BAY AREA WATER SUPPLY AND CONSERVATION AGENCY

BOARD OF DIRECTORS MEETING

February 5, 2016

Correspondence and media coverage of interest between January 26, 2016 and February 3, 2016

Correspondence

Date: January 29, 2016
From: Steven R. Ritchie, SFPUC Asst. General Manager, Water
To: SFPUC Wholesale Customers
Subject: Initial Water Supply Availability Estimate

Date: January 28, 2016
From: Nicole Sandkulla, BAWSCA CEO/General Manager
To: The Hon. Felicia Marcus, Chair State Water Resources Control Board
Subject: Comments on Proposed Extended Emergency Water Conservation Regulation

Media Coverage

Restore Hetch Hetchy:

Date: January 29, 2016
Source: The Daily Journal
Article: Fight to restore valley in Yosemite heads to court

Date: January 28, 2016
Source: The Verge
Article: The Valley Below

Conservation:

Date: February 2, 2016
Source: Maven's Notebook
Article: This just in…State Water Board Adopts Extended Emergency Water Conservation Regulation

Date: February 3, 2016
Source: SJ Mercury News
Article: California refuses pleas for major weakening of water conservation rules

Date: February 2, 2016
Source: Sacramento Bee
Article: California extends mandatory water cuts despite growing snowpack

Date: February 2, 2016
Source: SJ Mercury News
Article: State water conservation numbers slipping

Water Supply:

Date: February 3, 2016
Source: Nevada Appeal
Article: Tahoe snowpack at 120 to 130 percent of average according to CA Department of Water Resources

Date: February 2, 2016
Source: ACWA News
Article: Water Commission Soliciting Concept Papers for Potential Storage Projects

Date: February 1, 2016
Source: Sacramento Bee
Article: Buoyed by recent rains, Folsom Lake levels triple

Date: February 2016
Source: Placer Sentinel
Article: State Water Project Allocation Boosted

Date: January 28, 2016
Source: Triple Pundit
Article: Bay Area Water Initiative Creates Drought Visualization Tool

Date: January 27, 2016
Source: San Diego Union Tribune
Article: EPA announces $182M for California water projects

Date: January 26, 2016
Source: SF Gate
Article: California to release more reservoir water thanks to El Nino storms

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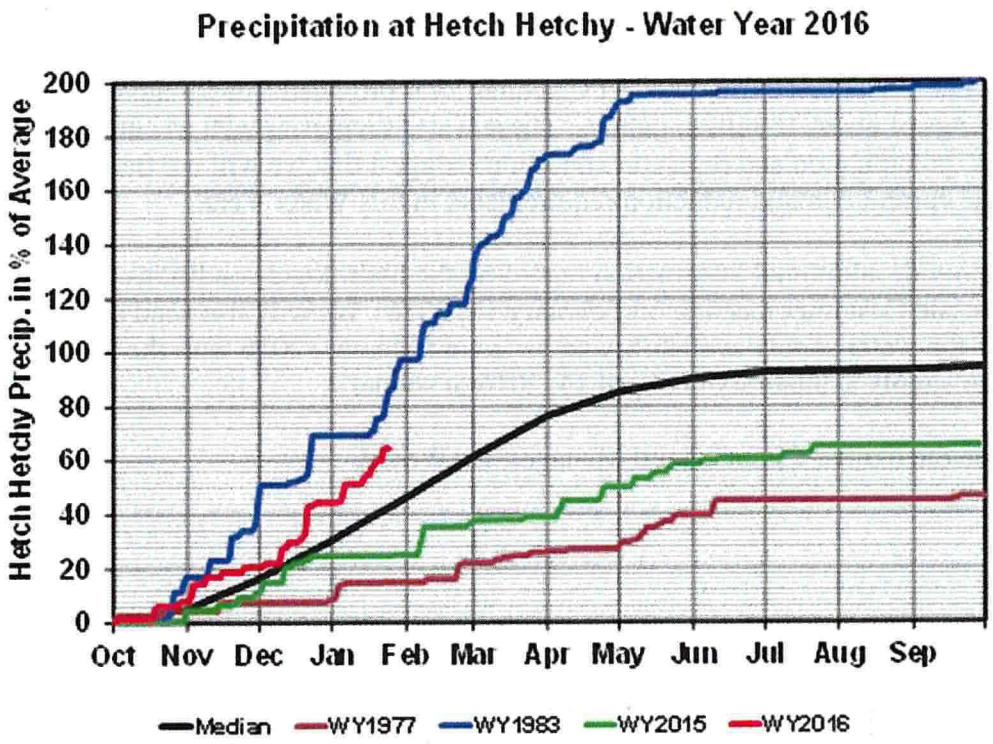
TO: SFPUC Wholesale Customers

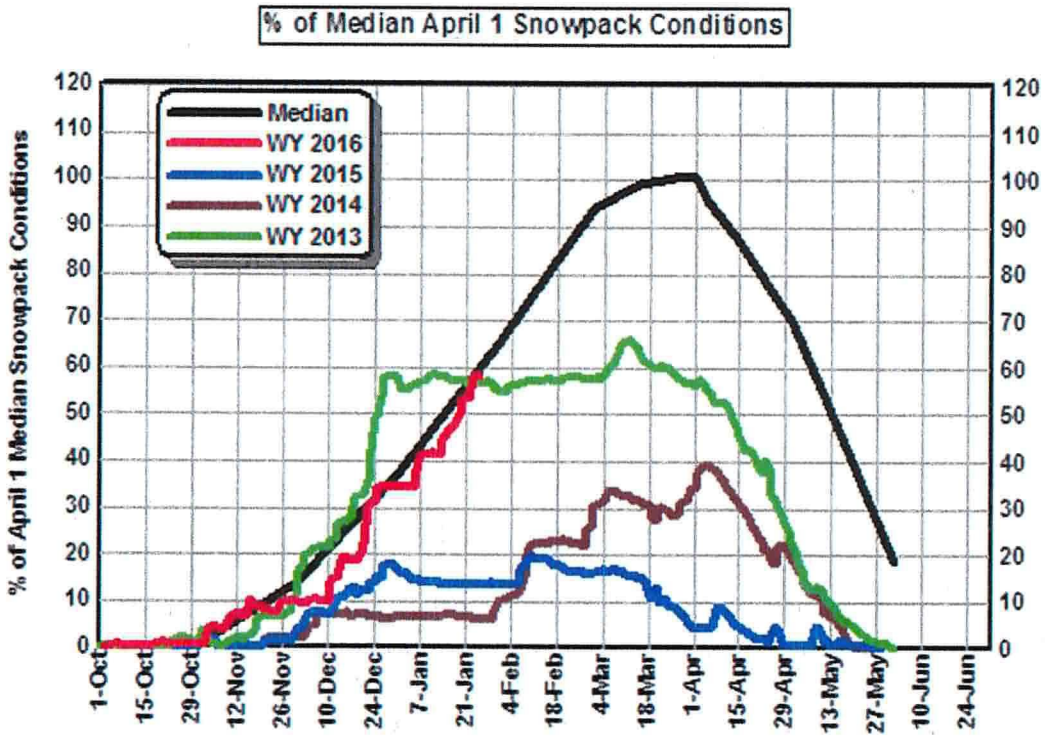
FROM: Steven R. Ritchie, Assistant General Manager, Water

DATE: January 29, 2016

RE: Initial Water Supply Availability Estimate

Pursuant to Governor Brown's Executive Order B-36-15, issued on November 13, 2015, calling for an extension of urban water use restrictions until October 31, 2016, should drought conditions persist through January 2016, the State Water Resources Control Board will consider a resolution on February 2, 2016 extending the drought reduction requirements for water utilities across the State. Based on current snowpack and precipitation totals in the SFPUC watersheds, the SFPUC does not anticipate needing to request demand reductions beyond the State Board requirements for the retail and wholesale service areas. The plots below provide precipitation at Hetch Hetchy and snowpack in the watershed through January 24, 2016.





As the plots indicate, we have been experiencing above normal precipitation and the snowpack is following median conditions. This is a welcome change from the prior years. At this point, there is a high probability that we will fill Hetch Hetchy Reservoir by July 1st. However, we need a continued wet pattern for the remainder of winter into spring for refilling Water Bank. The continuation of demand reductions will be beneficial to refilling the water system which provides for greater water availability in the event that next year is dry. Water reductions during the last Calendar Year provided a cumulative water savings of about 16 billion gallons. These water savings as well as current snowpack, precipitation and reservoir conditions suggest that we will not need to increase current demand reduction requirements in this Water Year.

We will provide additional information regarding the hydrologic conditions at the Wholesale Customer meeting on February 18, 2016. We will also send an update on the water supply availability on or around March1, 2016 with the final water supply availability on April 15, 2016 or sooner.

cc.: Nicole Sandkulla, CEO/General Manager, BAWSCA

BAWSCA
Bay Area Water Supply & Conservation Agency

January 28, 2016

The Honorable Felicia Marcus, Chair
and Members of the State Water Resources Control Board
c/o Jeanine Townsend, Clerk of the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

Subject: Comments on Proposed Extended Emergency Water Conservation Regulation

Dear Chair Marcus and Members of the Board:

The Bay Area Water Supply and Conservation Agency (BAWSCA) appreciates the opportunity to provide input as the State Water Resources Control Board (Board) considers the Draft Emergency Regulation for Urban Water Conservation. BAWSCA provides regional water reliability planning and conservation programming for the benefit of its 26 member agencies that deliver water to over 1.7 million residents and nearly 33,000 commercial, industrial and institutional accounts in Alameda, San Mateo and Santa Clara Counties.

We appreciate that the Board has added credits and adjustments to the Draft Emergency Regulation without redistributing the savings requirements to other water agencies.

Additionally, the Board has done a laudable job of implementing the directives within the Governor's Executive Orders under a challenging timeframe. As the process moves forward, BAWSCA suggests that the Board:

- Establish a process for rescinding the mandatory reductions enacted as part of the emergency regulation should water supply conditions warrant.
- Clarify that the revised emergency regulation will not be applicable in future droughts and should not be construed as the basis for future drought response by the State.

We look forward to working pro-actively in partnership with the Board, DWR and other stakeholders on a redirected process for long-term water use efficiency policy and drought response.

Thank you for your consideration of these comments. If you have any questions, please contact me at NSandkulla@BAWSCA.org or (650) 349-3000.

Sincerely,

Nicole Sandkulla
CEO/General Manager

cc: BAWSCA Board Members
BAWSCA Water Management Representatives
A. Schutte, Hanson Bridgett, LLP

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Fight to restore valley in Yosemite heads to court
The Daily Journal | January 29, 2016 | Fiona Smith

A century ago, the city of San Francisco won a bruising battle with environmentalists and flooded a picturesque valley in Yosemite National Park to create a reservoir that would supply water to the growing city.

The decision to dam the Tuolumne River and fill up the Hetch Hetchy Valley was controversial at the time, but the need to secure more water for San Francisco - which was recovering from the devastating 1906 earthquake – won the day with members of Congress.

Channeling the spirit of John Muir, who called Hetch Hetchy a "wonderfully exact counterpart" to Yosemite Valley, this generation of environmentalists have tried and failed in the political arena to get action to restore the valley.

Now, a group dedicated to reclaiming Hetch Hetchy is hoping the California courts will force San Francisco to eventually remove the O'Shaughnessy dam and find another way to store the Tuolumne's water.

On Friday, the nonprofit group Restore Hetch Hetchy will face off with the city of San Francisco in a Sierra foothills courtroom, hoping to convince a judge that in 2016, using a valley in Yosemite National Park as a reservoir violates the state Constitution's ban on the unreasonable use of water. Restore Hetch Hetchy v. City and County of San Francisco, CV59426, (Tuolumne Super. Ct. filed April 21, 2015).

The reasonable use doctrine, enshrined in 1928 as Article X Section 2 of the state constitution, bans the unreasonable use or unreasonable method of diversion of water in California.

The doctrine applies across the board to all water users in the state and the courts have wielded the doctrine over the years to curb what they saw as wasteful or damaging water use.

In this case, Restore Hetch Hetchy does not claim San Francisco is using its water unreasonably, but rather claims that its method of diversion - using a valley in a national park as a reservoir - is unreasonable. The lawsuit does not explicitly seek the dam's removal, but rather a court order directing San Francisco to develop a plan on alternatives to storing water in Hetch Hetchy.

The courts have viewed the reasonable use doctrine as evolving over time and what was considered reasonable in the past is not necessarily reasonable today, said Michael R. Lozeau, a partner at Lozeau Drury LLP who is representing Restore Hetch Hetchy. "If you were to propose a dam in Yosemite National Park today ... people would think it's crazy, that's absolutely a non-starter," Lozeau said. "If you look at the benefits of restoring the valley and the number of additional high quality, beneficial uses that would come into play and the relative costs and benefits, there's a real solid argument that it's unreasonable."

Restore Hetch Hetchy hired experts to come up with projections about the possible costs of finding alternatives to storing water in Hetch Hetchy as well as the financial boon of opening up a huge new area of Yosemite National Park to visitors.

The benefits outweigh the costs and rejiggering the water storage system to find alternate ways to store its Tuolumne River water would not require San Francisco to give up any water supply, the group argues.

The elegant gravity-fed system that produces hydropower and sends pristine water to 2.6 million people in San Francisco and several other nearby cities, should not be changed and is legally protected by the 1913 Raker Act, an act of Congress that approved the dam's construction, argues the city and county of San Francisco.

"We take this case seriously, as we would any challenge to our water system," wrote Mollie M. Lee, a deputy city attorney for San Francisco, in a statement. "However, we are confident that there is no legal merit to Restore Hetch Hetchy's case, which attempts to revive a debate that was decided by Congress in 1913."

The lawsuit is preempted by the Raker Act and also fails to state a proper claim under the California constitution, according to a demurrer motion filed by San Francisco that aims to knock the case out at an early stage.

"While ... the Raker Act acknowledges the general operation of state water law, it does not incorporate laws that conflict with the rest of the act," wrote San Francisco in its brief. "Here, petitioner's proposed interpretation of state law would effectively undo the Raker Act."

San Francisco has a heavy burden of proof to show that the California water law is preempted and must show it actually conflicts with the purposes of the Raker Act, responded Restore Hetch Hetchy in its court filings.

"The Raker Act's plain text and its legislative history make clear that Congress not only explicitly protected California's authority over water law, but also that compliance with California law should operate as a condition precedent to exercising the grant of right," wrote Restore Hetch Hetchy in its brief.

If the case survives the Raker Act preemption argument, focus will then move to the question of whether using Hetch Hetchy Valley to store water is unreasonable. While there is legal precedent that supports Restore Hetch Hetchy's claims, a court ruling in its favor here would represent "the most expansive interpretation of the doctrine in state history," said Brian E. Gray, an emeritus professor at UC Hastings College of the Law and a water law expert.

"It's a very novel and innovative assertion of Article X Section 2," said Gray. "This would be the first time the courts would say, 'You must completely move your existing point of diversion.'"

The issue is ultimately a policy question - whether to keep the status quo of providing San Francisco and its environs with high quality water and hydropower or tear the dam down

because it's more in the public interest to restore a magnificently beautiful valley that was an essential part of Yosemite National Park, Gray said.

"Judges are cautious in making these policy decisions even if they have the legal authority to do that and I could see judges ... being reluctant to exercise that," Gray said.

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The Valley Below
A century ago San Francisco dammed a pristine Yosemite valley. Now environmentalists are fighting to tear down that dam, and hundreds of others

The Verge | January 28, 2016 | By Michael Zelenko | Photography by McNair Evans
Click here for the online version

Over an unseasonably warm weekend this past October, Spreck Rosekrans, the executive director of Restore Hetch Hetchy, led his board members on a hike through a rarely visited corner of Yosemite National Park.

The air was hot and breathless, and all around Yosemite, the drought was on full display: where waterfalls still fell, they had thinned from ribbons to threads. Reservoirs in the surrounding foothills had dried up, revealing acres of cracked earth. Because of meager rainfall, the pines that survived 2013's Rim Fire — the largest ever recorded in the Sierra Mountains — were too desiccated to produce sap, making them vulnerable to a booming bark beetle population. As the tiny insects march through the forest, trees yellow and perish in their wake.

The group followed a rocky trail around the northern rim of Hetch Hetchy Reservoir, where 85 percent of San Francisco's water comes from. In the midst of the worst recorded drought in the state's history, the reservoir has been a paragon of reliability: a survey last June found Hetch Hetchy to be at 92 percent capacity. Thanks to the reservoir, San Franciscans drink some of the cleanest water in the country — only four other municipalities in the United States have the privilege of foregoing filtration. At the mouth of Hetch Hetchy Valley sits the 430-foot-tall concrete plug that makes all this possible: the O'Shaughnessy Dam.

Hetch Hetchy was a replica of Yosemite Valley in miniature

But Restore Hetch Hetchy is campaigning to tear down the dam, drain the valley, and revive the landscape that was flooded in 1923. Shaped by the same glacial forces as Yosemite, Hetch Hetchy was a replica of its sister valley in miniature: an idyllic meadow encircled by cascading waterfalls and 1,000-foot-tall, perfectly sheared granite walls. The effort to save Hetch Hetchy is considered one of the first modern environmental campaigns in US history. Restore Hetch Hetchy, a small outfit with two staff employees and roughly 5,000 supporters, is its latest standard bearer.

It's a campaign that puts Rosekrans and his followers in direct conflict with San Francisco politicians and many of its citizens. Senator Dianne Feinstein, once San Francisco's mayor, has called the reservoir the city's "birthright" and efforts to remove it "dumb, dumb, dumb."

Even as a burgeoning movement is successfully tearing down dams across the country, the century-old Hetch Hetchy campaign remains stuck. Last spring, Restore Hetch Hetchy sued San Francisco in an effort to break the stalemate. The case is winding through California courts, and if Restore Hetch Hetchy ultimately wins, San Francisco will have no choice but to drain the reservoir.

A couple miles in, Rosekrans and his group arrived at their final destination: a wooden footbridge that offers a sweeping view from the O'Shaughnessy Dam, across the valley and into the Grand Canyon of the Tuolumne beyond. The bridge sits at the foot of the 1,300-foot-tall Wapama Falls, and during snowmelt, it can be a perilous crossing. But Wapama had also

succumbed to the drought. Looking up, all I could see was a stain on the rock where the water should have been.

Removing San Francisco's key reservoir has always been a challenge, never more so than now in the midst of a drought. But Rosekrans is resolute. I asked him why he makes the three-hour drive to see the flooded valley a couple times each year. "I come here primarily to look at how we can do better," he said. "To look at the mistake that we can, and should, fix, and which thousands of people are dedicated to fixing."
For most of our history, Americans have been dam crazy. Dams were some of the first structures colonists built; later, engineering feats like the Glen Canyon Dam were testaments to our ability to harness nature and bend it to our will. Many of these were built to last centuries, if not longer; a monument on Hoover Dam features a star calendar indicating when it was built to whomever, or whatever, discovers it thousands of years from now. Many of these structures continue to serve us: they store our water, mitigate flood risk, and generate electricity — 7 percent of all energy generated in the United States comes from hydroelectric power.

But by the 1980s, the era of dam building in the United States had largely come to a close for one simple reason: we'd dammed anything worth damming. The United States has more than 80,000 dams, crossing all of the country's substantial rivers — the Columbia River alone has 14 of them. A small portion of these dams are critical pieces of infrastructure, but many more are vestigial structures that have long outlived their utility, or had little to begin with. According to the Army Corps of Engineers, the primary purpose of nearly one-third of America's dams is "recreational."

We've already dammed anything worth damming

Environmentalists and engineers have begun re-examining the true cost of dams. Their impact on a landscape can be profound: before the 1930s, California's Tulare Lake covered 1,200 square miles, making it the largest body of fresh water west of the Mississippi. But farmers in the region plugged and diverted the four rivers that emptied into its basin. Today, nothing of the lake remains.

A dam cinches a river's natural course, breaking an uninterrupted thoroughfare into what Patrick McCully, author of Silenced Rivers, calls "staircases of reservoirs." They halt the flow of nutrient rich sediment from mountains to the valleys below. McCully writes that dams are one of the primary reasons why two-fifths of American fresh-water fish are either endangered or extinct.

There are other reasons to reconsider dams: many of them, like our roads and bridges, are aging. The US Army Corps of engineers estimates that a third of the dams it monitors pose a "high" or "significant" hazard. The same week I traveled to Yosemite, severe rain in South Carolina washed out 14 dams and weakened 62 others. Nineteen people died. It was a grim reminder that some of our dams are already coming down, without our help.

Over the last two decades, organizations like the Sierra Club and American Rivers have spearheaded a movement to remove nuisance dams. Their campaign has been remarkably successful: between 2006 and 2014, over 500 dams were removed from American rivers — more than were taken down over the entire century prior.

The campaign against O'Shaughnessy Dam is likely the oldest such attempt, and one of the most ambitious. It began toward the end of the 19th century, decades before the dam was even built. Struggling with a booming population, San Francisco sought to plug Hetch Hetchy Valley

in order to establish a reliable source of water and electricity. Because of its location high in the mountains, the entire system would be gravity-powered, and the valley's granite lining would ensure some of the purest drinking water in the country. The plan had one problem: Hetch Hetchy was part of Yosemite National Park. The city was vying to transform one of the country's most notable landmarks into a water tank.

San Francisco was vying to transform part of a national park into a water tank

The proposition was met with fierce resistance. One editor at the time declared the country possessed just four "great national features" — Yosemite Valley, Niagara Falls, the Grand Canyon, and the Hetch Hetchy Valley. He added Yellowstone as an afterthought. John Muir called Hetch Hetchy a "great landscape garden, one of Nature's rarest and most precious mountain temples." In 1892, Muir founded the Sierra Club, and the organization's first formal action was a lengthy resolution opposing the damming of Hetch Hetchy. Muir and the Sierra Club waged a campaign of persuasion, arguing that the valley held greater value as a refuge than as a reservoir. For the first time in US history, a regional environmental campaign became a national one.

Muir ultimately lost — in 1906 an earthquake levelled San Francisco, and the fire that followed consumed 500 city blocks. City officials blamed the extent of the fire on outdated water infrastructure, and in 1913, Congress gave San Francisco authority to flood Hetch Hetchy. Two years later, hundreds of men began logging and scraping the valley bare until nothing remained but a bowl of rock. It took eight years to build O'Shaughnessy dam and another 11 to complete an aqueduct to carry the water 160 miles west. By 1934, Tuolumne River water flowed freely to San Francisco homes. For most Americans, Hetch Hetchy Valley faded into memory.

A few days before the hike around Hetch Hetchy, I visited Spreck Rosekrans in his organization's two-room Oakland office. It's a cluttered space, full of schematics, reports, maps, and paperwork overflowing from bookshelves and cabinets. There are pictures, too — lots of pictures. Faded photographs of what Hetch Hetchy once looked like, and colorful illustrations and renderings of what it might look like again.

Rosekrans is blond-haired and blue-eyed and speaks with the measured, calculated diction of an engineer. Raised in Berkeley, Rosekrans worked as a white water rafting guide before becoming an analyst with the Environmental Defense Fund in 1988. He met his wife, also a guide, going down the Merced River.

"I wanted to see the river. I wanted to see the trees."

It was during his time at EDF that Rosekrans turned his attention to Hetch Hetchy. He remembers the first time he saw it: "It was an odd thing to see a version of Yosemite Valley, albeit a little smaller, a little narrower, just as long — quite spectacular. It just seemed wrong to have this concrete plug at the end of it. I just really wanted to see the valley below. I wanted to see the river. I wanted to see the trees."

After Muir's defeat, activists had largely abandoned the cause. But in 1987, Ronald Reagan's secretary of the interior Donald Hodel brought the idea back to life when he unexpectedly began advocating for restoration and the creation of "a second Yosemite Valley." Sensing a window of opportunity, the Sierra Club launched a Hetch Hetchy Task Force the same year. When the Task Force spun off into Restore Hetch Hetchy, Rosekrans joined its board.

In 2009, Restore Hetch Hetchy relocated to San Francisco in an effort to educate the city on the merits of its cause. Three years later, Restore Hetch Hetchy spearheaded Proposition F, a ballot initiative to fund a two-phase evaluation for the valley's restoration. "This is a values conversation that belongs to the people, not the politicians," Mike Marshall, the organization's director said at the time.

But the politicians interjected. Mayor Ed Lee, as well as every living former San Francisco mayor, Senator Feinstein, Representative Nancy Pelosi, and the entirety of the city's Board of Supervisors came out in opposition. "We don't agree on everything, but we agree that Prop. F would be a disaster for San Francisco," the ballot's counter-argument read. Mayor Lee called restoration "stupid" and "insane"; the alt-weekly Bay Guardian said it was "a huge waste of time and money."

The proposition lost by a landslide, with 76.9 percent voting against. Marshall resigned, and in 2014 the organization retreated back across the bay. "We knew some people would oppose it," Rosekrans told me. "But we underestimated the degree to which the city leaders and politicians would lock arms."

Mayor Lee called restoration "stupid" and "insane"

When Rosekrans became executive director in 2012, he says his mandate was clear: "I wasn't the one to run our grassroots campaign. I wasn't the one to go and lobby Congress for legislation. I was the one to put the lawsuit together."

Filed on April 21st, John Muir's birthday, the suit argues that continued operation of the Hetch Hetchy Reservoir is in violation of Article 10, Section 2 of California's Constitution, which states that "the public interest requires that there be the greatest number of beneficial uses which the supply [of water] can yield."

Restore Hetch Hetchy says the city could retool other reservoirs further down in the system to accommodate the water currently stored at Hetch Hetchy. The valley is a holding tank — not the water's source. Shifting storage would allow restoration while guaranteeing San Francisco all of its water.

Once restored, the valley would be able to serve a greater variety of uses for a wider swath of the population. The lawsuit suggests the value of a restored Hetch Hetchy could be as high as $8.7 billion over the next half-century.

When I spoke with San Francisco Public Utility Commission's assistant general manager for water, Steve Ritchie, he sounded exasperated. "As long as there is a Restore Hetch Hetchy there will be lawsuits or measures or fundraisers — lots of fundraisers," he said. For the city, the restoration campaign is a perennial irritation.

"We're all struggling to keep what water we've got, and it seems like an odd time to file this kind of litigation. But they continue to try to make arguments — and these are certainly creative arguments they've put out there," Ritchie added.

Estimates for restoration run anywhere from $1 billion to nearly $10 billion. Without Hetch Hetchy as its primary reservoir, San Francisco will be forced to pump and filter its water for the first time in a century, and lose out on the 726 million kilowatt-hours produced by the dam's system.

For San Francisco, the restoration campaign is a perennial irritation
"I think about the limited resources that we actually have, and I'd rather spend our money protecting areas that haven't been disturbed and maintaining this for the functionality that it provides. We don't have enough money in this world to go around and do every single thing that everyone wants done. We ought to pick our battles," said Ellen Levin, SFPUC's deputy manager of water.

Restore Hetch Hetchy and SFPUC had been in communication since the organization's founding, but the legal challenge spiked that relationship. "We're in a lawsuit — that's a different situation," Ritchie told me. "We don't see any basis for having a discussion."

Rosekrans told me that SFPUC has been less "chatty" lately, but insists Restore Hetch Hetchy has plenty of supporters. "We've got some very loyal and committed followers — people really see this as a travesty," he told me. "I don't anticipate our organization backing out of this any time soon. We're committed to success here."

To get a better sense for the challenges of dam removal, early one morning I drove from New York City to Pelham, Massachusetts, to see a dam come down for myself.

In 2012, a coalition of environmentalists and government officials brought down a 25-foot-tall stone dam over Pelham's Amethyst Brook. Built in 1820, the dam once powered the largest fishing rod manufacturer in the world but had fallen out of use, and by 2009 it was condemned for safety reasons. Its removal restored a habitat for American eel, brook trout, brown trout, slimy sculpin, and sea lamprey.

"Dams on dams on dams"

It also exposed yet another dam upstream, this one sticking out just a few feet above the water. Potentially dating back to 1740, this dam was built like a log cabin, with giant timbers piled atop one another and nailed together with wooden pegs. "Dams on dams on dams," said Amy Singler, the associate director of the River Restoration Program at American Rivers, as we followed a trail down toward the brook. It's not uncommon, Singler said, to find a new dam built directly in front of an older one. With 3,000 dams, Massachusetts is one of the most dammed corners in the country.

The temperature hovered in the low 30s, but standing on the bank of a frozen brook, it felt much colder. Around noon an excavator, using its arm like a crutch, lowered itself into the creek bed behind the dam. Log by log, it pulled the structure apart. Each time it plucked out a particularly large piece of wood, the dozen or so engineers, ecologists, and archaeologists gathered on the banks whooped in excitement. Within an hour, it was gone. Fish could now move that much farther upstream; the river would quietly reclaim its path.

Laura Wildman, the director of the New England regional office at Princeton Hydro, and one of the nation's foremost experts on dam removal, told me that so far removal proponents have targeted low-hanging fruit — useless pieces of infrastructure that are well past their prime.

The Amethyst Brook dams were typical examples, but there are hundreds of others across the country: in Gainesville, Florida, a community is currently working to pull down a dam that decimated local fish stock and transformed the Ocklawaha River from a robust ecosystem into what one activist called "an ugly abomination." Last month, residents of Fremont, Ohio, upheld a

city council ordinance to remove a 102-year-old structure that had, one resident said, "outlived its usefulness." Fall River, Massachusetts, recently received a $35,000 grant to tear down the Bleachery Dam, a structure built to power a bleaching factory that burned down in the 1950s. For more than half a century, the dam remained intact, serving no purpose but still blocking the river.

Taking down even a relatively small dam is a slow, expensive, and bureaucratic process. The removal of Amethyst Brook's stone dam had been in talks for decades, and ultimately cost $350,000. Tearing down the simple timber dam upstream took another two and half years, and an additional $100,000. The larger the dam, the harder it is to remove. In August of 2014, a battery of explosives destroyed the last remnants of the Glines Canyon Dam in Washington, completing the largest dam-removal project in history. Anyone could see why it had to go: the dam had wiped out one of the richest salmon fisheries in the United States and was quickly filling with sediment. Even so, the campaign to remove it took half a century, and its total estimated cost is $325 million.

On November 2nd, Restore Hetch Hetchy won a legal victory: San Francisco had tried to get the case moved from Tuolumne County — where Hetch Hetchy is located — to San Francisco, but failed. In December, the city filed both a demurrer and a motion to strike, in hopes of having the case diminished or dismissed outright. On January 29th, a Tuolumne County judge will hear oral arguments from both sides.

Many of the observers I spoke with were dubious of Restore Hetch Hetchy's chances — taking out a dam when it no longer serves any purpose is a challenge; doing so when it provides millions in the Bay Area with drinking water can seem hopeless. Nevertheless a week before the hearing Rosekrans told me, "We feel good about the merits of our case. We're excited to move forward."

"We feel good about the merits of our case. We're excited to move forward."

Over the last decade, other environmental organizations have stepped away from the campaign. The San Francisco chapter of the Sierra Club — the organization Muir built around the valley's preservation — abstained from taking a position on 2012's Prop F. Bruce Hamilton, the Sierra Club's deputy executive director, says he admires Restore Hetch Hetchy's doggedness and supports its work, but that the Sierra Club isn't taking a stance on the lawsuit either. "There's no one advocating that we get involved in ongoing tactics around this campaign," he says. "As a result, [the lawsuit] was never considered. It was never debated. It was never accepted or rejected."

A representative from the Environmental Defense Fund, which published the study "Paradise Regained: Solutions for restoring Yosemite's Hetch Hetchy Valley" in 2004 and was once on the campaign's frontlines, emailed me to say they support the cause but are no longer actively engaged — other initiatives had taken priority.

A few weeks after I came back from Yosemite, I called Robert Righter, a research professor of history at Southern Methodist University. Righter is the author of The Battle Over Hetch Hetchy, the definitive history of the valley. I asked Righter what he thought of Restore Hetch Hetchy's chances.

"I wish I could be more upbeat about that," he said. He doubted that he'd live to see Hetch Hetchy as it once was — or that his children or grandchildren would either. But he took

consolation in the long view. Whether by the hand of activists or nature, within a thousand years the valley will come back. In the meantime, "it serves a function for environmentalists," he told me, "those that would want to preserve other mountains, other valleys."

It's unlikely we'll see another major dam like O'Shaughnessy go up in the United States. But around the world, big dams are on the rise: a recent study published in Science reported that "the world's most biodiverse river basins — the Amazon, Congo, and Mekong — are experiencing an unprecedented boom in construction of hydropower dams," with 450 dams planned or already under construction.

These mega-dams will have an environmental impact of unimaginable scope. China's Three Gorges Dam, completed in 2008, plugs a 244-square-mile reservoir that can hold 39 trillion kilograms of water. It's said that the sheer weight of that water has changed the physics of our planet, slowing the very rotation of the Earth by 0.06 microseconds. Scientists suspect that some of the world's largest reservoirs can and have triggered major earthquakes.

Decades, even centuries, after we've lost use for them, the dams will still be there. They're tenacious structures, because we've built them that way. When it comes time to bring them down, the campaigns to do so will be long and arduous.

I asked Rosekrans whether there was value in keeping the Hetch Hetchy Reservoir as a standing reminder for us to think carefully about building bigger dams, flooding even more valleys.

"I think that's arguably true," Rosekrans said after a pause. "But there's a whole lot more value if we win."

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This just in … State Water Board Adopts Extended Emergency Water Conservation Regulation

Extended Regulation Gives More Flexibility to Water Suppliers to Meet Conservation Targets

Maven's Notebook | February 2, 2016 | State Water Resources Control Board

With California still experiencing severe drought despite recent rains, the State Water Resources Control Board (State Water Board) today adopted an extended and revised emergency regulation to ensure that urban water conservation continues in 2016.

The regulation extends restrictions on urban water use through October 2016 while providing urban water suppliers more flexibility in meeting their conservation requirements. It also directs staff to report back on additional flexibility once more complete water supply information is known in April. The action follows Governor Edmund G. Brown Jr.'s Nov. 13, 2015, Executive Order directing the State Water Board to extend the emergency water conservation regulation should drought conditions persist through January 2016.

"After four years of extreme drought, there is still a need for Californians to keep up their stellar conservation practices," said Felicia Marcus, chair of the State Water Resources Control Board. "This updated regulation acknowledges that need, while making adjustments in response to feedback from water suppliers and others. If we continue to receive a lot of rain and snow in February and March, we may scale back the conservation requirements further, drop them, or move to another approach."

Under the revised regulation, statewide water conservation is expected to exceed 20 percent compared to 2013 water use. The revised regulation responds to calls for greater consideration of certain factors that influence water use in different parts of the state, including hotter-than-average climate, population growth, and significant investments in new local, drought resilient water sources such as wastewater reuse and desalination.

Due to the severity of the water deficits over the past four years, many of California's reservoirs and groundwater basins remain depleted, and the need for continued water conservation persists. Today's action serves as the fourth iteration of the emergency regulation since the State Water Board first instituted statewide conservation requirements in July 2014.

The State Water Board will continue to track water conservation efforts for each of the state's urban water suppliers (those with more than 3,000 connections) on a monthly basis. Compliance with individual water supplier conservation requirements will continue to be based on cumulative savings since June 2015. Cumulative tracking means that conservation savings will be added together from one month to the next, including conservation achieved under the Board's May 5, 2015, emergency regulation, and compared to the amount of water used during the same months in 2013.

Summary of Conservation Regulation Adjustments

The updated emergency regulation continues to specify how much water communities must conserve based on their residential gallons per capita per day (R-GPCD) data (from July through September 2014), and provides recognition for certain factors affecting water use, along with other changes detailed below:

> **Credits and adjustments to urban water suppliers' conservation standards are now available.** They range from 2 percentage points to a maximum of 8 percentage points. In some cases, water suppliers are automatically credited based on conditions in their service areas. In other cases, water suppliers must supply specific information to support and determine the size of an adjustment.

The regulation provides credits in three ways:

1. Considering the differences in climate affecting different parts of the state;
2. Providing a mechanism to reflect water-efficient growth experienced by urban areas; and
3. Recognizing significant investments made by suppliers toward creating new, local, drought-resilient sources of potable water supply.

> **The regulation creates penalties for homeowners' associations or community service organizations** that block, stifle or threaten homeowners from reducing or eliminating the watering of vegetation or lawns during a declared drought emergency in violation of existing law.

This regulation extends the original framework that has resulted in a statewide water conservation rate of 25.5 percent over a seven-month period, according to December conservation data released earlier today. Even assuming all of the 400-plus water agencies receive the applicable credits offered in this regulation, the statewide cumulative conservation rate is still projected to exceed 20 percent.

"We expect a savings rate greater than 20 percent, but perhaps not quite achieving the prior call for 25 percent," said Marcus. "We anticipated this might occur with any tweaks to our existing regulation. This regulation should still allow this state to save more than 1 million acre-feet of water through October 2016 – which is enough water to serve an average of two million California families. While we are hopeful that we are turning the corner on this drought, the truth is that it's just too soon tell. Any additional water we can conserve to today will serve us well tomorrow if the drought continues."

For additional information and examples of how the credits would be calculated and applied, please click here to see the fact sheet.

Next Steps

The regulation will now be submitted to the Office of Administrative Law, which will review and approve or deny the regulation. If approved by the Office of Administrative Law, the regulation will take effect immediately and remain in effect for 270 days from the approval date.

For more information, please visit the Emergency Water Conservation website.

To learn more about the state's drought response, visit Drought.CA.Gov.

Every Californian should take steps to conserve water. Find out how at SaveOurWater.com.

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California refuses pleas for major weakening of water conservation rules
SJ Mercury News | February 3, 2016 | Paul Rogers

SACRAMENTO -- Nine months after California imposed its first-ever mandatory statewide water conservation rules to cope with the state's historic drought, dozens of leaders of water agencies on Tuesday pleaded with the administration of Gov. Jerry Brown to relax them.

Their argument: It's raining, reservoirs are filling, customers are mad -- and selling less water is costing them hundreds of millions of dollars.

But rather than making major changes, the State Water Resources Control Board voted instead for modest adjustments after a six-hour meeting. The rules will shave a few percentage points off the conservation requirements of some places -- particularly in hot areas like the Southern California desert and the Central Valley -- while leaving drought rules unchanged in most Bay Area cities, Los Angeles and San Diego through at least May.

"We are just at halftime in this rainy season," said Felicia Marcus, the board's chairwoman. "A lot could change."

Marcus acknowledged that the rules -- aimed at cutting water consumption 25 percent from 2013 levels -- needed to be adjusted to make them more fair in a state as large and varied as California. But she pointed out that Australia, beginning in the late 1990s, had a drought that lasted more than a decade. So, Marcus said, until California knows for sure it is out of its current four-year drought -- in April or May, after winter rain and snow totals are in -- caution and conservatism are the most prudent courses of action.

Under the new rules, adopted by the water board unanimously, California cities and water agencies will have to reduce their consumption 23 percent overall. The board allowed cities that have particularly hot weather or high levels of population growth in recent years -- or which have developed new supplies from desalination or recycled water plants -- to reduce their mandatory state conservation targets up to 8 percentage points. Those targets range from 8 percent to 36 percent, based on per capita use.

The Contra Costa County Water District is expected to see its target drop from 28 percent to 25 percent. The California Water Service Co. in Livermore would drop from 24 percent to 21 percent. And residents in Modesto, Bakersfield and Palm Springs would see similar small changes.

But San Jose Water Co., East Bay Municipal Utility District and many others, including Palo Alto, Santa Cruz, Gilroy, Morgan Hill, San Francisco and the Los Angeles Department of Water and Power, would see no change on their targets.

Very few Bay Area water leaders testified Tuesday. But many from other parts of the state flew or drove for hours to pressure the board to make more dramatic rule changes.

Emblematic of many was Shauna Lorance, general manager of the San Juan Water District, located 15 miles northeast of Sacramento. Lorance said her customers are furious that they see nearby Folsom Lake filling, amid regular rainstorms, while still being told they are in a drought and having to pay higher water rates to make up for reduced water sales.

"We already have a few customers who are looking to recall our board or go against them in the next election because of this conservation requirement and what it has done to rates," she said.

An economic analysis commissioned by the water board said leaving the rules unchanged would cost the state's water districts, cities and water companies $673 million from Feb. 1 to Oct. 31. Adjusting them as the board did Tuesday would cost $567 million.

Riverside County leaders wanted credit for having a large groundwater basin. Palm Springs leaders said their climate is so hot that they should get more of a break than other cities. Einar Maisch, general manager of Placer County Water Agency, said with a big snowpack and local reservoirs filling: "Locally you can't tell people there is still a drought."

But environmentalists pushed back. They argued that California is an arid state that wastes huge amounts of water on golf courses and lawns in hot areas and that the drought has helped put in place more efficient rules. Just as a wet December 2014 gave way to a bone-dry January 2015, they argued that no rules should be relaxed until it's clear California's drought is over.

"We don't know how long this drought is going to last," said Kyle Jones, with Sierra Club California. "Allowing the one period of wet weather we have to weaken this might be a serious mistake going forward."

Meanwhile Tuesday, a new report by the water board showed that California's water conservation habits are slipping a bit.

The state's urban residents cut water use by 18.3 percent in December compared with December 2013. That's down from 20.4 percent in November and is the lowest percentage saved in any month since June, when Brown's order took effect requiring cities and water agencies to reduce water use 25 percent or face fines and penalties.

State water officials noted Tuesday, however, that because of huge savings by California residents who turned off lawn sprinklers during the hot summer months, in the seven months from June to December, Californians have cumulatively cut water use 25.5 percent, meeting the governor's goal so far.

On Tuesday, the statewide Sierra snowpack was 114 percent of the historic average, the best for the beginning of February since 2011, when it was 129 percent. A monthly manual survey done near Lake Tahoe, at Phillips Station off Highway 50, found that the snowpack there was 130 percent of normal.

"It's a very good start for the year," said Frank Gehrke, chief of snow surveys for the state Department of Water Resources, as reporters stood listening atop snow more than 7 feet deep. "We need to keep this on track."

But because of the very deep rainfall deficit over the past four years, many major reservoirs are still not yet up to their historic average level for this time of year. And the El Niño weather systems that have soaked Northern California have mostly missed Southern California.

On Tuesday, San Francisco was at 100 percent of normal rainfall for this date. But Los Angeles was at only 58 percent.

That dry weather in the south showed up in Tuesday's conservation numbers.

Overall, customers of the Los Angeles Department of Water and Power cut water use 13.7 percent in December compared with December 2013. But Bay Area residents did much better. Customers of the San Jose Water Co. reduced use 30.2 percent in December, while Contra Costa Water District slashed use 34.6 percent. East Bay Municipal Utility District cut use 22.2 percent, Santa Cruz 30.8 percent and Palo Alto 25.9 percent.

Dave Bolland, a spokesman for the Association of California Water Agencies, said the rain is wonderful but is presenting a challenge in convincing Californians to continue to conserve.

"We have a communications conundrum," he said. "It's difficult to message with the kind of rain that we are seeing."

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California extends mandatory water cuts despite growing snowpack
Sacramento Bee | February 2, 2016 | Ryan Sabalow, Phillip Reese, Dale Kasler

Phillips — The snow keeps piling up, but the rules requiring water conservation aren't going away.

California's drought regulators agreed Tuesday to extend water conservation mandates through the end of October. The decision came in spite of increasing evidence that El Niño is delivering better-than-average precipitation, including an encouraging measurement of the Sierra Nevada snowpack recorded just hours earlier.

The new regulations adopted by the State Water Resources Control Board mean urban Californians will have to reduce their water usage between March and October by about 23.4 percent compared with the baseline year of 2013.

That represents a slight easing of the existing mandates expiring this month, which require a savings rate of 25 percent compared to 2013. Sacramentans will be among the main beneficiaries of the relaxed rules, as the state board voted to ease requirements for hot inland communities where it takes more water to keep trees and lawns alive.

The state board voted after hearing hours of dispute and concern from stakeholders on all sides of the issue. Environmentalists argued against relaxing the rules, saying Californians need to save as much water as possible given the lingering effects of the current drought and the forecasts for longer, more frequent dry spells ahead.

Scores of local water officials countered with pleas for additional leniency, especially in winter, saying it's tough to maintain conservation efforts when rain and snow are falling. Other local officials wanted more credit for work they've done to improve their supplies.

A somewhat exasperated Felicia Marcus, the state board's chairwoman, shot back at suggestions by some local officials that the conservation mandates should be abandoned altogether while it's raining.

"If we add up everything everyone is asking for, we'd have to give water back," Marcus said. The board has pledged to revisit the rules in the spring, when a full accounting of the winter rain and snow can be made.

Ninety miles east of Sacramento, employees from the state Department of Water Resources unearthed fresh evidence that this season promises at least some relief from the state's historic drought, now in its fifth year.

As a steady but moderate snow fell, DWR employees conducted the season's second manual measurement of the Sierra Nevada snowpack at Phillips, near Echo Summit off Highway 50. The findings: 76 inches of snow, or 25.4 inches of water content. That's 130 percent of average for the Phillips location for early February.

By comparison, the snow's water content was only 12 percent of average at Phillips a year ago and 25 percent statewide.

“It’s a good start,” Frank Gehrke, chief of snow surveys for the DWR, told about 30 media representatives after taking the measurement. “We need to keep on this track.”

Gehrke’s measurement represented a snapshot of just one location, however. Broader electronic measurements show the snowpack throughout the Sierra is somewhat less robust: 114 percent of normal, according to DWR data.

Other indicators suggest the state is making progress against the drought, but water shortages remain. Persistent rain and snow have raised Folsom Lake levels to above normal for early February, but the far larger reservoirs at Oroville and Shasta remain comparatively empty.

An ample Sierra snowpack is crucial to ending the drought, and replenishing reservoirs through the dry spring and summer. Gehrke said the snowpack is approaching levels similar to February 2011, the last healthy winter before the drought started. One nice “Pineapple Express” would put the snowpack over that mark.

“We haven’t seen a really good one of those this time,” he said. “The snowpack is growing even in that absence.”

Later Tuesday, at the state water board hearing, Northern California water officials said they should be given more lenient regulations than other areas of the state because of the recent rain and snow. Some urged the board to let the regulations lapse completely until spring, when a clearer picture will emerge of how much rain has fallen.

Einar Maisch of the Placer County Water Agency said “there’s no longer a drought” in his service territory – a comment that drew gasps of disbelief from some board members. Shauna Lorance, of the San Juan Water District in suburban Sacramento, said enforcing conservation is hard when Folsom Lake is so full that water likely will be released soon for flood control purposes.

“Our customers are going to roll their eyes, and we’re going to lose trust,” Lorance said.

Meanwhile, environmentalists warned the board against relaxing the existing conservation standards. “I would hate to have those efforts lose steam going forward,” said Kyle Jones of the Sierra Club California. “We don’t know how long this drought is going to last.”

The current rules are based on historical per-capita consumption rates and tend to punish hot, dry areas like Sacramento. The new rules make allowances for climate differences and give credits to communities that have invested in “drought-resilient” new water supplies.

In the Sacramento area, where the conservation mandates are among the toughest in the state, most agencies are expected to see targets fall by 3 percentage points. An agency that’s had to slash consumption by 36 percent, for instance, would now have to meet a 33 percent savings rate.

Agencies that don’t meet their mandates could be fined.

State board officials were wary of relaxing the standards too much. As it is, they’re concerned that conservation efforts currently in effect won’t meet the 25 percent threshold ordered by Gov. Jerry Brown.

Earlier Tuesday, the board announced that conservation in the state slipped to 18.3 percent in December, the lowest savings rate since mandatory conservation took effect last June. It was the third straight month that the savings rate fell below 25 percent, although the cumulative savings since June totaled 25.5 percent, just above the governor's order.

Katheryn Landau, with the water board's office of research, planning and performance, said she was "cautiously optimistic" the savings rate would remain above 25 percent through the end of February, when the current mandates expire.

Savings rates were considerably higher in the summer, when conservation largely amounted to cutting back on outdoor watering. Officials say it's harder to achieve major year-over-year savings in winter because residents have to reduce their indoor water use.

Sacramento-area residents continued to be among the most diligent in the state at saving water. The area's conservation rate averaged 26 percent in December, according to data compiled by the Sacramento Regional Water Authority. All told, Sacramentans have cut water use by 33 percent since June, the authority said.

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State water conservation numbers slipping
SJ Mercury News | February 2, 2016 | Paul Rogers

Sacramento - California's water conservation habits are slipping as winter rains and a robust Sierra Nevada snowpack begin to ease but not yet end the state's historic drought.

The state's urban residents cut water use by 18.3 percent in December compared to December 2013. That's down from 20.4 percent in November and is the lowest percentage saved in any month since June, when Gov. Jerry Brown's order took effect requiring cities and water agencies across California to reduce water use 25 percent or face fines and penalties.

State water officials noted Tuesday, however, that because of huge savings by California residents who turned off lawn sprinklers during the hot summer months, in the seven months from June to December, Californians have cumulatively cut water use 25.5 percent, meeting the governor's goal so far.

"I think the message has held," said Felicia Marcus, chairwoman of the State Water Resources Control Board in Sacramento. "People understand and have a much more sophisticated view despite the precipitation, as weird as it seems to be saying we need to conserve until we know where we are."

Marcus said she is hopeful the cumulative conservation rate will continue to hit the 25 percent target through February and that the rain and snow will continue to fall.

Regular rain and snow from one of the strongest El Niño events ever recorded have begun to fill reservoirs in Northern California and have left the Sierra snowpack at its best level in five years.

On Tuesday, the statewide Sierra Nevada snowpack was 114 percent of the historic average, the best for the beginning of February since 2011, when it was 129 percent.

"It's a very good start for the year," said Frank Gehrke, chief of snow surveys for the state Department of Water Resources, as reporters stood listening atop snow more than 7 feet deep. "We need to keep this on track."

But because of the very deep rainfall deficit over the past four years, many major reservoirs are still not yet up to their historic average level for this time of year. More broadly, the El Niño weather systems that have soaked Northern California have mostly missed Southern California.

That dry weather in the south showed up in Tuesday's conservation numbers.

Overall, customers of the Los Angeles Department of Water and Power cut water use 13.7 percent in December compared with December 2013. But Bay Area residents did much better. Customers of the San Jose Water Company reduced use 30.2 percent in December, while

Contra Costa Water District slashed use 34.6 percent. East Bay Municipal Utility District cut use 22.2 percent, Santa Cruz 30.8 percent and Palo Alto 25.9 percent.

Greenfield residents led Monterey County, cutting water use by 28.7 percent. Elsewhere in the south Salinas Valley, King City cut 26.2 percent, according to provider California Water Service Company, and Soledad 26 percent; Alco Water Service's area customers cut 27 percent.

Among other local jurisdictions, Marina Coast Water District's customers cut use by 25.5 percent, California American Water's Monterey customers reduced by 23.5 percent and Cal Water Salinas customers were 20.9 percent lower than two years ago.

# # #

Tahoe snowpack at 120 to 130 percent of average according to CA Department of Water Resources

Nevada Appeal | February 3, 2016 | Sebastian Foltz

The results are in. Following a manual snow survey Tuesday at Phillips Station near Sierra-at-Tahoe Resort, the California Department of Water Resources reported the Sierra Nevada snowpack continues to show promise.

Measurements at the designated snowpack observation site showed a 76.2 inch snow depth, but more importantly, a 25.4 inch snow water equivalent — the measure of the volume of water in the snow pack.

That number equates to 130 percent of average year-to-date snowpack water volume measurements for that site, which observers said is a welcome sign compared to recent drought years.

The Northern Sierra Nevada as a whole is tracking at 120 percent of its multi-decade average for this time of year. The statewide measurements indicate 114 percent of average in the mountains, or 20.4 inches.

“It’s a really good start for the year,” said Frank Gehrke, chief of the California Cooperative Snow Surveys Program. “Clearly we want to see this keep coming.”

‘MAKING A BIG DIFFERENCE’

Gehrke and his team were on site Tuesday recording the snow depth and water volume from seven different points in a meadow near the entrance to Sierra-at-Tahoe.

“We don’t know how the rest of the winter is going to play out,” Gehrke added. “We’re still very encouraged by the fact that we’re getting these storms that aren’t major storms, but are still making a big difference in terms of snowpack accumulation.”

The results thus far are a stark contrast to last winter, when Gehrke recorded a water content of just 2.5 inches in a February survey.

According to the DWR, Tuesday’s measurements were the highest for the site since 2005, when they recorded 77.1 inches of snow depth and a water content of 29.9 inches.

While skiers and snowboarders might appreciate the over-70-inch base depth, Gehrke was quick to clarify the water volume is far more critical.

“Doing comparisons on depth are pointless,” he explained. “It can vary so dramatically. We can come out here next week and our depth could be 70 inches and our water content wouldn’t have changed.”

‘FOR BETTER OR WORSE’

Officials with the California DWR still caution a single season of strong snowfall doesn’t mean the end of the drought. Most state reservoirs will continue to be below average. Residents should continue to conserve water.

As to what the current measurements mean moving forward, it's hard to say. Beyond the last four years of drought, historically the state has had substantial fluctuations in precipitation year after year.

"It's a feature, for better or worse, of California," Gehrke said. "Winters are these extremes. It's feast or famine. If we have a wet year this year, we don't know what next year could be. There's no correlation winter to winter."

It also remains to be seen what the rest of winter will bring. Looking at the last 65 years of recorded averages, there are a number of years in which the percentage of average water content dropped between February and April.

Forecasters, however, continue to be optimistic with the strong El Niño weather pattern.

"(Forecasters) are still hanging on a strong El Niño," Gehrke continued. "Some El Niño prognosticators think that it will come on more strongly as we move through into the spring."

RESORTS TOP 300 INCHES OF SNOWFALL

What's good news for refilling reservoirs has been great news for Tahoe Basin ski areas so far. Kirkwood Mountain Resort, Sierra-at-Tahoe and Northstar are each among area resorts that have topped the 300 inch mark for total to-date snowfall.

"It's a great time to be back in Tahoe," Heavenly spokesman Kevin Cooper said Monday. "El Niño is not backing down, and we're going into February and March, which are (typically) two big months."

Following last weekend's storm, Kirkwood was reporting 304 total inches of snowfall. Sierra-at-Tahoe resort spokeswoman Thea Hardy said the resort was reporting 310 inches season-to-date. Last year, Sierra reported 123 inches for the entire season.

Cooper said Kirkwood's multi-year average — which had fallen slightly due to recent low snow years — is 395 inches for the season.

# # #

Water Commission Soliciting Concept Papers for Potential Storage Projects
ACWA News | February 2, 2016 | Pamela Martineau

The California Water Commission is soliciting concept papers that summarize potential water storage projects and their benefits in an effort to gather information on projects that may qualify for Water Storage Investment Program public benefit funding under Proposition 1.

Concept papers will be accepted electronically until 5:00 p.m. March 31 at cwc@water.ca.gov.

California voters passed Proposition 1 in November 2014. The proposition dedicated $2.7 billion for investment in the public benefits of water storage projects and designated the CWC as the agency responsible for allocating these funds.

The solicitation of concept papers is intended to benefit both the commission and potential project proponents. The concept papers will be made public, so project proponents will be able to identify potential regional partners or potential conflicts with other projects. Project proponents also will be able to identify potential eligibility issues early and judge the potential competitiveness of their projects.

The concept papers also will allow commission staff to assess the number and scope of potential projects that may apply for WSIP funding to determine how to best assist applicants through the application process. Commission staff also will be able to refine and adjust the application review timeline for the WSIP based on information in the concept papers.

Submission of a concept paper is not mandatory to be eligible for WSIP funding, but the information collected through will assist the commission in its mission to maximize the potential public benefits of water storage projects funded by the WSIP.

All of the information provided through these concept papers will be made available on the commission’s website.

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Buoyed by recent rains, Folsom Lake levels triple
Sacramento Bee | February 1, 2016 |Phillip Reese

What a difference a month of rain makes.

Two months ago, Folsom Lake stood at its lowest depth in history, and federal officials were engineering a special pumping system to ensure drinking water would keep flowing to Sacramento suburbs.

Following a month of persistent rain and snow in Northern California, lake levels are triple what they were in early December, and the reservoir contains more water than average for early February.

Lake levels have rebounded so fast, in fact, that after four years of drought, officials are talking about releasing water downstream in the near future to mitigate flood risks caused by a wet winter and an increasingly full lake. Such releases happen routinely in a typical Northern California winter – flood control is a primary purpose of Folsom Dam. But it's been years since the reservoir has reached flood-control stage.

Since early December, a series of storms has added about 393,000 acre-feet, or 128 billion gallons, to Folsom reservoir. On Saturday alone, the lake gained about 71,000 acre-feet, the largest single-day increase in a decade. As of Monday, Folsom Lake was at 104 percent of average for this time of year and at 54 percent of total capacity. Two months earlier, it was at 14 percent of capacity.

Much of the rebound stems from runoff from Sierra storms. But the striking rise also reflects how little water federal operators have released from the lake in recent months. Daily water releases from Folsom averaged just 600 cubic feet per second in December and January, state data show. During the last wet winter, five years ago, average daily releases were more than 13 times as high.

And the return to more typical snowfall in the northern Sierra means Folsom Lake levels likely won't plummet again soon. The mountain snowpack that supplies the lake in spring and summer is an estimated 20 percent above average for early February.

Still, lots of water in Folsom Lake doesn't mean the drought is over. Folsom is the smallest of Northern California's major reservoirs, and so it fills up more quickly than others. No other major reservoir in the state has reached normal levels or is near flood-control stage. Most reservoirs aren't even close.

State regulators say at least one of three things would need to happen for the drought to end: Statewide reservoir storage would need to be at 90 percent of average levels; runoff forecasts for the state's water year, which runs from October through September, would need to be 110 percent of average; or reservoirs on the four major rivers in the Sacramento River basin would have to reach flood-control stage.

Shasta Lake is at 76 percent of average depth for this time of year; Lake Oroville is at 66 percent; and Trinity Lake is at 40 percent. Combined, those lakes have about 10 times the storage capacity as Folsom Lake.

“It will take them more than one wet year to recover from their condition,” said Tom Gohring, executive director of the Sacramento Water Forum.

Given continued concerns, the State Water Resources Control Board is expected Tuesday to extend through October the mandatory water cuts it ordered last year for urban residents across California. The agency has proposed relaxing the mandates slightly for many local water agencies to account for the difference in climate between coastal and inland regions. But most communities in the Sacramento region still will be required to cut usage by 25 percent or more compared to 2013.

Monday brought other sobering reminders about the lingering impacts of California’s historic drought. The National Marine Fisheries Service released data confirming an alarming decline in the population of the winter-run Chinook salmon, an endangered species native to the Sacramento River.

Drought has diminished the supply of cold river water the salmon need to spawn and survive. Last year, federal officials held more water behind Shasta Dam, at the expense of farmers and cities, in hopes of creating deep cold-water pools to aid the fish. Simultaneously, they released more water than normal from Folsom Dam to keep ocean salt water from overwhelming the Sacramento-San Joaquin Delta, which serves as the hub of the state’s water-supply network.

The plan failed. The river heated up anyway, and the National Marine Fisheries Service said Monday that only 3 percent of the juvenile salmon survived last year. It marked the second straight year that the vast majority of juvenile winter-run Chinook salmon were cooked to death in the Sacramento River; in 2014, only 5 percent of the juveniles survived.

Already, farmers, fishermen and environmentalists are fighting over what to do this year about the salmon. Because Chinook have a three-year spawning cycle, the 2016 season is considered critical to keeping the salmon from heading to the brink of extinction. The state is considering storing even more water at Shasta this spring. For farmers, that would mean another year of severely diminished supplies.

The best tonic for winter-run Chinook – and Folsom Lake – would be continued steady precipitation this winter, particularly in the form of snow in the Sierra. But a bountiful snowpack is not assured. After a wet start to 2016, there is no heavy precipitation in the forecast for Sacramento or the Sierra over the next seven days.

# # #

State Water Project Allocation Boosted
Placer Sentinel | February 2016 | DWR

With winter storms slowly boosting water supply, the Department of Water Resources (DWR) today increased its water delivery estimate for most recipients from 10 percent of requests for the calendar year, as announced in December, to 15 percent.

“Our modest increase underscores the fact that we still have a critical water shortage after four-plus years of drought that we don’t know when will end,” said DWR Director Mark Cowin. “One look at our low reservoirs tells us that we need a lot more wet weather before summer.”

Although there is no exact formula for ending the drought and conditions vary region by region, a rough guidepost is that approximately 150 percent of average winter precipitation — rain and snow — would significantly ease statewide conditions, with the major exception of groundwater depletion.

The State Water Project (SWP) delivery estimate (allocation) may be increased further if storms continue to build rainfall and snowpack totals. The 29 public agencies that receive SWP water (State Water Project Contractors) requested 4,172,786 acre-feet of water for 2016. With today’s allocation increase, they will receive 631,115 acre-feet.

Collectively, the SWP Contractors serve approximately 25 million Californians and just under a million acres of irrigated farmland.

It is important to note that nearly all areas served by the SWP also have other sources of water, among them streams, groundwater, and local reservoirs.

Key reservoirs are beginning to rise from early winter storms, but remain low.

Lake Oroville in Butte County, the State Water Project’s principal reservoir, was recorded recently as holding 1,366,061 acre-feet, 39 percent of its 3.5 million acre-foot capacity and — 60 percent of its historical average for the date. Shasta Lake north of Redding, California’s and the federal Central Valley Project’s (CVP) largest reservoir, was holding 2,138,566 acre-feet, 47 percent of its 4.5 million acre-foot capacity and 71 percent of its historical average. San Luis Reservoir, a critical south-of-Delta pool for both the SWP and CVP, reflects the same trend of lower reservoir storage this year. San Luis was holding 641,729 acre-feet, 31 percent of its 2 million acre-foot capacity and 41 percent of normal for the date. Folsom Lake, a CVP reservoir near Sacramento, is holding 398,523 acre-feet of its 977,000 acre-foot capacity, 79 percent of average for the date.

Though still critically low, many reservoir levels have dramatically risen from recent storm runoff. Groundwater aquifers recharge more slowly, with many in the Central Valley sinking toward record levels.

Last year’s (2015) 20 percent allocation was the second lowest since 1991, when agricultural customers of the SWP got a zero allocation and municipal customers received 30 percent of requests. In 2014, SWP deliveries were five percent of requested amounts for all customers.

The last 100 percent allocation — difficult to achieve even in wet years largely because of Delta pumping restrictions to protect threatened and endangered fish species — was in 2006. SWP allocations in recent years:

2015 – 20 percent

2014 – 5 percent

2013 – 35 percent

2012 – 65 percent

2011 – 80 percent

2010 – 50 percent

2009 – 40 percent

2008 – 35 percent

2007 – 60 percent

2006 – 100 percent

Governor Edmund G. Brown Jr. declared a drought state of emergency on Jan. 17th, 2014 and followed up with statewide water conservation mandates. Since then, the state has been swept by drought-fueled forest fires, vast tracts of farmland have been fallowed and some communities have scrambled for drinking water.

Long-range weather forecasts are uncertain, and there is no way to know if this winter will deeply dent the state's historic drought.

DWR's California Data Exchange Center (CDEC) Web sites show current water conditions at the state's reservoirs and weather stations.

Reservoirs: http://cdec.water.ca.gov/cdecapp/resapp/getResGraphsMain.action

Precipitation: http://cdec.water.ca.gov/snow_rain.html

Snow: http://cdec.water.ca.gov/cdecapp/snowapp/sweq.action

While the early winter rain and snowpack are promising, this may yet prove to be a fifth consecutive year of drought in California. To learn about all the actions the state has taken to manage our water system and cope with the impacts of the drought, visit Drought.CA.gov. Every Californian should take steps to conserve water; find out how at SaveOurWater.com.

# # #

Bay Area Water Initiative Creates Drought Visualization Tool
Tiple Pundit | January 28, 3016 | Gina-Marie Cheeseman

The past four years of drought have left aquifers and snowpack at low levels in California. Despite El Niño, which is bringing more rain, the effects of the drought won't be reversed any time soon. Clearly, business-as-usual can't happen ever again.

Seeing the effects of the drought helps to gain a grasp on the size of the problem. Sustainable Silicon Valley (SSV), an organization committed to sustainability in the Bay Area, partnered with Tibco, a software and data analytics company, to learn more about the effects of the drought and find new ways to conserve, recycle and locally source water. They created data visualization of the drought using Tibco Spotfire software with data coming from NASA, the U.S. Geological Survey and state of California water boards.

"It was hard work on the part of two companies. Sustainable Silicon Valley and Tibco came together to work on it," SSV's senior advisor, Bruce Naegel, told TriplePundit.

SSV established new initiatives that are partially based on the insights gained from these data visualizations as part of its Net Positive campaign. The organization first created a set of aspirational goals for 2015, which included sourcing only local water for the Bay Area's water supply by 2050. "The idea is that we really have to about reducing our water consumption and coming up with resources so should be be cut off from outside water, which the snowpack event indicates, we need to start thinking along those lines," Naegel said. Natural disasters could also cut the Bay Area off from outside water sources, he added.

Some of the new insights the visualization reveals are:

- How the drought has affected areas of California from 2013 to the present.
- Water usage by county and which industries within those counties are responsible for consuming the most water.
- The rate of water production in the state month-to-month, with a breakdown by water regions
- Mandatory water restrictions in regions.
- Top recycled water suppliers in California.

In a video about the drought analysis tool, Naegel stated that the goal for Net Positive Bay Area 2050 in the water sector is to have "only locally supplied water," and pointed out that the Bay Area receives 60 to 80 percent of its water from the snowpack. "If we lose that snowpack we'll be forced to use only local water," he said.

The Bay Area had a GDP of over $738 billion in 2015, which would put it 20th among countries, but two-thirds of its water supply is imported. The goal of the SSV's Net Positive water initiative is a five-year project that focuses on the following:

- Working to form a task force to get a model ordinance passed for onsite water reuse with support from council members of Santa Clara County's four biggest cities.

- Encouraging intelligent water use and reuse in new developments through Santa Clara County's Water Efficiency New Development Task Force.
- A state ordinance bill to set standards for onsite treated water.

The first step of the water initiative was to "establish a baseline and see where we are at and what we need to do," Naegel said. That's what the drought visualization tool was all about. The next step was to launch pilot projects, which include:

- Helping Facebook and the city of Menlo Park collaborate to bring onsite water reuse to Facebook's new campus.
- Encouraging both Santa Clara County and the state legislature to set standards to allow Google to bring onsite water reuse to their campus.
- Partnering with ARUP, the global engineering and design firm, to conduct water audits in the low-income community of East Palo Alto.

One of the great aspects of the work of SSV in general, and the water initiative specifically, is that it educates the public. And that work of education is one that needs to continue. Or, as Naegel said: "We are going to have to keep educating people."

# # #

EPA announces $182M for California water projects

Carlsbad chosen as example of recycling technology

San Diego Union Tribune | January 27, 2016 | Phil Diehl

CARLSBAD — U.S. Environmental Protection Agency officials were in Carlsbad on Wednesday to announce more than $182 million in federal funding that will be funneled to drinking water and wastewater infrastructure improvements throughout California.

EPA Regional Administrator Jared Blumenfeld made the announcement at the Carlsbad Water Recycling Facility, which has received about $37 million in low-interest loans funded by the federal agency over the past several years to nearly double output at the plant.

The expansion now underway will allow Carlsbad to use recycled water, which is available only for irrigation and industrial uses, to meet close to 33 percent of the city's water needs.

With California mired in an unprecedented drought that even a strong El Nino rainy season is unlikely to end, finding ways to limited water supplies stretch farther has taken on a new urgency.

"We are thinking sustainability," Blumenfeld said. "We are going to have more dry years in the future, and this is our insurance against that."

The federal money goes into the California Clean Water State Revolving Fund, which provides low-interest loans to local water districts for projects that will reduce pollution, improve drinking water, and increase efficiency. As districts repay the loans, that money becomes available for new water projects.

The city of San Diego is in line to receive roughly $9 million in loans to help pay for a sewer pipeline rehabilitation project and a new Sorrento Mesa recycled water pipeline. The city also recently used loans from the program to upgrade its Metro Biosolids Center, which takes solids from area wastewater treatment plants and turns it into fertilizer for parks, gardens and agricultural crops.

Escondido, La Mesa, and the Valley Center Municipal Water District also have projects due to receive loans.

The Valley Center district would get $4 million toward expanding its Woods Valley Ranch Wastewater Treatment Plant. That project has already received almost $31 million in state revolving fund loans, said the water district's General Manager Gary Arant.

The expansion is allowing the plant to offer sewer service to areas that otherwise would be on septic systems, he said. Recycled water from the plant will replace potable water now used to irrigate a nearby golf course and other areas, or piped into a new storage reservoir that's also being built.

He said the sewer needs date back to the 1970s and the district had tried twice before to expand the treatment plant.

“This one was largely successful because of access to the state water revolving fund money,” Arant said. “It’s very rewarding to see it happen.”

The EPA chose the Carlsbad recycling plant for Wednesday’s announcement because it sets an example for water districts across the state, Blumenfeld said. The plant uses filtration, micro filtration and disinfection to clean wastewater and make it suitable for irrigation and industrial uses.

“This recycling facility shows the potential,” Blumenfeld said. “This is the kind of technology that we want to spread.”

Every gallon of recycled water means one less gallon of potable water that the city must buy, said Carlsbad Mayor Matt Hall. Recycled water also about one-quarter the cost of imported potable water.

“The city is proud to be a leader in the production of recycled water,” Hall said.

Carlsbad is expanding its recycling plant’s peak capacity from the present 4,100 acre-feet per year to more than 7,200 acre-feet per year. An acre-foot is enough water to cover an acre one foot deep, or to meet the needs of two typical families of four for a year.

The city also is building a second reservoir for recycled water and expanding its recycled water delivery system by adding 18 miles of pipe to its existing 79-mile distribution system.

When the expansion is complete, Carlsbad will be able to deliver all its own recycled water and an additional 4,000 acre-feet purchased from the neighboring Leucadia and Vallecitos water districts, or as much as 11,000 acre-feet in all. Because most recycled water is used for irrigation, that peak would only be reached during the summers, when days are long and rain is scarce.

Projects elsewhere in the state that are expected to receive funding this year include one to switch the city of Davis from groundwater to the Sacramento River for its drinking supply, which would reduce the amount of selenium in the water supply.

Another portion of this year’s money will go to San Francisco for stormwater control projects in a disadvantaged residential area of the city.

La Mesa is using roughly $25 million in state revolving fund money for several large sewer system capital improvement projects that the city needs, said Public Works Director Gregory P. Humora.

“It’s a really good way to put together a larger capital improvement project that we would not be able to do normally with just CIP (capital improvement program) funds,” Humora said.

The EPA has awarded more than $4.6 billion to California’s clean water and drinking water funds since 1988.

# # #

California to release more reservoir water thanks to El Niño storms
SF Gate | January 26, 2016 | Kurtis Alexander

California officials offered some good news Tuesday amid the throes of the continuing drought, announcing they'll probably have a little more water to release from the state's mountain-fed reservoirs this year because of wet weather.

The Department of Water Resources, mindful of the fruits of the El Niño weather pattern, boosted expected water deliveries to cities and farms from last month's scant projection of 10 percent of what was requested to a slightly better 15 percent.

While the bump is small, any increase in the supply is sure to be welcomed by the 29 public agencies that receive water from the State Water Project and ultimately serve it to two-thirds of California residents.

"Our modest increase underscores the fact that we still have a critical water shortage after four-plus years of drought that we don't know when will end," said Mark Cowin, director of the Department of Water Resources, in a prepared statement.

The department noted Tuesday that the crucial Sierra Nevada snowpack was at its highest level for the date since 2011, before the drought began. However, while water content in the snow was an encouraging 115 percent of average, it needs to grow closer to 150 percent of average before drought relief is assured, officials said.

Last year, because of the continuing dry conditions, State Water Project deliveries amounted to just 20 percent of what was requested after a meager 5 percent the prior year. The state hasn't met 100 percent of demand since 2006.

The cutbacks have forced water agencies to turn from Sierra runoff caught at the state dams to alternative supplies, such as local rivers and groundwater, as well as to step up conservation.

The communities of Livermore, Pleasanton, Dublin and San Ramon, which get more than two-thirds of their water from the state, have already indicated that strict conservation measures will remain in place while they try to stretch out remaining reserves.

The State Water Project is made up of 34 lakes, reservoirs and storage facilities that fill with mountain runoff but, because of drought, are running thin. January's storms — coming amid the much-anticipated El Niño winter — have been beneficial, but reservoir levels remain lower than normal.

Lake Oroville, the state's largest reserve, Tuesday stood at 60 percent of its historical average for the date.

The state water system works alongside the federally run Central Valley Project in moving mountain supplies to cities and farms.

Federal officials have not projected how much water they will deliver this year. But in an announcement last week, they warned recipients that it might not be much because the drought-stricken system remains in recovery.

# # #