BAY AREA WATER SUPPLY AND CONSERVATION AGENCY

BOARD OF DIRECTORS MEETING

November 13, 2015

Correspondence and media coverage of interest between October 7, 2015 and November 12, 2015

Correspondence

From: Nicole Sandkulla, BAWSCA CEO/General Manager
To: Richard Morten
Date: November 6, 2015
Re: Response to Mr. Morten's September 28, 2015 email regarding Mountain Tunnel

From: Nicole Sandkulla, BAWSCA CEO/General Manager
To: City and County of San Francisco Board of Supervisors
Date: October 7, 2015
Re: Support for RBOC Extension to January 1, 2019

Media Coverage

Hetch Hetchy:

Date: November 3, 2015
Source: Union Democrat
Article: Hetch Hetchy lawsuit to be heard in Tuolumne County court

El Nino:

Date: November 11, 2015
Source: LA Times
Article: Everything is blinding white: Sierra storms pay off for resorts and add hope for Drought

Date: November 11, 2015
Source: Capital Press
Article: So wet, yet so far from drought recovery

Date: November 7, 2015
Source: The Columbus Dispatch
Article: Drought in California eased a bit by storms

Date: October 15, 2015
Source: SF Chronicle
Article: El Nino looking like a rainy winter for state's watersheds

Water Supply:

Technology

Date: November 12, 2015
Source: SF Gate
Article: UC scientists test inexpensive way to capture El Nino rains

Date: November 11, 2015
Source: Breitbart.com
Article: California Desalination Plant Online in Next 30 Days

Date: November 10, 2015
Source: Wired.com
Article: California is finally getting rain. Now if it could just hold on to it

Date: November 9, 2015
Source: Business Insider
Article: These two guys found an affordable way to turn salt water into drinkable water using the power of ocean waves

Date: November 6, 2015
Source: Singularity HUB
Article: Singularity University Impact Challenge: Finalists to ease California Drought with Technology

General

Date: November 12, 2015
Source: Hews Media Group
Article: Runner and Huff File Water Priorities Constitutional Amendment and New Surface Water and Groundwater Storage Facilities Bond Act

Date: November 11, 2015
Source: The Galt Herald
Article: County Supervisors remain critical of proposed tunnels project

Date: November 11, 2015
Source: Chico Enterprise-Record
Article: Sacramento River water users sued for harm to salmon

Date: November 3, 2015
Source: Daily Journal
Article: Officials explore San Mateo groundwater basin: Agencies, city, county consider managing local basin for supplemental water source

Date: October 27, 2015
Source: Ag Alert
Article: Groundwater: Deadlines loom as new state law goes into effect

Date: October 14, 2015
Source: San Mateo Daily Journal
Article: Drill to tap into Peninsula aquifer: SFPUC, Cal Water, San Bruno, Colma agree to seismic drought plan

Drought:

Date: November 11, 2015
Source: San Jose Mercury News
Opinion: Jeremy Madsen: Being smarter about land use can help fight against drought

Date: November 8, 2015
Source: The Desert Sun
Article: Valley Voice: We must realize limits of our water

Date: November 8, 2015
Source: KGO
Article: Some say mandatory water restrictions may have done more harm than good

Date: October 10, 2015
Source: LA Times
Article: Restrictions on water rates get newfound opposition from Gov. Jerry Brown

BAWSCA
Bay Area Water Supply & Conservation Agency

November 6, 2015

Richard Morten
2578 33rd Avenue
San Francisco, CA 94116

Dear Mr. Morten:

I've been very busy with the Mountain Tunnel issue since your September 28th email arrived, so I hope you will understand the delay in my reply.

First, the evidence of BAWSCA's strong, long-time concern with the risk of a Mountain Tunnel collapse and the urgent need for San Francisco to fix it is a matter of public record. Therefore, criticism of BAWSCA if the Tunnel should collapse is totally unwarranted.

In 2005, in a letter to San Francisco Public Utilities Commission General Manager Susan Leal, my predecessor Arthur Jensen opposed San Francisco's removal of the Tunnel from its Capital Improvement Program (CIP), which became the legislatively–mandated Water System Improvement Program (WSIP) to repair the seismically unsafe parts of the San Francisco Regional (Hetch Hetchy) Water System. The SFPUC placed the Tunnel in a much lower-priority Repair and Replacement Program where it received little attention until 2014, nine years later.

In his letter, Mr. Jensen warned that this action "effectively 'un-schedules the project," but it "does not eliminate the need for the work to be done…" BAWSCA believed that the Tunnel was a major risk to public health and safety and needed immediate attention. But San Francisco rejected, without further discussion, Mr. Jensen's request that the Tunnel remain in the high-priority WSIP.

In another part of your email, you suggested that the BAWSCA Board of Directors should "be more aggressive in pushing the San Francisco Public Utilities Commission." In fact, as BAWSCA's Chief Executive Officer, I have involved the Board repeatedly in discussions about the risk of a collapse in the Mountain Tunnel and the need for high-priority action by San Francisco.

The Board has supported my repeated requests to the Commission to expedite a plan to fix the Tunnel and identify a reliable alternative water supply in case the Tunnel is blocked by a sudden collapse. BAWSCA's initiative with respect to the Tunnel and other matters related to the Regional Water System are in my hands as BAWSCA's CEO with strong Board support. To date, BAWSCA's efforts have resulted in several important actions by the Commission for the Mountain Tunnel including: Development of an Emergency Restoration Plan, and Commission adoption of scopes, schedules and budgets for three Mountain Tunnel projects.

We appreciate your interest in these very important matters.

Sincerely,

Nicole Sandkulla

Nicole Sandkulla
Chief Executive Officer/General Manager

cc: Dick Allen (via email)

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BAWSCA
Bay Area Water Supply & Conservation Agency

October 7, 2015

Board of Supervisors
City and County of San Francisco
1 Dr. Carlton B. Goodlet Place, Room 244
San Francisco, CA 94102-4689

Subject: Support for RBOC Extension to January 1, 2019

Dear San Francisco Board of Supervisors,

The Bay Area Water Supply and Conservation Agency strongly supports extension of the Public Utilities Revenue Bond Oversight Committee (RBOC) to January 1, 2019 given that the final project (the new Calaveras Reservoir) in San Francisco's Water System Improvement Plan (WSIP) is scheduled for completion in May 2019.

Construction of the Reservoir, originally scheduled for completion in May 2012, has been delayed because unstable soil conditions were discovered unexpectedly during early testing and earth-moving activity. Significant added time, therefore, has been incurred to address the situation, resulting in a later completion date for this project and the WSIP overall.

RBOC has provided very valuable oversight of the WSIP to date, and it should continue until this massive and essential construction program is completed. The RBOC has also helped protect the financial interests of all water users in the Bay Area who depend on the San Francisco Regional (Hetch Hetchy) Water System, including those users in Alameda, San Mateo, and Santa Clara Counties, whose interests BAWSCA represents.

Respectfully

Nicole Sandkulla
CEO/General Manager

cc: Ann Caen, President of the Commission, SFPUC
Harlan Kelly, General Manager, SFPUC
Kevin Cheng, RBOC Chair
BAWSCA Board of Directors

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Hetch Hetchy lawsuit to be heard in Tuolumne County court
Union Democrat | November 03, 2015 | Guy McCarthy

Water level at Hetch Hetchy Reservoir on the Tuolumne River in Yosemite National Park exposes bands of rock scrubbed of lichen. Guy McCarthy / Union Democrat, Copyright 2015.

A group that wants Hetch Hetchy Valley restored to what it looked like before O'Shaughnessy Dam was built between 1919 and 1923 is touting a Superior Court ruling that legal proceedings will take place in Tuolumne County.

The group filed a lawsuit in April against the City and County of San Francisco claiming Hetch Hetchy Reservoir in Yosemite National Park violates water diversion mandates of the state constitution.

The City and County of San Francisco want to move the venue to San Francisco.

"Tuolumne County is where the damage has been done, and it's normal for court processes to take place where the damage takes place," Spreck Rosekrans, Restore Hetch Hetchy's executive director, said Monday morning. "We don't think it's right to move it to the place where the people are from, the people who did the damage."

Hetch Hetchy System officials referred questions to the Office of San Francisco City Attorney Dennis Herrera. A public information coordinator for Herrera released the following statement: "We look forward to the court's next ruling, which we expect to affirm San Francisco's longstanding and clearly established right to use the Hetch Hetchy Reservoir."

Restore Hetch Hetchy supporters have said their mission is to return Hetch Hetchy Valley in Yosemite National Park to its natural splendor, while continuing to meet water and power needs of all communities that depend on the Tuolumne River.

The Restore Hetch Hetchy website says the water should be stored outside Yosemite National Park.

According to the Bay Area Water Supply & Conservation Agency, Congress passed the Raker Act in 1913, allowing federal lands in the Sierra Nevada, including Hetch Hetchy Valley in Yosemite National Park, to be used to build the water system. President Woodrow Wilson signed the Raker Act that same year.

O'Shaughnessy Dam and Hetch Hetchy Reservoir are the primary source for the Hetch Hetchy Aqueduct and Hetch Hetchy System, which provide water and power for more than 1.7 million people in San Francisco and other municipalities of the west Bay Area.

San Francisco is the only city that's been allowed to build a dam in a national park, Rosekrans said Monday.

"We don't want to take anybody's water supply away," Rosekrans said. "We're moderate environmentalists. Every last drop of water can be recaptured for water needs, and some replenishment of power production is possible with additional solar investment elsewhere."

The next step is a case management meeting scheduled Nov. 20, at which Restore Hetch Hetchy will ask the court for resolution of “all other preliminary issues in a timely fashion” so the lawsuit can proceed.

# # #

Everything is blinding white': Sierra storms pay off for resorts and add hope for drought

LA Times | November 11, 2015 | Joseph Serna and Bettina Boxall

Alex Hoon was driving north from Mammoth Lakes on Tuesday, looking in awe at the decidedly winter landscape.

“Everything is blinding white … fresh white snow,” said Hoon, a meteorologist for the National Weather Service in Reno. “It was beautiful.”

A series of storms has left a large swath of the Sierra Nevada with a blanket of snow — something of a surreal sight after four years of drought. Social media filled with photos of snowplows, skiing and landmark peaks in Yosemite dusted with snow.

About 36 inches of snow was dumped on Mammoth's summit in just two days, while folks at slightly lower elevations saw up to 20 inches of snow. Farther north, Lake Tahoe got as much as 12 inches of snow.

Forecasters said the heavy snow was from one of the biggest storms the region has seen in several years.

But welcome as it is, the early November dump of white means little in terms of building a hefty winter snowpack that could help ease the drought.

“The snow that typically will fall in November isn't always the snow that lasts the entire winter,” said National Weather Service meteorologist Brooke Bingaman. “What we're really going to rely on is the snowpack that falls in the second half of the winter, particularly January and February.”

The key date for California's snowpack is five months away: April 1, when the mountain snowpack is customarily at its peak and state hydrologists know roughly how much water it will produce to help fill reservoirs in the spring and early summer. This year, the statewide snowpack on that date was an abysmal 5% of average, the lowest in more than 60 years of record-keeping.

The snowpack, technically the water content of snow, acts as nature's reservoir, typically providing about a third of California's water supply.

“We'd love to see a whole series of these, measured out tablespoon by tablespoon all winter long,” said Kelly Redmond, regional climatologist at the Western Regional Climate Center in Reno.

Extraordinary as it may seem after four years of drought, the snowfall accumulation of the recent Sierra Nevada storms is about average for this time of year, Bingaman said.

“Once we get into November, that's when we get a more regular occurrence

of storms.... So far this month, it's pretty much clockwork.”

Forecasters continue to predict a strong El Niño this winter, but the storms could be warmer, producing more rain than snow. Moreover, Redmond said, “it's worth remembering,

of the last four drought winters, two of them started out very promising: on the wet side and then just pooped out."

"It's a good teaser," he said of the storm that draped the valleys near Reno with 18 inches of snow. "Even just an average winter would be great."

Nonetheless, the snow is a boon for sports shops and ski resorts across the Sierra Nevada, but it's too early to tell whether it's a harbinger of a snowy winter closer to the historical average that could help California's vital snowpack.

"It's really too early to answer that.... We're probably a little bit below normal," said Karl Swanberg, a National Weather Service forecaster in Sacramento. "With the lowest snowpack on record last year, anything's an improvement."

Indeed, a combination of years of drought and media hype over an upcoming El Niño may magnify the attention to any precipitation as something other than normal, Swanberg said.

At Mammoth Lakes, ski and snowboarding slopes opened earlier than scheduled after a storm last week, said Rick Flamson, owner of Rick's Sports Center, a mainstay for 25 years.

"If you believe the weather people — and I'm a little bit of a weather buff myself — it seems to me that, yes, we're all very optimistic it's going to be a better winter," Flamson said. "Last year at this time, the ski area was just opening. I'm looking straight out this front door at the snow out there," and he can imagine hotels will be booked this weekend.

But the storms also brought complications. Some areas were overwhelmed, and roads were closed temporarily, Hoon said.

Utility customers on the Nevada side of Lake Tahoe have been coping with a power outage after branches weighed down with snow snapped and took out electrical lines, Hoon said.

Nevada Energy said it was a severe storm that caused widespread power outages.

The storm also brought heavy rain to coastal areas of Northern California. In Monterey, San Benito, Santa Cruz and Santa Clara counties, more than an inch of rain fell in some areas. The Bay Area saw less rainfall but more than 500 lightning strikes.

For all the talk of El Niño, experts said the storm had the telltale signs of the routine seasonal systems that flow south from the northern Pacific.

Regardless, "we need moisture, no matter how it comes," Swanberg said.

# # #

So wet, yet so far from drought recovery
Capital Press | November 11, 2015 | Don Jenkins

Drought-stricken West welcomes early wintry weather as some reservoirs rise and snowpacks start forming.

The precipitation pelting the West, punctuated by snowstorms in the mountains, has raised reservoirs, given snowpacks an early start and eased drought conditions in places, but water supply officials looking ahead to the 2016 growing season have been largely unimpressed.

A storm marching through Washington on Wednesday morning was expected to drop up to 10 inches of rain in the Olympic Mountains and 10 inches of snow in the Cascades before dusting Eastern Washington and the Idaho Panhandle. Southern Idaho and Northern California already have had significant snowstorms.

The National Weather Service forecasts the moist and cool Pacific barrage will continue next week. The U.S. Climate Prediction Center foresees weather wetter and colder than usual in the West through Nov. 24.

The change in the weather came after the hottest October ever in Washington and the second-hottest Octobers on record in Oregon, Idaho and California, according to the National Oceanic and Atmospheric Administration.

Irrigation mangers, hydrologists and climatologists welcomed the rain and snow after months of drought-deepening weather. But they mostly shrugged off the early season storms as only mildly encouraging.

“Any amount of above-average precipitation is certainly going to help with recovery,” said Melissa Webb, a hydrologist with the Natural Resources Conservation Service in Oregon. “But it doesn’t have any particularly large significance as far as how the season ends up.”

Water storage remains below normal, by far in some places. There’s a lot of catching up to do, and El Nino isn’t expected to help most of the West.

Southern and Central California can anticipate a wet winter, according to the Climate Prediction Center. But chances for above-normal precipitation in Northern California, Western Oregon and Western Washington are no better than even, and it’s likely those regions, including the Cascades, will have warm winters, keeping snowpacks low.

Eastern Oregon, Eastern Washington and Idaho are expected to be both warm and dry.

“El Nino. I think that’s our biggest concern,” said hydrologist David Hoekema of the Idaho Department of Water Resources. “At this point, the precipitation we’re getting is not of much significance.”

Idaho’s reservoirs were 83 percent of normal levels as of Nov. 1, according to NRCS. Compared to other states, Idaho enters the winter in a better position. Oregon’s reservoirs, for example, were only 44 percent of normal levels beginning the month. But Idaho still needs an above-average snowpack to ensure an adequate summer supply of water throughout the state, Hoekema said.

An early November storm dumped 10 to 30 inches of snow across the Idaho-Nevada border region. The storm inflated snowpack percentages. The Owyee Basin snowpack, for example, was 584 percent of normal as of Wednesday. “We just got a good dump in the mountains, but (snowpack percentages are) going to decrease,” said Ron Abramovich, an NRCS water supply specialist in Boise.

An early, moisture-laden storm in California dropped several inches of snow in the Sierra Nevada. The U.S. Drought Monitor reported that after four years of drought in California, the precipitation “was just a start to moisten the soils.”

Shasta Lake, the centerpiece of the federal Central Valley Project, was 30 percent full Tuesday, about half the normal level. Lake Oroville, the State Water Project’s main reservoir, was 28 percent full, 46 percent of the normal level, according to the California Department of Water Resources.

Shasta and Oroville started to decline in mid-April and haven’t bottomed out yet, water resources spokesman Doug Carlson said.

Storms passed through Northern California this week, dousing Redding, Sacramento and other cities. “It’s going to take a good amount of moisture to seep into the soil, so at first it’s just going to get absorbed into the very dry soil,” said Sheri Harral, a U.S. Bureau of Reclamation spokeswoman at Shasta Dam. “It will definitely take some heavy rains before we’ll start seeing it turning around, and it starts back up. For right now, we’ll take every little inch and drop we can get.”

Shasta Lake is actually 23.4 inches higher than it was last year because more water was held back to provide cold water at key moments for chinook salmon, Harral said.

Recent snow on Oregon’s Mount Hood, which had been bare since summer, caused a stir in Portland, but most of the talk was about skiing and snowboarding. Farmers are taking a wait-and-see approach.

“I’d call it a little premature,” said John Buckley, East Fork Irrigation District manager. The Hood River district depends on runoff from Mount Hood to water about 9,500 acres and serve 936 customers, mostly orchardists.

Buckley said the snowpack in January and February will provide a better prediction of the 2016 water supply. “It definitely has all of us concerned,” he said.

The November to January forecast from the Oregon Department of Agriculture and Oregon Department of Forestry calls for warmer temperatures than normal and many days of rain or snow, but probably less total precipitation than average. A snowpack deficit may occur by December, according to the forecast.

California’s rain barely changed its drought status, according to the Drought Monitor, a partnership between NOAA, the U.S. Department of Agriculture and the University of Nebraska-Lincoln. The percentage of the state in the worst-classification, “exceptional drought,” dropped to 45 percent from 46 percent.

Oregon, Idaho and Washington received enough rain to be reflected in the Drought Monitor’s Nov. 3 report.

The drought in portions of Western Oregon were downgraded from “extreme” to “severe,” while other parts went from severe to “moderate.”

The percentage of Idaho in extreme drought dropped to 17 percent from 28 percent, mostly because conditions improved in the Panhandle.

In Washington, the percentage in extreme drought dropped to 48 percent from 68 percent. The northeast corner and almost all of Western Washington showed improvement.

Washington State Assistant Climatologist Karin Bumbaco said the report was a snapshot of conditions and didn’t consider long-range water supplies. “We’ve been receiving rain. What we really need is snow,” she said.

In the past two weeks, rain has nearly doubled the amount of water held in the five reservoirs that supply Washington’s Yakima Valley, the state’s most-valuable farmland. Still, the reservoirs hold only about two-thirds as much water as usual for mid-November.

“It would take 10 more storms to get us to about where we should be,” said Urban Eberhart, Kittitas Reclamation District general manager.

Even torrents of rain won’t end the valley’s drought. The reservoirs filled up last winter with rain — above normal levels. But growers with junior-water rights were cut back because there was too little melting snow to replenish the reservoirs throughout the irrigation season.

“Rain is great, but we don’t have enough storage in the Yakima Basin to make it through on rain,” said Eberhart, who was in Washington, D.C., this week lobbying Congress to fund water storage projects. “We do not make it through the summer without snowpack.”

Washington has received a lot of early snow at higher elevations, but the state relies far more on snow runoff from mid- and low elevations, said Scott Pattee, NRCS water supply specialist in Mount Vernon.

The failure of snow to accumulate last winter below 6,000 feet led to Washington’s “snowpack drought,” which was exacerbated by an exceptionally hot and dry spring and summer.

As of Wednesday, Washington snowpacks were above average for mid-November. But at this point, the outlook can change in one night. The snowpack in the Olympic Mountains, for example, went from zero to 79 percent of normal overnight this week. “You have to take those numbers with a grain of salt this time of year,” Pattee said.

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Drought in California eased a bit by storms
The Columbus Dispatch | November 7, 2015 | Sharon Berntein

SACRAMENTO, Calif. — Fall storms that brought rain and snow to parts of California have made a small but measurable dent in the state's four-year drought, experts said.

The storms dumped up to 3.5 inches of snow on the parched Sierra Nevada this week.

The precipitation has put the state ahead of the normal rainfall for the season and nudged a few areas out of the worst drought designation, scientists at the U.S. Drought Monitor said on Thursday.

The weekly report shows that as of Tuesday, 44.84 percent of the state was experiencing exceptional drought conditions, the worst designation, down from 46 percent last week and 55 percent a year ago at the same time.

The portion of California experiencing extreme drought, the next-highest level, also was down slightly from the prior week, at 70.55 percent. That's a slight drop from 71.08 percent last week and 79.69 percent at the same time in 2014.

Experts caution that the drought isn't over, even though the Pacific Ocean warming phenomenon El Nino is expected to being rain.

To replenish the state's reservoirs and provide enough water through next summer, it must get cold enough for snow to continue to fall in the mountains. The snowpack, which last year was at its lowest in 500 years, melts in the spring to provide water.

A tiny sliver of the state — just over a tenth of 1 percent — is not experiencing drought or dry conditions, the Drought Monitor report showed, an improvement over this time last year, when 100 percent of the state was abnormally dry.

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El Niño looking like a rainy winner for state's watersheds
SF Chronicle | October 15, 2015 | Kurtis Alexander

The areas that need strong El Niño storms the most are likely to get them, forecasters said Thursday.

The U.S. Climate Prediction Center, in its monthly long-term weather outlook, boosted the odds of precipitation for California this winter and spring — including, crucially, the areas in the North State and Sierra that supply the bulk of the state's water supply.

Forecasters have long pegged Southern and Central California for rain in coming months, but with El Niño in the tropical Pacific gaining strength and warm pockets of ocean water expected to add moisture to the atmosphere, federal forecasters have broadened their bullishness.

The updated outlook calls for at least 40 percent above-average chances of wet weather between January and March for nearly the entire state, including all of the Sierra Nevada. San Francisco stands a more than 40 percent above-average chance of seeing a rainy winter, according to the federal forecasters, while the South Bay has 50 percent greater odds.

"Well north of the Bay Area, we do have a slight tilt toward above-average precipitation," said Mike Halpert, deputy director of the Climate Prediction Center, a division of the National Atmospheric and Oceanic Administration. "Only in the very north do we have equal chances" of a dry or wet winter.

This El Niño, defined by warm equatorial waters that drive moisture into the atmosphere, is one of the strongest that forecasters have observed. Temperatures in the tropics are much greater than normal, and trade winds that typically push warm currents away from the Americas have died.

While El Niños have historically meant above-average rain in Southern California, only the strongest have correlated with wet weather farther north.

# # #

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UC scientists test inexpensive way to capture El Niño rains
SF Gate | November 12, 2015 | Amy Graff

During California's rainy months, rivers often run high and excess water flows out into the ocean.

Amid the worst drought in more than a century, all of that water lost? With an El Niño event expected to bring heavy rains this winter, isn't there an easy way to collect and store it?

Researchers from UC Davis and UC Cooperative Extension are testing a new method for capturing some of that underutilized water by diverting it from rivers into the network of canals running through Central Valley farmland. This irrigation system sits empty during the rainy months, and the scientists are looking at filling some canals with water and directing it onto suitable farmland where it can seep underground.

The method known as on-farm recharge could help capture some of the El Niño deluge and replenish California's diminishing groundwater supply.

The team has identified 3.6 million acres of California farmland that's suitable for recharge and says that flooding it with only one foot of water could add as much as 3.5 million acre-feet of groundwater.

"That could go a long way toward replenishing the 6 million acre-feet growers had to pump this year alone to cope with California's drought," said UC Davis Professor Helen Dahlke, who's testing the technique in the field.

The drought has left lakes and reservoirs at historic lows with little Sierra snowpack to feed them. Water districts and farmers are becoming increasingly dependent on groundwater. Some 70 to 80 percent of lost surface water in agriculture is being made up by pumping ground water.

Converting farmland into percolation basins for groundwater recharge during fallow and dormant periods might be one of the most effective ways to refill the aquifer.

I think our project is definitely part of the puzzle," says Toby O'Geen, a soil resource specialist in the Department of Land, Air and Water Resources at UC Davis. "If we start thinking about these landscapes in different ways and manage them in different ways we can start to be smarter about collecting water."

The benefits of on-farm recharge go beyond collecting water. Flooded farmland can create wetland habitat for birds in winter, and replenishing the deepwater aquifer can prevent land from sinking. In recent years, swaths of land throughout the state are beginning to shift and collapse because farmers and water agencies are tapping into groundwater to make up for the lack of rainfall.

The trick is identifying which farmland is suited to managed flooding and groundwater recharge. The best soils have high infiltration rates and low levels of substances such as salt and nitrates that can contaminate groundwater. And the best crops can survive a flood and will continue to thrive.

O'Geen developed an interactive map for farmers to help them determine whether their soil and crops are conducive to the practice. But more work needs to be done because data on the effects of flooding crops is lacking.

"Not many scientific studies have been done to see how much water plants can tolerate and still produce normal yields, and farmers would never overapply water during the growing season," said Dahlke, who's an assistant professor in the Department of Land, Air and Water Resources at UC Davis. "We've gathered some data during El Niño years but we need more."

Dahlke led a successful effort to implement managed flooding in alfalfa fields in the Scotts Valley. Her team performed a controlled experiment, looking at crop yields before and after various levels of water were applied.

"We could apply up to 29 feet of water—that's like a five-story house—and the alfalfa came back," Dahlke said. "We tried to kill it but it didn't want to go. That was a big surprise."

Dahlke will perform tests on almond trees with funding from the California Almond Board this winter.

"Almonds are early bloomers," Dahlke said. "They can bloom as early as February. When they start blooming that means the tree is active, and it becomes a question of how much water they can withstand. This is a question that we'll be exploring in the upcoming season."

Even as the practice is fine-tuned and the best crops and land identified, a number of hurdles stand in the way: convincing farmers to postpone wintertime irrigation maintenance, receiving access to farmland, assessments of flood risk, adoption of more efficient ways for pumping groundwater.

Legal issues also stand in the way. "It's not clear if there are water rights for flood waters," O'Geen said. "Water rights give growers the right to use water. Growers will likely need to explore permitting options through the State Water Resources Control Board for this practice."

But despite the obstacles, the team has proven recharge of groundwater makes more economical sense than constructing reservoirs.

"It's definitely cheaper," Dahlke said. "Building a reservoir costs between $1,700 and $3,000 per acre foot of water. Groundwater banking is between $90 to $1,000 per acre foot. The main cost is dependent on the cost to pump the groundwater from the aquifer."

And O'Geen points out that this is a win-win for agriculture.

"They're typically considered the bad guys. They're feeding the world yet they're considered the water hogs because they have to take all the water to grow the food. On-farm recharge offers the opportunity for them to offer two services — providing food and collecting water. That puts agriculture in a better light."

# # #

California Desalination Plant Online in Next 30 Days
Breitbart.com | November 11, 2015 | Chriss Street

As Carlsbad's $1 billion desalination plant is about to go online in the next 30 days, residents can look forward to paying for huge water subsidies to a private company for the next 30 years.

California is the "mother lode" for residents paying "sustainable" utility subsidies. Solar power plants regularly receive up to 200 percent subsidies. Moreover, as Breitbart News reported, a 300 percent subsidy is being proposed for an offshore wind farm near the Hearst Castle.

Steep subsidies explain why California residents, despite living in a huge oil and gas producing state, pay 13.50 cents per kilowatt hour (KWh) for electricity. That compares to neighboring residents in energy-barren Nevada, with few subsidies, who only pay 8.95 cents per KWh for electricity.

Carlsbad's Poseidon Desalination Project negotiated a 30-year contract with San Diego's publicly-owned water utility to convert 56 million gallons of seawater each day into drinking water on a take-or-pay basis.

Although it took the company 15 years and they had to survive 14 legal challenges to bring the environmentally controversial plant online, Poseidon looks to be wildly profitable by selling desalinated water to the San Diego Water Authority at the $2,257 per acre-foot. That rate is almost three times the $800 cost per acre-foot the water district pays for San Joaquin Delta water, according to The Atlantic.

Poseidon Water vice president Peter MacLaggan has described Poseidon's plant technology as "effectively where the magic happens."

But the desalination plant is using 16,000 reverse-osmosis tubular membranes to filter the seawater. The "technology" was invented in California in the 1950s. Arid communities in Israel, Australia and Saudi Arabia have built dozens of such expensive projects over the past few years.

Poseidon promises to "advance the goals of the Coastal Act to maintain, restore and enhance public access and recreation and maintain, restore and enhance the marine environment through the dedication of more than 15 acres of lagoon and ocean front land for public purposes." But the plant's cold-water intake pipes will kill 100% of all marine life sucked into the plant, and create a potentially toxic brine discharge plume that can further harm fish and other marine life.

The U.S. has a history of launching desalination plants that turned out to be a disaster. During the California drought in the 1980s, the city of Santa Barbara built, but never operated, a desalination plant because it was too expensive to run.

In the early 2000s, Tampa Bay Seawater Desalination facility, owned by the public Florida Water Authority, spent $108 million on a plant that bankrupted the builder and rarely run at full capacity because of high costs.

In southern Arizona along the U.S.-Mexico border, the federal government spent $286 million on the Yuma Desalting Plant that promised to deliver 92 million gallons of clean water a day. The project seldom operates and costs $9 million in reverse-osmosis membranes each time it is turned on.

There are currently 27 proposed desalination projects along California's coast. Poseidon announced on October 27 that it will apply in the next month or two for a permit to build a desalination plant in Huntington Beach.

# # #

California is finally getting rain. Now if it could just hold on to it.
Wired.com | November 10, 2015

El Niño has arrived in California, and with it the rains. It's not exactly monsoon season, but for the first time in a long while the weather is bringing puddles to San Francisco, mud to the valleys (Silicon and Central), and snow to the Sierras. But how much is this precipitation helping the state's ongoing drought? Short answer: Not so much. Long answer: Not as much as Californians hope, but at least parts of the state are working to bank some of the water from this wetter year for the future.

In drought years, groundwater has always been California's ace in the hole. It's a crucial fallback for when reservoirs dry up and snowpack melts away—and it will become even more important in the future. Scientists expect climate change to make dry spells longer, and wet years warmer, resulting in less snowpack atop the mountains. Without it, Californians start pumping their aquifers. Now, after years of drought, those groundwater reserves are starting to dry up.

But El Niño—a warming of the Pacific—generally brings more rain to the West Coast. (That's when water comes from the sky, Californians.) If that rain gets back into the ground, it recharges the aquifers. Yesterday, the Los Angeles Times reported how new laws and bonus bond money have engineers developing projects to enhance that recharge. Gallon for gallon it's the best way to hold onto water—if those engineers can get it back in there at all.

Ground Truth

California has never had rules governing groundwater use. Read that again: The state has never regulated how much water anyone pulls out of the ground. (How do you think a well works?) And because aquifers don't conform to property lines, people have generally acted in their own self interest—slurp out as much water as possible before your neighbors take it.

"When you have a lot of straws in the milkshake, there's really zero incentive to conserve groundwater," says Tara Moran, researcher at Stanford Woods Institute for the Environment and the Bill Lane Center for the American West.

A state law passed earlier this year changed all that. The Sustainable Groundwater Management Act will for the first time require landowners to report the water they draw from the ground. The bill also requires water districts and managers to coordinate across groundwater basins. That's in addition to a bond measure passed last year allocating $2.7 billion for new water storage projects.

In the past, this money would have been guzzled up by dam and reservoir projects. But these days, flooding pristine valleys isn't environmentally in vogue—and besides, groundwater reserves could hold many times the amount of the state's reservoirs. If all of California's reservoirs were full, they would hold about 50 million acre-feet of water. (For reference, that would be enough to cover about half of the state in a foot of water.) That's a lot, but compare it to the state's aquifer capacity, which the California's State Water Resource's Board, estimates could hold anywhere from 850 million to 1.3 billion acre-feet.

But getting the water into aquifers isn't nearly as easy as building a dam (Which is pretty dam hard). If can take years for surface water to percolate through soil into the squishy clay

or caverns that hold the moisture. (Usually it's not a big Gollum cave, but more like what happens when you dig down into beach sand—make a hole and water seeps out of the mud.) "It needs to be sandy or gravely soil," says Moran. California soils, especially in the agriculturally rich Central Valley, can have a lot of clays, which can block water from dripping down. And on dried-out topsoil—which California has a lot of right now—water tends keep flowing.

Water Shipped Down

So what are engineers doing to supercharge the recharging process? In places like Orange County, engineers have built spreading basins, vast ponds on raw earth that confine water until it percolates down into the aquifer below. The OC uses cleaned-up sewer water taken directly from treatment plants.

Another option, one better suited for agricultural areas, is to build canals from rivers or reservoirs behind dams to similar spreading basins, letting the water wash over the ground. "A lot of irrigation districts in the Central Valley have water coming down a canal system," says Moran. A few of these systems are under construction in the Central Valley, waiting for more rain to fall.

And if the soil is too clay-y for percolation, or the topography won't accommodate spreading basins, engineers have a third, more aggressive option: injection wells. You know how most people use a well to pull water up from an aquifer? This is the opposite of that, using a high-pressure system to force water back into the ground.

But the real advance here might be a change in mindset, from "use what we have" to "save what we get."

"What we need to do is conserve even during wet years," Moran says. She and other researchers now suggest that water managers put up to 30 percent of a year's precipitation back in the ground. If climate change means more drought and less snow, those aquifers could be California's most valuable resource.

# # #

These two guys found an affordable way to turn salt water into drinkable water using the power of ocean waves

Business Insider | November 9, 2015 |Tess Danielson

As California enters the fourth year of its devastating drought, it's never been more clear that water shortages are a present threat.

But two recent graduates from the University of North Carolina, Justin Sonnett and Chris Matthews, think they've found a solution to help ease the world's growing thirst using nothing but ocean water.
It's called the Swell Actuated Reverse Osmosis System, SAROS, and it's a way to remove the salt from saltwater using high-pressure pumps that can harness energy drawn from the vertical motion of waves. Thanks to SAROS, once undrinkable saltwater can have the salt removed so it can be consumed like any other glass of freshwater.

Of course, the most interesting aspect of SAROS is how it uses the motion of waves to generate the energy to power itself. Here's how it works.

SAROS gets pushed out to sea on a buoy — an update from the initial prototype, which used a pendulum. Then, the wave-powered system pulls in sea water, pumps it at high pressure through a reverse-osmosis membrane, and stores the clean, drinkable water in a tank.

"It's a lot less expensive than traditional desalination, and you can get into it at a lot lower of an initial price," Sonnett told Business Insider. "Also, it's environmentally friendly, so anytime you need a lot of energy to perform this process you have to generate that somehow, and on a lot of islands and coastal regions, that's all generated by diesel."

The system can produce 2,000 gallons of water a day over its 10 year lifespan and costs $23,000. Sonnett says the team hopes to begin testing its second prototype in January or February and to get the product on the shelves in the next two years.

The SAROS team has focused "solely on water production and targeting areas in need of sustainable, small-scale desalination." He's not sure if it's "feasible" for SAROS to operate on the kind of scale necessary to provide drinking water for the state of California, considering the amount of wave power they would need to harness to compete with a full sized desalination plant, which can produce 50 million gallons a day.

"We like to joke around and say people aren't going to be washing their car with our water," he says. "[But] we'll see where the future takes us."

But the biggest issue for SAROS currently isn't getting a buoy to create 50 million gallons of water, it's convincing investors that they are worth the money. "It's been tricky to get people to have the faith in us to pull this off."

But people are starting to notice.

SAROS was selected as one of 30 projects from a pool of 3,600 to compete at the Hello Tomorrow Conference in Paris this summer and competed as a semi-finalist at Port Tech Pitch Competition in August.

# # #

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Singularity University Impact Challenge: Finalists to Ease California Drought With Technology

Singularity HUB | November 6, 2015 | Matthew Straub

Last Friday, October 30, Singularity University awarded three groups support and resources as part of its first-ever water-focused Impact Challenge. The 2015 Impact Challenge, in partnership with California Lieutenant Governor Gavin Newsom, asked applicants to leverage exponential technologies to increase California's water supplies and, effectively, solve for the region's immense drought.

The world is full of water, quite literally. Not even just the oceans, but the air too. Trouble is, most of it isn't easily usable or accessible. Even most of the Earth's fresh water isn't readily accessible according to Nicholas Haan, Singularity University's track chair for global grand challenges. Earth is the pale blue dot, as Carl Sagan famously said, yet this sustaining life force is cruelly kept out of the easy grasp of millions.

Singularity University's 2015 Impact Challenge invited applicants using exponential technologies to solve California's drought problems and water shortages specifically—but the solutions found here could be leveraged worldwide. And that's an important note, because with current trends, some of the applicants estimate that within a decade, two thirds of the world will be suffering from water shortages.

Following a four month open application period, six Impact Challenge finalists were invited to pitch at Singularity University's NASA Research Park campus in Silicon Valley. The challenge's panel of 15 judges included representatives from Singularity University, Intel, Google X, XPrize, and an assortment of water-based organizations, like the Bay Area Water Supply and Conservations Agency.

The finalists ranged from early stage startup Permalution—creators of a standing device that collects data on fog patterns and extracts potable water from fog cover—to Ingersoll Rand subsidiary Trane, a leading global provider of commercial and industrial heating and cooling systems.

The pitches often focused on repurposing and recycling water.

Sanzfield Technologies' device, for example, recycles residential wastewater. Trane aims to repurpose the considerable water produced from HVAC systems as a natural byproduct. And Desolenator is making a solar-powered desalination unit.

Other finalists opted to focus on potential water sources that have never been used at scale before. These included Permalution's fog water harvester, AWE's wind-powered atmospheric water extractor, and SunToWater's solar-powered water extractor, which also produces water from the air.

Focusing on criteria including the use of exponential technologies, technical feasibility, and scalability, judges awarded admission into Singularity University Labs' Entrepreneurship in Residence program as well as $5,000 in unrestricted grant money to SunToWater, Sanzfield Technologies, and Desolenator.

Taking first place, SunToWater is already selling personal solar-powered atmospheric water extractors—able to extract 40 gallons of water from the air a day—to residents of California

for around $9,000 per device, a price that is expected to fall dramatically as production ramps up.

A now-independent spinoff company of electronics manufacturer Flextronics, the startup is also raising $4 million to take these prototypes into mass production to reduce the per-unit cost. They're also in talks with organizations like Bill Gates' Global Good team—to use the device in clinics in developing nations—and Coca-Cola to unlock new levels of water access globally. Coca-Cola has told SunToWater could be worth an additional $5 billion to their current business.

"13 trillion tons of water is trapped in the air around us," said SunToWater founder Jeanine Johnson during her pitch. "If we could just harness 1%, it would be enough to supply the world's residential water needs for four months."

"I'm grateful to Singularity [University] for stepping up and stepping into the issue that defines our time here in California," said California Lt. Gov. Gavin Newsom about the drought plaguing the region. In a keynote speech focused heavily on the fragmented politics of water resource management Newsom said, "We are not engaging the private sector as we should," and added that one of the things he loves about the Singularity University community is they're not interested in who's to blame, but what to do.

"Scarcity is an old mindset and abundance is the mindset that should be our focus, and that optimism was obviously felt by the presentations we've experienced here today," said Newsom moments before winners were announced.

That optimism is shared by the startups, mentors, and faculty behind SU Labs, where the Entrepreneurship in Residence is awarded. It's hoped that the SU Labs network will help the winners scale their prototypes and demonstrably improve not only the state's dwindling water resources, but potentially water crises globally.

# # #

Runner and Huff File Water Priorities Constitutional Amendment & New Surface Water and Groundwater Storage Facilities Bond Act

Hews Media Group | November 12, 2015

SACRAMENTO, Calif. (Nov. 12, 2015) – Vice Chair, Board of Equalization, George Runner and California State Senator Bob Huff (R-San Dimas) today announced they have submitted for title and summary a 2016 ballot initiative that redirects unspent High Speed Rail Proposition 1A (2008) and Proposition 1 (2014) water bond money to build new surface water and groundwater storage projects without adding more debt or levying new taxes.

It also establishes priorities for the state's use of water as a constitutional amendment. The measure adds a new section to Article X of the California Constitution making drinking water and irrigation the primary beneficial water use priorities for the people of the state ahead of all other needs, according to the proponents.

"This initiative does not raise taxes, it does not ask for additional revenue or add any more debt, " said George Runner. "It reallocates unused money from past bonds to make better use of the money in our dire drought for the purpose of providing groundwater recharge and treatment facilities and infrastructure to store new water for California families, businesses and food production. "

"California's economy and our ability to survive depends on a reliable water supply, " said Bob Huff. "This initiative secures our water future by building long-overdue expansions of existing facilities and new projects to store, deliver and recycle water for our families, farms and businesses. "

Runner and Huff join a chorus of elected California Democrats, Republicans and many of the state's citizens who believe High Speed Rail is off track and would rather use its bond money for more critical projects.

Lt. Governor Gavin Newsom and Assemblywoman Patty Lopez (D-San Fernando) have been vocal opponents to the current project, and in 2014, California Democrats, Rep. Ami Bera (D-Elk Grove), Rep. Raul Ruiz (D-Palm Desert), Julia Brownley (D-Westlake Village) and Scott Peters (D-San Diego), voted to block California's high-speed rail project from receiving federal funds. On the federal level, U.S. Senate Majority Leader Kevin McCarthy recently called for using rail bond money for facilities that would help the state in its next drought.

The Water Priorities Constitutional Amendment and New Surface Water and Groundwater Storage Facilities Bond Act was submitted to the Attorney General for the Secretary of State to review and issue an official title and summary.

# # #

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County supervisors remain critical of proposed tunnels project
The Galt Herald | November 11, 2015 | Bryan Gold

Sacramento County supervisors remain critical of a $15 billion plan to build tunnels that would carry water from the Delta to southern California.

Previously known as the Bay Delta Conservation Plan (BDCP) and costing $25 billion, the two tunnels are still part of a slimmed down plan now referred to as the "California WaterFix."

Unable to secure the necessary permits from fish and wildlife agencies to carry through with the BDCP, Gov. Jerry Brown's new $15 billion plan calls for hastening restoration of the Delta's ecosystem and fixing what he described as California's "aging" water infrastructure.

But supervisors for the fourth time criticized the plan, writing in a letter submitted by Oct. 30 that the plan will not guarantee additional water, improve the Delta's ecosystem, or mitigate the loss of the area's agricultural industry that is several generations old.

County officials also said their concerns include the tunnels' construction period of 10-12 years "will result in major negative impacts to the lives of Delta residents, the local and regional economy, and its irreplaceable natural resources."

"It's such a misnomer to call this the "California WaterFix.' It doesn't really provide any fix," Supervisor and lifelong Galt resident Don Nottoli said at the Oct. 27 meeting before the board voted 5-0 to send the letter to the state. "It doesn't fix water for California. It doesn't create any new water. Actually, it creates a lot of problems."

Nottoli said he and his colleagues have been "solid" in their view on this topic. But he said their input has mostly fallen on deaf ears.

"There has almost been a total ignoring of the things that we believe need to be done in order to really address the issues," he said. "They set their sights on a goal of building the conveyance project. But it's still the twin tunnels."

In addition, water modeling indicates that the Folsom Reservoir will likely "dead pool" or have its water level below the dam's water intakes every 10 years.

County officials said this would impact access to the primary source of water for urban populations in Sacramento, Placer and El Dorado counties, which county officials said would "severely impact" the economy, livability and property values in the region.

The same could be said for San Joaquin County.

State Senator Cathleen Galgiani (D-Stockton), whose district includes Galt and northern San Joaquin County, sent an email to constituents on Oct. 27 – the same day supervisors approved the comment letter – that the tunnels could grab the Sacramento River, which is the main supply of fresh water in the Delta, San Joaquin County and the entire San Francisco Bay-Delta estuary.

"Negative economic impacts on the region if the Delta tunnels are built will be significant," she wrote in the email also signed by U.S. Rep. John Garamendi (D-Walnut Grove), whose

district runs north and west of Galt. “To protect this area’s economic and water supply ties to the Delta, protecting and enhancing the Delta’s water quality is essential.”

# # #

Sacramento River water users sued for harm to salmon
Chico Enterprise-Record | November 11, 2015 | Heather Hacking

Environmental groups took legal action this week, stating that water users along the Sacramento River misused water that should have gone to endangered winter-run salmon.

The complaint will be added onto existing litigation the groups have filed against the U.S. Bureau of Reclamation and Sacramento River settlement contractors. That previous lawsuit is about water use that allegedly fails to protect the delta smelt, also an endangered species.

Under the Endangered Species Act, species on the ESA list cannot be killed or harmed without a permit, said Doug Obegi, senior attorney for the Natural Resources Defense Council, which is joined in the lawsuit by Earthjustice, San Francisco Baykeeper, The Bay Institute, the Winnemem Wintu Tribe, and Pacific Coast Federation of Fisherman's Association/Institute for Fisheries Resources.

This year the amount of cold water in Lake Shasta ran out, Obegi said. Cold water is critical for the survival of salmon eggs in the Sacramento River, as well as survival of the juvenile salmon later in the season.

This year and last, the Bureau of Reclamation was not able to keep the water temperatures at the level crucial for egg and young salmon. Eggs and young fish died.

Naming the settlement contractors in the legal documents may persuade the courts to renegotiate water delivery contracts, Obegi explained.

California will experience droughts in the future, droughts that will again threaten salmon in the Sacramento River, he said.

"These are 40-year contracts. Climate change will make droughts more frequent and more severe."

By naming water users, the legal action is targeting farmers of 450,000 acres of land in the Sacramento Valley.

Sacramento Valley water leaders, including the Northern California Water Association, responded strongly to the lawsuit. "NRDC and its partners have blatantly misrepresented the actions of the Sacramento River Settlement Contractors, as well as state and federal regulatory agencies."

In 2014 and 2015, the most challenging of the recent drought, water users delayed water deliveries so more cold water would be available in Lake Shasta, a letter from the water users states. Water diversions were also cut back for even those with the most senior water rights.

The lawsuit also accuses water users of "illegally" diverting water, an accusation the water groups firmly refute.

Water users worked very closely with federal water managers, going beyond their legal right to water during the drought, the group says.

Lewis Bair is manager of Reclamation District 108, which provides water to farmers in the Colusa area. He said water districts, wildlife and fisheries agencies, and the Bureau, worked together to work out water diversions.

One of many issues is that salmon are not the only endangered species. The giant garter snake relies on wet land near rice fields for survival. If water was completely cut off for winter-run endangered salmon, another species would be in peril, Bair pointed out as one example.

The NRDC lawsuit states 95 percent of juvenile winter-run salmon died during the past drought year, Bair said. That's terrible, he said. Yet, even in a good year 80 percent of young salmon would be eaten by predators or die in other ways in the river.

Bair said farmers worked more closely with federal water managers this year than they ever have in the past. To accuse them of illegally diverting water is unfair, the group says.

As a result, there was 440,000 acre-feet more water in Lake Shasta at a time critical for fish, the group of irrigators said.

Bair said the water districts are working on projects to increase fish habitat, such as the Painter's riffle project near Redding, which cleared gravel to create a side channel for fish.

"Our livelihood depends on the survival of salmon" Bair said.

Litigation such as this doesn't help the fish, he said. What's needed is for groups to work together to solve problems, he said.

Obegi, of the NRDC, said the past two years have been so extreme that the survival of the endangered winter-run salmon has been touch-and-go.

If there were just a few more years that warm water killed the remaining fish, the species could be lost forever, he said.

Contracts need to be changed so that fish survival takes precedence, he said. This could mean farmers waiting longer in the season to receive water.

Also, the bottom line is that water users do not have permits that allow them to "take winter run" fish, which are endangered, he said.

"We believe that is illegal under the" Endangered Species Act.

The defendants in the lawsuit include San Luis and Delta Mendota Water Authority, State Water Contractors, Westlands Water District, California Department of Water Resources, California Farm Bureau Federation, Glenn-Colusa irrigation District, Natomas Central Mutual Water Company, Pelger Mutual Water Company, Princeton- Codora-Glenn Irrigation District, Provident Irrigation District, Reclamation District 108 and River Garden Farms.

# # #

Officials explore San Mateo groundwater basin: Agencies, city, county consider managing local basin for supplemental water source
Daily Journal | November 03, 2015 | Samantha Weigel

In an effort to explore alternate water sources to serve the Peninsula, officials from various cities, counties, utilities and other stakeholder groups will study and possibly regulate a little-used groundwater basin.

The Bay Area Water Supply and Conservation Agency, or BAWSCA, hosted a kickoff meeting last month to discuss a collaborative effort called the Ground Water Reliability Partnership, which will consider opportunities within San Mateo Plan Sub-basin.

The goal is to investigate the hydrology and geology of the currently unregulated basin that spans multiple jurisdictions between the southern portion of Burlingame down to the San Francisquito Creek on the southern San Mateo County border, said BAWSCA CEO Nicole Sandkulla.

The historic drought has caused many throughout the state to consider how to become less dependent on surface water sources.

While most on the Peninsula drink from the Hetch Hetchy Reservoir system courtesy of the San Francisco Public Utilities Commission, various agencies are considering how to combat dry spells while providing for an increasing population by diversifying resources — such as turning to groundwater and investigating other methods like recycled water and desalinization, Sandkulla said.

“Historically [the basin] was used before the Hetchy supply came in and we haven’t really relied upon it since. Now, there’s an increased focus with new technology like brackish water or injecting recycled water, there’s some interest in the basin. So let’s bring together stakeholders and talk about what we know about the basin,” Sandkulla said. “Then we can all better understand how the basin operates and look to new projects and make sure there’s a sustainable basin. Because that’s the goal, to make sure we don’t do anything to [jeopardize] it.”

Several agencies either already draw from the basin, plan to use it in emergencies or are expanding their use — such as East Palo Alto, Menlo Park and an unknown number of homeowners in Atherton who have private wells, Sandkulla said. An initial review of the basin showed it’s not extremely productive and only offers maybe 10 million gallons a day. Although new state laws regulate higher priority basins, the San Mateo aquifer is considered a low priority since no communities solely rely on it and it doesn’t yield much, Sandkulla said.

Therefore, unlike its neighboring basins — the Westside Groundwater Basin to the north and the Santa Clara Basin to the south — there isn’t a management plan overseeing the San Mateo Plain Sub-basin.

Now, San Mateo County has opted to take the lead in conducting a study of the basin that will ideally inform a multi-agency agreement on how to best manage the resource.

There are a variety of ways humans can negatively affect the basin. Drawing from it without letting it recharge poses risk of saltwater intruding into the basin or draining nearby surface water like the San Francisquito Creek, which is habitat to many creatures. Prior to the Hetch Hetchy system, the basin was heavily depleted and portions of the county sunk as much as a foot, said Peter Drekmeier, policy director of the Tuolumne River Trust.

“We’re seeing that there’s the potential for pumping to get back to the level that it was in the 1950s, before the Hetch Hetchy line was providing water from the Sierras. And at that point, we were overdrafting the basin and there was about a foot of land subsidence. So we think it’s important to get ahead of the problem,” Drekmeier said. “With this four-year drought that we’re in and with climate change, it’s very likely to impact precipitation in the future. I think now is the time to get a handle on this and plan for a time when there’s going to be less surface water available.”

Studying the resource

The county is currently seeking experts to conduct an assessment of the basin that could help inform how it should be managed, said Heather Forshey, director of the county’s Environmental Health Services.

Factors will include evaluating the hydrogeological condition, such has how much it can yield; where surface water interacts with the basin, such as how saltwater from the Bay could taint it; identifying threats to the basin and its quality such as the number of private wells drawing from it, and how to recharge the basin. Ultimately, the consultants would help identify a long-term strategy to maintaining a sustainable groundwater resource through policies and cooperation amongst varying entities, Forshey said.

“What we want to do is get a good idea of what the basin looks like in its entirety and what is possible,” Forshey said. “It’s critical to have all the municipalities and the water districts and the wastewater districts communicating together to develop a large-scale solution. … We’re hoping to get a lot of answers and we’re hoping it will inspire a lot of additional questions and ideas on how to best use this resource.”

Part of the report will include identifying who is currently reliant on the basin. While the county oversees permits for new wells, many were drilled prior to the program and there isn’t firm data on how many individuals use the basin.

What is known, is that East Palo Alto is planning to reinstate a well and create a new one to help sustain the city that doesn’t receive a lot of water from SFPUC, said Drekmeier and Sandkulla.

Drekmeier said it’s crucial that the basin be studied in collaboration with the surrounding entities to avoid negative impacts. The San Francisquito Creek, which is habitat to endangered steelhead trout, appears to be a main source of recharge for the basin. Depleting the basin could harm the creek and even impact the neighboring Santa Clara Basin — on which Santa Clara County residents are extremely reliant, said Drekmeier.

Opportunities underground

There are a variety of ways in which the basin can be used, particularly in regards to storing water. Sandkulla said her agency is interested in considering how it could incorporate recycled water into the basin.

Typically, wastewater would undergo significant treatment before being injected into the basin where it would be further refined through a natural filtration process, said Sandkulla and Drekmeier.

Another project underway is the California Water Service Company seeking grants to study the efficacy of drilling for brackish water. Cal Water serves thousands of residences in San Mateo, San Carlos, South San Francisco, Colma, Woodside, Portola Valley, Atherton and unincorporated portions of the county, Redwood City as well as Menlo Park.

To diversify its portfolio, Cal Water seeks to drill into the basin for brackish groundwater and if the aquifer is fruitful enough, possibly create the county's first desalinization plant.

The treatment plant could cost between $111 million to $141 million, and the entire operation would include several wells. Drilling into a brackish groundwater basin could have fewer environmental impacts than compared to an open-bay desalinization project where it's pulled from an open body of water, Sandkulla said previously.

Next steps and timeline

Cal Water is awaiting approval from the California Public Utilities Commission before it can even start investigating a drill project.

The county is soliciting bids from consultants to oversee its assessment and the Board of Supervisors is expected to vote on a contract early next year, Forshey said. Ultimately, the thorough study will likely take years, she added.

BAWSCA, which advocates for the interests of its 26 member agencies that purchase wholesale water from the SFPUC, will host another stakeholder meeting in December. Sandkulla said she's thrilled the county has taken a proactive role and ideally, those with an interest in the basin will continue to collaborate while sharing information about the San Mateo Plain Sub-basin.

"These kinds of things take a long time, which is why it's important to start before you have a problem while there's interest and while you have stakeholders that are committed to it," Sandkulla said. The basin "can't replace the Hetch Hetchy system, but it can augment it."

Visit bawsca.org/water-supply/ground-water-reliability-partnership for more information.
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# # #

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Groundwater: Deadlines loom as new state law goes into effect
Ag Alert | October 27, 2015 | Kate Campbell

Hammering out the structure for sustainably managing groundwater is a complicated effort, California water experts say. But farm owners, water districts, government agencies and cities all have a stake in completing the steps to meet the deadlines set by the 2014 Sustainable Groundwater Management Act.

Known as SGMA, the law sets a number of milestones that must be met to achieve groundwater sustainability. People involved in implementing the law say achieving that means acting now to complete incremental steps to sustainability.

Some of the most pressing and problematic deadlines are just months away, said Sonoma County farmer Tito Sasaki, who serves on both the California Farm Bureau Federation and Sonoma County Farm Bureau water committees.

Sasaki said attending groundwater sustainability meetings, briefings and planning sessions related to SGMA has turned into a near full-time job for him—and that's in a county where groundwater management has been a priority for more than a decade.

"Our county is moving ahead as scheduled and will definitely meet deadlines for establishing the required groundwater sustainability agencies for at least two of our three groundwater basins," Sasaki said, adding that the Sonoma County Farm Bureau has held discussions and a workshop with agricultural landowners to help them prepare for upcoming decisions and deadlines.

Of immediate concern, he said, is the June 30, 2017, deadline for establishing groundwater sustainability agencies, or GSAs. In Sonoma County, there are 11 local entities eligible to oversee future groundwater use, and decisions need to be made about how governance—structure, scope, accountability—will be handled within the SGMA framework.

"Agency people in our county have been working on this for six months, and everyone agrees there should be one overall plan coordinated at the county level and three groundwater sustainability plans—one for each aquifer," Sasaki said. "Each GSA will take seats on the county-level governing board."

Getting to that level of agreement has been complicated, he said, because of the need to address the interests of many stakeholders.

"How these groundwater agencies are set up and operate will shape the future of agriculture for a long time," CFBF Associate Counsel Jack Rice said. "The challenges for agriculture in this process are significant, both because groundwater is technically and legally complicated, and because managing groundwater can mean limiting how much is pumped."

The task of setting up GSAs becomes more complex when looking at governance and boundaries for all underground aquifers statewide. There are currently 431 groundwater basins, underlying about 40 percent of the surface area of California. A number of the basins are subdivided into sub-basins, totaling 515 distinct groundwater systems. Many of

the sub-basin boundaries, however, are not precise, meaning additional studies are needed, according to the state Department of Water Resources.

Basins have been tentatively ranked, with 127 identified as medium to high priority, including 21 designated critically overdrafted.

The California Water Commission adopted new groundwater-basin boundary regulations to allow for basin modifications in the future. DWR said it will begin accepting requests from local agencies for basin boundary modifications as early as Jan. 1.

The California Water Foundation has been working with stakeholders during the past year to support local SGMA implementation, said Kate Williams, foundation program manager.

"What we understand is that agricultural communities in some parts of the state are still trying to decide how to represent their interests, particularly if they're not part of an irrigation district," she said.

But Williams said she thinks SGMA implementation is going well overall, adding "that doesn't mean there haven't been bumps, but it's such a huge shift in the paradigm of water management. It's a big challenge."

At the Association of California Water Agencies, Dave Bolland called SGMA "one of the most important changes in California water law in probably 100 years."

"We're optimistic about the focus on local groundwater water management and the importance of planning at a local basin level," he said.

Once sustainability regulations are set, Bolland said, he expects a lot of action at the local groundwater-basin level in terms of planning for sustainability, including more involvement by groundwater users, including farmers and ranchers.

"We're facing some regulatory deadlines," Bolland said. "The next big action coming up is forming the GSAs, and it's going to be important for groundwater users to engage with their local agencies to make sure their interests are represented in the implementation process."

CFBF Water Resources Director Danny Merkley said there's a significant incentive for local agencies to meet SGMA regulatory deadlines.

"If you don't meet your GSA formation deadlines, the state water board has the authority to become your GSA," Merkley said. "They'll develop your sustainability plan, and that might not be the best approach."

Merkley said governance issues need to be addressed at the local level, and that's where an area's agricultural leaders can play a role in bringing water users together to help create the foundation and framework for sustainable groundwater use.

That won't be easy, he cautioned.

"There are counties that have been working on groundwater management for decades, and even they are having challenges in setting up their GSAs," Merkley said.

"Many of the things to be decided are controversial," he said. "The best way to mitigate these risks to our agricultural livelihoods is to get involved."

Information about the new sustainable groundwater rules is available at www.water.ca.gov/groundwater/index.cfm.

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Drill to tap into Peninsula aquifer: SFPUC, Cal Water, San Bruno, Colma agree to seismic, drought plan

San Mateo Daily Journal | October 14, 2015 | Samantha Weigel Daily Journal

Construction crews work one of the drills tapping into a 25-square-mile aquifer along the Peninsula as part of a multi-agency water sustainability plan.

Dan Wade, left, director of the San Francisco Public Utilities Commission's Water System Improvement Program, and Greg Bartow, SFPUC's groundwater program manager, discuss the process of drilling a 500-foot deep well in Millbrae.

For the first time in decades, Peninsula customers served by one of the region's largest water suppliers could soon be sipping from a massive underground aquifer as the San Francisco Public Utilities Commission has commenced drilling wells in an effort to diversify its resources.

Nestled between the Caltrain tracks and the Orchard Supply Hardware in Millbrae, officials with the SFPUC and representatives from its partner agencies gathered Tuesday to unveil a drill rig that is working to tap into the South Westside Groundwater Basin source nearly 500 feet underground.

The $113 project that includes 15 well sites and several treatment facilities, is part of a collaborative effort between the SFPUC, California Water Service Company and the cities of Daly City and San Bruno.

While Cal Water and the cities have previously drawn from the 25-mile-square basin stretching from Burlingame to San Francisco, this agreement will be one of the SFPUC's first forays into groundwater pumping.

The utilities and two cities have agreed not to draw from aquifer during wet years allowing it to replenish, then use it in years of drought. As a tradeoff, the SFPUC will supplement Cal Water, San Bruno and Daly City with free Hetch Hetchy water during wet years.

The goal is to diversify water sources to promote sustainability during drought years and a reliant supply in the aftermath of an earthquake.

The SFPUC provides water to 2.5 million people through an intricate delivery system that begins more than a hundred miles away near the Hetch Hetchy Reservoir. Once the drill project is complete and online in late 2018, customers throughout the region will have access to 20 billion gallons stored within the basin during a drought or after a natural disaster.

"We all know, especially now, we can't control our destiny. Both the current drought and water shortages are reminding us how important a stable water supply is. It's important for us to remember that natural disasters don't know any boundaries. When an earthquake or an emergency occurs, we all rely on one another," said Daly City Manager Patricia Martel, who previously worked for the SFPUC. "This project is the best example of how mutual cooperation, that I can think of, allows us to assure our residents … that we have a back-up plan and that in an emergency, we have prepared long and hard to address the issues of providing high-quality water."

The Regional Groundwater Storage and Recovery Project could contribute 7.2 million gallons of water per day during drought years and is part of the SFPUC's multi-billion dollar Water System Improvement Program.

"One of our major supplies is 167 miles in the Sierra Mountain and across three major seismic faults. So we invested $4.8 billion to harden that system to make is seismically reliant. But also, one of the goals of our system is to diversify our water supply and look at ways of utilizing ground water," said SFPUC General Manager Harlan Kelly, who added the utility is also looking at digging wells in San Francisco as well as investigating the feasibility of producing recycled water.

The drill project has been years in the making with the concept first arising nearly 20 years ago. After negotiating the terms of how the SFPUC, Cal Water and two cities will sustain the large basin running along the Peninsula, beginning to drill is an exciting development, said Kelly and Greg Bartow, the SFPUC's groundwater program manager.

"In the water industry, people have gone to diversifying their water supplies. We were nearly 100 percent surface water and now, we're expanding to ground water, recycled water," Bartow said. "Kind of like your stock portfolio, it's good not to have all your eggs in one basket."

The Millbrae drill rig site is the southernmost well that will be established with others in Daly City, Colma and South San Francisco. Some will reach depths of up to 700 feet and have been carefully plotted after geologists examined soil quality and the capacity of the aquifer, said Bartow and Dan Wade, director of the Water System Improvement Program.

The entire $4.8 billion upgrade includes 86 projects, 280 miles of pipeline replaced or repaired, treatment plant retrofits and three new tunnels — including the first ever to be drilled under the San Francisco Bay floor. With that multi-year effort now at 90 percent completion, Wade said the drill project is the final and now largest on the Peninsula that will continue into 2018.

While the seismic upgrades are critical to sustaining the millions of customers across the Peninsula who might otherwise be without clean water during the aftermath of an earthquake, officials noted the projects to diversify and increase supply are made poignant by the drought.

Still, SFPUC officials are looking to the past as an example of how to prepare for the future noting the anniversary of one of the Bay Area's worst natural disasters in history.

"It's almost 26 years to the day of the Loma Prieta earthquake that struck in 1989 on Oct. 17. That earthquake caused an estimated $10 billion worth of damages," said SFPUC Commissioner Vince Courtney. "Most people believe that we'll have a similar event sometime in our lifetime. So we believe it's important as leadership in the government, to make sure that we have an opportunity to make sure that water is being made available to the people that rely on it during an emergency."

# # #

Jeremy Madsen: Being smarter about land use can help fight against drought
San Jose Mercury News | November 11, 2015 | Jeremy Madsen

El Niño is coming. Get your umbrella and maybe some sandbags -- this winter promises to be a wet one. But even if the next few months are rain-filled, it will take more than one watery winter to recover from California's four-year drought. And with a changing climate, this level of water scarcity could be a new normal.

By now, you would have to have been living under a very dry rock to not know the things we should all be doing to save water -- let your lawn go brown, wash your car less, take fewer and shorter showers, flush less if you dare. But there is one thing that cities and counties across the Bay Area and around California can do to save water that has not gotten a lot of attention--be smart about land use. For three reasons, smart decisions about how communities grow and develop are also smart water decisions.

First, protecting the open spaces that surround our cities and towns from sprawl development also protects our water supply. In the nine-county Bay Area, about 30 percent of our water comes from local rivers, streams, and groundwater aquifers. Roughly 1.2 million acres, more than a quarter of all the land in our region, serve as watersheds and groundwater infiltration zones that replenish these local water sources. Local sources will likely be more critical to our water supply in the future than they are today. Paving over water resource lands puts our water supply in jeopardy.

Second, "smart growth development" in which existing cities and towns are invigorated with a mix of housing types -- like apartments, condos and townhomes -- together with shops, restaurants, work places, and parks, is water-wise development. Such development tends to have less water-consuming landscaping. When comparing current Bay Area development trends to a more smart-growth scenario for future development, a Greenbelt Alliance study with Calthorpe Associates found that the smart growth scenario would reduce water consumption by 9 percent. Conveniently, smart growth development is not only water-wise but consistent with the demand of many Bay Area residents -- from tech-worker millennials to retiring baby boomers -- who want to live in a vibrant, dynamic downtown or neighborhood center rather than a tract home on the urban edge.

Third, smart growth development is water-wise because it helps address the "leaky pipe syndrome." A 2014 report from the American Water Works Association found that California leaks about 228 billion gallons of water a year from municipal water infrastructure -- the pipes that move water to where we live and work. This is 25 percent of the total water in the system or, to put it another way, the annual water demand for the entire city of Los Angeles. Smart growth that directs development to existing cities and towns versus out into open spaces or agricultural lands creates fewer opportunities for leaks simply because fewer miles of pipes will be necessary to serve development. Additionally, by redeveloping in cities and towns, old pipes can be replaced to reduce or prevent leakage, meaning water gets where it is supposed to go.

We are surely going to be talking about water and how to get by with less of it, for years to come. By implementing smart growth development in our cities and counties, Bay Area leaders will also be making water-wise decisions. As our region grows from 7 million to 9 million people over the next generation, doing right by the water and land-use connection in not merely a good idea, it's essential.

Jeremy Madsen is CEO of the Greenbelt Alliance. He wrote this article for this newspaper.

# # #

Valley Voice: We must realize limits of our water
The Desert Sun | November 8, 2015 | Manny Rosas

I recently paid a visit to the Bay Area to attend the funeral of my father-in-law “Grandpa Turner,” who was 92 when he passed.

I was shocked when I arrived in Pleasanton. What is normally a lovely city in the East Bay suburbs with lush lawns adorning every home was completely devastated, looking more like a dried-out desert. All the lawns were dead and the shrubs and trees struggling to survive due to lack of water. The only green lawn in the neighborhood belonged to a homeowner who bought a water tank and would drive to the water agency to get free recycled water.

All relatives and friends attending the funeral were advised to stay in a hotel, as the family was afraid of going over their home water budget.

The city of Pleasanton had mandated a 25 percent water cutback for all customers, including businesses and golf courses, and had achieved 31 percent water savings between June 2014 and February 2015. At the same time it collected $1.2 million worth of penalties. Consequently, Pleasanton was among the highest water conserving agencies in the state.

Arriving in our hotel seemed normal, except for the dead lawns and a sign explaining the drought as the reason. To my surprise the hotel was near capacity; I questioned: “were hotels exempt from the water cutbacks?”

I found the answer days later when the hotel’s vacancy was nearly 75 percent and the “NO VACANCY” sign was lit up. I realized then, hotels were rationing their occupancy rates to achieve their mandatory water cutbacks and balancing their revenues by raising the hotel fees.

During my morning walks through the business park, I noticed the effect of the drought on their landscapes was less severe, with only 20 percent of the lawn areas brown. I attributed this to efforts to preserve corporate images coupled with the ability to pay the fines.

Some of the memories shared about Grandpa Turner included how he used to read the water meter every day, at times telling Grandma, “Dear, you won’t be able to wash any clothes or dishes today.” Grandpa’s efforts to conserve water paid off; he never had to pay a penalty.

Returning to the desert made me realize we are living in a dream where the water supply is unlimited.

In our community it has been business as usual. The hotel occupancy rates in the Coachella Valley have surpassed last year’s, the boulevards are still adorned with green lawns (except for the medians), all the golf courses are lush and green and the Southwest Community Church in Indian Wells continues to sport a parking lot carpeted with lush green grass.

It’s no surprise that two local water agencies have failed to achieve the state mandated water cuts and are among only four agencies in California to earn a fine from the state.

Most water agencies understand the severity of a water emergency that requires cutting back 36 percent of total water use, and that to accomplish that goal it is necessary to mandate water use cutbacks for all customer classes, including golf courses, in addition to putting in place hefty penalties to incentivize compliance.

The success of a water agency rationing program is measured at the water meter of each and every water customer. That is why Grandpa Turner read the meter daily.

Manny Rosas is a retired water resources manager who lives in Indio. Email him at mannyrosas@mac.com

# # #

Some say mandatory water restrictions may have done more harm than good
KGO | November 8, 2015 | Reggie Aqui

SAN FRANCISCO (KGO) -- Despite the recent rain, our drought continues and so does the call to save water. However, some say the way the state imposed emergency conservation measures may have done more harm than good.

Across the Bay Area lawns and landscaping are drying out. "It's difficult because I like my garden and I like my grass to be green, but I think that this important," Dublin resident Voni Ribera said.

It's one of the many signs that people are cutting back on their water use, but if you head south to Beverly Hills it doesn't look like everybody got the message. "The idea of your nice little green grass getting lots of water every day, that's going to be a thing of the past," Gov. Jerry Brown said.

In April, the governor ordered mandatory cuts in water usage and the Bay Area listened. Many local water agencies report people here are meeting or exceeding the Brown's call to save water.

He ordered a 32 percent cut. Beverly Hills did impose restrictions, but it has only cut water use by 20 percent.

The Central Valley town of Clovis missed it's goal by three percent. Officials there seem more worried about saving trees than saving water. "It's very unsightly, it's going to cost money to someday either replace that with other plantings, we've had a great loss of trees," Public Works Director Lisa Koehn said.

UCLA plant scientist Don Hodel doesn't think public and private landscaping should have suffered. "My concern with the way the state imposed watering restrictions is that they were made without any knowledge of how plants grow, how plants interact with the soil, how water moves into the soil and how the soil holds water," he said.

Instead of restricting water use, Hodel believes more practical watering advice could have saved plants and trees. "We can retain our landscapes if we simply watered any more precise or a judicious manner," Hodel said.

Hodel doesn't believe any plant experts were consulted and the deputy director of the California Department of Water Resources agrees the plan was a rush job. "It was one size fits all, that wasn't the best and there wasn't a lot of time to get on top of this," Hodel said.

Hodel questions whether the order was even necessary. He said landscaping uses just a small fraction of the states water supply. "So if we never watered another tree, shrub, ground cover, blade of grass, potted plant in California again the state would save 7 percent of its total water use," he said.

To put that in perspective, the California Department of Water Resources says 77 percent of the state's water is used for agricultural purposes.

East Bay Municipal Utility District still believes every drop counts. "This is bad, this is the worst drought we've seen in a generation," EBMUD spokesperson Abby Figueroa said.

We saw just how bad it is when DroneView7 flew over the Camanche Reservoir near Stockton. The reservoir supplies water to more than one million people in the East Bay and it's only a little more than a quarter full right now. It's just one of many around the state that's parched. "We're not going to run out of water, but we certainly are going to continue seeing restrictions. We might get tougher restrictions because we have to make sure we have enough drinking water for the following year and the one after that," Figueroa said.

Those restrictions could be more than just turning off your sprinklers.

Beverly Hills and three other cities were among the first fined $61,000 each for not complying with state water restrictions.

# # #

Restrictions on water rates get newfound opposition from Gov. Jerry Brown
LA Times | October 10, 2015 | Chris Megerian

Gov. Jerry Brown is picking a fight over a two-decade-old law that can make it difficult to increase water rates, raising the possibility of a new battle over the issue at the ballot box next year.

He's turning his attention to the issue as he seeks more flexibility to fund infrastructure improvements and use financial incentives to spur conservation, tactics for steering California through the fourth year of a damaging drought.

"Too many Californians still lack affordable, safe drinking water," Brown said in a statement Friday. "Proposition 218 serves as the biggest impediment to public water systems being able to establish low-income rate assistance programs."

Proposition 218, passed in 1996, requires that many local taxes and fees be approved by voters. It also prevents government agencies from charging more for a service than it costs to provide the service.

Brown called the law "an obstacle to thoughtful, sustainable water conservation pricing and necessary flood and stormwater system improvements."

Brown announced his effort to change things when he signed AB 401, a measure by Assemblyman Bill Dodd (D-Napa) intended to help low-income Californians pay their water bills.

The governor's plan for tiered water pricing -- consumers paying increasing amounts for water as they use more -- ran into legal trouble when a state appeals court said it violated Proposition 218.

Brown complained that the court's ruling was a "straightjacket."

It's unclear what kind of changes Brown will try to make. He said he plans to work with lawmakers and others to address the issue "while maintaining rate payer protections."

Brown could find important support from water agencies in his effort.

"He's pretty much got it right," said Timothy Quinn, executive director of the Assn. of California Water Agencies. "There's a problem to be solved here."

Although Proposition 218 has improved accountability, Quinn said, there needs to be more flexibility to make investments.

"You've got a very difficult road getting financing for your infrastructure," he said.

Quinn said his organization has been in touch with the Brown administration as it develops proposals. Because Proposition 218 is a constitutional amendment approved by voters, the governor's effort would be likely to require a new ballot measure.

He would certainly face resistance from the Howard Jarvis Taxpayers Assn., which wrote Proposition 218.

"We would obviously oppose" the governor's efforts, said Jon Coupal, the group's president. "The voters would ultimately decide."

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