BAY AREA WATER SUPPLY AND CONSERVATION AGENCY
BOARD OF DIRECTORS MEETING

May 12, 2017

Correspondence and media coverage of interest between January 25, 2017 and May 11, 2017

Correspondence

Date: May 11, 2017
From: Nicole Sandkulla, CEO/General Manager, BAWSCA
To: Harlan Kelly, General Manager, SFPUC
Subject: April 25, 2017 Statement Clarification

Date: April 25, 2017
From: Nicole Sandkulla, CEO/General Manager, BAWSCA
To: San Francisco Public Utilities Commission
Subject: Statement by Nicole Sandkulla at a Meeting of the SFPUC about the Future Water Supply for Residents, Businesses, and Community Agencies in Alameda, San Mateo, and Santa Clara Counties

Date: April 14, 2017
From: Nicole Sandkulla, CEO/General Manager, BAWSCA
To: The Hon. Eduardo Garcia, Chair, Assembly Water Parks and Wildlife Committee
Subject: BAWSCA's Support of AB 1654 (Rubio): Urban Water Management Planning

Date: April 14, 2017
From: Nicole Sandkulla, CEO/General Manager, BAWSCA
To: The Hon. Eduardo Garcia, Chair, Assembly Water Parks and Wildlife Committee
Subject: BAWSCA's Support of AB 968 (Rubio): Urban Water Use Efficiency

Date: April 13, 2017
From: Nicole Sandkulla, CEO/General Manager, BAWSCA
To: Mr. Tim Quinn, Executive Director, Association of California Water Agencies
Subject: BAWSCA Support of ACWA's Policy Statement on Bay-Delta Flow Requirements

Date: April 14, 2017
From: Nicole Sandkulla, CEO/General Manager, BAWSCA
To: Jose Esteves, Former BAWSCA Board Member
Subject: Thank you letter

Date: January 25, 2017
From: Nicole Sandkulla, CEO/General Manager, BAWSCA
To: Mike Guingona, Former BAWSCA Board Member
Subject: Thank you letter

Media Coverage

Water Supply Management:

Date: May 8, 2017
Source: Sacramento Bee
Article: Oroville Dam: With bills rolling in, state borrows heavily

Date: May 7, 2017
Source: Water Deeply
Article: 'These fish are in a bad way.' How many more will die because of the Delta tunnels?

Date: May 5, 2017
Source: ACWA News
Article: ACWA, Member Agencies Oppose Water Conservation Budget Trailer Bill

Date: May 2, 2017
Source: California Today
Article: Use Less Water, Pay Higher Bills

Date: April 29, 2017
Source: The Press Enterprise
Article: Fix California's dilapidated water system

Date: April 24, 2017
Source: E&E News
Article: Engineers rebuild behemoth in face of earthquake risks

Date: April 21, 2017
Source: Monterey Herald
Article: Major new reservoir planned in Santa Clara County

Water Supply Conditions

Date: May 8, 2017
Source: CBS San Francisco Bay Area
Article: Snowmelt Threatens To Flood San Joaquin River, Mokelumne River

Date: May 7, 2017
Source: The Press Enterprise
Article: Low groundwater levels mean water worries not behind us

Date: April 18, 2017
Source: NASA
Article: Sierra Snowpack Bigger Than Last Four Years Combined: NASA

Date: May 1, 2017
Source: San Francisco Chronicle
Article: Floods possible as warmth melts heavy Sierra snowpack

BAWSCA
Bay Area Water Supply & Conservation Agency

May 11, 2017

Harlan L. Kelly, Jr.
General Manager, San Francisco Public Utilities Commission
525 Golden Gate Ave, 13th Floor
San Francisco, CA 94102

Subject: April 25, 2017 Statement Clarification

Dear Harlan,

With regard to BAWSCA's April 25th statement to the San Francisco Public Utilities Commission (SFPUC), I want to clarify that BAWSCA's priority for resolution of the State Board's Bay Delta Plan continues to be reaching a negotiated settlement on Lower San Joaquin River flow objectives, which we believe is possible. As documented in our comment letter to the State Board and elsewhere, BAWSCA supports the alternative that the SFPUC has proposed to the State Board. Working together in close collaboration on the State Board's Bay Delta Plan, which has the potential for significant negative impacts to all water customers served by the Regional Water System, will hopefully better enable our agencies in finding a solution that improves the Tuolumne River while maintaining water supply reliability for our member agencies and their customers.

In the unfortunate event that a negotiated settlement cannot be reached and the State Board's Bay Delta proposal is implemented, we expect SFPUC to undertake water supply planning efforts necessary to fulfill its contractual requirement to deliver 184 mgd whenever needed by the Wholesale Customers. BAWSCA appreciates the continued expression of commitment by the Commission and the SFPUC staff to deliver 184 mgd to the Wholesale Customers. If the State's proposal is implemented, BAWSCA recognizes that implementation of projects substantial enough to achieve reliable delivery of the Supply Assurance will be very difficult, particularly during sequential dry years. But we trust that SFPUC will fulfill its contractual requirements and meet the level of service goals so that it can reduce the impact on its Wholesale Customers. Therefore, BAWSCA is not currently seeking legislative action to ensure that San Francisco meets its requirements to BAWSCA's constituents. BAWSCA is focused on working collaboratively with the SFPUC to pursue a negotiated solution to the Tuolumne River issue.

BAWSCA looks forward to continuing our efforts in working collaboratively with the SFPUC to reach the best possible outcome with regard to the State's proposal.

Sincerely,

Nicole Sandkulla
Chief Executive Officer/General Manager

cc: BAWSCA Board of Directors
Allison Schutte, Hanson Bridgett, LLP

Statement by Nicole Sandkulla, Chief Executive Officer, at a Meeting of the San Francisco Public Utilities Commission (SFPUC) about the Future Water Supply for Residents, Businesses and Community Agencies in Alameda, San Mateo and Santa Clara Counties

April 25, 2017

California's State Water Resources Control Board (State Board) has stated its intent to adopt, by the end of the year, a plan which proposes new minimum stream flow requirements for the Tuolumne River. It would reduce water available from the San Francisco Regional (Hetch Hetchy) Water System for residents and businesses in Alameda, San Mateo, and Santa Clara Counties (and several adjacent counties) and use that water to protect fish and other wildlife in the lower Tuolumne River.

These changes could force additional reductions in a reliable supply of water for the 1.8 million residents, 40,000 businesses and thousands of community agencies in these three counties, whose water interests are represented by BAWSCA.

BAWSCA supports the objective of the State Board's Bay-Delta Plan, but it can't support the details of the proposed Plan for the Tuolumne River. There are better ways to reach the same goal, and the Board should strike a reasonable balance in its allocation of limited water supplies and use the best technologies to do so.

BAWSCA's constituents already have reduced their water-use to 56 gallons per day, one of the lowest levels in California, and are ready to do their fair share in the future. The SFPUC and BAWSCA have proposed a detailed alternative to the State Board that is designed to promote the expansion and maintenance of salmonid populations in the lower Tuolumne River, while maintaining water-supply reliability. BAWSCA strongly supports a negotiated settlement agreement to resolve this issue.

For BAWSCA's member agencies and their retail customers, the SFPUC, which supplies water to them, is required by a decades-old Court decision, and a subsequent settlement agreement and contract, to provide them with 184 million gallons of water a day.

San Francisco also is required by state legislation (AB 1823) to submit annually a report to the Legislature and the State Department of Health "describing the progress made during the previous calendar year on securing supplemental supplies of water to augment existing supplies during dry years." The problem is that the SFPUC's reports show very slow progress developing this water to date with no new water supply coming on line until at least 2019.

That situation has to change. The SFPUC must anticipate impacts to water supply and find replacement water to provide to BAWSCA's constituents when needed. The SFPUC must continue to meet its water-supply obligations

In 2002, San Francisco was forced by state legislation to repair and rebuild its antiquated Regional Water System before it collapsed in an earthquake. Now it must supply BAWSCA's constituents with water that will meet their needs regardless of the anticipated State Board decision that would reduce their water supply. BAWSCA is prepared, if necessary, to seek help again from the Legislature. But BAWSCA would prefer to continue its ongoing collaborative efforts with the SFPUC to address this and other critical water supply issues that are being faced today resulting in the SFPUC voluntarily fulfilling its long-term water-supply requirements.

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BAWSCA
Bay Area Water Supply & Conservation Agency

April 14, 2017

The Honorable Eduardo Garcia, Chair
Assembly Water, Parks and Wildlife Committee
State Capitol, Room 4140
Sacramento, CA 95814

Re: BAWSCA's Support of AB 1654 (Rubio): Urban Water Management Planning

Dear Chair Garcia:

On behalf of the Bay Area Water Supply and Conservation Agency (BAWSCA), I am writing to express our support for AB 1654.

BAWSCA represents the interests of the 26 water suppliers who purchase, on a wholesale basis, water from the San Francisco Regional Water System and in turn provide that water to 1.78 million residents, 40,000 businesses, and thousands of community organizations in Alameda, San Mateo and Santa Clara counties.

AB 1654 will serve to enhance existing urban water management planning requirements and strengthen water suppliers' abilities to plan and prepare for future drought. Assuring drought resiliency is of particular interest to BAWSCA and its member agencies.

AB 1654 would enhance existing reporting and drought response requirements related to water shortage contingency analyses, as called for by the Governor. Under the bill, urban retail water suppliers would report annually to the Department of Water Resources on the status of their water supplies for that year and be required to note whether supplies will be adequate to meet projected customer demand. If supplies are not adequate to meet demand, the water supplier would be required to implement the appropriate responses as described in their water shortage contingency analysis.

AB 1654 would also prohibit a water supplier from being required to reduce its use or reliance on any water supply available beyond the steps specified in its water shortage contingency analysis, protecting water suppliers' and their customers' investments in resilient water supply sources.

Finally, as a significant policy matter with implications for California's economy and communities, we encourage the Legislature to consider AB 1654 and other similar bills through the regular policy committee process, and to not consider budget trailer bills related to this important area of public policy.

For the above reasons, BAWSCA supports AB 1654.

Sincerely,

Nicole Sandkulla
CEO/General Manager

cc: The Honorable Blanca Rubio, California State Assembly
Honorable Members of the Assembly Water, Parks, and Wildlife Committee

BAWSCA
Bay Area Water Supply & Conservation Agency

April 14, 2017

The Honorable Eduardo Garcia, Chair
Assembly Water, Parks and Wildlife Committee
State Capitol, Room 4140
Sacramento, CA 95814

Re: BAWSCA's Support of AB 968 (Rubio): Urban Water Use Efficiency

Dear Chair Garcia:

On behalf of the Bay Area Water Supply and Conservation Agency (BAWSCA), I am writing to express our support for AB 968 as proposed to be amended.

BAWSCA represents the interests of the 26 water suppliers who purchase, on a wholesale basis, water from the San Francisco Regional Water System and in turn provide that water to 1.78 million residents, 40,000 businesses, and thousands of community organizations in Alameda, San Mateo and Santa Clara counties.

BAWSCA and its member agencies support the Governor's call to make water use efficiency a way of life here in California, and take pride in our collective efforts to help the State meet the many challenges faced during this recent prolonged period of drought.

AB 968, as BAWSCA understands its proposed language following the incorporation of amendments, will set new water efficiency targets for water suppliers to achieve by 2025. As called for by Governor Brown, these new targets will build upon the progress made under the existing "20% by 2020" law (SB x7-7 (2009)). The bill will make water use efficiency a way of life in California in a manner that accounts for local conditions, while also recognizing and incentivizing sustainable, balanced approaches to water management. AB 968 will establish a collaborative stakeholder process to continue improvement in water use efficiency beyond 2025. AB 968 will also preserve the Legislature's authority and oversight over long-term water use target setting while making water use efficiency a way of life in California.

As a significant policy matter with implications for California's economy and communities, BAWSCA encourages the Legislature to consider AB 968 and other similar bills through the regular policy committee process, and to not consider budget trailer bills related to this important area of public policy.

For the above reasons, BAWSCA supports AB 968.

Sincerely,

Nicole Sandkulla
CEO/General Manager

cc: The Honorable Blanca Rubio, California State Assembly
Honorable Members of the Assembly Water, Parks, and Wildlife Committee

BAWSCA
Bay Area Water Supply & Conservation Agency

April 13, 2017

Mr. Tim Quinn
Executive Director
Association of California Water Agencies
910 K Street, Suite 100
Sacramento, California 95814-3577

RE: BAWSCA Support of ACWA's Policy Statement on Bay-Delta Flow Requirements

Dear Mr. Quinn:

The Bay Area Water Supply and Conservation Agency (BAWSCA) supports the Association of California Water Agency's (ACWA) Policy Statement on Bay-Delta Flow Requirements. BAWSCA represents the interests of the 26 water suppliers who purchase, on a wholesale basis, water from the San Francisco Hetch Hetchy Regional Water System and in turn provide that water to 1.8 million residents, 40,000 businesses, and thousands of community organizations in Alameda, San Mateo and Santa Clara counties. BAWSCA understands that ACWA will be sharing this letter of support, together with similar letters and resolutions from other water agencies, with the State Water Resources Control Board (SWRCB) to encourage them to embrace the collaborative approach articulated in ACWA's Policy Statement.

The SWRCB has the responsibility for updating the Bay-Delta Plan in a manner that establishes water quality objectives that ensure the reasonable protection of all beneficial uses of water in a way that is consistent with the coequal goals of improving water supply reliability, and protecting, restoring and enhancing the Delta ecosystem while respecting the commitments made in the California Water Action Plan.

ACWA, in its review of the SWRCB's current proposal for the Bay-Delta Plan update, noted that the proposal: (1) focused singularly on an "unimpaired flow" approach, (2) was irreconcilable with a policy of coequal goals of improving both water supply reliability and ecosystem health, and (3) was inconsistent with the broader water policy objectives of Governor Brown's Administration.

BAWSCA's review of the SWRCB 2016 Draft Revised Substitute Environmental Document (SED) found that the SWRCB's flow proposal would severely impact the Bay Area, including BAWSCA member agencies, particularly during times of drought. Severe impacts would include drastic water shortages that in turn would have adverse environmental impacts, harm the region's economy, and

significantly burden the 1.78 million people served by BAWSCA member agencies. Those impacts were not adequately analyzed by the SWRCB in their accompanying environmental documentation.[1]

Counter to the current SWRCB approach, ACWA's policy statement provides a sound path forward to effectively achieve ecological objectives while maintaining water supply reliability. It calls on the SWRCB to set aside its "unimpaired flow" approach and heed Governor Brown's call for negotiated agreements. BAWSCA likewise has appealed to the SWRCB to allow for negotiated agreements in its January 3, 2017 statement as part of the hearings on the 2016 SED, as well as its March 17, 2017 comments on the 2016 SED. Negotiated agreements have proven to be successful on many rivers and tributaries in California.

The ACWA policy statement notes the state's flow policy must be consistent with the principles of collaboration, comprehensive solutions, science, functional flows, economic considerations, state policies, and leadership concerns. Such an alignment best assures success. ACWA's policy statement was unanimously adopted by the AWCA Board of Directors in March of 2017. BAWSCA is highly supportive of ACWA's effort. BAWSCA believes that the SWRCB can achieve its ecological objectives more effectively while maintaining water supply reliability if it were to embrace ACWA's approach.

Sincerely,

Nicole Sandkulla
CEO/General Manager

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cc: BAWSCA Board of Directors
BAWSCA Water Management Representatives

[1] BAWSCA's March 17 2017 Comments on The 2016 Draft Revised Substitute Environmental Document In Support Of Potential Changes To The Water Quality Control Plan For The San Francisco Bay-Sacramento San Joaquin Delta Estuary: San Joaquin River Flows And Southern Delta Water Quality (BAWSCA's Comments on the 2016 SED).

BAWSCA
Bay Area Water Supply & Conservation Agency

April 14, 2017

Mr. Jose Esteves
c/o City of Milpitas
455 East Calaveras Boulevard
Milpitas, CA 95035

Dear Mr. Esteves:

The Bay Area Water Supply and Conservation Agency (BAWSCA) and the San Francisco Bay Area Regional Water System Financing Authority (RFA) were fortunate to have you as a member of their boards during the height of one of the most challenging drought period our Region has had.

Your support of BAWSCA, its board, and its staff in ensuring a reliable supply of water at a fair price was invaluable to sustaining the strong regional organization BAWSCA strives to be for its member agencies.

On behalf of the BAWSCA and RFA boards of directors, I would like to thank you for your leadership, contributions, and continued support of BAWSCA, its goals, and efforts to address the major issues that continue to face the member agencies and their customers.

The BAWSCA Board of Directors, BAWSCA staff and I wish you every success in the future!

Sincerely,

Nicole Sandkulla
CEO/General Manager

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cc: Board of Directors, Bay Area Water Supply & Conservation Agency (BAWSCA)

BAWSCA
Bay Area Water Supply & Conservation Agency

January 25, 2017

Mr. Mike Guingona
332 Peoria Street
Daly City, CA 94014

Dear Mr. Guingona:

The Bay Area Water Supply and Conservation Agency (BAWSCA) and the San Francisco Bay Area Regional Water System Financing Authority (RFA) were fortunate to have you as a member of their boards.

Your commitment and support of BAWSCA, its board, and its staff was crucial to building the strong regional organization we have today.

On behalf of the BAWSCA and RFA boards of directors, I would like to thank you for your leadership, dedication, and continued support of BAWSCA, its goals, and efforts to address the major issues that continue to face the member agencies and its customers.

The BAWSCA board of directors, BAWSCA staff and I wish you every success in the future!

Thank you Mike for all your efforts for water customers!

Sincerely,

Nicole Sandkulla

Nicole Sandkulla
CEO/General Manager

cc: Board of Directors, Bay Area Water Supply & Conservation Agency (BAWSCA)

Oroville Dam: With bills rolling in, state borrows heavily
Sacramento Bee | May 8, 2017 | Dale Kasler

California is borrowing up to $500 million to pay for the crisis at Oroville Dam, although it expects to be reimbursed for its costs.

The Department of Water Resources obtained a $500 million line of credit last week to cover expenses connected to the spillway fracture at Oroville, including the permanent repairs. DWR obtained a separate $300 million credit line last week to cover other capital improvements for the State Water Project beyond Oroville.

Federal money is expected to pay for much of the repairs. President Donald Trump in early April approved a request for $540 million in winter storm repair funds for California, including $274 million to deal with the short-term emergency at Oroville.

The state also plans to seek reimbursement from the Federal Emergency Management Agency for 75 percent of the cost of the dam's permanent repairs. Kiewit Corp. of Omaha, Neb., has won a $275.4 million contract for the repairs, which are expected to take two years.

Despite the federal funding, the state had to line up financing because it could take a while for FEMA to reimburse the state, said spokeswoman Nancy Vogel of the Natural Resources Agency, which oversees DWR. Vogel said the state has already tapped $67 million of the available $500 million.

Water customers, not state taxpayers, are expected to pick up whatever costs aren't covered by the feds. Because Lake Oroville is the main storage facility of the State Water Project, state officials believe the costs will be borne by SWP member agencies such as the giant Metropolitan Water District of Southern California.

The $500 million line of credit was arranged through Wells Fargo, despite State Treasurer John Chiang's decision last fall to suspend the big bank from most forms of state business as punishment for a scandal over unauthorized customer accounts. Chiang spokesman Marc Lifsher said the DWR credit deal doesn't violate the treasurer's rules.

# # #

These fish are in a bad way.' How many more will die because of the Delta tunnels?
Water Deeply | May 7, 2017 | Matt Weiser

California's ambitious plan to tunnel under the West's largest estuary has always had two primary goals: to restore imperiled native fish and to improve water deliveries to farms and cities.

An early analysis by federal wildlife agencies, however, indicates the project might make life worse for fish.

The so-called WaterFix project calls for building two giant tunnels under the Sacramento-San Joaquin Delta, a tidal estuary that nurtures the largest salmon run on the West Coast. The tunnels, each 40 feet in diameter and 35 miles long, would shunt a portion of Sacramento River flows out of the estuary and directly to existing water distribution canals south of the Delta, near the city of Tracy.

Some 25 million Californians rely on the Delta for at least a portion of their water needs. The diverted water also irrigates more than 3 million acres of farmland. But this water supply has become less reliable in recent years amid pumping reductions to protect native fish, including Chinook salmon, delta smelt, steelhead trout and sturgeon.

The tunnels, estimated to cost $17 billion, are intended to bring reliability back to the water diversions. This would be done by moving the diversion point north to a presumably less sensitive location on the banks of the Sacramento River, with improvements like modern fish screens and 15,000 acres of habitat restoration.

But big water projects come with big conflicts. And despite 10 years of work on the proposal, it may still present significant risks to fish.

The U.S. Fish and Wildlife Service and National Marine Fisheries Service recently released draft studies detailing how the tunnel project might affect fish protected by the Endangered Species Act. Known as a "biological opinion," each agency's report is still undergoing extensive internal review and fine-tuning.

Even so, the drafts identify problems that may be difficult to overcome or which might require extensive modification of the tunnel project.

"It's obvious there will be adverse effects from this project," said Holly Doremus, a professor of environmental law at UC Berkeley and an expert on the Endangered Species Act. "These fish are in a bad way. There's a desire to have higher reliability for high volumes of water delivery. That isn't compatible with certainty that the fish will be in better shape."

The draft biological opinions are even more significant because key sections have already been reviewed by an independent science panel assembled by the Delta Stewardship Council, a state agency.

Significantly, the panel found that 15,000 acres of habitat restoration won't be enough to neutralize damages caused by the project.

“Adverse effects of construction and operation will require significant mitigation beyond the conservation measures described,” the six-member panel of experts wrote in its report, completed in March.

A spokesperson for the WaterFix project did not respond to a request for comment.

Concerns identified by federal wildlife officials include:

- Delta smelt could be cut off from habitat upstream of the three tunnel intakes on the Sacramento River during the 10-year construction period. Construction will narrow the river, boosting water velocity beyond what smelt can handle.
- Once operational, water diverted by the new intakes will cause salinity to shift upstream in the estuary. This could further constrict smelt habitat.
- The suction effect of the intakes could cause reverse flows both upstream and downstream that could be harmful for salmon and smelt.
- The project includes changing how upstream reservoirs release water. This could increase water temperatures and shrink spawning habitat in the Sacramento and American rivers, which would be deadly to salmon.

In its draft biological opinion, the National Marine Fisheries Service writes that tunnel operations could kill as much as 7 percent of winter-run Chinook salmon, an endangered species.

“This is a notable survival reduction for an endangered species, especially if it occurs on a frequent (e.g., annual) basis,” the report notes.

Federal officials emphasized that their review of the complicated project is ongoing, and any findings in the draft biological opinions could change.

“The WaterFix proposal is not entirely ripe for final consultation,” said Shane Hunt, a spokesman for the U.S. Fish and Wildlife Service. “They have proposed some minor adjustments. So until they put pens down on tweaking what they’re proposing to do, we won’t have a final biological opinion.”

State officials hope to have all permits for the project in hand by the end of this year, with groundbreaking to start in 2018.

# # #

Matt Weiser is a contributing editor at Water Deeply. Contact him at matt@newsdeeply.org or via Twitter at @matt_weiser.

ACWA, Member Agencies Oppose Water Conservation Budget Trailer Bill
ACWA News | May 5, 2017 | Lisa Lien-Mager

ACWA and representatives of nearly 40 local water agencies turned out in force to oppose a budget trailer bill on water conservation heard May 3 in the Assembly Budget Subcommittee #3 on Resources and Transportation.

The subcommittee did not vote on the budget trailer bill – identified as 810 Water Conservation as a California Way of Life on the Department of Finance website – but left it as an "open issue" for potential action later. The trailer bill would authorize the State Water Board to adopt interim standards (prior to 2021) for urban conservation via emergency regulation, and long-term standards (2021 and beyond) via regular rulemaking procedures. It also would add new requirements for water shortage contingency plans and agricultural water management planning as outlined in the Brown Administration's final report, "Making Conservation a California Way of Life," which was released April 7.

ACWA opposes the use of budget trailer bills to advance substantive policy changes in state law. The trailer bill on conservation proposes significant public policy changes that should be heard through the deliberative and transparent policy and fiscal committee process and not rushed through the budget trailer bill process, which does not provide adequate time for stakeholder comment and public input.

ACWA Director of State Legislative Relations Wendy Ridderbusch, who led the testimony in opposition to the trailer bill, noted that ACWA local water agency members did an excellent job planning and preparing for the recent drought. The vast majority of water systems throughout the state were able to deliver safe and reliable water suppliers to their customers even in consecutive years of severe drought.

"Water agencies are governed by elected boards of directors that have their finger on the pulse of the communities they live in," Ridderbusch said. "They have a much better idea of what needs to be done to enhance future drought planning based on lessons learned on the ground in their communities. It's important to note for the record that state government did not swoop in to save water agencies from the drought; water agencies along with California water users are the ones who led the way and delivered the impressive conservation results."

She also noted that ACWA has partnered with the California Department of Water Resources on the statewide Save Our Water program, which has reached millions of Californians with information about making conservation and water-use efficiency a way of life.

Ridderbusch cited policy principles adopted by the ACWA Board of Directors in 2015 opposing the use of budget trailer bills to advance substantive changes in state law that are not related to the budget. She expressed disappointment that the technique is being considered once again for use in formulating important public policy.

ACWA and its member agencies are actively supporting AB 968 (Rubio) and AB 1654 (Rubio), which are policy bills based on water community proposals developed as alternatives to the administration's approach. These bills, which would enhance long-term conservation and water shortage contingency planning, are not part of the budget trailer process.

ACWA thanks the many member agencies that provided testimony and sent opposition letters on the budget trailer bill to the Assembly and Senate budget subcommittees. Members that have not yet sent letters are encouraged to do so.

# # #

Use Less Water, Pay Higher Bills
California Today | May 2, 2017 | Mike McPhate

OAKLAND — During California's long drought, public officials urged residents to cut back on water usage and imposed temporary bill surcharges to discourage consumption.

Consumers and businesses responded by reducing water consumption an average of 22 percent statewide from June 2015 to January 2017.

Now their reward will be higher water rates.

Although California's governor, Jerry Brown, officially declared an end to the state's drought emergency last month, local water agencies are planning major rate increases to make up for the fact that they are selling a lot less water than they used to.

The East Bay Municipal Utility District, which serves 1.4 million people on the east side of San Francisco Bay, told customers last week that it planned to raise water rates 9.25 percent on July 1 and another 9 percent the next year. The water agency in Marin County, just north of San Francisco, is proposing to raise rates 7 percent per year for the next two years.

Call it the paradox of conservation.

About 80 percent of the costs of delivering water to urban customers are fixed — pipes, treatment plants, reservoirs. But water bills are set up to recover most of those costs by charging customers a per-gallon fee, said David Mitchell, who studies water policy at M.Cubed, a public policy consulting firm.

So when usage drops sharply, as it did during the drought, rates have to go up. "The fixed costs have to spread over fewer gallons," Mr. Mitchell said. He predicted that water utilities statewide will be raising rates in the next few years to make up for the revenue shortfalls caused by the drought.

For the East Bay Municipal Utility District, revenue is down 12 percent this fiscal year, as a drought surcharge ended and the average user cut back from 250 gallons a day to 200.

"We really do appreciate what our customers have done to conserve. They've pulled out their lawns. They take shorter showers," said Jenesse Miller, an agency spokeswoman. "But whether we deliver one gallon or 130 million gallons, the infrastructure is the same."

Ms. Miller said that the two rate increases, which will ultimately raise the average bill $9 a month by mid-2018, will largely pay for infrastructure improvements and maintenance. "Many parts of the East Bay have pipes that are 90 or 100 years old," she said.

# # #

Fix California's dilapidated water system
The Press Enterprise | April 29, 2017 | Thomas Evans, Opinion

California has decrepit water infrastructure at risk of catastrophic failure. Should state officials sidestep the issue as conditions worsen by the year? Or should they take action, ensure upgrades, and prevent a crisis?

The better approach is clear — and the state has a modern, compelling and vetted solution on tap: California WaterFix.

WaterFix is the product of expert analyses dating to 2007. State and federal officials have weighed and collected input on thousands of ideas for boosting water system reliability while restoring fish and repairing a damaged delta ecosystem.

The result is a balanced approach that protects nature, preserves quality of life, and helps ensure a dependable water supply in arid Southern California.

WaterFix entails building two underground tunnels, each 40 feet in diameter and 35 miles long, to carry fresh water from the Sacramento River to the California Aqueduct, which in turn sends water statewide.

The $15 billion project would help restore the Sacramento-San Joaquin Delta, hub of the state water system and the Inland region's primary water source. The new tunnels would move water naturally, through gravity: no more relying on antiquated, court-restricted delta pumps that kill endangered fish.

And WaterFix would cut the risk of system failure by relieving pressure on 1,100 miles of dirt levees that form a ring of protection around the delta. A levee collapse, from an earthquake or old age, could bring severe water rationing — a drain on both the economy and quality of life in California.

That's why WaterFix is backed by a broad coalition of scientists, engineers, business groups and chambers of commerce. Economically, the project would help prevent catastrophic costs for industry while adding tens of thousands of construction jobs and billions of dollars to the state's economy.

At the same time, the project would nurture the environment. California EcoRestore, a companion plan to WaterFix, would preserve tens of thousands of acres of nature-sustaining wetlands and floodplains — a boon to fish, plants, wildlife and habitat throughout the delta area.

Project opponents fear that preserving a centralized water supply would undercut incentives to develop local water sources. But water agencies already diversify these sources to the extent they can, and local efforts in areas of recycling, conservation and groundwater recharging cannot offset the need for a modern, reliable state water system.

For Southern California residents, the average out-of-pocket cost would be about $5 per month, according to projections from the Metropolitan Water District — not a bad price for stronger reliability, a healthier environment, and a bulwark against the dry taps of system failure.

WaterFix also would support capturing more water in rainy years such as this one. Enacting a delta solution after years of study and discourse would let the public debate shift to other water issues, including producing more storage.

Of course, California will never achieve unanimity around any project as sweeping and complex as WaterFix. But after 10 years of weighing the options, it is time to coalesce around the best available answer.

WaterFix provides a good balance among practical, economic, environmental and water-security concerns. Inland residents would do well to embrace this solution, support the project — and keep in mind the cost of doing nothing.

# # #

Thomas P. Evans of Riverside is the president of the Western Municipal Water District Board of Directors. He represents Division 2.

Engineers rebuild behemoth in face of earthquake risks
E&E News | April 24, 2017 | Jeremy P. Jacobs

ALAMEDA COUNTY, Calif. — If you think the era of big dam building is over in America, check out the Calaveras project.

Since 2001, construction crews have been excavating a gap in a ridge as tall as a city skyline near San Jose. They've sliced off part of a hillside and laid a concrete spillway longer than four football fields with 50,000 cubic yards of cement — enough to pave a sidewalk between Washington, D.C., and New York.

A custom conveyor belt this spring will carry 3.5 million cubic yards of earth — the same amount used in Egypt's Great Pyramid of Giza — to build a 220-foot dam.

Calaveras is the country's largest new dam project. And it's only 1,200 feet downstream from another dam.

The San Francisco Public Utilities Commission is replacing the Calaveras Dam, an earthen berm impounding a reservoir that provides water to 2.6 million people in the Bay Area.

California's dam safety agency in 2001 ordered the utility to bolster the dam and reduce reservoir levels because the active Calaveras fault is just 1,500 feet away, and a smaller, inactive fault runs directly under the existing dam.

If the fault slips and there's an earthquake, the dam's base could "liquefy" — essentially, turn to quicksand — causing the dam to sag 30 feet and send a deluge over the dam's crest, down Alameda Creek, and into densely populated Fremont and Union City before reaching the San Francisco Bay.

Instead of making expensive and complicated repairs to the existing dam's base, the commission decided it made more financial sense to build a new, state-of-the-art dam just a stone's throw downstream.

Seismic risks like those discovered at Calaveras have become common for the aging water infrastructure in quake-prone California, which relies heavily on nearly 16,000 dams for water management.

"The dams that are older weren't built to current standards," said Chris Dorsey, a senior engineer with the California Division of Safety of Dams. "And because of that, they do end up having deficiencies."

Dorsey said 24 dams under state jurisdiction are being updated for seismic deficiencies. That doesn't include federal dams, like the upgrades at Lake Isabella near Bakersfield — a $500 million dam project.

"We concentrate a lot of our evaluation on seismicity," he said.

No project underscores the challenges of coping with seismic risks — and building a dam in the 21st century — better than Calaveras.

The project underwent more than five years of environmental reviews, and when construction began, engineers discovered ancient landslides, evidence of prior seismic activity thousands of years ago that weakened the soils and made them unsuitable to secure the dam's abutments.

As a result, the project's cost ballooned from $400 million to $810 million, and its timeline stretched from four to 7 ½ years. It is now scheduled to be completed in April 2019.

Seismologist Ivan Wong, who's analyzed more than 200 dams across the country, said discovering new problems during construction is not unusual.

"That's probably true for some large percentage of the projects that I've been involved in," said Wong, who is based in the Bay Area and consulted on the Calaveras. "There are just always surprises."

Wong noted that there has yet to be a major earthquake that caused outdated dams to fail. But, he said, that should serve as little reassurance; one could strike at any time. That includes a major slip of the Cascadia fault in the Pacific Northwest, which could pose a threat to more than two dozen dams along the lower Columbia River.

The dams need to be upgraded, Wong said, and the engineering know-how exists.

"It's not so much a challenge of engineering and science," he said. "The challenge is economics. We've got a lot of dams, and a lot of dams need to be fixed. It's just going to take time and money."

He added, "And, you know, we don't have that much time and that much money to fix everything."

'Calaveras Dam is irreplaceable'

Nestled in the Diablo Range, the Calaveras Valley was home to hay and strawberry farms in the late 19th century.

San Francisco, about 50 miles north and across the bay, was expanding rapidly, and the Spring Valley Water Co. saw an opportunity to create a reservoir to feed the city's growing population.

It purchased the land straddling Alameda and Santa Clara counties and hired the legendary engineer William Mulholland to build a dam.

Mulholland was then celebrated as the mastermind of the Los Angeles Department of Water and Power's 223-mile aqueduct that sucked water from the Owens Valley in the eastern Sierra Nevada and delivered it to Los Angeles (Greenwire, June 6, 2016).

He picked a relatively narrow span between two hillsides about 1,200 feet wide and used a hydraulic fill method that was common during the gold rush of the late 19th century.

The problem — as Mulholland soon learned — was that method was effective for small dams of around 50 to 100 feet, not impoundments over 200 feet.

Mulholland built the dam in 1913, but five years later the upstream slope slumped into the reservoir, and the dam failed. (Mulholland's career ended in 1928 when another of his dams, St. Francis, collapsed in Los Angeles in 1928, killing hundreds of people.)

Spring Valley Water moved ahead, reconstructing the dam to 220 feet using a more robust method. When it was finished in 1925, it was the largest earthen-fill dam in the world.

The dam impounded a 4-mile-long reservoir that reaches 200 feet deep. It is fed by two creeks — the Arroyo Hondo from the east and the Calaveras from the south — creating a long and slender reservoir that holds almost 97,000 acre-feet of water, or about 31 billion gallons. (An acre-foot is nearly 326,000 gallons, or about the amount two California households use in a year.)

San Francisco eventually bought the dam and reservoir, and it has become a critical part of the Public Utilities Commission's water system that delivers water from Hetch Hetchy Reservoir in Yosemite National Park to the Bay Area.

The dam served the utility well for 90 years until, in 2001, state officials became concerned about what would happen if the Calaveras fault caused an earthquake.

Officials required that the water level be kept at 40 percent capacity until the dam was bolstered to withstand a 7.25 magnitude earthquake, a major problem for the utility during the recent six-year drought.

On a sunny spring day after recent rainstorms, the reservoir remains at about 50 feet lower than capacity, with the familiar "bathtub ring" at its edges providing a reminder of its former level.

Dan Wade, the utility's director for water capital projects and programs, said his team immediately examined how to fortify the dam. Removal was not an option because of the pivotal role it plays in the utility's water system and how close it is to its customers. The reservoir is only miles from southern East Bay communities like Milpitas and provides half the system's local Bay Area storage.

Further, he said that unlike many reservoirs in California, Calaveras is fed entirely by local sources — no water is pumped or moved into it.

"Calaveras Dam is irreplaceable," Wade said. "The reason I say that is we have water right here. And water rights are worth their weight in gold in California. We can't take water anywhere else."

'Very robust design'

The dam has become the keystone of the utility's $4.8 billion system improvement program, and Wade takes pride in the project's engineering.

More than 10 million cubic yards of earth has been moved, much of which will be reused in the dam. More than 550 tons of cement — enough to pave several hundred baseball fields — was used in grout that has been injected into the new dam's base, creating a "grout curtain" 150 feet deep to protect from underground seepage.

The 1,550-foot-long concrete spillway is 4-feet thick and has walls as tall as 45 feet in places. It is anchored to the rock below every 6 feet.

"It's a very robust design. I'm proactively telling you that in recognition that there is a lot of questions about spillways these days," Wade said, referring to the near catastrophe at the Oroville Dam in February (Greenwire, March 6).

An inlet-outlet tower has also been built, adorned by sculptures of mountain lions that act as rain gutters and the phrase "Lympha Optima," Latin for "pure water," chiseled above the door.

The project is funded by a bond measure approved by San Franciscans in 2002. Over the next 30 years, water rates will gradually increase to cover the costs.

It is serving as an example for other dams' seismic retrofits, including one less than 50 miles south.

The 240-foot Anderson Dam near Morgan Hill similarly impounds a 90,000-acre-foot reservoir that is threatened by an earthquake on the same fault. If it fails, a deluge would reach the pricey real estate in Morgan Hill in less than 15 minutes. Downtown San Jose would be under 8 feet of water in three hours.

The dam's owner, the Santa Clara Valley Water District, has sought to avoid surprises like the landslides discovered during the Calaveras project.

"We kind of learned a lesson: Make sure we pull back the onion enough in design to we don't get surprises during construction," said Katherine Oven, one of the district's deputy operating officers.

But that hasn't kept its price tag from ballooning. The project cost jumped from $200 million to $400 million when new geologic studies concluded the upstream slope of the dam could collapse in an earthquake.

Set to begin construction next year, the project will drain the reservoir and remove about three-quarters of the dam to be rebuilt — all but about 40 to 50 feet. The district hopes to complete the project by 2024.

Wade of the San Francisco Public Utilities Commission said his team had limited options for the new dam. The original failure in 1918 made engineers and seismologists skeptical of its base, so Wade wanted to construct a new dam. And farther downstream, there was evidence of a larger landslide.

Even if the utility had known about the landslides discovered during construction, "the reality is that we probably would have done the same project," he said. "There is really nothing that points to a different project that would be better or more economical."

Habitat battles ahead?

The Calaveras project underscores the environmental challenges of new dam construction.

Officials waded through six years of environmental reviews. Significant safeguards and measures have been put in place, including 7 miles of fencing designed to keep endangered species out of the construction area.

Every worker and visitor to the site is also trained to look out for threatened species like the Alameda whipsnake and California tiger salamanders.

Environmentalists also earned some major concessions, said Jeff Miller of the Alameda Creek Alliance.

When the Calaveras Reservoir and a smaller reservoir nearby, the San Antonio, were built in the early 1900s, they trapped some species of steelhead above them, cutting them off from reaching the ocean.

Miller and his group initially pushed for a fish ladder to be installed on the new dam. That proved infeasible because of the dam's height and the narrow gap it fills.

However, the utility did agree to build a ladder on a smaller dam that diverts water from Alameda Creek to the north and channels it into the reservoir.

Operators will also release a small amount of water from the Calaveras Reservoir into the Alameda Creek at key times in the summer and fall to boost fish rearing habitat.

"When this dam is complete, the way they will operate the whole system will provide a big benefit for getting salmon and steelhead back in Alameda Creek," Miller said.

Like many environmentalists, Miller said he'd support removing the dam. But he acknowledged that isn't possible here.

"Ecologically, I'd love to see that dam go," Miller said. "But given how many people in the Bay Area depend on that water, it's just not going to happen."

That doesn't mean there won't be clashes ahead with environmentalists.

A major reason for rebuilding the dam was to literally lay the foundation to raise it.

If the water supply is needed, the utility could seek to augment the dam by another 150 feet, bringing it to about 370 feet tall. That would nearly quadruple the size of the reservoir to about 400,000 acre-feet.

It would also inundate a much larger swath of pristine wildlife habitat.

Wade said that decision would be made by future generations.

"One of the criteria for this project," he said, "was that we wanted to have the ability to raise this dam in the future if a later generation decides they want to do that."

Miller said he and other environmentalists would oppose any such development.

And he added that if precedent is any guide, when the foundation for water development is laid in California, there is typically no stopping it.

"Sadly, the history of water development in California, anytime infrastructure is put in to take water out of rivers," he said, "it generally gets taken out."

But Wade, who is also a member of the U.S. Society on Dams, said it is a balancing act, and an important one that must be considered as water resources become scarce.

"It's well-recognized that dams do have impacts, so we have to weigh those carefully," he said. "When you look at securing our water supply and increasing water supply, some of the best ways to do that in an environmentally sustainable way is rehabilitating dams or raising them."

# # #

Major new reservoir planned in Santa Clara County
Monterey Herald | April 21, 2017 | Paul Rogers

Hoping to boost water supplies during future droughts, Silicon Valley's largest water provider is working on a plan to build a new $800 million dam and reservoir in the remote hills of eastern Santa Clara County, just off Pacheco Pass.
The idea, still in the early stages, could result in the construction of one of the largest reservoirs in the Bay Area — a lake that would be twice the size of Crystal Springs Reservoir along Interstate 280 in San Mateo County — and the first new reservoir built in Santa Clara County since 1957, when Uvas Reservoir near Morgan Hill opened.

"It remains to be seen if it is feasible. But it definitely is worth exploring," said Garth Hall, deputy operating officer at the Santa Clara Valley Water District. "This is a major opportunity to find new storage."

On Feb. 28, the board of the water district, a government agency based in San Jose, voted to pay consultants up to $900,000 to study the idea. If those studies show the project has promise, Hall said, the district will apply for funding under Proposition 1, the $7.5 billion water bond that California voters passed in 2014 to help pay for new reservoirs, underground storage, conservation programs, water recycling, desalination and other water projects.

The project faces considerable hurdles, from its price tag to tricky geology.
"The good dam sites were taken long ago," said Jonas Minton, senior water policy adviser at the Planning and Conservation League, a Sacramento environmental group. "What's left are projects that are more expensive and provide less water supply."
The new reservoir would be built on, or slightly upstream from, an existing reservoir, Pacheco Lake, in the rugged ranch lands about half a mile north of Highway 152 near Casa de Fruta. That lake, owned by the tiny Pacheco Pass Water District, sits on Pacheco Creek behind North Fork Dam, a 100-foot earthen dam built in 1939. The existing reservoir is small and holds only 6,000 acre-feet of water. The new reservoir would hold 130,000 acre-feet. An acre-foot is 325,851 gallons, or roughly the amount of water a family of five uses in a year. By comparison, Anderson Reservoir, the largest reservoir in Santa Clara County, holds 90,000 acre-feet.

The plan would be to tear down North Fork Dam and build a new dam either on the same location or up to a mile upstream, Hall said, in the oak woodlands of the Diablo Range. The new earthen dam would be at least 200 feet tall and potentially 300 feet tall. The district would take water it now stores in nearby San Luis Reservoir and pipe it into the new reservoir, filling it in wet years. There's already a pipe, known as the San Felipe Project, running from San Luis Reservoir through the mountains into Anderson Reservoir, so building a connection to bring the water into the San Jose area would be relatively easy, district officials believe.

The idea, as with many dam projects, is expected to face controversy.

The district studied two locations in the same area as far back as 1993 for a new reservoir of roughly between 150,000 and 400,000 acre-feet. Both would have submerged part of Henry W. Coe State Park. When plans moved ahead in 2003, the outcry and potential lawsuits from park lovers and environmental groups led the district to drop the idea.

The 1993 study noted that shale geology in the area is unstable in places, which would make building a dam difficult. One site, known as Pacheco B, located 1.5 miles upstream from the existing reservoir, had solid geology, however. A 150,000 acre-foot reservoir there would cover about 1,200 acres, a 2002 district study found, and would require a 305-foot-tall dam and the acquisition of 25,000 acres of surrounding ranch land to protect the watershed.

The new proposal would not cross the Henry Coe park boundary, Hall said, and could provide more water and passage to help endangered steelhead trout migrate up Pacheco Creek into the state park.

Another challenge is the cost. Any new dam would result in increased water rates in Santa Clara County. The district, which provides water to 1.9 million people, has a long list of costly expenses coming up, including $400 million to rebuild the 67-year-old, seismically unsound Anderson Dam near Morgan Hill.

The district is also exploring other projects. Among them: a partnership with the Contra Costa Water District to raise the height of the dam at Los Vaqueros Reservoir in eastern Contra Costa County by 51 feet, increasing its storage from 160,000 acre-feet to 275,000 acre-feet at a cost of about $800 million, and sharing that water. And it is studying a proposal to store more water at Lake Del Valle in rural Alameda County with the Alameda County Water District.

“With the drought, we realized our vulnerability,” said Gary Kremen, a board member of the Santa Clara Valley Water District. “New projects are expensive, but what’s the cost of reliability? No one wants to run out of water.”

The Los Vaqueros project may be more feasible than a new Pacheco Pass reservoir, said Minton, a former deputy director of the state Department of Water Resources. It has no environmental opposition and would be built at an existing reservoir that already was successfully expanded five years ago.
“This is a new idea, which even if it is worthwhile will take quite a while to prove out,” Minton said. “Los Vaqueros is much further along.”

# # #

Snowmelt Threatens To Flood San Joaquin River, Mokelumne River
CBS San Francisco Bay Area | May 8, 2017

SAN JOAQUIN COUNTY (KPIX 5) — Flooding in San Joaquin County has already cost millions of dollars worth of damage and now high water levels along rivers and reservoirs in the area are keeping emergency management teams on alert.

Bill Lindstedt is finally getting the chance to walk back into the Manteca Sportsmen Club, a shooting range that was completely under water after recent storms hit Northern California.

“Well, this year was pretty bad,” Lindstedt, a Manteca Sportsmen Club member said.

Owners of the club were forced to close their doors and their neighbors had to abandon their property.

Lindstedt said, “It’s been a big problem out here for a while.”

More than two months later, most of the area is still flooded.

The San Joaquin County Office of Emergency Services estimates the damage to be around $13 million and that doesn’t include the crops lost by local farmers.

Michael Cockrell, director of the San Joaquin County Office of Emergency Services said, “We are not out of the clear. We are just starting another danger period with the snowmelt.”

Areas along the Mokelumne River and the San Joaquin River are being watched closely as they rise in order to monitor levels, and in some cases — warning levels — this weekend.

There are also crews patrolling parts of the delta, 24/7.

Cockrell said, “We are threatened to the north, to the east, and the south due to river systems, and to the west because of the inland delta, the tide flow also threatens our levees in the delta. So, all around us, we are threatened by water.”

The county continues to try and get as much federal assistance to help people deal with the flooding and are working to make area levees stronger. Property owners have taken steps to save their land.

Lindstedt said some residents are relying on sandbags.

“…All we can do is take it day by day. It’s nature of living by the delta,” Lindstedt explains.

# # #

Low groundwater levels mean water worries not behind us
The Press Enterprise | May 7, 2017 | Jeffrey Armstrong

The drought emergency may be over, but our water supply worries are not.

When Gov. Jerry Brown lifted mandatory conservation orders across most of the state in April, he closed the book on a sobering chapter in California history. His action marked the end of cutbacks that began in 2014.

By winter, extreme drought turned to record rain and snow. This year, the mountains were cloaked in white, teeming rivers boosted reservoir levels, and State Water Project deliveries are the highest in more than a decade.

But don't be fooled. Below the surface, in groundwater basins, the effects of extreme drought persist. The water held underground in layers of rock and soil serves as a water savings account for dry times. Right now, that account is low. And that means we all need to be concerned.

The problem is most pronounced in Central California. Farmers there pumped excessively from aquifers to keep crops alive during the five-year drought. Decades of overpumping have permanently reduced the aquifers' storage capacity and caused the land to sink more than 2 feet in some places.

Local aquifers are also impacted. Levels in the Temecula Valley Groundwater Basin are 30 percent lower than normal for this time of year, despite abundant winter rains. The basin was drawn down at the peak of the drought, when imports from the State Water Project and Colorado River were limited.

Local aquifer levels are very important because the Temecula Valley basin supplies up to 40 percent of the water for 150,000 people served by Rancho California Water District.

Because local water is about one-fifth the cost of imports, this supply is what keeps the district's rates among the lowest in the area.

The 137-square-mile basin will be recharged by rain and runoff — eventually.

Rancho California Water District uses water from Vail Lake, east of Temecula, to replenish the basin. The lake also suffered from the drought, dropping levels to just over a quarter of capacity.

That is why Rancho California Water District will remain in Stage 3c of its Water Shortage Contingency Plan. While neighboring water providers may be moving to less restrictive stages because their supply portfolio includes more of the costly imported water, it is important for Rancho California to remain vigilant so basins can recover before the next drought.

Under Stage 3c and the district's tiered rate structure, residential and landscape customers get their full tier 1 and tier 2 efficient budgets; tier 3, the inefficient tier, is eliminated. So customers who go over their efficient budget go directly to tier 4 and pay the highest price for water.

As the weather warms, residents of Inland Southern California must remain attentive to their water consumption. The region made great strides in water conservation over the last three years, and hopefully those changes have become habit.

The winter of 2017 gave us a reprieve from drought, but we could have water shortages again next year. It is imperative that we continue making deposits into our groundwater savings accounts so when the next dry spell hits, we are ready.

Jeffrey D. Armstrong is general manager of Rancho California Water District.

# # #

Sierra Snowpack Bigger Than Last Four Years Combined: NASA
NASA | April 18, 2017

New NASA data show that snowpack in the Tuolumne River Basin in California's Sierra Nevada -- a major source of water for San Francisco and California's Central Valley -- is currently larger than the four previous years of snowpack combined. NASA's Airborne Snow Observatory (ASO) measured the Tuolumne Basin snowpack on April 1, a critical annual measurement of snow for states and their inhabitants, at 1.2 million acre-feet (1.5 cubic kilometers). That's enough snow to fill the Rose Bowl in Pasadena, California, nearly 1,600 times.

The Airborne Snow Observatory is the only program that measures snow depth, snow water equivalent (the water contained in snow), and how much sunlight snow reflects over an entire basin, using two scientific instruments (a scanning lidar and an imaging spectrometer) on a King Air aircraft. All other snow-monitoring programs sample only a few locations on the ground or give an average over a broad area. The Airborne Snow Observatory flies in California, Colorado, Oregon, Nevada and Idaho, and is flying a research version in the Swiss Alps.

Frank Gehrke, chief of the California Cooperative Snow Surveys of California's Department of Water Resources, said, "In such a huge snow season, the data available from ASO will provide critical guidance for water managers as we enter into the peak melt season later this spring."

Principal Investigator Tom Painter of NASA's Jet Propulsion Laboratory in Pasadena, California, explained, "Before ASO, water managers had intense stress worrying about how much potential runoff was stored in the mountain snowpack, with little historical information about snowpack years as large as this to guide reservoir management and allocation decisions. With ASO, we will be precisely quantifying this volume and how it changes through the spring." Before 2013, when the ASO program began, errors in forecasting the total Sierra Nevada snowmelt-season runoff were frequently greater than 20 percent and occasionally greater than 40 percent. Now, errors in forecasting runoff from basins that ASO monitors have dropped to less than 2 percent.

The 2017 California snowpack is close to the largest on the record, which consists of decades' worth of snow measurements made at ground level. ASO mapping showed that Tuolumne Basin's snowpack is twice the volume of last year's snowpack and 21 times larger than the snowpack of 2015, the lowest on record. The combined April 1 snow water equivalent of 2013 through 2016 -- years when California was in an intense drought -- added up to only 92 percent of this year's April 1 measurement. In much of the Central Sierra, snow lies 25 feet deep (8 meters). In some high mountain basins, it's deeper than 80 feet (24 meters). And since April 1, it has continued to snow.

This year, the program began mapping the San Joaquin River Basin in California's Central Valley, with funding from the Friant Water Authority in Friant, California, and NASA's Western Water Applications Office. In that basin, this year's April 1 snow water equivalent was about 2.9 million acre-feet (3.6 cubic kilometers). Jeff Payne, water resources director for Friant, said, "This is a critical path to better water management for the San Joaquin River and Friant Dam, particularly in a year like this one, where annual inflow from snowmelt might be 10 times the operating capacity of our reservoir. A lot of the snow in our basin accumulates in protected wilderness areas where conventional monitoring is restricted or prohibited. ASO is leading us to earlier and better water management decisions."

With the addition of the San Joaquin Basin, the Airborne Snow Observatory now maps the snowpack of the entire Central Sierra Nevada range from Kings River in the south to the Tuolumne River in the north, a milestone in a planned expansion of the program to cover the entire Sierra Nevada and other key regions in the West.

# # #

Floods possible as warmth melts heavy Sierra snowpack
San Francisco Chronicle | May 1, 2017 | Kurtis Alexander

The historic snow that piled up in the Sierra this winter has started to come down a mountain melt-off that's swelling rivers and creeks with a dazzling, and potentially dangerous, flow of water.

Several waterways, including Yosemite Valley's Merced River, are expected to approach and even surpass flood stage in coming days as a warm spell keeps overnight lows on many snow-covered peaks above freezing for the first time this year, accelerating the thaw.

Water experts say the heavy spring runoff will likely continue until summer, testing California's flood management efforts in what is a delicate balance between keeping enough water behind dams to prevent downstream surges and releasing enough to make space for the incoming melt.

"Finally, our first heat wave is coming through, and that's triggered a lot of high flows," said Pete Fickenscher, a hydrologist with the California Nevada River Forecast Center, a division of the National Weather Service. "The reservoirs appear prepared for the snowmelt and are expected to be able to handle it. We'll see how it goes."

On Monday, in the routine, first-of-the-month snow survey, the state Department of Water Resources confirmed the immensity of the snowfall that helped put an end to the drought.

State officials reported 190 percent of average snowpack at their central test site, Phillips Station in El Dorado County, about 15 miles southwest of Lake Tahoe near the Sierra-at-Tahoe ski resort. Statewide, snowpack measured 196 percent of average.

The windfall means as much as 20 feet of snow still sits atop ski runs like those at Squaw Valley Resort, which plans to stay open through the Fourth of July.

The potent combination of heavy snow and sun was already set to affect Yosemite National Park on Wednesday, where the Merced River was forecast to reach flood level early in the morning and remain at the brink through Saturday. Unlike most of California's waterways, the Merced River through Yosemite is not dammed, and its flows remain at the mercy of Mother Nature.

Park officials were bracing for high water, monitoring the river to see whether swells would approach roads or trails and leaving low-lying campsites closed as a precaution.

"Yosemite Valley is absolutely beautiful. The meadows are green, and people are enjoying the waterfalls. But obviously we don't want people camping and their campsites getting flooded," park spokesman Scott Gediman said.

With the surrounding granite domes still thick with snow, Gediman said the Park Service will be warning visitors to keep their distance from rivers and streams not just this week but for the next few months.

Nearby Sequoia and Kings Canyon National Parks on Monday reported their second fatality of the year in the Kaweah River's surging middle fork. The body of an 18-year-old Woodlake man was found in the water, and while authorities didn't say how the victim got there, they issued a strict advisory against swimming.

A statewide campaign to alert Californians of the dangers of high water, which is responsible for several deaths every year, has already been launched by the National Weather Service.

"A couple of years ago, we didn't even have a snowpack left when we got to spring," said Courtney Obergfell, a weather service forecaster. "This time of year, as temperatures warm up, people want to cool off, and the water is really cold and moving a lot faster than normal."

The hot spell that's hastening the melt-off is expected to stick around through Thursday. Temperatures at Lake Tahoe and other spots in the Sierra where the snow has begun to melt — at about 6,000 feet above sea level — are likely to hit 70 degrees.

San Francisco will see highs close to 80 degrees through at least Wednesday, with some Bay Area spots jumping into the 90s, forecasters say.

In Truckee, which sits more than a mile above sea level, melting snow was already bringing the Truckee River to flood stage Monday. No damage was immediately reported, but properties along Highway 89 near the river were at risk.

"It's raging. It looks really pretty. It's probably about 8 feet above what it normally runs," said Wendy Brown, owner of the River Street Inn, who could see the whitewater gushing from her business but was not in harm's way.

Several rivers flowing off the Sierra's west side, including the San Joaquin and the Tuolumne, were also running high, but flooding was not expected as dam operators continued measured releases.

Because of active flood control, spring snowmelt generally doesn't produce the abrupt surges in water that come with winter storms. The flow, however, is more constant.

Up to an inch of melt a day, sometimes more, can be expected in major watersheds over prolonged periods this year, according to Jeffrey Mount, a senior fellow at the Public Policy Institute of California's Water Policy Center.

"An inch of rain is no big deal, but an inch of rain a day over a month is a lot of water," Mount said.

The biggest toll of the runoff probably won't be flooding, he said, but damage wreaked on dams and levees from the steady surge.

A fractured spillway at Lake Oroville that forced nearly 200,000 people to temporarily evacuate was the most notable infrastructure problem this year, but several smaller levees face similar threats.

Throughout the Central Valley, Mount said, walls and embankments holding back rivers and wetlands experience ongoing seepage, while in the Sacramento-San Joaquin River Delta, the complex levy system is also inundated.

“That all translates to stress,” Mount said. “I think we are going to have a levee damage hangover. But until the water comes down, we won’t know.”

# # #