BAY AREA WATER SUPPLY AND CONSERVATION AGENCY

BOARD OF DIRECTORS MEETING

January 18, 2018

Correspondence and media coverage of interest between December 26, 2017 and January 11, 2018

Correspondence

Date: December 26, 2017
To: Nicole Sandkulla, CEO/General Manager
From: Charles Perl, Deputy Chief Finance Officer
Subject: Probable Fiscal Year 2018-19 Wholesale Water Rate Range

Media Coverage

Water Supply:

Date: January 10, 2018
Source: Calaveras Enterprise
Article: It is too early to be discouraged by below-average snowpack

Date: January 8, 2018
Source: Bay Area News Group & Mercury News
Article: California storm sets rainfall records, triggers trouble in fire zones

Date: January 4, 2018
Source: Almanac
Article: Menlo Park's first recycled water system to keep golf course green

Date: January 3, 2018
Source: Sacramento Bee
Article: Snow measures just 3 percent of average in first California mountain survey

Date: December 27, 2017
Source: Department of Water Resources
Article: California Water Plan eNews

Water Supply Management:

Date: January 1, 2018
Source: Times Standard
Article: Opinion – Setting the record straight on Sites Reservoir

Water Quality:

Date: January 2, 2018
Source: Business Insider
Article: Food-safety expert warns latest bizarre Silicon Valley $60 'raw water' trend could quickly turn deadly

Date: December 30, 2017
Source: CNBC
Article: Unfiltered fervor: The rush to get off the water grid

Water Infrastructure:

Date: January 11, 2018
Source: GreenBiz
Article: Salesforce dives headfirst into water recycling with new HQ

Date: January 10, 2018
Source: Sacramento Bee
Article: After Oroville disclosures, embattled California water agency names new director

Date: January 10, 2018
Source: ACWA
Article: Governor Releases Proposed 2018-19 Budget with Funding For Key Water Projects

Date: January 10, 2018
Source: SF Gate
Article: Governor appoints new chief at California's troubled water agency

Date: January 10, 2018
Source: Chico ER
Article: Oroville Dam: Local leaders question DWR about forensic report

Date: January 5, 2018
Source: Sacramento Bee
Article: Final verdict on Oroville Dam: 'Long-term systemic failure'

Date: January 4, 2018
Source: Monterey Herald
Article: 11 projects battling for Proposition 1 water bond funding

Date: January 2, 2018
Source: EP Online
Article: New Recharge Project's Environmental Documents Completed

Water Policy:

Date: January 5, 2018
Source: LA Times
Article: The delta smelt heads for extinction, marking a half-century of failed California water policy

Date: January 4, 2018
Source: The Independent
Article: Legislation Would Impose State Tax on Water Bills

San Francisco Water Power Sewer
Operator of the Hetch Hetchy Regional Water System

525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102
T 415.554.3155
F 415.554.3161
TTY 415.554.3488

December 26, 2017

Nicole Sandkulla, General Manager
Bay Area Water Supply and
Conservation Agency
155 Bovet Road, Suite 650
San Mateo, California 94402

Re: Probable Fiscal Year 2018-19 Wholesale Water Rate Range

Dear Ms. Sandkulla,

As agreed to at the joint SFPUC and BAWSCA meeting of June 1, 2011, the San Francisco Public Utilities Commission (SFPUC) has reviewed and analyzed Wholesale Water Rate inputs and is providing a probable Fiscal Year 2018-19 rate range for Wholesale Water charges. This memorandum also summarizes relevant rate inputs.

In the 5-year Wholesale rate forecast issued on April 4, 2017, the SFPUC projected no change from the current rate of $4.10/Ccf for FY 2018-19.

The SFPUC has since updated the revenue requirement for FY 2018-19, and based on the most recent available data, the revenue requirement inputs are as follows:

Expenses ($ million)	
Wholesale Revenue Requirement	($267)
Debt Service Coverage	($ 6)
Less: Partial Balancing Account Payment	$ 18
Total	($255)
Revenues ($ million)	
Fixed Service Charge	$ 4
Volumetric Charge	$ 251
Total	$ 255

These volumetric revenues assumed 125 MGD based on water delivery data through November 2017. The projected revenues are sufficient to cover the estimated expenses, and therefore no rate change is anticipated.

As a result of these estimates, the SFPUC continues to project no change to the current rate for FY 2018-19 as included in the 5-Year Rate Noticing memo of April 4, 2017.

The SFPUC will next share updated rate projections with Wholesale Customers at the February 2018 meeting.

Amy Javelosa-Rio, Rates Administrator and I are available to discuss the supporting analysis with you or your staff. We look forward to your input. I can be reached at (415) 487-5262.

Thank you.

Sincerely,

Charles Perl
Deputy Chief Finance Officer

cc: Eric Sandler, SFPUC, CFO and AGM, Business Services
Kristina Cordero, SFPUC, Financial Planning Director
Christina Tang, BAWSCA, Senior Administrative Analyst

It is too early to be discouraged by below-average snowpack
Calaveras Enterprise | January 10, 2018 | Staff

In a press release on Jan. 3, the Department of Water Resources (DWR) reported its findings of the first snow survey of the year. Through a survey conducted with the DWR's electronic readings from 103 stations throughout the Sierra Nevada, officials concluded that although December produced a below-average snowpack, it's still too early to draw conclusions about the kind of winter season California will have.

Measurements of the snow water equivalent (SWE) – the depth of water that theoretically would result if the entire snowpack melted instantaneously – of the Sierra Nevada were recorded as follows: The northern Sierra snowpack is 2.3 inches, 21 percent of the multidecade average for the date. The central and southern Sierra readings are 3.3 inches (29 percent of average) and 1.8 inches (20 percent of average), respectively. Statewide, the snowpack's SWE is 2.6 inches, or 24 percent of the Jan. 3 average.

California traditionally receives about half of its annual precipitation during December, January and February, with the bulk of this precipitation coming from atmospheric rivers. So far this winter, an atmospheric high-pressure zone spanning the western United States has persistently blocked storms from reaching the state. If that zone were to move or break up, storms could deliver considerable rain and snowfall this winter.

California's exceptionally high precipitation last winter and spring resulted in above-average storage levels in 154 reservoirs tracked by the DWR. Officials estimate the total storage in those reservoirs at the end of December amounted to 24.1 million acre feet, or 110 percent of the 21.9 average for the end of the year. One year ago, those reservoirs held 21.2 million acre-feet, or 97 percent of the average. End-of-year storage is now the highest since December 2012 (24.3 million acre feet), which was early in the first of five consecutive years of drought in California.

DWR conducts five media-oriented snow surveys each winter near the first of January, February, March, April and May. On average, the snowpack supplies about 30 percent of California's water needs as it melts in the spring and early summer. The greater the snowpack's water content, the greater the likelihood California's reservoirs will receive ample runoff as the snow melts to meet the state's water demand in the summer and fall.

# # #

(This page intentionally left blank)

California storm sets rainfall records, triggers trouble in fire zones
Bay Area News Group & Mercury News | January 8, 2018 | Julia Prodis Sulek

After a bone dry December, the stubborn atmospheric ridge of the Pacific Coast has broken down, the storm door has opened up, and on Monday, Californians from Redding to San Diego welcomed something we haven't seen all winter: the Golden State's first significant storm of the season.

San Francisco racked up its most rainfall in a calendar day — more than 3.15 inches — since 2014. Southern Big Sur got pounded by more than nearly 4.5 inches. Residents in fire-damaged regions in both the north and south faced flash flood watches and warnings, prompting evacuations in Southern California where the Thomas fire burned until nearly Christmas.

What a difference a month makes.

"It relieves that sense of 'here we go again back in the drought,'" State Climatologist Michael Anderson said Monday. "We'll have to see how the rest of the winter plays out, but it keeps us closer to our average precipitation, which is good. It's just managing the extremes with the challenges of the huge fires that we had this fall and winter."

In Northern California's Wine Country region, where 44 people perished and nearly 9,000 structures were destroyed during October's firestorms, home owners and public works crews have been preparing for flooding and mudslides. On Monday, they continued to sandbag near storm drains and lay lines of "straw wattles" — straw-stuffed burlap sausages that recreate natural filters and prevent the toxic stews of incinerated household materials from polluting the water supply.

"We do have crews out monitoring the burn scar areas and are scheduled to work late tonight through the heaviest rain," Adriane Mertens, a spokeswoman for the city of Santa Rosa, said Monday. No significant flooding had been reported by midafternoon.

Still, officials say Northern California's soils in the fire zones have fared better than Southern California's, thanks to rain in October and November up north.

"That helped to activate some of the dormant seeds in the soils and you could get a little growth out of the burned areas. It helps to anchor the soil, which is always a good thing," said Brian Garcia, a National Weather Service meteorologist in Monterey. "Southern California fires were later in the season. There hasn't been time and there hasn't been water, so this rain will wake up some of the dormant seeds. But what's going to happen between now and then is that intense rain can cause flooding and pick up debris and run it down the hills."

California's five-year drought ended last winter, but the dry December had kept rainfall in Northern California cities at less than half or a third of average.

Before this week's storm, Southern California had barely received a drop of rain since last February, creating prime conditions for December's Thomas fire, the state's largest in recorded history after burning 273,400 acres in Ventura and Santa Barbara counties. Students from UC Santa Barbara, which canceled classes a week before winter break, returned Monday to take their delayed finals.

Before Monday's storm, rainfall in Los Angeles and San Diego, for instance, was 3 percent of normal, registering barely a tenth of an inch of rain in either city. By 4 p.m. Monday, a quarter-

inch deluge in Los Angeles doubled its rainfall totals. Santa Barbara could receive as much as six inches by Tuesday.

With rain forecast to taper off after Tuesday's morning commute, the storm is expected to bring 2 to 4 inches in the mountains around the Bay Area and up to two feet of snow in the Sierra. Monday, 3.15 inches fell on San Francisco, 2.56 in Oakland and 1.40 inches in San Jose, according to the National Weather Service. Another 3.27 inches fell on Santa Rosa and 2.04 on Napa.

The early-morning rain wreaked havoc on the morning commute, with a spike in crashes on Bay Area highways, according to the California Highway Patrol.

"A lot of them are caused by people following too closely," said Sgt. Robert Nacke of the CHP.

Average rainfall for a full year in Los Angeles is just under 13 inches and in San Jose, just under 16 inches, so a few good storms can go a long way to bringing rainfall totals back to normal.

Because of last year's wet winter, most major reservoirs remain at or above historic averages. The state's largest, Shasta, is 71 percent full, which is 112 percent of average. Closer to the Bay Area, San Luis Reservoir between Gilroy and Los Banos, is 82 percent full, or 116 percent of average for this date.

"We haven't dealt with this kind of rain in quite some time, so please be careful," Garcia said. "Since the water year began Oct. 1, this is probably going to be the wettest system we've had so far."

# # #

Menlo Park's first recycled water system to keep golf course green
Almanac | January 4, 2018 | Kate Bradshaw

A project by West Bay Sanitary District to build the first recycled water system in Menlo Park could enable the district to pump between 400,000 and 500,000 gallons a day of recycled water to one of the city's top water users: the Sharon Heights Golf & Country Club.

The sanitary district is also in talks to expand the system in a second phase of the project to provide recycled water to SLAC – another of the city's biggest water users – and possibly homeowners' associations in Sharon Heights.

In 2011, the country club used about 164,000 gallons of potable water a day, according to city staff. But the plan is to provide capacity for up to about 400,000 gallons daily to the golf course during the dry season, according to Phil Scott, manager of the sanitary district.

Today, wastewater – water that's passed through household and commercial water systems, including via toilets – generated in the West Bay Sanitary District gets collected and sent to a pump station in Bedwell Bayfront Park. From there, it is distributed to Silicon Valley Clean Water in Redwood Shores, where it's cleaned up and pumped into the Bay, Mr. Scott said.

The new system will instead collect wastewater generated mostly in Menlo Park households and funnel it through a pump station in western Menlo Park using pipes set to be installed along Sand Hill Road. The pump station, set to be built near the intersection of Sand Hill Road and Oak Avenue, will be underground and won't appear different from what's there now, Mr. Scott said.

From there, the wastewater will be pumped to a treatment center to be built off the side of Sand Hill Road and eventually up to the Sharon Heights Golf Course. At the treatment facility, the water will be passed through a "membrane bioreactor" that cleans it up to a level at which it's safe to be used for irrigation. Odor "scrubbers" will also be used to neutralize the smell, he said.

"If we can get the golf course to use recycled water – water that was just going to be sent out to the Bay anyway – it makes sense to have (the golf course operators) use that, so they're not using up the potable water," he said.

At a presentation to the Menlo Park City Council on Dec. 5, Dave Richardson, senior water resources engineer at the West Bay Sanitary district, announced that the district is hoping to secure state funding and award a contract to a team to design and build the project.

According to the timeline, design work will be completed by June, with some overlap for construction to start in April. Work to build the pipeline along Sand Hill Road would take about four months, and the whole project would be completed in June 2019.

The agency plans to avoid construction during peak hours in order to reduce traffic impacts on Sand Hill Road, Mr. Richardson said.

A partnership

According to Mr. Scott, the project will be funded by the golf course and a revolving fund loan from the state. Ratepayers won't have to pay for it, he said.

The golf course for years had been trying to figure out a way to get water from other sources than the Hetch Hetchy water system, which is the main water supplier in Menlo Park. In 2011, a proposal was made to dig a well beneath city property at either Nealon Park or Jack Lyle Park and pump public groundwater to the private golf course.

The proposal was initially opposed by some residents near the parks; opposition was renewed in 2014.

The origin of the alternate proposal to use recycled water is unclear. Talks about the project started around 2014, Mr. Scott said, and both the sanitary district and golf course claim it was their idea.

"So far it's turning out to be a great public-private partnership," he noted. "Anything we can do to help save our water we think is a good thing."

Initially, the cost of the recycled water will be higher than for potable water, Mr. Scott said, but the expectation is that the cost of potable water will go up and, over time, it will become more cost-effective to use the recycled water.

Using recycled water will also give the golf course more stability in times of drought, he said. There's always a chance that golf courses will face tougher water restrictions, he said, since drinking water is being used for the main purpose of keeping grass green.

"Is that our best use of our drinking water?" he asked.

# # #

Snow measures just 3 percent of average in first California mountain survey
Sacramento Bee | January 3, 2018 | Dale Kasler

PHILLIPS - When the chief of California's snow measurements conducts his manual surveys, he usually does it in style, skimming the snow in cross-country skis as reporters plod behind him in snowshoes.

No need this time. The vast meadow around Phillips, a remote spot near Echo Summit, was mostly grass and dirt Wednesday, with pitifully small patches of snow. Frank Gehrke, the Department of Water Resources employee who runs the survey, wore simple winter boots as he walked the 200-yard course off Highway 50 to complete the first official snow survey of the season.

When the measurements were done, Gehrke reported the dismal numbers: just 1.3 inches of snow on average, and a "snow water content" of 0.4 inches. That was 3 percent of average for early January.

"While we would have liked to have had more snow at the first of the year, I believe more will come," said DWR Director Grant Davis, who accompanied Gehrke on the snow survey.

The survey at Phillips, a former post office and stage coach stop at an elevation of 6,800 feet, is mainly a ceremonial affair, and Wednesday's results weren't typical of how the state is faring. Overall, the Sierra Nevada snowpack is about 24 percent of normal, based on electronic readings from "snow pillows" scattered throughout the mountains, and Davis and Gehrke expressed hope that the rest of the winter will bring better results.

"We're very early in the season," Gehrke said. "We have had very dramatic turnarounds."

Davis added, "I'm not going to say the anxiety level is any higher than normal."

Nonetheless, the statistics were a sobering reminder of the fickle nature of California winters. The state endured five years of epic drought, which ended with last winter's record-setting precipitation. Now the season is off to a dry start.

Michelle Mead of the National Weather Service, who walked the meadow with Gehrke and Davis, pleaded with Californians to continue to conserve water.

A break in the weather was expected as early as Wednesday evening. The weather service's forecast called for a mixture of rain and snow, extending through late Saturday. For Sacramento, the rainfall would be the first since Dec. 20.

But the upcoming storms aren't expected to be "atmospheric rivers," the deluges that can quickly turn a dry winter into a wet one. This week's precipitation was expected to bring rain for the most part, with snowfall in most mountain areas hitting only 2 inches or so.

Although state officials welcome precipitation in any form, they prefer lots of snow because the Sierra can act as a second set of reservoirs, holding water until summer and fall.

In any event, Mead said this week's precipitation was a sign that the high-pressure ridge hovering over the Pacific, which has effectively blocked most of the storms, is weakening. She said more precipitation is expected next week.

"Showers into next weekend," she said. "That is a good sign for us."

# # #

(This page intentionally left blank)

California Water Plan eNews
DWR | December 27, 2017

2017: California Water – Year in Review

2017 was a reminder that California water is a tale of two extremes. It was a clarion of the urgently needed changes charted out in the emerging California Water Plan Update 2018. After more than five years of drought, 2017 was the year that brought drought-busting snow and rain across the state. There was a snowpack in the Sierra that was well above average in May; reservoirs ended the year above historical capacity averages. But the second wettest year on record, behind 1983, also delivered water that led to flooding and an emergency incident at Lake Oroville. Expansive wildfires have devastated communities and landscapes in Northern and Southern California, fueled by dead vegetation from the drought, powerful winds, and a very dry autumn.

All that is inspiring the development of California Water Plan Update 2018. It will provide a long-term vision for policies and investment in California's water future. During 2017, the development process included release of the draft Assumptions and Estimates Report in April. After a summer of public workshops, the preliminary draft of Update 2018 was released during a plenary meeting in September.

2018: Water Plan – Year in Preview

The new year will bring more progress in moving Update 2018 toward the finish line. It will be shorter than previous versions of the California Water Plan Update. Presented in five chapters, Update 2018 will provide a comprehensive strategy for water resources sustainability.

1. Envisioning Water Resources Sustainability – Enabling planners and decision-makers to create policy and track progress in advancing what California's societal values.

2. Sustainability Outlook – Supporting mutual understanding of resource limitations, management deficiencies, and shared intent to identify State policy and investment.

3. Actions for Sustainability – Providing vetted priorities and actions to strengthen State agency alignment, and empower and build capacity of regional water management efforts.

4. Investing in Water Resources Sustainability – Estimating funding needs and offering funding options for the governor, Legislature, and other decision-makers to implement Update 2018 actions.

5. Implementation Plan and Funding Options – Providing progress assessments for the five priorities, and recommending refinements to priorities, actions, roles/responsibilities, policies, and legislation.

An updated draft will be available in early January. The public review draft is expected to be released in February, with the final report due in December. During the next 12 months, the Water Plan Team will convene more advisory group meetings, public workshops, and the final Update 2018 annual plenary meeting. There are two scheduled events in early January to review the latest draft chapters, and provide an opportunity for additional public feedback before releasing the public review draft.

• January 4 – Chapters 4 and 5 workshop, the funding and implementation plan chapters.

• January 9 – All-day webathon to review all five chapters of Update 2018.

# # #

(This page intentionally left blank)

Opinion – Setting the record straight on Sites Reservoir

Times Standard | January 1, 2018 | Letters to the Editor – Jim Watson

Sites Reservoir offers significant benefits to native fisheries and communities. It is important to know the facts. The Sites Project Authority is managed locally, through a partnership of Northern California water agencies, irrigation districts, and representatives from Glenn and Colusa Counties. The Sites Project will not impact upstream water rights, will not impact Trinity River flows, and is wholly independent of the state's proposed WaterFix. In fact, Sites offers substantial environmental benefits. Up to 40 percent of the Sites water would be allocated to the state for environmental flows — a significant amount of water dedicated entirely to the ecosystem – to benefit fish and wildlife in the Sacramento River, Delta, and South-of-Delta wildlife refuges. The project would only divert Sacramento River flows during wet fall and winter months, after all existing water rights and water quality standards have been met. Sites will allow existing reservoirs (e.g. Shasta and Folsom) to preserve cold-water needed for salmon survival and protect the most at-risk salmon runs. With broad statewide support, Sites offers California a new water management tool to enhance environmental flows and improve conditions in the Sacramento River and Delta, while also protecting against inevitable future drought conditions. The Sites Project fulfills the clear Proposition 1 mandate from the people of California, who overwhelmingly said the state needs public benefits from new water storage. The Authority fully intends to work with the state and local communities to fulfill the will of voters.

# # #

(This page intentionally left blank)

Food-safety expert warns latest bizarre Silicon Valley $60 ‘raw water’ trend could quickly turn deadly

Business Insider | January 2, 2018 | Kate Taylor

Silicon Valley is developing an obsession with untreated, unfiltered water, according to The New York Times. But a food-poisoning expert says that the trend is dangerous and could be deadly. "Raw" water can spread bacteria and diseases including cholera, E. coli, Hepatitis A, and Giardia.

When food-safety expert Bill Marler saw The New York Times' trend piece on Silicon Valley's recent obsession with raw water, he thought he was reading a headline from The Onion.

According to The Times, demand for unfiltered water is skyrocketing as tech-industry insiders develop a taste for water that hasn't been treated, to prevent the spread of bacteria or other contaminants.

In San Francisco, "unfiltered, untreated, unsterilized spring water" is selling for as much as $60.99 for a 2.5 gallon jug. Startups dedicated to untreated water are popping up. People — including startup Juicero's cofounder Doug Evans — are gathering gallons of untreated water from natural springs to bring to Burning Man.

While Evans and other fans say raw water is perfect for those who are "extreme about health," Marler — a food-safety advocate and a lawyer — says the opposite is true.

"Almost everything conceivable that can make you sick can be found in water," Marler told Business Insider.

Unfiltered, untreated water, even from the cleanest streams, can contain animal feces, spreading Giardia, which has symptoms such as vomiting and diarrhea and results in roughly 4,600 hospitalizations a year. Hepatitis A, which resulted in 20 deaths in a California outbreak in 2017, can be spread through water if it isn't treated. E. coli, and cholera can also be transmitted via untreated water.

Because filtered, treated water has become the norm, Marler says, most people don't realize how dangerous s0-called raw water can be.

"The diseases that killed our great-grandparents were completely forgotten about," he said.

Most Americans don't personally know anyone who died of Hepatitis A or cholera, thanks to advances in technology and more stringent safety standards. As a result, they had a hard time realizing the risks involved in consuming untreated water.

"It's fine till some 10-year-old girl dies a horrible death from cholera in Montecito, California," Marler said.

On January 2, Business Insider's Melia Robinson visited a San Francisco supermarket where a small company called Live Water sells its untreated water. Rainbow Grocery was sold out of the Fountain of Truth Spring Water from Live Water, but a sign indicated a "slight price increase."

The cost of a 2.5 gallon jug increased from $36.99 to $60.99 since The Times' article published. While the price includes the glass container, a refill costs only $14.99, according to The Times.

According to Marler, the raw-water trend is similar to people's obsession with raw milk or opposition to vaccines. While they lack scientific evidence, they're convinced that they are correct, in part because they have failed to see the repercussions of life without scientific advances.

"You can't stop consenting adults from being stupid," Marler said. "But we should at least try."

# # #

Unfiltered fervor: The rush to get off the water grid

Start-ups like Live Water in Oregon and Tourmaline Spring in Maine have emerged in the last few years to deliver untreated water on demand.

Another company, Zero Mass Water, installs systems allowing people to collect water directly from the atmosphere around their homes.

Adherents of the "water conscious movement" share a wariness of tap water, particularly the fluoride added to it and the lead pipes that some of it passes through.

CNBC | December 30, 2017 | Nellie Bowles

SAN FRANCISCO — At Rainbow Grocery, a cooperative in this city's Mission District, one brand of water is so popular that it's often out of stock. But one recent evening, there was a glittering rack of it: glass orbs containing 2.5 gallons of what is billed as "raw water" — unfiltered, untreated, unsterilized spring water, $36.99 each and $14.99 per refill, bottled and marketed by a small company called Live Water.

"It has a vaguely mild sweetness, a nice smooth mouth feel, nothing that overwhelms the flavor profile," said Kevin Freeman, a shift manager at the store. "Bottled water's controversial. We've curtailed our water selection. But this is totally outside that whole realm."

Here on the West Coast and in other pockets around the country, many people are looking to get off the water grid.

Start-ups like Live Water in Oregon and Tourmaline Spring in Maine have emerged in the last few years to deliver untreated water on demand. An Arizona company, Zero Mass Water, which installs systems allowing people to collect water directly from the atmosphere around their homes, began taking orders in November from across the United States. It has raised $24 million in venture capital.

And Liquid Eden, a water store that opened in San Diego three years ago, offers a variety of options, including fluoride-free, chlorine-free and a "mineral electrolyte alkaline" drinking water that goes for $2.50 a gallon.

Trisha Kuhlmey, the owner, said the shop sells about 900 gallons of water a day, and sales have doubled every year as the "water consciousness movement" grows.

What adherents share is a wariness of tap water, particularly the fluoride added to it and the lead pipes that some of it passes through. They contend that the wrong kind of filtration removes beneficial minerals. Even traditional bottled spring water is treated with ultraviolet light or ozone gas and passed through filters to remove algae. That, they say, kills healthful bacteria — "probiotics" in raw-water parlance.

The quest for pure water is hardly new; people have been drinking from natural springs and collecting rainwater from time immemorial. The crusade against adding fluoride to public water began in the 1950s among Americans who saw danger in the protective measures that had been adopted over decades to protect the populace from disease and contamination.

But the off-grid water movement has become more than the fringe phenomenon it once was, with sophisticated marketing, cultural cachet, millions of dollars in funding and influential supporters from Silicon Valley.

One recent morning in the hills of Berkeley, Calif., Cody Friesen, the founder and chief executive of Zero Mass Water, was inspecting water collection panels he had installed for his investor Skip Battle, a longtime tech leader who now sits on the boards of LinkedIn, Netflix and OpenTable.

The system — called Source, which retails for $4,500, including installation — draws moisture from the air (the way rice does in a saltshaker) and filters it, producing about 10 liters of water a day and storing about 60 liters. The goal, Mr. Friesen said, is to make water "that's ultra high quality and secure, totally disconnected from all infrastructure."

"Just take a breath of air," said Mr. Friesen, a professor of materials science at Arizona State University. "Take a deep breath. No matter how wealthy or poor you are, you can take a breath and own that air that you breathe. And yet water — the government brings it to you."

Mr. Battle's system runs on power from its own small solar panel. It feeds into a tap set up in his stone garden, where he goes to drink. He said he's been making all his meals and drinks with it.

Mr. Battle poured himself a glass. "The water from the tap just doesn't taste quite as refreshing," he said. "Now is that because I saw it come off the roof, and anything from the roof feels special? Maybe."

The most prominent proponent of raw water is Doug Evans, a Silicon Valley entrepreneur. After his juicing company, Juicero, collapsed in September, he went on a 10-day cleanse, drinking nothing but Live Water. "I haven't tasted tap water in a long time," he said.

Before he could order raw water on demand, Mr. Evans went "spring hunting" with friends. This has become more challenging lately: The closest spring around San Francisco has recently been cut off by landslides, so reaching it means crossing private property, which he does under cover of night.

"You have to be agile and tactile, and be available to experiment," he said. "Literally, you have to carry bottles of water through the dark."

At Burning Man, the summer festival in the Nevada desert that attracts the digerati and others, Mr. Evans and his R.V. mate brought 50 gallons of spring water they had collected. "I'm extreme about health, I know, but I'm not alone with this," Mr. Evans said. "There are a lot of people doing this with me. You never know who you'll run into at the spring."

The founder of Live Water, Mukhande Singh, started selling spring water from Opal Springs in Culver, Ore., three years ago, but it was a small local operation until this year. Marketing materials show Mr. Singh (né Christopher Sanborn) sitting naked and cross-legged on a hot spring, his long brown hair flowing over his chest.

Pure water can be obtained by using a reverse osmosis filter, the gold standard of home water treatment, but for Mr. Singh, the goal is not pristine water, per se. "You're going to get 99 percent of the bad stuff out," he said. "But now you have dead water."

He said "real water" should expire after a few months. His does. "It stays most fresh within one lunar cycle of delivery," he said. "If it sits around too long, it'll turn green. People don't even realize that because all their water's dead, so they never see it turn green."

Mr. Singh believes that public water has been poisoned. "Tap water? You're drinking toilet water with birth control drugs in them," he said. "Chloramine, and on top of that they're putting in fluoride. Call me a conspiracy theorist, but it's a mind-control drug that has no benefit to our dental health." (There is no scientific evidence that fluoride is a mind-control drug, but plenty to show that it aids dental health.)

Talk like Mr. Singh's disturbs Dr. Donald Hensrud, the director of the Healthy Living Program at the Mayo Clinic in Rochester, Minn. What the raw-water partisans see as dangers, he says, are important safety measures.

"Without water treatment, there's acute and then chronic risks," Dr. Hensrud said, including E. coli bacteria, viruses, parasites and carcinogenic compounds that can be present in untreated water. "There's evidence all over the world of this, and the reason we don't have those conditions is because of our very efficient water treatment."

Dr. Hensrud said he has noticed more interest in alternative water sources; a patient recently asked questions about a raw water he had been drinking. "There are people, just like with immunizations, that don't accept the status quo," Dr. Hensrud said.

The rules for selling bottled water are imposed by states and the Food and Drug Administration, which does not specify how water be treated but sets acceptable amounts of chemicals and bacteria at a low level. State and federal inspectors make unannounced visits to bottling plants to test for harmful contaminants.

Seth Pruzansky, the chief executive of Tourmaline Spring (whose website touts its "sacred living" water), got an exemption from the State of Maine in 2009 to sell his water untreated. "The natural food industry has been in the dark ages when it comes to water," he said. "Now there is a renaissance."

The movement against tap water, like the movement against vaccines, has brought together unlikely allies from the far left and the far right. Conspiracy theorists like Alex Jones, founder of the right-wing website Infowars, have long argued that fluoride was added to water to make people more docile. Similar claims can be heard in the largely liberal enclaves where Live Water is seeing interest spike.

"Fluoride? It's a deathly toxic chemical," said Vanessa Kuemmerle of Emeryville, Calif., who does landscape design for large tech companies. She said she was an early adopter of raw water, and has noticed many of her clients following suit.

"They're health-conscious people that understand the bigger picture of what's going on," she said. "Everyone's looking for an edge: nootropics, Bulletproof coffee, better water."

The health benefits she reported include better skin and the need to drink less water. "My skin's plumper," she said. "And I feel like I'm getting better nutrition from the food I eat."

In the community of tap-water skeptics, many talk about water the way others might about fine wine.

"My friends who drink spring water, when they come over now they're like, 'Oh yeah, give me the good stuff,'" said Amanda Thompson, a writer in San Francisco. "The consciousness around water is changing."

Not everyone has been receptive. Many San Franciscans are proud of their tap water, which comes from Hetch Hetchy, a reservoir in Yosemite National Park.

"My landlord lives across the street and thinks I'm crazy," Ms. Thompson said. "He gave me a big rant around Hetch Hetchy water and how the water's so good. I always hope he's not around when there's a delivery."

Raw water is such a nascent business that there's debate over what exactly to call the liquid. Daniel Vitalis hosts a podcast, "ReWild Yourself," that promotes hunting for food and gathering water; he started the site called FindASpring.com to help people locate springs. He prefers the term "unprocessed water," which echoes the idea of processed versus unprocessed food.

# # #

Salesforce dives headfirst into water recycling with new HQ
GreenBiz | January 11, 2018 | Heather Clancy

The new Salesforce Tower, which opened to employees this week in San Francisco, isn't just the tallest one gracing the skyline of the City by the Bay. The structure sets a new bar for reducing water consumption in commercial office buildings.

By the end of the year, the 1.4 million-square foot, 61-story skyscraper will boast the largest commercial "blackwater" recycling system in the United States — and the first such installation in California. Salesforce eventually will occupy 36 floors, or about 881,762 square feet of the property.

The technology from Australian company Aquacell will reduce the tower's drain on the local drinking water supply by 7.8 million gallons annually or 30,000 gallons daily. Put another way, the system will result in a 76 percent reduction in the building's water footprint, according to Patrick Flynn, senior director of sustainability for the cloud software giant. "This is a step above and beyond what we have to do," he said.

Blackwater systems work by extensively filtering and processing the water draining out of toilets, urinals, kitchen and utility sinks, and dishwashers using membrane bioreactors, ultraviolet radiation and other methods. The treated water is repurposed for non-potable applications such as for toilets, urinals and drip irrigation, recirculated through a different set of pipes.

Greywater systems use a similar approach and are suitable for similar uses; the main difference between that technology and this one is that the former doesn't process the water from toilets so they don't have to handle as many contaminants.

What lies beneath

Salesforce began studying the technology for its new headquarters several years ago, in the height of the California drought. That decision was motivated, in part, by building ordinances in San Francisco that require buildings of a certain size to invest in graywater recycling systems for non-potable consumption. Another carrot: The local public utility is offering grants (automatic PDF download) of up to $250,000 to encourage these investments in structures larger than 100,000 square feet that save at least 1 million gallons of potable water annually over at least eight years.

Salesforce is taking advantage of that program, although Flynn declined to discuss the financial aspects of the project. The money is awarded at different phases: after the design is approved; when the system is connected; and after its performance has been validated over time.

"We are doing this because this is the right thing to do," Flynn said. "I do believe that we would have looked closely at this option, regardless."

The building's developers, Boston Properties and Hines, were important allies in the process, helping to set the parameters for the selection and sizing of the installation. They also worked with a subcommittee of the Salesforce team — a cross-discipline team including representatives from real estate, finance, project management and sustainability — to define testing, operation and maintenance requirements. The technology is housed in a space created by reallocating several parking spaces in the buildings garage space, Flynn said.

Generally speaking, water recycling systems still aren’t that common in the United States but are popping up in water-stressed countries in the Middle East, as well as in Australia and Singapore. Aquacell is actually behind at least one other installation in San Francisco — its greywater system is used in a nearby 55-story building combining condominiums and commercial office space.

Will Salesforce consider this technology elsewhere? Flynn said time will tell, although the parameters used to guide this project will become part of the framework used to guide the real estate's decisions about green building investments. "The thing about water and water stress is that it's very regionally specific," he said. "This technology is best suited for places of drought."

The Salesforce Tower is on track to become the highest-rated building under the LEED version 4 program.

# # #

After Oroville disclosures, embattled California water agency names new director
Sacramento Bee | January 10, 2018 | Dale Kasler

The California Department of Water Resources underwent a management shakeup Wednesday, less than a week after investigators released a scathing report on last February's crisis at Oroville Dam and how the department handled it.

Grant Davis resigned as DWR's director barely seven months after taking over the embattled department, which has been heavily criticized following the near-catastrophe at the dam's two flood-control spillways. Davis will go back to his old job as general manager of the Sonoma County Water Agency.

Karla Nemeth, deputy secretary and senior adviser for water policy at the Natural Resources Agency since 2014, was named the new DWR director by Gov. Jerry Brown. Brown's administration said Nemeth's appointment was part of a larger restructuring of DWR to place more emphasis on flood control and dam safety.

An independent forensic team, in a wide-ranging critical report on the causes of the Oroville emergency, said last week that dam safety must become a higher priority at DWR. The department owns and operates Oroville Dam and runs the State Water Project, which delivers billions of gallons of Northern California river water to agencies as far away as San Diego.

"In the past year alone, the most severe drought in California's recorded history was interrupted by one of the wettest seasons on record, putting extreme pressure on our flood control infrastructure and exposing vulnerabilities," Natural Resources Secretary John Laird said in a prepared statement. "This new team will help the state better prepare for ever-greater challenges to our infrastructure and flood management systems, and ensure that California is doing everything possible to ensure dam and flood safety." As part of the reorganization, DWR created a new position, deputy director for flood management and dam safety.

Davis, in a statement released by Sonoma County officials, said, "My home and passion is Sonoma County, and I am dedicated to helping the Water Agency achieve its ongoing goals while restoring our watersheds impacted by the wildfires." He didn't return calls seeking additional comment.

The forensic team's report on Oroville blamed a series of long-standing problems at DWR, all of which predated Davis' arrival at the agency.

Mark Cowin, who retired as DWR director in December 2016, said it appeared there was "a personality conflict between Grant and a number of people, including the governor. ... It was a bad fit to start with."

Among other things, he said Davis sometimes was too aggressive about suggesting changes at DWR. "He got ahead of the curve," Cowin said.

Davis was scheduled to appear at a legislative oversight hearing on Oroville on Wednesday morning at the Capitol, but was represented instead by DWR's chief deputy director. No explanation was given for his absence from the hearing, and his exit from DWR was announced about an hour after the hearing ended.

Nemeth has played a significant role in Brown's controversial proposal to overhaul the Sacramento-San Joaquin Delta's plumbing with a pair of water tunnels. She has worked for Natural Resources since 2009 and is married to Tom Philp, a former Sacramento Bee editorial writer who is a strategist for the Metropolitan Water District of Southern California – the largest member agency of DWR's State Water Project.

She becomes the fourth DWR director in a little more than a year. Those include two interim directors, one of whom, Bill Croyle, ran the department during the Oroville emergency.

The crisis began when a giant crater erupted in the main flood-control spillway Feb. 7. DWR tried to limit the damage by curtailing water releases, but a heavy rainstorm filled the reservoir and water began flowing over the never-before-used emergency spillway – a concrete lip atop an unlined hillside. When the hillside started eroding badly, putting the concrete lip in peril, officials ordered the immediate evacuation of 188,000 downstream residents.

In its report last week, the forensic team said the main spillway was poorly designed, and then poorly maintained in the decades following the dam's 1968 completion. The panel also faulted DWR's handling of the crisis, saying different decisions could have prevented water from flowing over the untested emergency spillway. Among other things, the investigators said DWR officials disregarded geologists' warnings that the emergency spillway might not withstand water flows, and also were influenced by a desire to keep water deliveries flowing to State Water Project member agencies. DWR officials denied that water delivery played a role in their decision-making.

At Wednesday's legislative hearing, forensic team leader John France reiterated his belief that dam safety hasn't been made a high enough priority at DWR.

"We'd like to see it have a bit of a louder voice," France told lawmakers.

He also warned that dam safety officials, in California and elsewhere, need to overhaul how they inspect structures. The flaws at Oroville, including a poorly designed drainage system, were lurking there for decades but weren't visible to inspectors. To truly understand if dams are working properly, inspectors have to review old blueprints and other documents, he said.

The problem isn't limited to California, he stressed. Across the industry, "we're not diving as deeply as we need to, to find these ticking time bombs," France said.

DWR officials pushed back on suggestions that they've neglected dam safety, but acknowledged that they're reforming the agency in response to France's team's report. Eric Koch, who takes over the newly created role of deputy director for flood management and dam safety, said DWR has traditionally concentrated much of its firepower on preventing failures of the dams themselves but hasn't paid enough attention to spillways and other related structures. That will change, he said.

"We are shifting the paradigm of dam safety across California," he told lawmakers. Already, several dam owners have pledged to replace their spillways, based on a flurry of post-Oroville inspections ordered by DWR.

But change will take time. Cindy Messer, DWR's chief deputy director, said a comprehensive blueprint for reform will take at least four months to develop. She said the agency is talking with Brown's staff about getting the personnel needed to ramp up the inspection procedures.

“I believe that we do prioritize dam safety,” she said. “Is the group big enough? No.”

Lawmakers remained skeptical. Assemblyman James Gallagher, R-Yuba City, whose family was evacuated in February, called the Oroville crisis a “monumental organizational failure.”

Added state Sen. Jim Nielsen, R-Tehama, addressing the DWR officials: “The agency is not trusted. You have been great under the pressure ... but there’s no trust.”

# # #

(This page intentionally left blank)

Governor Releases Proposed 2018-19 Budget with Funding For Key Water Projects
ACWA | January 10, 2018 | Will Holbert

Gov. Jerry Brown today released a proposed $190.3 billion spending plan that includes funding for several key water-related issues. Below are some highlights.

- $4.7 million to set up a safe drinking water fund consistent with the framework of SB 623 (Monning) to address the lack of safe drinking water in some disadvantaged communities. ACWA strongly opposes the tax on drinking water proposed in SB 623;
- $63 million in bond funding, if approved by voters in June, would fund capital costs for safe drinking water projects in disadvantaged communities;
- $61.8 million (assuming passage of bond funding in June) for the work of groundwater sustainability agencies operating under the Sustainable Groundwater Management Act (SGMA);
- $84 million (assuming passage of bond funding in June) for the State Water Board to support regional groundwater treatment and remediation activities that prevent or reduce contamination of groundwater that is a source of drinking water.
- $98.5 million (assuming the passage of bond funding in June) for flood control projects that achieve public safety, along with fish and wildlife improvements.

Overall, the new budget proposes a $190.3 billion spending plan. The budget is remarkable for setting aside $5 billion for the state's rainy day fund, building it up to $13.5 billion. A full summary of the governor's budget proposal can be found at www.ebudget.ca.gov.

ACWA staff is in the process of evaluating the budget and will provide more information to members in the coming days.

# # #

(This page intentionally left blank)

Governor appoints new chief at California's troubled water agency
SF Gate | January 10, 2018 | Kurtis Alexander

Gov. Jerry Brown named a senior state water official to head California's troubled water agency Wednesday, just days after the department was blasted in an independent report for having a culture of complacency and incompetence that contributed to last year's near-disaster at Oroville Dam.

Karla Nemeth, a deputy secretary and senior adviser at the California Natural Resources Agency, is poised to take over the Department of Water Resources as it confronts criticism of how it manages a massive network of reservoirs and canals. Her appointment is subject to Senate confirmation.

The Brown administration said the change is part of a restructuring of the state's water operations intended to improve dam safety and incorporate lessons learned at Oroville Dam.

The agency's largest water storage site and the nation's tallest dam at Lake Oroville fell into disrepair. In February, pounding rain and large water releases caused the reservoir's spillway to collapse. A back-up spillway also failed. Fears that water would pour uncontrollably downstream prompted the evacuation of 180,000 people.

The agency's former director, Grant Davis, wasn't on the job when the spillway problems came to light, but he announced Wednesday that he would be returning to his position as general manager of the Sonoma County Water Agency. His tenure at the Department of Water Resources was less than six months.

The previous director, William Croyle, stepped down in July after also being at the helm for about six months, including during the Oroville crisis. Mark Cowin had served in the job for six years prior.

On Friday, a report ordered by federal regulators detailed a history of mistakes, lax inspections and botched repairs at the 770-foot Oroville Dam before the spillways gave way. The assessment concluded that the water agency's poor work culture contributed to the missteps.

Nemeth, 47, has a background in water and public affairs, having worked as a project manager for the state's Bay Delta Conservation Plan and environmental and public affairs director for the Alameda County Flood Control and Water Conservation District.

Her appointment comes with the addition of two new executive positions at the Department of Water Resources, one responsible for dam safety and operations and one responsible for long-term water planning. The agency is folding its current position of deputy director for integrated water management.

"This new team will help the state better prepare for ever-greater challenges to our infrastructure and flood management systems, and ensure that California is doing everything possible to ensure dam and flood safety," said John Laird, secretary of the state Natural Resources Agency, in a prepared statement.

The Department of Water Resources operates one of the world's largest water grids, a system of nearly three-dozen dams and storage sites that channel water to 25 million Californians, including many in the Bay Area.

# # #

(This page intentionally left blank)

Oroville Dam: Local leaders question DWR about forensic report
Chico ER | January 10, 2018 | Risa Johnson

Local politicians were full of questions for state Department of Water Resources officials at a legislative oversight hearing Wednesday after the recent release of the forensic report.

John France, head of the forensic team, along with DWR leaders testified at the State Capitol before the Assembly Committee on Water, Parks and Wildlife about the forensic report which came out Jan. 5.

The report cast blame for the Oroville Dam spillway crisis on “long-term systemic failure” of DWR, regulators and the dam industry at large for faulty design and construction and inadequate maintenance.

The department has to send plans to address concerns laid out in the report to the Federal Energy Regulatory Commission, or FERC, within 60 days, per a letter filed Wednesday morning with the commission. At the three-hour hearing, department officials said they would have more robust plans to the committee in 4-6 months.

Assembly member James Gallagher, R-Yuba City, sought a “yes” or “no” from DWR officials on whether they would commit to address issues brought up in the forensic report, including the department’s longtime assertion that rock underneath the spillway chute and on the emergency spillway hillside was solid — when it was in fact weathered, the forensic team found.

“That’s a monumental failure, I would call it,” Gallagher said.

Additionally, he asked officials to respond to the report’s findings of design flaws and claims that the department’s dam safety culture was not as strong as it should be.

Cindy Messer, DWR’s chief deputy director, said the department was taking the forensic team’s findings seriously, though she did not agree with all of the claims, including that the department was overconfident or reactive rather than proactive.

“We need to take a half step back (and come in) with fresh eyes, ego checked at the door,” Messer said. “Yes, we are committed to implementing the recommendations in the report.”

She said DWR was looking to bolster its group focused on dam safety.

Gallagher also voiced concerns about some decision-makers during the crisis suggesting that keeping the Hyatt Powerplant running was a higher priority than emergency spillway erosion, according to the forensic report. At least one reason to keep the powerplant running would be to save water deliveries, Gallagher said.

France said it was difficult to put oneself in the position of those in the room that day, as he had been in similar decision-making situations in the past. Feb. 11 was when the emergency spillway was used for the first time. France said dam safety should have a “louder and more prominent voice” at the department.

Joel Ledesma, deputy director of the State Water Project, said the group tried to balance all of the risks and that the use of the emergency spillway was never a one-person decision.

“Was every decision perfect? I don’t know,” Ledesma said, adding they did their best with the information available at the time.

He also said that the Board of Consultants would look at recommendations in the forensic report. FERC is requiring this.

Sen. Jim Nielsen, R-Red Bluff, asked if there could be some change in department oversight, as government agencies tend to become insular. He asked that the department’s plans for addressing the forensic report be done in the public eye.

“The reason I’m pushing this so hard, the biggest problem is there is no trust,” Nielsen said. “The agency is not trusted. Assemblyman Gallagher and I don’t trust you either, though I like you personally.”

He suggested, as he had previously, that a group of local leaders and state and federal regulatory officials be formed. Messer said the group could help the department keep aware of community concerns and that it would be considered.

When asked if the department would help support claims of people who evacuated on Feb. 12, she said her ability to comment was limited because the department was facing several class action lawsuits. All claims have been denied by the state.

On Feb. 12, about 180,000 residents in Oroville and communities downstream were ordered to evacuate because there was fear that water running down the unlined hillside below the emergency concrete weir could erode the hill back upward toward the structure, causing a catastrophic failure.

# # #

Risa Johnson covers local politics in Butte County and the City of Oroville for the Chico Enterprise-Record and Oroville Mercury-Register newspapers. Since February 2017, she has written extensively about the Oroville Dam crisis. She is a proud alumna of Chico State University.

Final verdict on Oroville Dam: ‘Long-term systemic failure’
Sacramento Bee | January 5, 2018 | Dale Kasler

Citing a "long-term systemic failure" at the California Department of Water Resources, independent forensic investigators released their final report Friday on the nearly-catastrophic emergency last February at Oroville Dam.

In a 584-page dissection of the disaster at America's tallest dam, the investigative team said Oroville Dam was designed and built with flaws from the beginning, which were exacerbated by inadequate repairs in the years that followed.

"Due to the unrecognized inherent vulnerability of the design and as-constructed conditions and the chute slab deterioration, the spillway chute slab failure, although inevitable, was unexpected," the panel report.

The panel also said the Department of Water Resources, which runs the dam, has been "somewhat overconfident and complacent" and gave "inadequate priority for dam safety." At the same time, the investigators said the entire dam industry, including federal regulators who oversee the facility's operations, needs to heed the lessons learned at Oroville.

"Although the practice of dam safety has certainly improved since the 1970s, the fact that this incident happened to the owner of the tallest dam in the United States, under regulation of a federal agency, with repeated evaluation by reputable outside consultants, in a state with a leading dam safety regulatory program, is a wake-up call for everyone involved in dam safety," the panel wrote. "Challenging current assumptions on what constitutes 'best practice' in our industry is overdue."

Made up of six independent engineering consultants from around the country, the investigative team said there was "no single root cause" for the crisis, which began Feb. 7. Rather, the panel pointed to a "complex interaction of relatively common physical, human, organizational and industry factors." The giant crater that erupted in the concrete chute set off a slow-motion emergency that culminated five days later with the evacuation of 188,000 downstream residents.

Problems emerged almost immediately after the dam, the linchpin of the State Water Project, opened in 1968. The concrete chute slab cracked above and along underdrain pipes, leading to higher-than-expected flows of water directly beneath the chute, the panel wrote.

"The slab cracking and underdrain flows, although originally thought of as unusual, were quickly deemed to be 'normal,' and as simply requiring on-going repairs," the panel wrote. "However, repeated repairs were ineffective and possibly detrimental."

The 3,000-foot-long chute deteriorated over the years, with its steel rebar and anchors corroding. The chute was also plagued by "poor foundation conditions" directly beneath the concrete, which were documented in geological reports but weren't properly addressed in the design and construction of the spillway, the panel wrote.

All these factors came together Feb. 7, as the dam was releasing water down the spillway to lower reservoir levels during a massive rainstorm. Water that crept into the cracks and joints of the concrete chute resulted in "uplift forces beneath the slab," causing the spillway to erupt.

The panel's findings are in line with its interim reports, although the final report ventures into new territory by criticizing Department of Water Resources officials for their handling of the first few days of the emergency once the initial fracture appeared in the main spillway.

After the crater formed, dam operators decided to curtail water releases on the chute the next few days in an effort to limit the damage. Water levels at Lake Oroville, the state's second largest reservoir, rose so high that water started pouring over the nearby emergency spillway, which consists of a concrete lip sitting on an unlined hillside, for the first time since the dam opened.

The forensic team said the DWR dam operators didn't realize just how risky it was to let water pour over the emergency spillway.

"The decisions were made with the best of intentions, but against the advice of civil engineering and geological personnel, who had by then recognized the poor bedrock conditions and the potential for unsatisfactory performance of the previously untested emergency spillway," the forensic team wrote.

One day after water started running over the emergency structure, the hillside had eroded so badly that dam officials feared the lip of the emergency spillway would crumble, releasing a "wall of water" on communities below the dam. That necessitated the evacuation. Faced with imminent disaster, dam operators then dramatically ramped up water releases over the main spillway, which lowered lake levels to the point that water stopped flowing over the emergency spillway.

The evacuation ended two days later, although the heavy water releases over the main spillway turned the initial fracture into a massive canyon that would take months to fix.

The panel had other criticisms for DWR, calling it a "somewhat insular organization" that hasn't tapped "industry knowledge" to improve its "technical expertise."

"Lake many other large dam owners, DWR has been somewhat overconfident and complacent regarding the integrity of its civil infrastructure and has tended to emphasize shorter-term operational considerations," the panel added.

The report was a blow for an agency that has built a reputation for diligently policing California's dams. An audit in 2016 by the Association of State Dam Safety Officials concluded that California operates "the leading dam safety program in the nation." Yet a Sacramento Bee investigation last fall showed that dam owners are allowed to let flaws and deficiencies go unrepaired for years, even after repeated notifications from DWR's inspectors.

The independent investigation was ordered by the Federal Energy Regulatory Commission, which licenses Oroville Dam. State officials said they welcomed the investigation and incorporated its preliminary findings into the massive repair project that has been underway since last spring.

DWR Director Grant Davis, in a prepared statement, said "we will carefully assess this report, share it with the entire dam safety community and incorporate the lessons learned going forward to ensure California continues to lead the nation on dam safety."

The flood control spillway has been largely repaired in time for the rainy season, although portions of the chute have been patched or partially replaced and are awaiting further repairs later in 2018.

The total emergency, including the repairs, is expected to cost around $500 million or more. State officials are expecting the Federal Emergency Management Agency to pick up most of the expense. Any leftover costs are to be covered by the water agencies that store water behind Oroville Dam, such as the Metropolitan Water District of Southern California.

# # #

(This page intentionally left blank)

11 projects battling for Proposition 1 water bond funding
Monterey Herald | January 4, 2018 | Steve Shoonover

The California Water Commission got a look in December at all 11 projects vying for water storage bond money, including Sites Reservoir.

Proponents of Sites, an off-stream reservoir proposed for a valley west of Maxwell, are seeking $1.7 million from Proposition 1, a $7.5 billion bond measure approved by voters in November 2014.

Proposition 1 included $2.7 billion for water storage projects, but the 11 proposals would cost $5.7 billion.

Six of the projects include new or enlarged dams. Others are “conjunctive use,” which typically involves putting excess surface water into the ground when available, and pumping it out later when needed.

There are rules on how the money can be allocated. No more than half the cost of a project can be funded, and only “public benefits” can be funded. Public benefits have been defined as ecosystem benefits, water quality, flood control, emergency response — providing water in a drought, for instance — and recreation.

Those parts of projects that increase water supply for municipal or agricultural users cannot be paid for with Proposition 1 funds.

Each of the applicants put an estimate on the public benefit that would result from a state investment. The next step is for Water Commission staff to adjust those numbers, which will be finalized in March.

More ranking of the projects will come in April and May, and by June it may be clearer which will be funded. However the Water Commission has until the end of 2021 to actually allocate the funds.

Here are the 11 projects, ranked from the one seeking the most money to the one seeking the least:

Sites Project

The Sites Project Authority is seeking $1.7 billion for a $5.2 billion project to build Sites Reservoir. Claimed public benefits at a rate of $2.11 per dollar invested include ecosystem and water quality improvements, flood control, emergency response and recreation.

Sites would be a 1.8 million acre-foot off-stream reservoir west of Maxwell. Water would be pumped into it from the Sacramento River during high winter and spring flows to be available during the dry months of summer and autumn.

Temperance Flat Reservoir Project

The San Joaquin Valley Water Infrastructure Authority is seeking $1.3 billion for a $2.7 billion project to build a new 319-foot high dam on the San Joaquin River, upstream from the existing Friant Dam. Claimed public benefits at a rate of $2.86 per dollar invested include ecosystem improvements, flood control, emergency response and recreation.

Temperance Flat would be a new 1.33 million acre-foot reservoir that would increase the amount of spring runoff in the San Joaquin River that can be saved. Friant only holds about 500,000 acre-feet and dumps on average 250,000 acre-feet a year, according to proponents, because there's no room.

Republicans in the Legislature thought they were getting funding for Sites and Temperance Flat in exchange for their support for Proposition 1, but that was not specified in the ballot measure and this competitive process was.

Pacheco Reservoir Expansion Project

The Santa Clara Valley Water District is seeking $485 million for a $969 million project to enlarge a reservoir in Santa Clara County. Claimed public benefits at a rate of $2.43 for every dollar invested include ecosystem improvements, flood control and emergency response.

The project would replace an existing 100-foot-tall dam on Pacheco Creek, between Gilroy and Los Banos off Highway 152, with a new 319-foot dam just upstream. Storage would increase from 6,000 acre-feet to 140,000 acre-feet.

The existing dam has a damaged spillway, and without replacement of the entire structure, the existing reservoir will have to be drained.

Chino Basin Conjunctive Use Environmental Water Storage/Exchange Program

The Inland Empire Utilities Agency is seeking $480 million for a $480 million conjunctive use project. Claimed public benefits estimated at $1.72 for each dollar invested include ecosystem and water quality improvements, and emergency response.

This is an underground storage project southeast of Ontario in San Bernadino County that would draw water from local wastewater treatment plants and a contaminated groundwater basin, treat it, and put it in the ground.

The water would go for Southern California needs, freeing an equal amount of Lake Oroville water for the Feather River and delta ecosystems.

Environmental interests really like this proposal.

The Tulare Lake Storage and Floodwater Protection Project

Semitropic Water Storage District is seeking $452 million for a $603 million conjunctive use project near Kettleman City in Kings County. Claimed public benefits at a rate of $1.62 per dollar invested include ecosystem improvements, flood control, emergency response and recreation.

The project would capture excess Kings River winter flows and transport the water to a new surface reservoir adjacent to the California Aqueduct. Water could then— depending on need — go either into the aqueduct to reduce imports from the delta, or into Semitropic's groundwater storage bank farther south in Kern County.

Los Vaqueros Reservoir Expansion Project

The Contra Costa Water District is seeking $434 million for a $795 million project to enlarge Los Vaqueros Reservoir from 160,000 acre-feet to 275,000 acre-feet. Claimed public benefits at a

rate of $3.58 per dollar invested include ecosystem improvements, emergency response and recreation.

Los Vaqueros is an off-stream reservoir in eastern Contra Costa County that has already been expanded once. Raising the dam again would provide additional cities, farms and wildlife refuges, and emergency supply during drought.

South Sacramento County Agriculture and Habitat Lands Recycled Water

The Sacramento Regional County Sanitation District is seeking $304 million for a $373 million conjunctive use project. Claimed public benefits include ecosystem and water quality improvements, emergency response and recreation.

This would put treated wastewater into a groundwater bank in southern Sacramento County, between Elk Grove and the Consumnes River. The plan would irrigate 1,600 acres of agriculture, and improve groundwater conditions and habitat. However up to 32,000 acre-feet would be available for use in dry years.

Willow Springs Water Bank Conjunctive Use Project

The Southern California Water Bank Authority is seeking $306 million for a $343 million conjunctive use project in the Antelope Valley northwest of Palmdale. Claimed public benefits at a rate of $2.60 for each dollar invested include ecosystem improvements and emergency response.

This would expand an existing Southern California groundwater bank from 500,000 to 1 million acre-feet, to store State Water Project water in extremely wet years.

Pure Water San Diego Program North City Phase 1

The city of San Diego Public Utilities Department is seeking $219 million for a $1.2 billion local reservoir and water recycling project in northern San Diego. Claimed public benefits at a rate of $6.09 per dollar invested include ecosystem and water quality improvements, emergency response and recreation.

The water would pump waste water to a new treatment plant, then pump the treated water into existing Miramar Reservoir. Proponents say it would reduce exports from the delta by 4,000 acre-feet per year.

Kern Fan Groundwater Storage Project

The Irvine Ranch Water District/Rosedale-Rio Bravo Water Storage District is seeking $86 million for a $171 million conjunctive use project. Claimed public benefits valued by the proponents at $1.47 for each dollar invested include ecosystem improvements and emergency response.

This would expand an existing groundwater bank in Kern County, about 15 miles west of Bakersfield. Water would be pumped from the California Aqueduct onto 1,500 acres of recharge basins to let the water seep into the ground for use later.

Centennial Water Supply Project

The Nevada Irrigation District is seeking $12 million for a $324 million local reservoir project on the Bear River between the existing Combie and Rollins Reservoirs, on the border between Nevada and Plumas counties. Claimed public benefits at a rate of $4.19 per dollar invested include ecosystem improvements and recreation.

This new 110,000-acre-foot reservoir and Sites are the only projects north of the Sacramento-San Joaquin Delta. It is also one of the most heavily opposed projects.

# # #

New Recharge Project’s Environmental Documents Completed

EP Online | January 2, 2018 | Staff

In addition to an 800-acre groundwater recharge basin, the project will install a 4.5-mile pipeline connecting the new recharge basin to the Friant-Kern Canal and 16 groundwater recovery wells within the Pixley Irrigation District.

Environmental documents have been completed for a new groundwater recharge project to bank up to 45,000 acre-feet of water annually in California's San Joaquin Valley. The project is part of the San Joaquin River Restoration Program and will expand Pixley and Delano-Earlimart irrigation districts' groundwater recharge efforts and improve area groundwater levels, the Bureau of Reclamation noted in its Dec. 27 announcement.

In addition to an 800-acre groundwater recharge basin, the project will install a 4.5-mile pipeline connecting the new recharge basin to the Friant-Kern Canal and 16 groundwater recovery wells within the Pixley Irrigation District. All of these are expected to be operational in 2019. The bureau will provide $7.5 million in partial project construction funding to local agencies within the Central Valley Project for planning, designing, and constructing local facilities to bank and recharge groundwater. The project contributes to the San Joaquin River Restoration Program goal of reducing or avoiding adverse water supply impacts to Friant Division long-term contractors.

The project's Finding of No Significant Impact (FONSI) is based on analysis of potential impacts as disclosed in the South Valley Water Banking Authority Modified Pixley Groundwater Banking Project Environmental Assessment/Initial Study. The FONSI was prepared in accordance with the National Environmental Policy Act and the EA/IS was prepared in accordance with NEPA and the California Environmental Quality Act.

# # #

(This page intentionally left blank)

The delta smelt heads for extinction, marking a half-century of failed California water policy

LA Times | January 5, 2018 | Michael Hiltzik

You might wish you had as much power to affect the environment and the economy as the delta smelt.

Enemies have blamed the tiny freshwater fish for putting farmers out of business across California's breadbasket, forcing the fallowing of vast acres of arable land, creating double-digit unemployment in agricultural counties, even clouding the judgment of scientists and judges.

During the presidential campaign, the lowly smelt turned up in Donald Trump's gunsights, when he repeated California farmers' claim that the government was taking their water supply and "shoving it out to sea...to protect a certain kind of three-inch fish."

But the delta smelt couldn't be as powerful as all that. The latest California fish population survey in the Sacramento-San Joaquin Delta, which along with San Francisco Bay is the species' only habitat, turned up only two delta smelt in four months of trawling from September through December. That's the lowest count since 1967, and a far cry from the peak of 1,673 in 1970. The count is especially worrisome because it came after a wet year, when higher water flows in the delta should have led to some recovery in the numbers.

"The delta smelt is on the brink of extinction," says Doug Obegi, a senior attorney for the Natural Resources Defense Council in San Francisco. "This species, which is considered the bellwether of the health of the estuary, has fallen to the point where it can hardly be found anymore."

The figures arrive just as the Trump Administration is proposing to loosen Endangered Species Act protections for fish in order to "maximize water deliveries" to users south of the delta—that is, farmers—according to a Dec. 29 announcement by the Interior Dept. .

Obegi's point about the smelt's role as a bellwether is important. We care about the delta smelt not entirely for itself, but because its health is an indicator of the overall health of the delta ecosystem—and the signal it has flashed is alarming. We are facing the harvest of a half-century's failure to fashion a statewide water policy that serves all the state's residents—farmers, fishermen, city dwellers, and wildlife.

"This isn't a battle between the delta and Southern California," says Bill Jennings, chairman of the California Sportfishing Protection Alliance. He points to the development of water-hungry crops in the central valley, as well as a history of undervaluing the delta as merely an ecosystem, rather than a contributor to the state's economy on many levels. "Healthy rivers and estuaries are a public trust, and we've never gone through a formal balancing of the public trust," he told me.

As an estuary, a transition zone where fresh- and seawater meet, the delta is particularly vulnerable to environmental changes that shift the balance of inflows and outflows.

Diverting too much of the freshwater supply to serve downstream farms and urban users allows more brackish water to infiltrate deeper into the delta, placing more stress on freshwater fish such as the smelt, but also on the species that traditionally feed on them, including shad and striped bass. Saltier water ruins agricultural productivity in the delta itself, and has contributed to

a series of crashes in the chinook salmon population that has all but destroyed the commercial salmon fishery; last year, fishery authorities closed 200 miles of the West Coast to ocean salmon fishing to protect dwindling populations of chinook.

The diversion of water by itself isn't the cause of the declining fish populations. The delta also has been afflicted by the invasion of non-native species such as the Asian clam, which arrived from China and Japan via ballast water dumped from ocean going vessels and competes with native fish for plankton, their food supply. Return flows from farms into the delta carry a load of toxic chemicals.

"It's always hard to separate out water as the sole factor causing the decline," says Peter Moyle, an emeritus professor of biology at UC Davis and an expert on wildlife conservation.

But low environmental flows exacerbate other factors. And those can be traced in part to the advent of the State Water Project in the 1960s and 1970s, along with the older federal Central Valley Project. Through a series of complex agreements, the dams and aqueducts of these projects aimed to transfer water supplies from their natural courses in Northern California to users elsewhere in the state.

The resulting legacy of conflict has been neverending: Those on the receiving end of the transfers tend to see them as theirs by right, even though they're often constrained by regulations and senior legal rights belonging to others. The situation has not been helped by extended periods of drought, including a five-year dry spell, possibly related to climate change, that ended with a wet 2017. But a seriously dry winter thus far may herald the drought's return.

Amid this turmoil the unassuming delta smelt was taken up by farmers and their political backers as a symbol of how environmental regulations "waste" water that could better be used to grow crops.

"To protect smelt from water pumps," the Wall Street Journal editorialized in 2015, "government regulators have flushed 1.4 trillion gallons of water into the San Francisco Bay since 2008." In fact, the Journal has so assiduously attacked the delta smelt that one might almost consider its editorial board to be among the fish's most dangerous natural predators.

The Journal's allusion was to a 2008 biological opinion by the federal Fish and Wildlife Service that operations of the Central Valley Project threatened the survival of the smelt, and therefore needed to be reconsidered. (The biological opinion was upheld in 2014 by a federal appeals court.)

But the fate of the smelt itself is a distraction; the real issue is the fate of the delta. And the decline of the smelt tells us it's in trouble. While it's true that agricultural production in Tulare and Kern counties, which receive water from the delta, is valued at more than $13 billion a year, that has to be weighed against other values needing to be preserved. They include the value of delta farming, commercial and sport fisheries, the health of its residents and their property values.

The possibility of the delta smelt's extinction may not mean that the delta ecosystem is in irreversible decline. Populations of striped bass and American shad, among other species, recovered somewhat during the wet 2017, though the numbers still are lower than their heyday in the 1980s. Some experts say that bass and shad should become the new bellwethers of delta health, since smelt have become so sparse they can't even fill that role anymore.

"This fish draws so much attention not because they are an indicator of the health of the ecosystem. That will affect not only the delta smelt itself, but other species, and even the health of humans," says Tien-Chieh Hung, director of the fish conservation and culture laboratory at UC Davis, which is trying to cultivate a population of delta smelt for possible restoration in the wild some time in the future.

But protecting the smelt reflects another human imperative. Since the Endangered Species Act was signed into law in 1973, Hung says, "no fish has gone extinct. We don't want this to be the first one."

# # #

(This page intentionally left blank)

Legislation Would Impose State Tax on Water Bills
The Independent | January 4, 2018 | Ron McNicoll

Everyone in California would pay a monthly tax of 95 cents on their water bills, if SB 623 were to become law in its current form.

The bill was introduced last year by Sen. William Monning of Carmel. It became a two-year bill available for passage in 2018. It was approved by a vote on the Senate floor last May by 39-0, with one member not voting. It was amended and passed out of two committees since then, the latest the Assembly Appropriations Committee in September on an 11-0 vote.

The main point of the bill is to help disadvantaged communities with unsafe ground water to switch to municipal waterworks. Most of the areas are located in the Central Valley, where water basins have been contaminated by nitrates from fertilizer.

Adding the 95-cent monthly tax as a way of funding, has drawn opposition from the Association of California Water Agencies (ACWA). They claim that other funding sources are available,

Zone 7 Water Agency belongs to ACWA. Director Sarah Palmer called the board's attention to SB 623 at its Dec. 20 meeting. "As voters, we should be aware that the state is thinking of this," said Palmer.

Palmer learned about the bill at an ACWA conference at the end of November. She serves on the board of ACWA Region 5, a territory that includes Zone 7 and Dublin San Ramon Services District (DSRSD).

The water tax would turn water agencies into a tax collection agency, ACWA spokesperson Tim Quinn told a reporter. Instead, the state should use the financial resources already designed for statewide projects, including the General Fund and available water bond money, said Quinn.

Quinn said that the tax itself is regressive, hurting lower income households more than those who can afford to pay a flat fee. A bigger worry than the inclusion of the 95-cent tax in the bill is the potential for expanding the tax, if the Legislature later finds other water projects that it wants to build through the tax, said Quinn.

The Zone 7 board has not taken a position on the bill.

PROPOSED RULES COULD SLOW FLOOD WORK

Palmer also reported that the State Water Quality Control Board is looking at a "new level of permitting that will create many problems." She expanded her thoughts later for a reporter, saying that new rules, which are still under study, would affect wetlands activity and dredging, and fill work. The rules eventually adopted could slow the process that Zone 7 must use to gain necessary permits to do its work.

A slide presentation at ACWA showed that a discharge of any size, even an "incidental fallback" from removal of sediment and debris," and even minor alterations in (stream) bed, bank, or dam" associated with habitat areas can be affected.

Palmer said that could apply to such projects as Zone 7 building percolation ponds, which are used in streams to cause more water to percolate into the underground water basin.

It appears the proposed changes would hamper such projects as those being contemplated to fix more than 200 areas of landslides and other soils damage from last year's heavy rains, added Palmer.

No vote on the state's proposed rules was taken at the ACWA conference. However, members want to approach the state water board as stakeholders to work out reasonable rules that won't impinge on water districts' ability to do necessary work, said Palmer.

The state water board has several reasons for creating the new rules. One is that California has relied on the federal Clean Water Act (CWA). However, since a series of U.S. Supreme Court decisions, the CWA has weakened the protections for waters of the state, according to the state water board.

Also, there have not been consistent rules about dredging or fill discharge permitting practices for each of the state's nine regional water boards. There is no single, accepted definition of wetlands at the state level, and no consistency between the regional water boards about requirements and analysis for issuing certifications.

The state board says, "Current regulations have not been adequate to prevent losses in the quantity and quality of wetlands in California, where there have been especially profound historical losses of wetlands."

Addressing the concern that the timing of permits could be tighter if new rules were adopted, a spokesperson for the state water board stated, "It is not our intention to drag out the permitting process. We are analyzing how much work an applicant would have to go through."

# # #