR Field Engineer Joan Weber (right) and consulting inspector Richard Scott review plans in preparation for blasting at the Perris Dam Remediation Project.

Lake Perris is the southernmost State Water Project facility and the southern terminus of the California Aqueduct. The Lake Perris State Recreation Area is one of the state's most popular recreation destinations.

California Department of Water Resources

Flood Board Wins National Award

The Central Valley Flood Protection Board won a third place in the 2014 Excellence in Communications Awards from the National Association of Flood and Storm Water Management Agencies (NAFSMA).

The Board's "A Century of Progress" brochure and "A River's Desire" video received third place in the Public Awareness of Flooding campaign category in October at NAFSMA's annual Conference in Boston. The brochure and film were created in 2012 to highlight the Board's 100 years of flood management and to inform the public of the Board's mission and responsibilities.

"Because the brochure and film tell the story of flooding in California and the Board's role in managing it, they remain timely and in demand," said Lorraine Pendlebury of the Board staff. "Copies of both have been requested by other agencies and distributed to various legislative staff members."

The brochure and film can be viewed on the Board's website at www.cvfpb.ca.gov

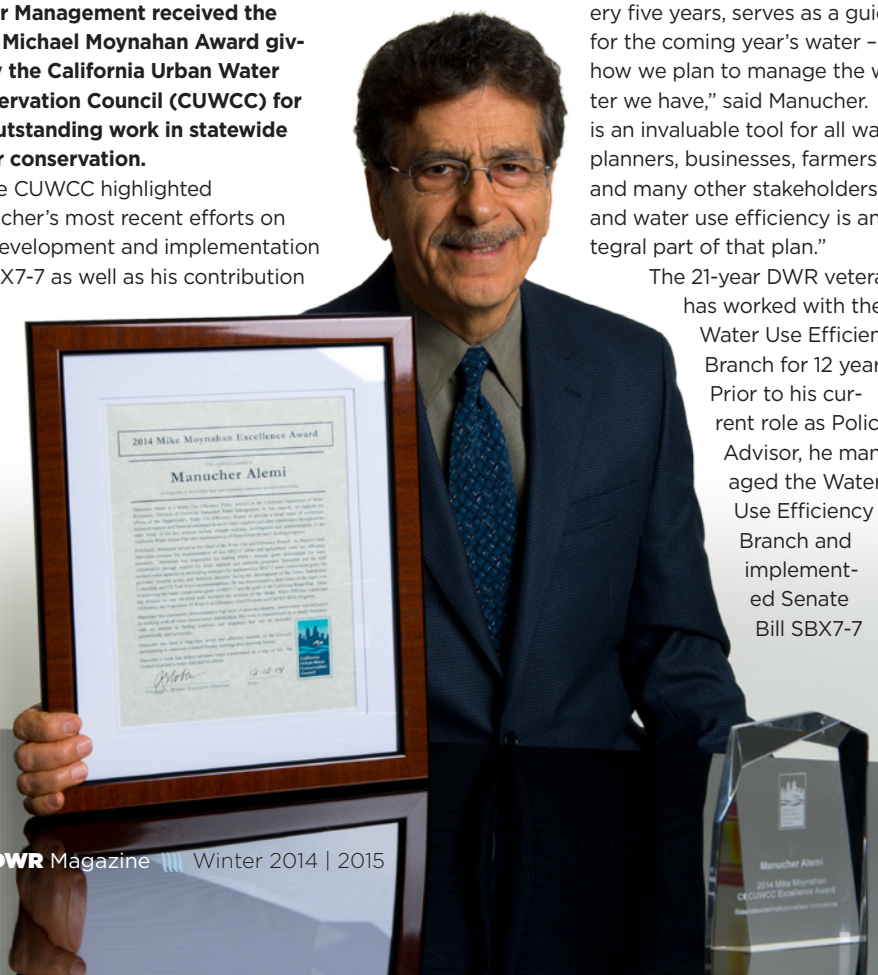
Statewide Water Conservation Efforts Honored

Water Use Efficiency Policy Advisor Manucher Alemi of DWR's Division of Statewide Integrated Water Management received the 2014 Michael Moynahan Award given by the California Urban Water Conservation Council (CUWCC) for his outstanding work in statewide water conservation.

The CUWCC highlighted Manucher's most recent efforts on the development and implementation of SBX7-7 as well as his contribution to the 2013 California Water Plan update.

"The California Water Plan, released every five years, serves as a guide for the coming year's water – how we plan to manage the water we have," said Manucher. "It is an invaluable tool for all water planners, businesses, farmers and many other stakeholders, and water use efficiency is an integral part of that plan."

The 21-year DWR veteran has worked with the Water Use Efficiency Branch for 12 years. Prior to his current role as Policy Advisor, he managed the Water Use Efficiency Branch and implemented Senate Bill SBX7-7 — mandating California water suppliers to increase water conservation. His team also worked on the Model Water Efficient Landscape Ordinance update and CalFED Water Use Efficiency Program.



Manucher has a Master of Science in Soil Physics from Michigan State University and a doctorate degree in Soil and Water Sciences from the University of California, Davis. He has been an active member of the CUWCC since 2012, where he attends board and plenary meetings to collaborate with other water use efficiency industry professionals.

"Water is an essence of life and is essential for public health, economic growth and for the environment," said Manucher. "Water conservation is an essential element of a sustainable water management portfolio."

The CUWCC's Mike Moynahan award annually recognizes two professionals in the water use efficiency industry who have demonstrated above and beyond statewide conservation practices efforts.

World Bank Visits DWR

When you think of the World Bank (if you think of it at all), you probably associate it with national capitals and heads of state. Prince William, the Duke of Cambridge and heir to the throne of the United Kingdom, stopped at the World Bank in Washington during his recent visit to the United States to discuss illegal wildlife trafficking.

The World Bank is active in all sorts of headline-grabbing issues, such as the Ebola health crisis, which it is fighting with hundreds of millions of dollars in grants. The Bank keeps tabs on population trends, finances infrastructure development and issues weighty tomes with titles like "Mind, Society and Behavior."

Weighty issues and the World Bank go together, so it was no surprise that DWR's Division of Flood Management (DFM), a weighty issue in its own right, was asked to host a delegation of World Bank water officials from around the world for a full day of briefings in December.

Participants came from Peru, China, the Philippines, Ethiopia, Vietnam, Spain, Germany and Canada. Consultant Mark Heggli, who worked at DWR from 1989 to 2001, facilitated the World Bank's week-long Northern California tour, which he said was intended to expose the visitors to best practices in weather forecasting, watershed monitoring and emergency response.

Ricardo Pineda, supervising engineer in DFM's FloodSAFE Program Management Office, hosted the group and organized the presentation, which included the National Weather Service's 10 a.m. forecast briefing.

Pineda said the visitors' questions suggested they were taking good advantage of DWR's expertise. "They're searching for usable models of data collection and flood control that they can implement without reinventing the wheel," he said.

The participants showed particular interest in the California Irrigation Management Information System (CIMIS), which collects data from dozens of automated weather stations to improve water use efficiency for agricultural and urban uses.

DWR's advanced methods in collecting real-time flood, water supply and water quality data prompted numerous questions from the group. Pineda said the visitors were impressed with DWR's close working relationships with other agencies such as NOAA and the Corps of Engineers. "It seemed obvious from their questions that they liked what they heard and saw."

Ricardo Pineda of DWR's Flood Management welcomes visitors to a presentation that included an overview of the Floodsafe California Initiative. **Below:** David Parker (fourth from left) of DWR speaks about the California Data Exchange Center and Flood Emergency Response Information Exchange.

People

New Hires

John Aaron
San Luis Field Division
HEP* Operator Apprentice

Cesar Aguilar Barajas
Technology Services
Senior Programmer Analyst

Michael Bell
Business Services Office
Business Service Assistant

Eric Bender
Office of the Chief Counsel
Senior Librarian

Sally Beno
Southern Field Division
Management Services Technician

Douglas Bertran
Public Affairs Office
Director, TV Communications Center Supervisor

Connor Block
Environmental Services
Environmental Scientist

Kenneth Bogdan
Office of the Chief Counsel
Attorney IV

Tanika Brookins
Human Resources Office
Personnel Specialist

Kevin Burks
Southern Field Division
Utility Craftsworker Apprentice

Christopher Camarillo
Technology Services
Associate Information Systems Analyst

Andrea Carmelo
Human Resources Office
Personnel Specialist

Raphael Carrillo
Technology Services
Systems Software Specialist II

Anesh Chandra
Fiscal Services
Office Technician (Typing)

Louling Chu
Fiscal Services
Associate Accounting Analyst

James Cox
Executive
Associate Governmental Program Analyst

Bonnie Crissman
State Water Project Analysis Office
Engineer

Angela Cruz
Flood Management
Engineer

Anthony Daquipa
Human Resources Office
Training Officer I

Rachel Dely
Oroville Field Division
HEP* Operator Apprentice

Charles Dingledine
San Joaquin Field Division
HEP* Mechanic Apprentice

Jimmy Doung
Southern Field Division
HEP* Operator Apprentice

*Hydroelectric Plant

Up to It

Pat Whitlock, the new chief of the Oroville Field Division, has an impressive to-do list in the region – the Thermalito Plant rebuild, modernizing Oroville Dam's low-water river release valves and much more.

Pat says he knows his team is up to the challenge. Welcoming new challenges has been a constant in his DWR career.

Pat grew up in the Antioch area and attended California Polytechnic State University in San Luis Obispo, where he earned an electrical engineering degree. His first choice of a career was DWR, but openings were scarce when he graduated. Instead, he accepted an offer from General Electric and worked as a motor and generator specialist for three-plus years in Schenectady, NY; Erie, PA; Charlotte, NC, and Oakland, CA.

Pat finally joined DWR in 1990 as an electrical engineer with the Division of Design and Construction (now Engineering). "I loved construction and learning all that stuff in the field," he says. "Great guys like Bob Christie and Don Mitchell really taught us the ropes, especially surveying, concrete and rebar construction and construction management practices."

His next stop was at the division's Sacramento office where he did contract administration, factory inspections and electrical design. Pat worked on the design for the new Coastal Branch and volunteered to help commission and start up the Polonio Pass, Bluestone and Devil's Den pumping plants.

Then came Operation and Maintenance and a move to Delta Field Division in Byron where he was an associate hydroelectric plant engineer.

"That's where we got to work on and fix old stuff," Pat laughs. "We had a lot of retrofit work, just trying to keep the old stuff working. I had to install new switchgear that I had designed and learned what a lousy design I had done. I had to modify the wiring during installation to make it work correctly."

Pat has been with the Oroville Field Division since 2007, most recently managing the project to clean up the fire-damaged Robie Thermalito Pumping-Generating Plant. He currently is preparing for the rebuild part of the project. "We have cost estimates, a schedule and a draft project management plan, and we're waiting for final approval," he says.

Now trying to fill "the big shoes" of previous Division Chief Dave Starks, Pat recites the long list of projects that lie ahead and stresses the importance of safety in the division's culture. DWR's goal is a world-class safety program, he says, and that's one of his major responsibilities, as well as ensuring that all the work gets done.

As for this article on his promotion, "I'd really like to fly low under the radar in all of this," he says, "but I guess it is what it is."

A Magical Map

Environmental Scientist Wins National Award for Topographic Web Application of the Delta

We may work at DWR, but most of us probably could use educating about the details of what happens here. Take bathymetry. Even its pronunciation can be a challenge, so let's go to the dictionary:

bathymetry noun [buh-thim-i-tree]

1. The measurement of the depths of oceans, seas or other large bodies of water.
2. The data derived from such measurement, especially as compiled in a topographic map.

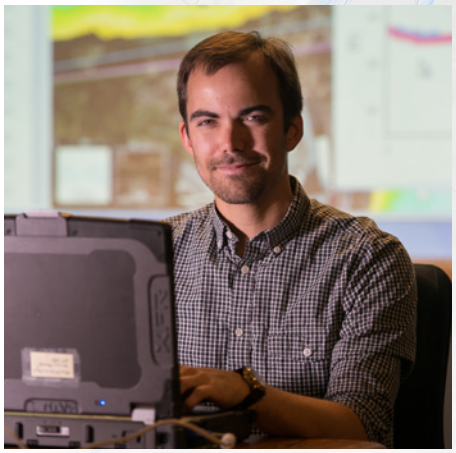
The North Central Region Office's (NCRO) Bathymetry and Technical Support Section has improved its methods over the decades to survey Delta waterways. Today's bathymetry is at technology's cutting edge and involves GPS satellites and computerized representations of rivers, sloughs and the levees throughout the Delta.

NCRO has been measuring bathymetry since the early days of the State Water Project. Environmental Scientist Scott Flory and others in the Office have revolutionized the technology in recent years.

Wyatt Pearsall, who joined NCRO's Bathymetry Section in 2011 as an environmental scientist, has brought some welcome attention to DWR's bathymetry activities. Wyatt received a Third Place Award at the 2014 Environmental Systems Research Institute Conference for his development of the Delta Bathymetry Catalog, a web-based geographic information systems (GIS) application. "Developing tools, such as the Delta Bathymetry Catalog, allow for a better understanding of conditions through visual representation of the data," said Eric Hong, Chief of the North Central Region Office in West Sacramento.

Senior Engineer Shawn Mayr at NCRO has watched bathymetry's usefulness grow in recent years. "Scott makes a big effort to collect this high-tech data in the field," he said, "and Wyatt's very cool web magic actually makes it useful to everyone, from a third grader to a design engineer. This is a great partnership that I love to talk about."

Wyatt's significant improvement in GIS



information delivery makes it all the more surprising that Wyatt himself is a relative newcomer to bathymetry.

"I didn't know too much about bathymetry," Wyatt said, "but the job opening sounded interesting, so I applied for the position and have been learning ever since."

Wyatt acknowledges bathymetry's under-the-radar reputation in DWR, but he said that's changing as the technology's capabilities are better understood. For example, the app's Profile tool helps NCRO's Flow Monitoring and Special Studies Section choose ideal sites for prospective flow stations by quickly revealing a channel's unique geometry.

Here's how DWR's bathymetry works: A multibeam scanner fitted to a boat sends dozens of sound pulses each second downward and outward as the boat travels along a river, slough or aqueduct. The sound sweeps the bottom of the channel like a large acoustic rake. The reflected pulses are captured by a computer to create an exceptionally detailed map of conditions on the bottom. The beams can even map details of submerged cars, levees and the concrete lining of a canal.

By conducting a sweep or two above an area of interest, the scan can collect data at the centimeter level. That's useful in many ways, Wyatt said, such as helping a local district determine if riprap has been eroded beneath the water level, which can compromise the levee's integrity.

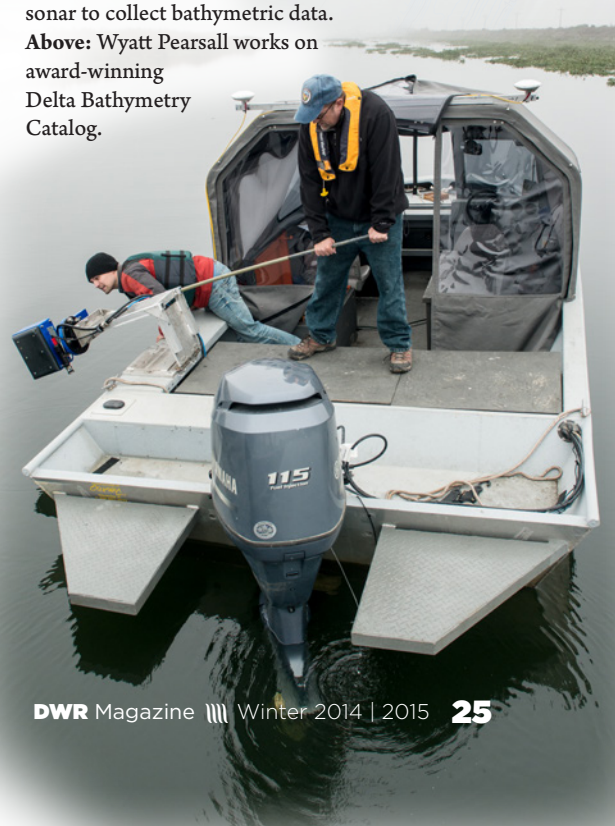
Among the many clients for Wyatt's catalog are computer modelers in DWR's Bay Delta Office who want to know, for example, how sediment is moving around in the Delta. Those changes can affect south Delta pumping operations and ship channel operability.

Just a few clicks at the user-friendly website and a slough's bottom characteristics are immediately revealed and can be tracked over time. Catalog improvements seem to be happening each week. The catalog can be accessed at **https://gis.water.ca.gov/app/bathymetry/**.

"Since receiving the award in July, I've added an animation tool that allows the user to select images that were collected months or years apart," Wyatt said. "Just click 'play' and you can see the animation display changes over time. Anyone can do that in any area they want."

It's a good bet a lot of users will be doing just that.

Environmental Scientists Brody Sunderland (left) and Scott Flory prepare a multibeam sonar to collect bathymetric data.
Above: Wyatt Pearsall works on award-winning Delta Bathymetry Catalog.



New Hires

Avongold Edrosolan
Human Resources Office
Office Technician (Typing)

Timothy Evans
Oroville Field Division
HEP* Mechanic I

Angel Farias
Flood Management
Utility Craftsworker Apprentice

Ruben Flores
San Luis Field Division
Water Resources Technician I

Noah Gargano
Delta Field Division
HEP* Mechanic Apprentice

Brian Giovinazzo
Delta Field Division
HEP* Electrician Apprentice

Anna Guevara
Oroville Field Division
Management Services Technician

Francisco Guzman
Statewide Integrated Water Mgmt.
Environmental Scientist

Randal Hadley
San Luis Field Division
HEP* Mechanic Apprentice

Jeanette Hamilton
Human Resources Office
Staff Services Analyst

Bryan Hayes
Oroville Field Division
HEP* Electrician I

Tuan Hoang
SWP Power & Risk Office
Associate HEP** Utility Engineer

Barbara Holbrook
Oroville Field Division
Assistant Safety Engineer

Alexander Hvisc
Operations and Maintenance
Electrical Engineer

Van Jones
Oroville Field Division
Utility Craftsworker Apprentice

Christopher Joseph
San Joaquin Field Division
HEP* Operator Apprentice

Jae Sung Kim
Technology Services
Associate Information Systems Analyst

Kermit Kirk
Delta Field Division
HEP* Mechanic I

Jennifer Lorentson-Greathouse
Human Resources Office
Personnel Specialist

Wayne Ly
Operations and Maintenance
Associate Telecommunications Engineer

Kelli Lyons
Fiscal Services
Accountant Trainee

Wesley McCandless
Business Services Office
Staff Services Analyst

*Hydroelectric Plant
**Hydroelectric Power

Safeguarding Employees

DWR Safety System

DWR Brings on New Safety Aces and Safety Classes

DWR's safety program reached several milestones in 2014, including hiring 18 new DWR safety engineers and rolling out 20 safety training courses.

The new hires bring DWR's safety engineer count to 20. They will serve as safety advisors to managers and supervisors, develop safety policies and procedures and train supervisors and employees on their roles in the safety system.

"All of the Department's leadership and most of the employees have bought into making the workplace safer, but they may not have the knowledge or tools to turn that commitment into action," said Michael Donlon, DWR's Chief Safety Officer. "The safety engineers will be a resource to managers, supervisors and employees and will help them take their safety 'game' to the next level."

In addition to being located in the Division of Operations and Maintenance's field divisions and headquarters, DWR safety engineers now are also part of the divisions of Engineering, Environmental Services, Integrated Regional Water Management, Safety of Dams and Flood Management (DFM).

"Embedding a high level of safety knowledge in the divisions — making it more accessible to line workers and supervisors — is our strategy to improving employee safety," said Donlon.

Paul Casillas, DWR's newest safety engineer, works for DFM and splits his time between the DFM headquarters in Sacramento and the Sacramento and Sutter Maintenance Yards. He has more than five years of safety experience preparing pre-work safety plans and job hazard analysis, and has been attending State Water Project safety meetings since 2008.

"My duty as a safety engineer in the Division of Flood Management is to provide the Division and the Sacramento and Sutter Maintenance Yards with a safety resource," said Casillas. "I'm responsible for our safety training program, safety plans and to be a safety resource for the yards' employees."

One of Casillas' recent safety undertakings is Sutter Maintenance Yard's commitment to a "Safety Stand-Down Day," during which the Yard shuts down operation for one day per year to conduct safety training.

(Above) Paul Casillas with the Sutter Fire Department conduct a fire extinguisher safety training for DWR's maintenance yard.

New Curriculum

Beginning in the summer of 2014, DWR rolled out new in-house safety training classes. Employees can choose from a wide variety of safety classes where they will learn ways to protect themselves, including "Hazard Communication, Safety Leadership Training and Job Hazard Analysis."

"No employees want to get injured, but they don't always have the knowledge they need to identify hazards and take corrective actions to mitigate these hazards," said Donlon. "Safety training gives the employees an understanding of Cal/OSHA regulations, DWR safety policies and practical knowledge to prevent injuries in the workplace."

Training coordinators can assist employees with class lists and registration.

Drag and Discover

Invention Locates Objects in the Aqueduct

In DWR's Southern Field Division, Gregory Dixon created an inexpensive and effective method for finding cars and other submerged objects in the State Water Project's aqueduct.

The device not only will save DWR a great deal of labor, it earned Greg, a Water Resources Engineering Technician, an Improved Procedure Award.

Greg created an inexpensive and effective method for one person to locate submerged objects in the State Water Project's aqueduct using an underwater video camera.

Three people were needed for the old "drag and discover" method. They walked in the same direction on opposite sides of the canal, each holding a rope attached to a grappling hook in the middle. As they walked, they dragged the hook along the aqueduct's bottom to find submerged objects.

"The strain of pulling the hook was hard on wrists, backs and ankles," Greg said, and the potential to trip and fall required a third person nearby as the rescuer if someone fell in.

"Drag and discover" had to begin at a bridge or overpass to position the rope handlers on opposite sides of the canal – sometimes miles from the area to be surveyed.

With Greg's device, one person searches for objects with the camera while another monitors video images in a nearby truck. Two people now do work that previously required three.

Greg's invention threads several pieces of PVC pipe together to create a long handle. Shorter pipe segments at the far end have wheels attached, and the camera, which Greg purchased to test out his idea, can be attached using additional pipe segments at the far end or on the handle.

The wheels allow the entire apparatus to be lowered down the side of the canal and pushed toward the middle. Once a location has been monitored, the device is pulled out and positioned farther along the bank to continue the monitoring.

What does his contraption find? "Lots of random metal pieces, vehicles and other foreign objects," Greg said. "Sometimes you can generally locate a vehicle by following tire tracks to the canal's edge, but they can be hard to pick up."

Once a submerged vehicle is located, DWR's team notifies the Los Angeles County Sheriff's Department, which sends divers and a tow truck to remove it.

Greg said he enjoys figuring out ways to improve procedures or a product. He's mulling over an idea now about how to reconfigure a vehicle carrier so it also can be used to display cars attractively at car shows.

Information on the State's Employee Suggestion Program can be found at **http://www.calhr.ca.gov/state-hr-professionals/Pages/awards.aspx.**

For additional information, email DWR's Merit Award Administrator at **Victoria.Whipkey@water.ca.gov**

(Below) Greg Dixon with his invention.

New Hires

Judith McCarty
Human Resources Office
Personnel Specialist

Justin Middleton
Operations and Maintenance
Heavy Equipment Mechanic

Aaron Miller
Executive
Senior Engineer

Hung Nguyen
Delta Field Division
HEP* Operator Apprentice

Monica Nolte
Environmental Services
Associate Environmental Planner (Archeology)

Wenjun Ouyang
Engineering
Electrical Engineer

Jeremy Poulson
San Joaquin Field Division
HEP* Mechanic Apprentice

Steven Reichmuth
North Central Region Office
Junior Engineering Technician

James Reilley
Operations and Maintenance
Systems Software Specialist II

Renee Rodriguez
Executive
Office Technician (Typing)

Vergel Simtim
Technology Services
Staff Information Systems Analyst

Jacqueline Stoddard
Business Services Office
Staff Services Analyst

Rodney Teeter
Executive
Associate Safety Engineer

Loyd Thomas
Delta Field Division
Staff Services Analyst

Cheryl Tofsrud
Business Services Office
Office Technician (Typing)

Christopher Valls
Engineering
Mechanical Engineer

Pieter Van Tatenhove
Business Services Office
Staff Services Analyst

Kim Vickers
Delta Field Division
Utility Craftsworker Apprentice

*Hydroelectric Plant

New Hires

Christopher Weber
North Central Region Office
Utility Craftsworker

Iesha Williams
Fiscal Services
Executive Secretary I

Wayne Wolfe
Engineering
Associate Safety Engineer

Clinton Womack
Oroville Field Division
Water Resources Technician I

Michelle Wong-Chiu
Fiscal Services
Accountant Trainee

Mateo Yanes
Technology Services
Senior Programmer Analyst

Mikel Zabalbeascoa
San Joaquin Field Division
Utility Craftsworker Apprentice

Promotions

Dee Alstatt
Southern Field Division
Senior HEP* Operator

Madelene Benjamin
Human Resources Office
Personnel Specialist

Clyde Blaisdell
Technology Services
Systems Software Specialist III (Supv.)

David Brown
Southern Field Division
Utility Craftsworker Supt.

Steven Brumbaugh
FESSRO***
Senior Environmental Scientist

Elizabeth Bryson
Flood Management
Senior Engineer

Lisa Carter
Office of the Chief Counsel
Staff Services Analyst

John Chairez
SWP Power & Risk Office
Senior HEP** Utility Engineer (Supv.)

Maria Chan
Human Resources Office
Associate Governmental Program Analyst

Seema Chowdhury
Engineering
Water Resources Technician I

Darla Cofer
Bay-Delta Office
Executive Secretary I

Gregory Dixon
Southern Field Division
Water Resources Technician II

Roberta Elkins
Environmental Services
Water Resources Technician I

Daniel Ellison
San Luis Field Division
HEP* Mechanic II

*Hydroelectric Plant
**Hydroelectric Power
*** FloodSAFE Environmental Stewardship and Statewide Resources

DWR Management Development Program Graduates for 2014

With the graduation of 25 mid-level managers from DWR's Management Development Program in 2014, a total of 550 participants have completed the program in the past 19 years.

The year-long internal training program teaches participants more about DWR and helps them develop the tools to become more effective leaders. Nominated by their direct supervisors, participants get an opportunity to develop their knowledge and skills in written communication, public speaking and project management, as well as gain a greater understanding about how DWR accomplishes its missions.

Over the course of the Program, participants join teams to develop and complete a project that could be implemented by the Department. The final session of the Program begins with each team giving a 15-minute presentation on its project to the Governance Board.

At the November 3, 2014 Governance Board meeting, the five project teams gave their presentations to the Board and guests. The audience included Deputy Director Kathie Kishaba, Acting Deputy Director John Pacheco and 17 Division or Office chiefs.

DWR's Management Development Program participants *(Italics names are Board and guests)*
Left to Right (Front) *Kamyar Guivetchi*, *Gail Newton*, *Kathie Kishaba*, *Kathy Aldana*, Patrice Thomason-Bell, Tammy Lytle, Gail Kuenster, Norma Alvarado, Nova Clemenza, Stephanie Mendiola, Randy Beckwith, Dean Lara **(Middle)** *Dave Kearney*, *Mike Donlon*, *Keith Swanson*, Bekele Temesgen, Loren Clancy, *Kim Oliphint*, Nalini Shankar, Susan Lee, Kelly Fucciolo, Donna Lane-Mills, Eric See, Michal Koller, Keith Wallace **(Back)** Mark Steenburg, Mike Sierra, *Paul Marshall*, Dennis McEwan, Jimmie Wright, Dennis Gastinell, Ray McDowell, Wes Dote, *John Pacheco*, Sudhakar Talanki.

Congratulations DWR Apprentice Graduates

DWR's Operations and Maintenance Apprentice Program graduated 15 apprentices this year. Created in 1971, the program provides a gateway to a career as Utility Craftsworker or Hydroelectric Plant Electrician, Mechanic and Operator at DWR's five field divisions and two maintenance yards located throughout California. To learn about the Apprentice Program, visit **http://www.water.ca.gov/apprenticetraining/**

Kevin Backes
Southern Field Division
Hydroelectric Plant Electrician
July 2014

John Everroad
Southern Field Division
Hydroelectric Plant Operator
February 2015

Andrew Fernandez
San Joaquin Field Division
Hydroelectric Plant Operator
January 2015

Matthew Gerspacher
Oroville Field Division
Hydroelectric Plant Electrician
January 2015

Paul Giodano
Oroville Field Division
Utility Craftsworker
January 2015

Mathew Goodman
Sacramento Maintenance Yard
Utility Craftsworker
January 2015

Alejandro Guerrero
Sutter Maintenance Yard
Utility Craftsworker
August 2014

Jewel Huckaby
Delta Field Division
Hydroelectric Plant Operator
February 2015

Benjamin Newcomb
Sacramento Maintenance Yard
Utility Craftsworker
February 2015

Jason Newton
Oroville Field Division
Hydroelectric Plant Electrician
July 2014

Felix Nuno
San Joaquin Field Division
Hydroelectric Plant Electrician
July 2014

Andrew Rios
San Luis Field Division
Hydroelectric Plant Electrician
January 2015

Brian Scoles
San Joaquin Field Division
Utility Craftsworker
January 2015

Joshua Stepp
Southern Field Division
Hydroelectric Plant Mechanic
January 2015

Thomas Westerhoff
Delta Field Division
Hydroelectric Plant Electrician
February 2015

Promotions

Joel Farias
Flood Management
Utility Craftsworker Supt.

David Fong
Fiscal Services
Associate Administrative Analyst (Accounting Systems)

Melissa Garcia
Delta Field Division
Administrative Officer II

Charles Garrett
Engineering
Water Resources Technician II

Joaquin Garza
North Central Region Office
Water Resources Technician I

Bryant Giorgi
Operations and Maintenance
Senior Engineer

Jeremy Goldberg
Office of the Chief Counsel
Attorney III

Julio Gomez
Engineering
Associate HEP** Utility Engineer

Preston Good
Engineering
Associate Right of Way Agent

Lynnette Green
Human Resources Office
Personnel Supervisor II

Alejandro Guerrero
Flood Management
Utility Craftsworker

Victoria Hankins
Executive
Office Technician (Typing)

Joriea Hayes
Fiscal Services
Associate Governmental Program Analyst

Balpreet Heer
Engineering
Associate HEP** Utility Engineer

Zachary Heller
Human Resources Office
Staff Services Analyst

Jeremy Hill
Flood Management
Senior Engineer

Raymond Hoang
Bay-Delta Office
Engineer

Matthew Hoffman
Flood Management
Water Resources Technician II

Kristi Holliday
Oroville Field Division
Materials and Stores Specialist

Eileen Hue
Technology Services
Systems Software Specialist II

Kaylie Humbert
Northern Region Office
Water Resources Technician I

Linda Ingalls
Technology Services
Associate Governmental Program Analyst

**Hydroelectric Power

Promotions

Mary Jimenez
Statewide Integrated Water Mgmt.
Senior Engineer

Maxine Johnson
Business Services Office
Office Services Supervisor I

William Johnston
Engineering
Associate HEP** Utility Engineer

Trevor Joseph
Integrated Regional Water Mgmt.
Supervising Engineering Geologist

Bruce Kaminski
Office of the Chief Counsel
Attorney IV

May Khang
Executive
Staff Services Analyst

Ted Lambert
Fiscal Services
Associate Administrative Analyst (Accounting Systems)

Francisco Llamas
Southern Field Division
Supervising HEP** Utility Engineer

Ray McDowell
FESSRO***
Program Manager II, CA Bay-Delta Auth.

Denise Medeiros
San Luis Field Division
Staff Services Analyst

Arthur Mendizabal
Operations and Maintenance
Associate HEP** Utility Engineer

Lawrence Molina
Business Services Office
Materials and Stores Specialist

Marcos Moreno
Southern Field Division
Water Resources Technician II

Haya Moscouplos
Engineering
Associate Governmental Program Analyst

Laura Nelson
State Water Project Analysis Office
Administrative Officer II

Jacqueline Nelson
Human Resources Office
Staff Services Manager I

Thu Nguyen
Fiscal Services
Associate Accounting Analyst

John Paasch
Flood Management
Supervising Engineer

Michael Parreira
Operations and Maintenance
Associate Safety Engineer

Brenda Pearl
Office of the Chief Counsel
Senior Legal Typist

Andrew Pollak
Office of the Chief Counsel
Assistant Chief Counsel

Kristin Richmond
Flood Management
Senior Engineer

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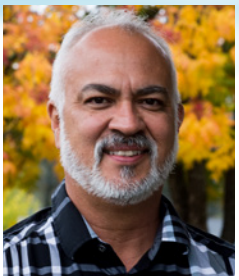
State Service Anniversary

Twenty-five Years of Service

Paula J. Landis
Integrated Regional Water Mgmt.
Division Chief
December 2014

Ney Gamboa
Southern Field Division
Water Resources Engineering Assoc.
January 2015



Chuck Saiz
Oroville Field Division
Utility Craftsworker Supervisor
December 2014

Linda Scherr
Executive
Staff Services Manager II (Managerial)
December 2014

Belinda S. Schlichting
Oroville Field Division
Utility Craftsworker
December 2014

Ted Soderstrom
Oroville Field Division
Associate Hydroelectric Power Utility Engineer
January 2015

Joseph Strain
Oroville Field Division
Hydroelectric Plant Maintenance Superintendent
January 2015

Lee Terry
SWP Power and Risk Office
Senior Hydroelectric Power Utility Engineer
January 2015

Jeffrey Woled
Statewide Integrated Water Mgmt.
Research Writer
February 2015

No Photo:

Martha Patricia Blake
Engineering
Business Service Assistant
February 2015

Congratulations

to DWR parent **Christa Collin**,
an Environmental Scientist in the South Central Region Office.
Son Case Leon Collin was born September 15, 2014,
weighing seven pounds, 11 ounces and measuring 20 inches long.

Retirements

Alan Aguilar

Alan Aguilar discovered an interest in agriculture while working at his grandparents' citrus orchards in Southern California as a teenager. Looking back, Alan sees that although it was hard work, the experience helped lead to his career in land and water use science. After 28 years with DWR's North Central Region Office, Alan retired in early November as a Senior Environmental Scientist.

While working as an electronics technician for the Navy, Alan realized he preferred working outdoors. After graduating from the University of California at Davis with degree in Soil and Water Science with a concentration in Water Quality, Alan worked as a Water Treatment Plant Operator for the Land Park Water Treatment Plant and an Air Pollution Control Technician for the Placer County Air Pollution Control District.

"These jobs greatly expanded my knowledge and experience regarding the field," said Alan.

In May 1986, Alan joined DWR as an Associate Land and Water Use Analyst for the Central District (now North Central Region Office). His assignment included conducting land use surveys that involved field mapping, crop identification and aerial photography interpretation.

"My greatest accomplishment while working for DWR was getting the opportunity to participate in the publication of four California Water Plan Updates," said Alan, who worked on how California is meeting the demands for water balances while also calculating urban demand. "I also enjoyed providing assistance to locals during the 1996 and 1997 floods and the droughts since 1998."

In retirement, Alan plans to continue to travel through various deserts with former DWR colleagues. When he is not golfing, Alan will be renovating his home and outdoor landscape.

Promotions

Christina Robinson
Southern Field Division
Business Service Officer I

Joseph Royer
Engineering
Principal Engineer

Mitchel Russo
Flood Management
Senior Engineer

Jennifer Russo
North Central Region Office
Administrative Officer II

Laurence Sanati
Flood Management
Engineer

Vera Sandronsky
Office of the Chief Counsel
Attorney IV

Gregory Sanfilippo
Engineering
Transportation Surveyor Party Chief (Caltrans)

David Shakhunov
SWP Power & Risk Office
Electrical Engineer

Edward Sison
Engineering
Senior Mechanical Engineer, HS

Kathy Stanley
Fiscal Services
Accounting Administrator I (Supv.)

Jason Sy
Engineering
Associate HEP** Utility Engineer

Warren Taylor
Delta Field Division
HEP* Technician III

Matthew Van Vacter
Southern Field Division
Water Resources Technician II

Patricia Vertrees
Fiscal Services
Senior Accounting Officer

M. Elizabeth Ware
Business Services Office
Staff Services Manager II (Managerial)

Robert Whitlock
Human Resources Office
Associate Personnel Analyst

Patrick Whitlock
Oroville Field Division
Chief

Jeff Winchester
Southern Field Division
Guide II, Historical Monument

Eliza Yam
Technology Services
Systems Software Specialist III

Larry Yu
SWP Power & Risk Office
Senior HEP** Utility Engineer

Richard Zmuda
Business Services Office
Staff Services Manager I

*Hydroelectric Plant
**Hydroelectric Power

Sherie Brubaker

Sherie Brubaker, a Data Processing Manager III for the Division of Technology Services, may have dedicated all but a few of her 38-year State career to the Information Technology (IT) field, but she considers herself as true environmentalist at heart. DWR was a perfect fit for her.

"I'm happy to have had the opportunity to work at DWR," Sherie said. "I loved working with renowned scientists and engineers delivering quality drinking water, irrigation water, restoring Bay and Delta tributaries and restoring the salmon and smelt fish populations. It allowed me to dip into two things I love — the environment and IT work."

Sherie spent the past three years with DWR's IT Governance and Special Projects Branch, where she focused on the management of AquaAssist, California Irrigation Management Information System Phase II and the Federal Energy Regulatory Commission license compliance tracking software project.

"I developed and implemented strategies to modernize the IT technologies that manage large volumes of complex scientific data captured by a variety of governmental and academic organizations," she said. "I provided the information via an internet web portal in Geographic Information System and standardized formats."

"My final project with DWR was one of my most rewarding — chairperson for the Our Promise Charitable campaign," Sherie said. "We raised more than $150,000 to provide important services to our communities."

Before joining DWR in 2007, she had worked at the departments of Corrections and Rehabilitation, Transportation, Health Services, Social Services, Aging and the California Health Facilities Commission.

A Sacramento native, Sherie earned a Bachelor of Science in Business Administration with an emphasis on human relations and management from California State University, Sacramento in 1978.

Sherie loves the outdoors and has been a whitewater rafting guide. She planned a 15-person, 18-day rafting trip down the Colorado River through the Grand Canyon – all in individual rafts.

Sherie's retirement plans include plenty of time to enjoy the outdoors while hiking, camping and skiing, as well as spending time with family, friends, traveling and volunteering to help others. Sherie and her family are looking ahead to next summer and a month-long trip to Yellowstone, Grand Teton and Glacier national parks.

Sonny Fong

With almost half of his more than 38 years of State service as DWR's Emergency Preparedness and Security Manager, Sonny Fong knew how to respond quickly to a variety of disasters, such as levee breaks, floods and earthquakes. He was responsible for the development and maintenance of the department's Continuity of Government Plan, Continuity of Operations Plan, the SEMS/NIMS/ICS Training and Exercise Program, Preparedness and Response Program, Cyber Security Program, Corporate/Physical Security Program and served as the law enforcement liaison to local, state and federal law enforcement/homeland security agencies.

"The people I worked with along the way contributed to my success and I thank them," said Sonny, "I also have fond memories of staff that I was lucky to have hired and am proud of their successes."

One of Sonny's highlights was representing DWR at the Governors Emergency Operation Executive Council, a cabinet-level group handling emergency/disaster related policies, from 2004 to 2010.

"It was so very interesting to observe, participate and experience the many personalities and how decisions were derived," said Sonny. He added that he was intimidated at first, but soon realized that the people were no different than anyone else.

Sonny also represented DWR during the concrete failure investigation and subsequent reconstruction of the Reid Gardner Unit Four Cooling Tower outside of Las Vegas, the 1989 Loma Prieta Earthquake response, the 1997 and 1998 flood disaster responses and the 2003, 2007 and 2008 fire disasters.

Sonny was instrumental in organizing DWR's team to respond to the 2001 energy crisis, when the Department was directed to purchase power for the state's electrical grid.

With 22 special awards, commendations and recognitions from 1995- 2012 and 29 Professional Certifications under his belt, Sonny's retirement plans include gearing his knowledge and expertise toward part-time consulting work while working on his muscle cars, riding his HOG, crafting his pool shots and helping out with youth baseball.

Retirements

Michael Brown
Operations and Maintenance
Systems Software Specialist II

Grace Cantonwine
Operations and Maintenance
Supervisor of Drafting Services

Craig Eddington
Delta Field Division
Utility Craftsworker

Barbara Graham
Technology Services
Assistant Information Systems Analyst

Lorraine Hall
Business Services Office
Staff Services Manager I

Betty Hanner
Oroville Field Division
Warehouse Worker

Marc Hoshovsky
FESSRO***
Program Manager III.

Dennis Johnson
Environmental Services
Associate Governmental Program Analyst

Alan Ladwig
Public Affairs Office
Associate Governmental Program Analyst

Kwok Louie
Engineering
Engineer

Michael Mathews
San Joaquin Field Division
HEP* Electrical Supervisor

Kevin Mefford
Oroville Field Division
HEP* Electrician I

Cheryl Moore
South Central Region Office
Administrative Officer II

Michael Mullen
Bay-Delta Office
Staff Information Systems Analyst

David Parke
Operations and Maintenance
Associate Seismologist

Pamela Ryan
Office of the Chief Counsel
Senior Librarian

Guadalupe Vargas
Operations and Maintenance
Senior Delineator

Dana White
South Central Region Office
Water Resources Technician II

John Williamson
Flood Management
Water Resources Technician II

*Hydroelectric Plant
*** FloodSAFE Environmental Stewardship and Statewide Resources

In Memoriam

Retired Senior Operator **Carroll Miller**, who passed away on November 15 in Yuba City, was already well-traveled when he joined DWR in 1975. Two of his tours with the U.S. Air Force were in war zones.

His son Jack, who followed his father's DWR career path and now is a Chief Hydroelectric Plant Operator in the Oroville Field Division, said Carroll joined the Air Force when he turned 18 during the Korean conflict in 1952.

Carroll migrated from the Military Police to power production in the service and enjoyed a 21-year Air Force career with overseas posts in Germany, England and Vietnam, as well as Korea. "Dad was responsible for supplying power to U.S. air fields during his Vietnam tour," Jack says.

Stateside stops included Vandenberg Air Force Base near Lompoc where Jack was born and Beale Air Force Base near Marysville, the final stop in Master Sergeant Miller's Air Force career.

Carroll's first assignment with DWR was as an Assistant Operator at Edmonston Pumping Plant, followed by a transfer to Oroville Field Division as an Operator in 1978. He became Senior Operator at the Area Control Center in 1982.

Jeff Said, Chief of DWR's Delta Field Division, remembers Carroll from when they worked together in the Oroville Division. Jeff was a relatively new operator and says the exceptionally competent Oroville team he joined had a regimented way of doing things.

"Carroll gave me an opportunity to make more decisions on my own rather than requiring a set regimen," Jeff says. "He wasn't as interested in the process as he was of being sure you could accomplish the goals. He let me find my way while ensuring I didn't go 'out of bounds.' Carroll helped make me a better operator."

Jack Miller says that besides camping and enjoying his motor home during retirement, his dad spent most of his time staying in touch with world events and political issues. "He watched the Fox News channel all his waking hours," he laughs. "That's all he watched."

Carroll's wife Patricia died in 2006. In addition to Jack and his brothers John and Neal Miller, Carroll is survived by grandchildren Jared, Jordan and Jacob Miller.

Heinrich "Hank" Gebhard, retired Senior Control Engineer with the Division of Environmental Services (DES), passed away October 26, 2014 at age 80.

Born and raised in Bavaria, Germany, Hank came to the United States in 1954 and graduated from the U.S. Naval Training Center two years later, allowing him to apply for his American citizenship with honors. He also earned a degree from the Michigan Institute of Technology.

For the next 14 years, Hank expanded his electrical engineering expertise with various programs. He worked with aerospace programs including North American Rockwell and on contract projects for NASA.

In May 1972, Hank joined DWR as a Control Systems Technician II for the Division of Environmental Services.

"Hank was very proactive in keeping the department involved and up to date with technology," says Control System Technician Mike Dempsey, who had been hired by Hank as a student assistant in 1979.

Hank 's 29 years with DWR included working at San Joaquin Field Division, Beckwourth Maintenance Station and as a DWR volunteer trainer. He supervised the DES' Control Systems Section before retiring in 2001. Hank's work included monitoring systems responsible for transferring real-time data on water quality for the State Water Project while also working aboard the San Carlos, DWR's 56-foot research boat that monitors conditions and collects water quality samples in the Sacramento-San Joaquin Delta and San Francisco Bay system.

Hank is survived by his wife Rose, his two daughters Heidi and Christina, son Martin, two grandchildren and three sisters.

Memoriams:

Ronald Buster Barker	Technology Services	October 31, 2014
Joan Lombard	Executive	November 17, 2014
Margaret Ward	Public Information Office	November 19, 2014

California's Frozen Reservoir Needs a Boost

Despite December and February storms, water content in California's snowpack is less than half the historical average for this time of year. And the state's reservoirs, which depend on the melting snowpack, are running near-historic deficits. It will take major, cold storms to bring the snowpack back to normal.

Reservoir and snowpack readings are here:
http://cdec.water.ca.gov/floodER/hydro/

DWR Mission Statement

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.

Chief Engineer Eric Santos is at the helm of the San Carlos, DWR's 56-foot research boat, as it sails the waters of the Sacramento-San Joaquin Delta and San Francisco Bay system monitoring conditions and collecting water quality samples. DWR biologists and water quality technicians on board assure DWR's compliance with the State Water Resources Control Board's water quality standards, monitor phytoplankton, zooplankton and benthos and keep an eye on such things as algae blooms. A new San Carlos under construction in Seattle will soon replace DWR's current workhorse vessel which has been in service since 1976.