

# Veles Water Weekly Report

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December 9<sup>th</sup> 2021

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**VelesWater**



## WATER FUTURES MARKET ANALYSIS

Welcome to ***WATERTALK***

by Joshua Bell

**CLICK THE LINK BELOW**

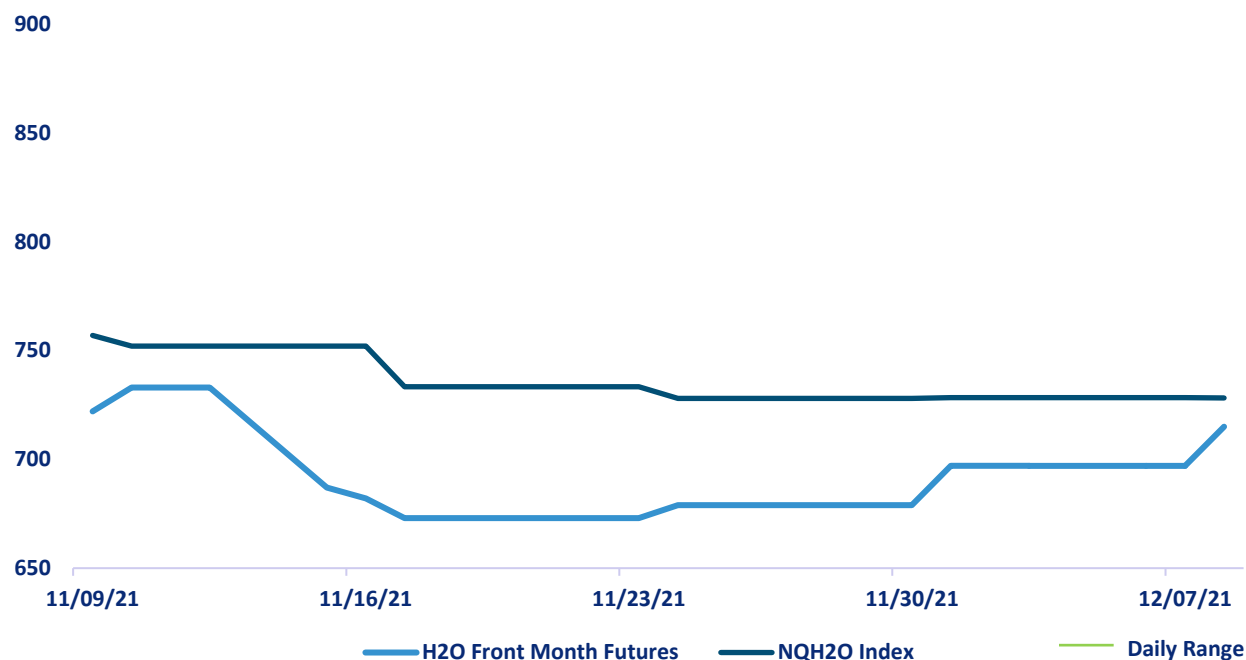
*"A 2 minute technical analysis video of H2O futures"*

<https://vimeo.com/654858800>



## NQH2O INDEX PRICE vs H2O FUTURES PRICE

1 Month Price Performance NQH2O Index vs H2O Futures



The new NQH2O index level of \$728.27 was published on the 8<sup>th</sup> of December, down \$0.03 or 0.004%. The discount of the futures to the index has narrowed from \$31.07 to \$13.27, we expect this to narrow further in the coming weeks.

NQH2O is up 45.70% YTD.

Below are the bid offer prices on different expiries being quoted in the market.

December 21 710@720

January 22 690@745

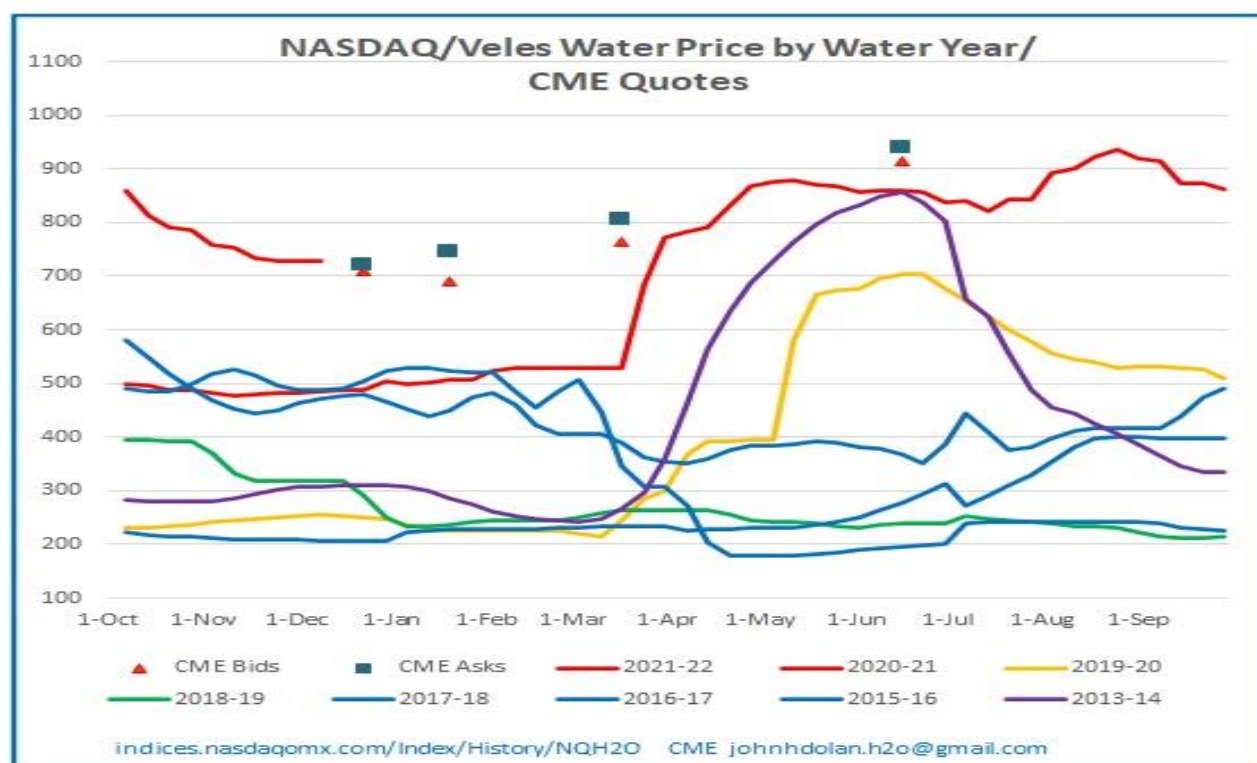
March 22 765@805

June 22 915@940





## NQH20 INDEX HISTORY



The graph above lays out the Nasdaq Veles water index by year, showing 2013- 2022. In very dry years, prices clearly rise through the spring, peaking in May to July (with the exception of 2015) as demand for water from farmers peaks. Prices then taper off heading into the winter on reduced demand, and the possibility of rain/snow.

The restricted ability to “carry” water, much like one can do with financial contracts, gives this index the same type of seasonal pattern that one sees on some other commodities.

The graph for 2021 is highlighted in red. It shows the same seasonal climb, but at record-high values above each of the last eight years since February.

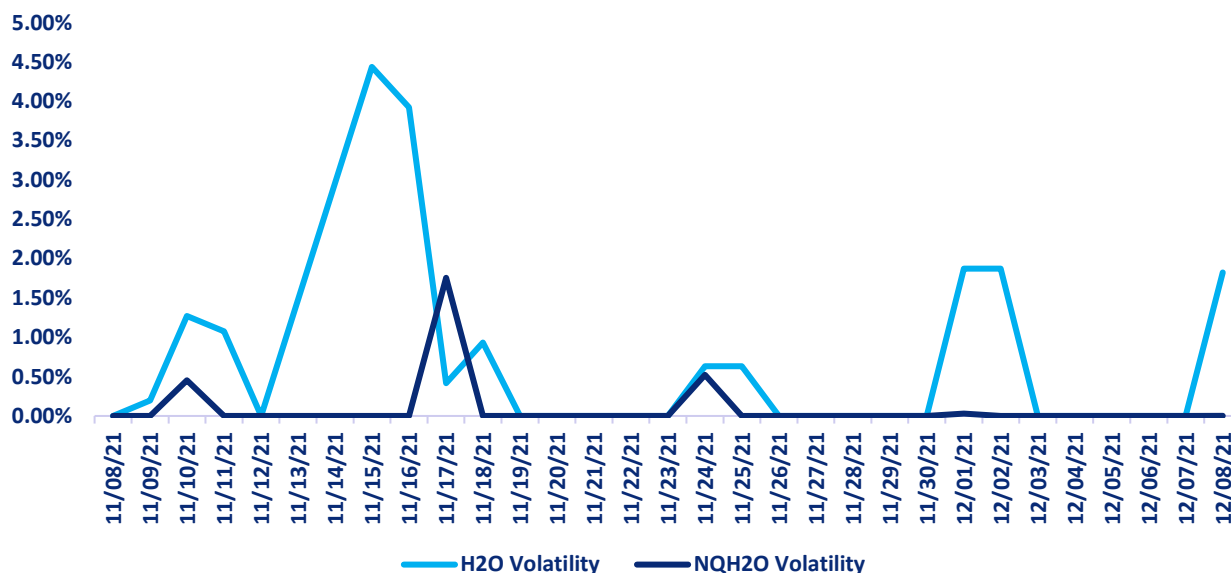
Current bids and offers in the market are still higher than historic prices showing that expectations are that this is an exceptionally dry year and prices may not fall seasonally as much as they have in prior dry years.

**(John H Dolan, CME Market Maker)**



## H2O FUTURES AND NQH2O INDEX VOLATILITY ANALYSIS

### Daily H2O Futures Volatility vs Daily NQH2O Index Volatility



#### DAILY VOLATILITY

Over the last week the December future volatility high has been 1.83% on December 8<sup>th</sup> with lows of 0% on December 2<sup>nd</sup> -7<sup>th</sup>.

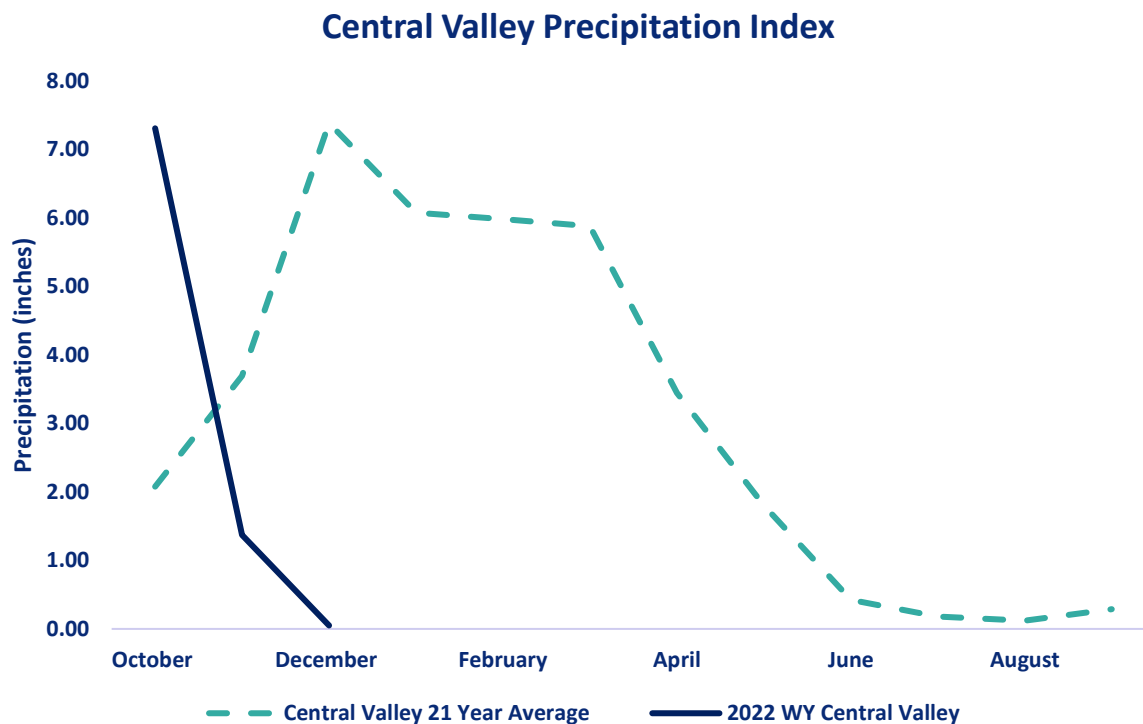
ASSET	1 YEAR (%)	2 MONTH (%)	1 MONTH (%)	1 WEEK (%)
NQH2O INDEX	34.76%	5.10%	2.36%	0.045%
H2O FUTURES	N/A	10.86%	7.35%	2.39%

For the week ending on the December 8th the two-month futures volatility is at a premium of 5.75% to the index, down 0.22% from the previous week. The one-month futures volatility is at a premium of 5.23% to the index, down 0.24% from last week. The one-week futures volatility is at a premium of 2.35% to the index, up 0.58% from the previous week. We expect the volatility premiums in the futures to remain until there is a fully established price trend in the underlying index.

*Above prices are all **HISTORIC VOLATILITIES** and **IMPLIED VOLATILITIES** will be introduced once an options market has been established. All readings refer to closing prices as quoted by CME.*



## CENTRAL VALLEY PRECIPITATION REPORT



Central Valley average is calculated using data from 19 weather stations in the Central Valley, California.  
Data as of 08/12/2021

STATION	MTD (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF 20 YEAR AVERAGE MTD	2022 WYTD VS 2021 WYTD %	2022 WY VS 20 YEAR AVERAGE TO DATE %
SAN JOAQUIN 5 STATION (5SI)	0.03	0.00	0.44%	25	108
TULARE 6 STATION (6SI)	0	0.00	0.00%	17	60
NORTHERN SIERRA 8 STATION (8SI)	0.12	0.12	0.00%	35	157
CENTRAL VALLEY TOTAL	0.15	0.00	0.15%	26	108

## RESERVOIR STORAGE

RESERVOIR	STORAGE (AF)	% CAPACITY	LAST YEAR % CAPACITY	HISTORIC ANNUAL AVERAGE CAPACITY %
TRINITY LAKE	705,728	29	52	50
SHASTA LAKE	1,114,908	24	44	45
LAKE OROVILLE	1,057,768	30	36	60
SAN LUIS RES	483,641	24	46	44

Reference: [California Water Data Exchange](#)

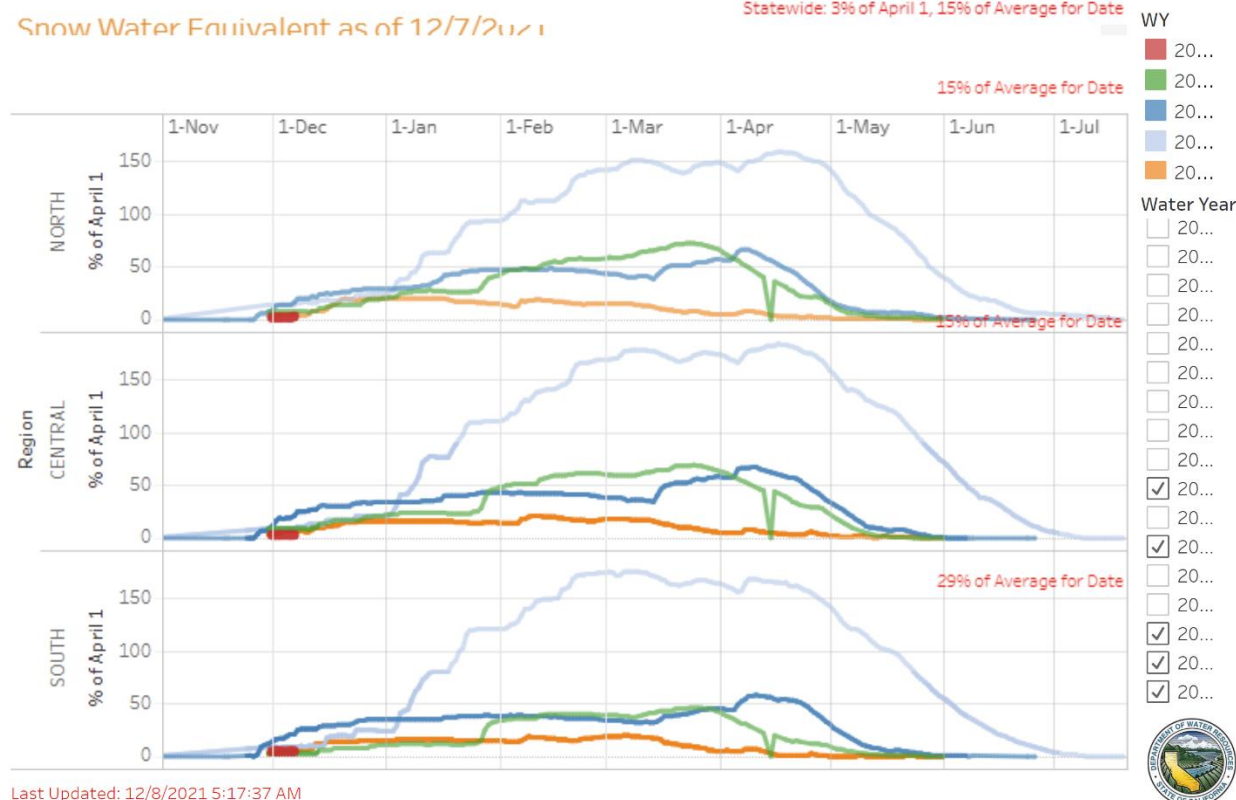


## SNOWPACK WATER CONTENT

### Snow Water Equivalent Dashboard

Snow Water Equivalent as of 12/7/2021

Statewide: 3% of April 1, 15% of Average for Date

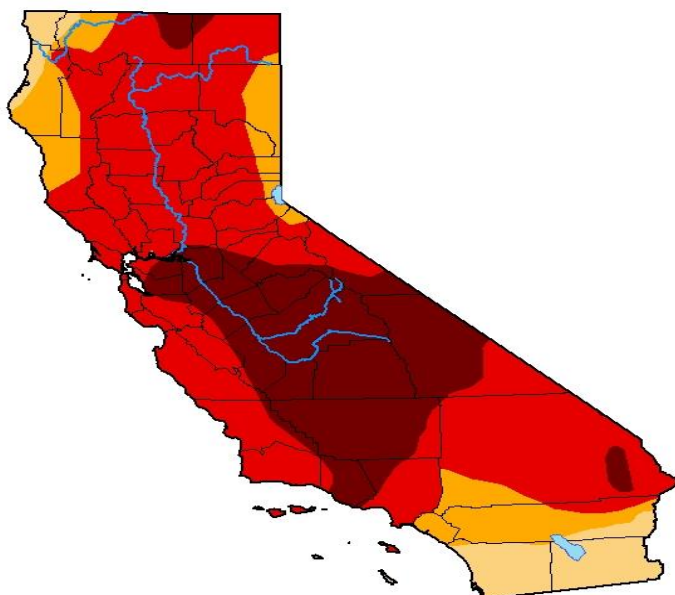




## DROUGHT MONITOR

# U.S. Drought Monitor California

**November 30, 2021**  
(Released Thursday, Dec. 2, 2021)  
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.00	100.00	100.00	92.43	80.28	28.27
<b>Last Week</b> 11-23-2021	0.00	100.00	100.00	92.43	80.28	28.27
<b>3 Months Ago</b> 08-31-2021	0.00	100.00	100.00	95.56	88.37	47.40
<b>Start of Calendar Year</b> 12-29-2020	0.00	100.00	95.17	74.34	33.75	1.19
<b>Start of Water Year</b> 09-28-2021	0.00	100.00	100.00	93.93	87.88	45.66
<b>One Year Ago</b> 12-01-2020	3.46	96.54	75.03	48.19	19.36	0.00

Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

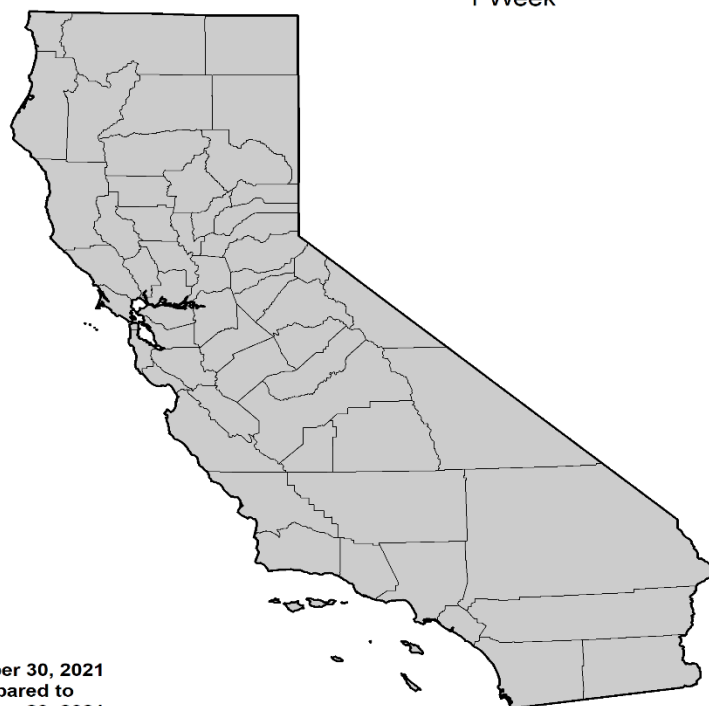
Author:

Richard Heim  
NCEI/NOAA



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

## U.S. Drought Monitor Class Change - California 1 Week



November 30, 2021  
compared to  
November 23, 2021

[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



5 Class Degradation
4 Class Degradation
3 Class Degradation
2 Class Degradation
1 Class Degradation
No Change
1 Class Improvement
2 Class Improvement
3 Class Improvement
4 Class Improvement
5 Class Improvement

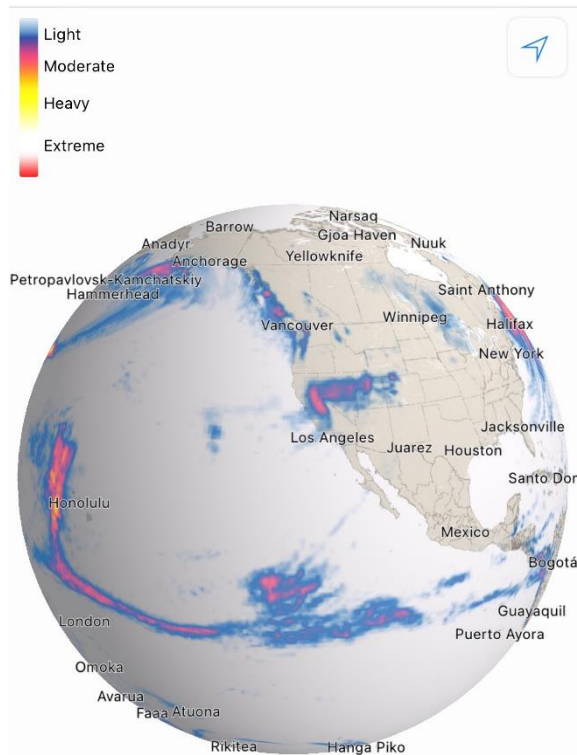
The US Drought Monitor release their statistics with a 1-week lag to this report. Over the past week there has been a 0% change in drought conditions in California.

The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC.





## CURRENT SATELLITE IMAGERY



Ref. Dark Sky

The current satellite picture shows a storm system over the San Francisco area bringing moisture and precipitation to the Northern Central Valley region. Precipitation is expected to reach as far south as the Los Angeles region today moving eastwards over the Sierra Nevada.

There is a further frontal system developing over the NW Pacific which should bring further precipitation to the region early next week including the Central Valley and moving once again as far south as the Los Angeles region.

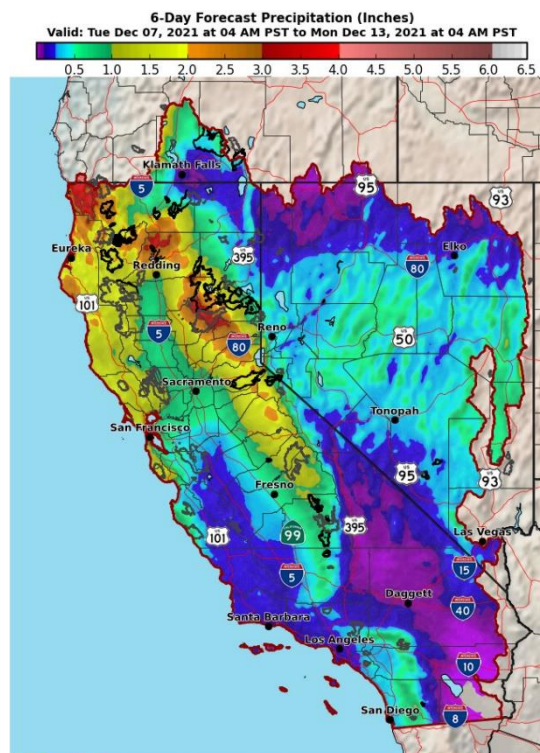
There is very little moisture inflow from the South into Southern Arizona and New Mexico

Monsoonal effects are not prevalent on this satellite picture at present as it appears this moisture inflow from the South may have ceased for the year. Our long-term models are still showing the potential for greater precipitation to reach the SW and Western US this winter.

## 10 Day Outlook

Overall forecast is in good shape for the weekend, with another system approaching from the Pac NW Sunday into Monday. 12Z runs of both the EC and GFS have come in with slightly higher totals for the Sunday evening and overnight period, giving a bump up to confidence in the system. Expect the focus of precipitation to be during the daytime and evening hours along the coast, shifting southward and inland overnight into Monday. The GFS has trended towards a bit wetter moisture plume, and this combined with favorable jet dynamics has led to the increased QPF. In addition, both deterministic models sped up the frontal passage by just a bit, and the afternoon update reflects that change.

Reference: National Weather Service / California Nevada RFC / Sacramento CA



National Weather Service  
CNRFC - Sacramento, CA  
Created: 12/07/2021 12:13 PM PST

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## WESTERN WEATHER DISCUSSION

Pacific weather systems brought 0.5-3.0 inches of precipitation to coastal portions of Oregon and Washington, with 5 inches or more falling in non-drought areas of northwest Washington. Half an inch to locally 2 inches also fell over parts of the northern Rockies, while locally up to half an inch occurred over a few parts of the southern Rockies. Otherwise, much of the West was dry. Drying soils and mounting 3-month precipitation deficits prompted expansion of moderate to extreme drought in parts of New Mexico. November 28 USDA reports had 81% of New Mexico's topsoil short or very short of moisture. Otherwise, no change occurred to the vast areas of moderate to exceptional drought which covers the West.

Reference:

Richard Heim, NOAA/NCEI

Denise Gutzmer, National Drought Mitigation Center



## WATER NEWS

### CALIFORNIA WATER NEWS

**In shocking decision, drought-stricken parts of California will get 0% of water they've asked for**

California's drought conditions have become so extreme that the state government announced it wouldn't be allocating any of the requests for water it received from districts across the state.

A kayaker fishes in Lake Oroville as water levels remain low due to continuing drought conditions in Oroville, Calif., on Aug. 22, 2021. Ethan Swope/ AP

California's Department of Water Resources (DWR) announced this week that it would only allow enough water for health and safety measures, like for drinking and bathing. Any additional water supply requests for things like irrigation, landscaping or gardening would not be granted.

California's State Water Project (SWP) provides water supply to 27 million people and 750,000 acres of farmland, but it's just one source out of the 29 districts it serves. About 30 percent of water from the SWP is currently used for irrigation, mostly in the San Joaquin Valley, and about 70 percent is used for residential, municipal and industrial purposes.

"The conditions on the State Water Project are unlike anything we've ever seen before. While we certainly hope they improve, we must be prepared for the reality that the state project may not have any water to allocate in 2022," said Adel Hagekhalil, general manager of the Metropolitan Water District of Southern California.

The decision came as California experiences unprecedented droughts, as the National Integrated Drought Information System (NIDIS) considers 100 percent of the state to be in a state of moderate drought, while 47 percent is in exceptional drought conditions, the most severe ranking NIDIS has.

The conditions have only worsened as California has experienced a record-breaking wildfire season and multiple heatwaves.

These extreme weather conditions have had serious impacts on local water supplies, with NIDIS also recording that California's Lake Oroville is below the previous record low level. Most of the 10 largest reservoirs in Northern California are below the 25th percentile levels for this time of year.

California is attempting to solve its water crisis by leveraging the resources it still has, with the state's DWR saying it's, "capturing and storing" water whenever possible in Lake Oroville and in the San Luis Reservoir to increase supplies for next year. Along with prioritizing water supply for the health and safety of California's residents, DWR said it



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will also maintain enough supply for, “protecting endangered species and meeting senior water right needs.”

DWR also said it plans to continue its aggressive conservation efforts and storage in anticipation for a third dry year and potentially a dry 2023 too.

Original Article: [The Hill by Shirin Ali](#)

### **\$63 million wetland restoration could be a blueprint for how California adapts to climate change. But it's taking forever**

An ambitious project to restore tidal wetlands on almost 1,200 acres of delta farmland has just completed its first phase, and the hoped-for transformation already is flourishing: River otters, rare seabirds and a single black bear have all returned to once-drained-out pastureland called Dutch Slough — results that hold promise for similar efforts toward many California environmental goals, including storage of greenhouse gases.

In the Contra Costa County town of Oakley, the restored Dutch Slough wetlands are bordered by housing developments and dairy farms, with Mount Diablo towering in the distance. When completed, the \$63 million restoration will be the largest of its kind in California, creating habitat for endangered salmon and other wildlife in a blueprint for how the state can become more resilient to climate change.

The state Department of Water Resources, which leads the Dutch Slough Tidal Marsh Restoration Project, hopes it will be a model for many other restorations, with a goal to restore 30,000 acres of the Sacramento-San Joaquin River Delta's original 360,000 acres of wetlands long lost to farms and housing.

At a time when worldwide greenhouse emission-reduction targets aren't being met, scientists are looking at ways to adapt to global warming; wetland restoration in San Francisco Bay and the sprawling delta holds a key strategy. Wetlands lessen destruction from flooding caused by storms and sea level rise, and also can recharge drought-starved aquifers, since they hold and release water gradually.

They also perform a key role in absorbing carbon from the atmosphere and storing it long term.

“You can put carbon in forests, where it can get burned,” said Dennis Baldocchi, professor at UC Berkeley's Department of Environmental Science, Policy and Management. “But if you put it in wetlands, it can stay a very long time. The limitation is we have a limited amount of land area we can convert.”

Baldocchi is one of several scientists now using Dutch Slough to study carbon sequestration in freshwater tidal marshes. Last week, he was joined in the field by U.S. Geological Survey ecologist Scott Jones, who is doing similar research.

Jones tottered through the wetlands in hip waders, holding high a cuboid plastic container tall enough to enclose the towering tule plants. He demonstrated how the container can be used to trap gases and then be attached to a greenhouse gas analyzer



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that measures how much methane and carbon dioxide that specific square foot of marsh is emitting or sequestering.

"Finding these ecosystems that can store carbon over the long term helps meet our goals for greenhouse gas reduction," said research ecologist Karen Thorne of the U.S. Geological Survey.

Restoration began in 2018, when excavators tore into the silty soil to create channels that mimic natural tidal zones. Conservation groups planted an assortment of native plants and trees and allowed them time to establish roots before levees were breached this fall. Now over half of the former grazing land has been converted into a maze of curving waterways under a wide expanse of yellow-tipped tule.

The catch is the slow pace of the overall project: The remaining restoration is not expected to see completion until roughly 2025 — more than two decades after the property was purchased in 2003. Many observers worry about how long it takes to surmount the bureaucratic steps to make such projects happen.

"It's the same permitting process as a housing development, even though we're creating better habitat than was here before," said Molly Ferrell, senior environmental science specialist at the state Department of Water Resources.

Especially with wetlands' role as a natural barrier to sea level rise, it's important that the state move quickly, said Dylan Chapple, senior environmental scientist at the Delta Stewardship Council, which administers grants for Baldocchi's research.

"Every year matters," said Chapple. "Wetlands are a really critical nature-based infrastructure. The sooner they can get in the ground, the more they can persist." Without intervention, the delta is expected to see large-scale inundation by 2100, he said.

Original Article: [San Francisco Chronicle by Tara Duggan](#)

### **Groups Urge CA to Harness Blue Carbon in Climate Strategy**

Coastal protection groups are pressing California to prioritize so-called "blue carbon" ecosystems in the fight against climate change.

Dozens of groups have sent a letter to the head of the California Natural Resources Agency - asking for action to protect existing wetlands and near-shore areas, and restore those that have been degraded.

Gilly Lyons, an officer with the Conserving Marine Life in the United States program of The Pew Charitable Trusts, is among those who signed the letter.

"The request from the signers is to protect biodiversity, to store and sequester carbon, and to mitigate the effects of climate change that we're already living with," said Lyons, "things like ocean acidification, storm surges, coastal flooding, etc."





The letter comes during the public comment period for a draft of the CNRA's new "Natural and Working Lands Climate Smart Strategy," to be finalized early next year.

Last year, Gov. Gavin Newsom issued an executive order requiring state agencies to act to accelerate the natural removal of carbon and build climate resilience, especially in lower-income communities.

Angela Kemsley is conservation and communication manager at the group WILDCOAST, which is currently restoring two lagoons in San Diego County. She said natural features like eelgrass beds are important tools in climate mitigation.

"They're actually much more efficient at storing this carbon than land-based plants," said Kemsley. "And so, they're able to take a bunch of carbon out of the atmosphere, store it in the soil - and that helps to fight climate change."

According to the U.S. Fish and Wildlife Service, 90% of California's historic wetlands have been drained for agriculture and development over the past century.

Original Article: [Public News Service by Suzanne Potter](#)

### **Much needed rain on the way for Southern California**

Southern California residents can expect cool weather and on and off showers into next week, forecasters said.

San Bernardino County had some of the most precipitation Tuesday morning, but it was still relatively light and short-lived.

Yucaipa Ridge saw only 0.08 inches, the second-highest in the region. Mount San Jacinto came just behind at 0.07 inches with Garden Grove in Orange County rounding out the list at 0.04 inches, according to the National Weather Service.

A stronger storm system is expected Wednesday night and through Thursday, forecasters said.

Projected rain totals for the coast and valley, with the lowest ones in Orange County, are estimated between 0.10-0.50 inches. The eastern San Gabriel Mountains could receive around a half-inch.

Los Angeles County is already expected to have relatively light rainfall with estimates of 0.14 inches in Woodland Hills and 0.22 inches in Pasadena.

Original Article: [Press Enterprise by Caitlin Antonios](#)

### **Californians cut water use 13% in October; still behind goal**

Californians stepped up their water conservation in October, a move made easier by a massive storm that dumped record rain in some parts of the state but still wasn't enough to combat the drought. Collectively, people reduced their water use by 13.2% compared



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to last October, a major jump from prior months when water conservation lagged. Still, total water usage is down just 6% since July compared to the same period last year, far short of Gov. Gavin Newsom's 15% goal. The calls for voluntary conservation follow California's second driest year on record and what's feared to be another dry winter as the state remains gripped by drought.

"The important part here is to continue to prepare for worst-case scenario," said E. Joaquin Esquivel, chair of the State Water Resources Control Board. Most of the state's reservoirs are still well below historic averages. That prompted the state's Department of Water Resources to tell water districts last week they likely won't be getting any of the supply they've requested from the state for 2022 except what's necessary for health and safety.

Newsom, a Democrat, has avoided mandatory statewide water restrictions but his administration has urged local water districts to bolster supplies. Next month, the state water board may prohibit certain "wasteful" actions such as outdoor watering during storms. In October, the storm and cooler weather reduced how much water was being used for outdoor activities, which can account for up to 80% of all use, said Charlotte Ely, who presented the conservation numbers to the board. "There is still a lot of work to do to reach the governor's call for 15% savings from that 2020 baseline, but we're making better progress," she said.

Original Article: [Lexington Herald Leader by Kathleen Ronayne, Associated Press](#)

### Californians Could Soon Be Fined For Using Too Much Water

The California State Water Resources Control Board could begin imposing fines in the near future for California residents who fail to conserve water. The move comes in light of historically hot and dry weather in the months of November and December.

The State Water Board released a draft on November 30 to propose fines of up to \$500 for residents who waste water. The fines would reportedly incur daily for repeat offenders. Should the propositions be approved, they would begin in January 2022.

They would however be up to the discretion of cities and local water agencies.

A list of the proposed fines includes:

- excessive sprinkler runoff
- hosing off the driveway
- watering lawns within 48-hours of rain
- washing cars without a shutoff nozzle
- use of water in ponds/fountains that do not recirculate

This news comes just months after Governor Gavin Newsom declared a statewide drought emergency declaration. The Newsom administration reports that Californians



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have failed to conserve water at a 15% rate compared to 2020, actually conserving just about 5% of that total.

“I feel like if we’d just do our part as a community, we’d be fine,” said Azusa resident Kenia Duenas.

These emergency water restrictions, very similar to those implemented in 2014 – the last time California was exposed to such extreme drought conditions, would also expire after nine months and only occur on an emergency basis.

According to The Mercury News, the Department of Water Resources attempted to make the 2014 changes permanent in 2018 as well, getting shut down by local water agencies who stated the move would violate their water rights.

The water board is prepared to take public comment on these proposed changes on December 23, with a vote set to take place on January 4.

For California residents like Toby Pruett, from Azusa, this is an overreach from the government, “I don’t think people really care what the governor or anyone else says right now,” he said. “They’ve over-stepped on so many things. It’s like really, now you’re gonna come up with a \$500 fine for the drought?”

Original Article: [CBS Los Angeles by CBSLA Staff](#)

### **California Water Conveyance Upgrades Receive \$100 Million in Support**

The California Department of Water Resources (DWR) is supporting upgrades to water conveyance facilities throughout the state. A \$100 million funding program was recently announced to restore capacity to areas of the California Aqueduct, San Luis Canal, Delta-Mendota Canal, and Friant-Kern Canal. Collectively, the four canals help provide water to nearly three million acres of farmland and 130,000 acres of wetlands.

“Fixing these canals is an important foundational piece to ensure a reliable and climate resilient water supply for California,” DWR Director Karla Nemeth said in a press release. “It enables us to move water during very wet conditions, which will be essential to adapting to more extreme weather. Restoring capacity in our existing infrastructure provides a critical link in diversifying water supplies by supporting groundwater replenishment throughout the Central Valley and water recycling projects in Southern California. It’s a prudent investment in our water future.”

The funding program to improve water conveyance through California is aimed at addressing issues of subsidence that have reduced overall water carrying capacity. Up to \$37 million will be provided to the State Water Project’s California Aqueduct and San Luis Canal during the first year of the program. The Friant Water Authority is receiving \$39.2 million to help support conveyance within the Friant Kern Canal. The San Luis Delta-Mendota Authority is also receiving \$23.8 million for improvements to the Delta-Mendota Canal. Funding for the projects is being made possible through the 2021-22 State Budget Act, which also authorizes an additional \$100 million for the next fiscal year.



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The funding support will be used for the planning, permitting, and construction of rehabilitation projects to address subsidence. Recipients will also be working to assess future risks and develop plans for mitigating continued subsidence moving forward. Once completed, the water conveyance upgrades will help restore up to 50 percent of the overall capacity of the canals over the coming decade.

Original Article: [AG Net West by Brain German](#)

### **Why is California's 'More Water Now' Ballot Initiative Already Under Attack?**

California has a long history of squandering its precious water.

In 2014, California voters approved \$7.12 billion in bonds for state water supply infrastructure projects. Of that, \$2.7 billion was designated for water storage projects. But nearly 8 years later, there are no new dams or reservoirs, or other water storage projects to collect and store California's winter runoff. And California is in yet another drought.

The state officials in charge bow to environmentalists by allowing half of the state's water to flow out to the ocean, leaving farmers and local governments to fight for the other 50%. The state uses about 47.5 percent of its developed water supply for the environment, including wild river flows, managed wetlands and wildlife preserves, habitat and water quality control for fish, and required Delta outflows, according to the Department of Water Resources. Water is diverted in times of drought and times of plenty to the Sacramento-San Joaquin Delta, leaving much less for irrigation or for Californians to drink.

Approximately 10% of the remaining water is used by cities, and 40% is used by agriculture. Yet it is always urban use and agriculture forced to conserve.

This is why the Water Infrastructure Funding Act of 2022 was written and has begun to qualify as a state ballot proposition. "More Water Now," as it is known, will be a nonpartisan initiative constitutional amendment.

When approved by voters, this initiative will accomplish the following objectives:

- Allocate two percent of the state's general fund to use for projects that increase California's annual supply of water to farms and cities.
- Permit up to half of the 2% allocation to pay principal and interest on construction bonds.
- Give priority to underfunded projects already approved by voters in Prop. 1 (2014).
- Prioritize projects to deliver abundant and affordable water to underserved communities.
- Funding does not expire until the supply capacity of new projects provides five million acre feet of new water per year for California's farms and cities.
- Funding for conservation achieving up to one million acre feet per year of water saved.



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- Allocate funds based on an all-of-the-above strategy, allowing Californians to repair and upgrade aqueducts, dams, water treatment plants, build off-stream reservoirs, expand existing reservoirs, invest in wastewater reuse and desalination plants, runoff capture, and aquifer recharge and recovery.
- Streamlines CEQA and the Coastal Act. Redefines “beneficial use” to include cities and farms.
- Provides funding for legal defense of projects approved by the California Water Commission and other water agencies against frivolous lawsuits designed to delay the completion of projects.
- Includes funding for R&D of new technologies to deliver safe and affordable water.

California needs all of the above. Yet once again, because the Legislature, Governor and unelected state water board officials are not doing what is best for the people, the people will have to do what is necessary and vote on an initiative enshrining water use in the State Constitution.

Recently the San Jose Mercury News editorial board published a scathing editorial denouncing the initiative, and claiming it is “a water grab” to benefit “Big ag” and Central Valley Republicans.

“Say this for Central Valley Republicans and Big Ag backers: When it comes to proposing water projects that benefit Central Valley farmers at the expense of urban users and the state’s fragile environment, they are as persistent as an annoying, leaky faucet,” the editorial board said.

The More Water Now proponents are not just “Big ag” or Republicans, because everyone in California needs water. And notably, “Big ag” producers grow food, which everyone eats.

“The initiative is supported by a bipartisan and growing coalition of Democrats and Republicans, water agencies, cities, counties, business associations, community groups, construction workers, homebuilders and environmentalists that need the state to invest in water supply projects,” More Water Now explained in a rebuttal.

Perhaps the SJMN editorial board forgot that Proposition 1, the Water Quality, Supply, and Infrastructure Improvement Act of 2014, authorized the \$7.12 billion in general obligation bonds for state water supply infrastructure projects: public water system improvements, surface and groundwater storage, drinking water protection, water recycling and advanced water treatment technology, water supply management and conveyance, wastewater treatment, drought relief, emergency water supplies, and ecosystem and watershed protection and restoration.

The problem is that of the \$7.12 billion, \$2.7 billion dollars was specifically designated for new water storage projects, but thus far, hasn’t been used. As the California Department of Water Resources bond oversight shows, no water storage has been





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added, but ecosystem and watershed protection and restoration projects have been completed.

Original Article: [California Globe by Katy Grimes](#)

### **Dahles, officials survey damage from Mud Creek debris threatening McCloud water supply**

A group of state and federal officials, including the Republican husband and wife team of Sen. Brian Dahle and Assemblywoman Megan Dahle, came to McCloud on Nov. 29 to see the damage from the Mud Creek mud flows that have been endangering the town's water supply.

The Dahles were joined by Siskiyou County Supervisor Brandon Criss, U.S. Forest Service Regional District Ranger Carolyn Napper, a representative from Hancock Forest Management and other dignitaries.

"This situation is very concerning, and I hope to work with all stakeholders to ensure McCloud's water reliability is maintained. The district is doing some creative short-term shoring-up and I applaud them for those efforts, but it needs a long-term solution," Sen. Brian Dahle of Bieber said.

A cloud of dust seen rising from Mt. Shasta last Saturday brought another scare for McCloud residents, sending them to make calls to officials whether this was related to activity on Mud Creek.

Investigating officials reported there was no further damage, mud flows or changes in the water coming through the channels that were previously dug out to prevent flooding damage to the water pipeline and Lower Elk Spring House.

Nonetheless, the emphasis of the Nov. 29 tour by McCloud Community Service District General Manager Amos McAbier was to show the infrastructure that is in danger of being damaged or wiped out by future mud flows, including the spring house, the 70-year-old aerial pipeline that crosses the Mud Creek channel and the work the service district has done. They also spoke of what still needs to be completed to better protect and save the town's water source.

Original Article: [MTShasta News by Shareen Strauss](#)

### **'Snow drought' causing concern among experts, businesses in Central California**

As we enter the winter months during yet another dry year, experts are seeing a slower than normal start to snowfall. According to the National Oceanic and Atmospheric Administration (NOAA) this is the 15th driest year to date over the past 127 years.

A map from the California Data Exchange Center shows the snow water content for Central California. The current period is well below the average and even drops below last year's average.

This affects the state year-round. But it is still early and the National Weather Service (NWS) is hopeful for a good snow season.



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"We still have a lot of winter left to go but right now, everything is trending in that lower-than-normal snowpack year and precipitation in general," explained Jerald Meadows, chief meteorologist at the National Weather Service.

Meadows noted that California weather is notoriously fickle but given the past couple of days which have been a bit colder, they are hopeful the lower temperatures and fog will allow them to catch up on snowfall closer to January.

"We are expecting to see a little bit more activity with winter storms. As we see the cold storms come in, there is going to be snowfall in the mountains, so there should be some for people to get up and see. It just not be as much as they are used to in previous years," added Meadows.

This is a cause for concern among area businesses that are at the mercy of Mother Nature. With skiing, tubing, and snow park attractions, one of those businesses is the Alta Sierra Ski Resort.

"We need a good amount of it, just to open. Even if we get a foot, we can't open. We need two feet and then we gotta pack it and then put a nice little powder on top of that," said one of the owners, Garro Ellis. "But the good thing about our resort is that it is fairly clear so we don't need like six feet of snow like other resorts."

Ellis adds not only does this affect them but other area businesses like rafting companies that depend on the water from snowfall. Not to mention the economy as a whole.

"From restaurants to hotels, to everything you come visit at a resort, even the cabins that are rented out there. They are losing out. They want us to open, everyone is cheering for us but it is just a matter of getting down to our knees and praying to God to send us a little snow."

At the moment they still don't have an opening date as standing by for snowfall is one of the challenges they face.

"We have seen it come, we have seen it go, and we would love to just say 'okay we are going to plan to open on December 24th.' It is impossible to know that."

Ellis said they are all hoping that the opening date is sooner rather than later but the message right now is onward and upward.

And in response to California not having any snow, Meadows said it is too early to say right now, but they are also hopeful.

Original Article: [23 ABC by Vania Patino and Anthony Wright](#)

### **Water providers looking into other sources for customers**

Area water providers are looking to their reserves and other sources for water next year, as they can not expect to receive supplies from the State Water Project.

In light of continuing drought conditions, the state Department of Water Resources announced this week that contractors can expect 0% of their allocations next year.

"The 0% allocation doesn't come as a shock," said Dwayne Chisam, general manager of the Antelope Valley-East Kern Water Agency.

The 2021 allocation was also greatly diminished due to drought conditions, to 5%.



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AVEK is the largest of the three state water contractors in the Valley. It provides supplemental supplies to retail water providers, such as Quartz Hill Water District and Los Angeles County Waterworks District 40.

Over the past 10 years, the Agency has been developing and using water banking to store reserve supplies under ground. During the wet years between 2017 and 2019, AVEK was able to store close to 100,000 acre-feet of water for use during dry years, Chisam said.

An acre-foot is 325,851 gallons, or approximately the amount of water a typical Antelope Valley household used in one year before recent droughts reduced usage.

The agency tapped into those banked reserves to make up for shortages in 2021, and plans to use about 20,000 to 25,000 acre-feet of the remaining approximately 70,000 acre-feet next year to meet demands next year, Chisam said.

AVEK officials predict the demand for their water will be about 42,000 acre-feet next year, without accounting for the existing voluntary 15% conservation request from the governor.

Palmdale Water District is also a state water contractor. State Water Project water makes up about half of its supplies in an average year, along with groundwater and runoff collected in the reservoir behind the Littlerock Dam.

In 2021, the District was able to use water dedicated to it from previous exchanges with other providers, as well as somewhat increased groundwater pumping and moderate conservation by its customers, Resource and Analytics Director Peter Thompson II said. "We still had a gap of close to 3,000 acre-feet," he said, which required purchasing water from another State Water Project contractor, at an extra cost to the District.

In planning for 2022, the District is evaluating the supply and demand sides of the equation.

"With a zero allocation, it really makes it much more likely that we will end up having some sort of mandatory conservation in 2022," Thompson said.

Unlike AVEK, the District does not have access to banked reserves. However, it does have a sort of virtual water bank in the form of water owed them from previous exchanges with other contractors, he said.

The problem with that: because so little water is available, those other contractors may not have the water to give, he said.

The 0% is an initial allocation; the number may change if weather conditions improve.

"I definitely hold out a lot of hope for that," Thompson said, with the wettest months traditionally in January and February.

Original Article: [AV Press by Allison Gatlin](#)

### **Marin water pipeline plan draws environmental lawsuit**

A Marin environmental group is suing to block a proposed water pipeline on the Richmond-San Rafael Bridge, citing the potential harm to endangered fish.



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The plaintiffs also allege the Marin Municipal Water District project could open the door to tens of thousands of new homes being developed in the county.

The Fairfax-based North Coast Rivers Alliance filed the lawsuit on Thursday in Marin County Superior Court.

“The question is, where are you going to get the water from? We’re saying, don’t take it from the delta,” said Frank Egger, the organization’s director. “Do you sacrifice salmon for consumptive uses in Marin County?”

The court filing asks a judge to halt the pipeline project until the water district conducts a full environmental review. The district says the project is exempt from a full review because it is an emergency drought project.

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The litigation also highlights a debate that has played out in Marin County for decades: whether more water will contribute to growth, a prospect that has often led residents to resist to new water supply projects.

Egger said Friday that he is concerned about the “massive urbanization of Marin County” under state housing mandates. High housing prices and studies showing the state has not built enough housing in recent years have resulted in state pressure on local officials to allow more housing.

Under a state directive, Marin County is required to accommodate about 14,000 new homes from 2023 to 2031.

In Egger’s court filing, he said the pipeline could supply enough water to support the development of 15,000 to 30,000 new homes. Egger has also called on the district to adopt a temporary moratorium on new water meter hookups.

Original Article: [Marin Independent Journal by Will Houston](#)

## US WATER NEWS

### **Diminishing groundwater poses serious challenges in the Paso del Norte region**

Sluggish waters flow and pool beneath the Borderland, offering water for millions of people in Far West Texas, Northern Mexico and Southern New Mexico.

From Las Cruces to Ciudad Juárez to El Paso, the cities rely on pumping that water out of the ground to survive. Despite efforts to conserve groundwater, the cities are pumping faster than the aquifers recharge.

Climate change is drying up the Rio Grande, making the river a less reliable source of water for the region. That’s made the area’s urban users and farmers alike rely on the region’s groundwater as a fallback option when the river can’t provide.

The region’s shared aquifers also face growing populations and decades of overexploitation. Water experts said the border communities need to cooperate and protect the aquifers from overexploitation and pollution — a prospect complicated by the border’s environment.



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Groundwater is complicated — it's hard to describe, tough to measure and the water quality varies across the region.

"Unlike surface water, where we can see when we're having floods or droughts, groundwater is invisible," said Sharon B. Megdal, the director for the Water Research Center at the University of Arizona. "A lot of the border communities depend on this pumped water."

Surface water is managed by treaties, but there's no current formal agreement on groundwater management between the United States and Mexico on its shared aquifers, Megdal said.

"It's a hard puzzle. But if we don't do something, then communities run the risk of overusing their water resources (and) having extraction become much more expensive, because you're going deeper or having the quality change," Megdal said.

Geology, hydrology and wells

In past geologic times, rivers or lakes could push into bedrock formations by the shifting of tectonic plates beneath the Earth's crust. Eventually covered by land, these "fossil" rivers are the basis of the Hueco and Mesilla bolsons, which sit underneath Texas, New Mexico and Chihuahua. Those underground pools are recharged by rainfall that streams off the mountains.

The geologic formations creating the aquifers stretch for miles, across counties, states and the border.

The Hueco Bolson is about 200 miles long and 25 miles wide beneath Texas and into Chihuahua; it has a maximum thickness of 9,000 feet deep. Only the top several hundred feet has fresh water while much of the other water is brackish, or somewhat salty, and the lower portions are extremely salty.

The Mesilla Bolson has a maximum thickness of 2,000 feet, extends 62 miles long and four miles wide under New Mexico and Chihuahua. The two bolsons have little water flowing between one another and are viewed as separate systems.

Original Article: [Las Cruces Sun News by Damien D. Willis](#)

### **El Paso pushes for solutions to groundwater challenges, at a price**

As climate change has altered El Paso's access to water, the need for increased treatment and transportation of the resource has grown. But those solutions will likely translate to higher costs for utilities and residents alike.

Experts in Texas and beyond think El Paso Water is on the forefront of diversifying the water supply. But warming temperatures and variable precipitation threaten the ability to find cheaper sources of water to treat and use, whether from the Rio Grande or from underground aquifers.

Cities across the Southwest are expected to use groundwater supplies faster in the next 50 years to compensate for less water on the surface, said Robert Mace, the executive director of the Meadows Center for Water and the Environment. Groundwater is already pumped faster than it can recharge.





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“There’ll be higher temperatures, greater evaporation, less soil moisture, which means less runoff, less water in the reservoirs. If there’s less surface water available, then groundwater is going to be the go-to supply,” Mace said. “That can have consequences on the long-term management of local groundwater resources.”

El Paso Water’s 50-year plan looks to increase desalination efforts, purchase additional rights to river water, put water from the surface and “bank” it underground, and pipe water from about 90 miles away from land the utility owns.

The city’s projected growth means pushing for more fresh water through increasingly expensive avenues in the future, El Paso Water CEO John Balliew said.

According to the utility’s estimates, 1 acre-foot (nearly 326,000 gallons) of river water costs \$125 to transport and treat, whereas importing the same amount would cost the utility \$3,000.

El Paso Water already owns land and water rights outside of Dell City about 90 miles away. But Balliew said the utility is focused on more local efforts.

“If we can postpone the importation project for another decade, then that saves money for the customer, because of the expense,” Balliew said.

Original Article: [El Paso Matters by Danielle Prokop](#)

## **Supreme Court turns to science to resolve groundwater dispute between Mississippi and Tennessee**

In an era when most Supreme Court opinions are sharply divided, last week the high court unanimously rejected Mississippi’s claim against Tennessee in a long-running dispute over the groundwater that lies beneath both states in a common aquifer.

The impacts of this case will extend far beyond Mississippi and Tennessee, as states compete with one another over limited water supplies.

When neighboring states fight over shared rivers, the law has been clear for more than a century: They can settle their differences either by negotiated agreements known as “interstate compacts” or they can ask the Supreme Court to divide up the waters through what is known as an “equitable apportionment.”

But until last week, it was not as clear how states should resolve brawls over water when it is found underground in geologic formations known as aquifers.

Mississippi initiated the latest round of this confrontation in 2014 when it sued Tennessee for allegedly stealing hundreds of billions of gallons of groundwater that were once located beneath it.

Mississippi declined to pursue the traditional solutions of interstate compact or equitable apportionment, in part because it did not want to share what it viewed as “its” groundwater.

Instead, it claimed that it owned the water beneath its territory. Further, it claimed that Tennessee owed it at least \$615 million for siphoning water from more than 160 wells in the Memphis area, some just a few miles from the state line.



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Chief Justice Roberts quickly laid those claims to rest, explaining that Mississippi “contends that it has sovereign ownership of all groundwater beneath its surface, so equitable apportionment ought not apply. We see things differently.” This was the first time that the Court clearly held that equitable apportionment applies to interstate aquifers, just as it does to interstate rivers.

In a pointed rebuke, the court dismissed the complaint and declined to grant “leave to amend.” That means Mississippi will have to go back to the drawing board and specifically ask for an equitable apportionment if it wants to limit Tennessee’s pumping. Among other things, Mississippi will have to show by clear and convincing evidence that Tennessee’s wells caused “substantial injury” to Mississippi. That is a stiff burden that many states have failed to sustain in past litigation over interstate rivers.

Why did it take so long for the Court to extend the equitable apportionment doctrine — which dates back to 1906 — to groundwater? Even before that doctrine was developed, mid-nineteenth-century judges viewed groundwater as so “secret” and “occult” that they deemed it impossible to regulate under the laws that applied to rivers.

It was not until the early 1900s that hydrologists had a firm understanding of the close interrelationship of surface and underground water, and not until 1937 that the invention of the high-speed centrifugal pump allowed us to extract significant volumes of groundwater.

But by then, the judicial aversion to groundwater regulation was firmly rooted and many water users had grown accustomed to circumventing laws applicable to surface water by instead pumping groundwater.

In the short term, the Supreme Court has handed Tennessee a victory.

For now, the City of Memphis, through its public utility, can continue to pump some 120 million gallons of abundant, clean, affordable drinking water each day. But at some point, Mississippi or one of the other eight states that overlie the same aquifer might try again before the Supreme Court.

The court’s decree has broad ramifications long term.

First, it signals a victory for the integration of law and science. Beyond equitable apportionment, numerous other legal doctrines have treated groundwater as apart from the water cycle — something one could think of as “groundwater exceptionalism.” The Mississippi v. Tennessee decision is an important judicial acknowledgement of the simple fact that surface water and groundwater are connected.

Original Article: [Commercial Appeal by Christine A. Klein](#)

### **A new bill would allow Colorado River Indian tribes to lease water to other cities**

As water supply continues to raise alarm bells across the American West, Sen. Mark Kelly introduced a bill that would allow central Arizona’s Colorado River Indian tribes to give portions Colorado River shares to other parts of the state.



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The Colorado River Indian Tribes are a single tribal nation made up of more than 4000 Chemehuevi, Mojave, Hopi and Navajo members who live along the river in California and Arizona.

The bill comes amid historic low levels in Lake Mead and as Arizona faces a harsh water future. The state is set to take mandatory cuts to its share of Colorado River water starting in January.

Like other tribes in Arizona, the Colorado River Indian Tribes have a pre-set share of water rights and, under the legislation, could lease some of those shares to other cities. Both Tucson and Phoenix metropolitan areas rely on that water.

In a statement, the tribe said the legislation would protect Arizona, and, for the first time in more than a century, allow the tribe to fully benefit from its water rights.

Original Article: [Fronteras by Alisa Reznick](#)

### **A Future With Little to No Snow? What That Means for the West**

It's that time of year in the West. Winter enthusiasts have started waxing their skis and crossing their fingers for a plentiful snowpack — something that's been in short supply of late. Of course, it's not just recreation at stake, as a sweeping drought still has a hold over a region that needs a lot more water to replenish depleted reservoirs and ecosystems.

While tourists watch the weekend weather reports, scientists also have their eye on winter conditions further ahead.

A new study in Nature Reviews Earth & Environment sounds the alarm about mounting research showing the West is on track for a future where little to no snow becomes a regular winter occurrence. If greenhouse gas emissions aren't reduced, models show significant reductions in snowpack in the West's mountains over the next 35 to 60 years — with far-reaching implications for ecosystems, agriculture and communities.

Erica Siirila-Woodburn, a research scientist at Lawrence Berkeley National Laboratory and one of the study's lead authors, says these findings shouldn't come as too much of a surprise. The April 1 snow-water equivalent — a common measurement to determine the amount of water in snowpack — has already declined by 20% since the mid-1950s.

"This isn't a future problem. This is something that's already happening," she says.

While things aren't great now, they're likely to get much worse during the second half of the century, the study explains.

During the second half of the century, the models predict that most years in the West — from 78-94% of winters — will see little to no snow. California will experience this shift first. Five consecutive years with less than half the usual snowpack could occur as early as the late 2040s, compared to the 2060s for other mountain basins in the West.

Despite these troubling predictions, the issue of snowpack declines still doesn't get enough attention in discussions about climate change, says study co-author Alan Rhoades, a hydroclimate research scientist at Lawrence Berkeley.



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“We wanted to elevate the urgency of snow loss to the level of some other climate impacts that we often see in the news, like sea-level rise, wildfires and extreme weather events,” he says. “We view this as one of the central issues for the Western U.S. in terms of water supply, reliability and ecosystem health.”

A significant decline in winter snowpack is likely to have “multibillion-dollar implications,” the study explains.

The West’s water system was built around reliance on a snowpack that builds up over the winter months and then melts in the late spring or summer, helping to fill reservoirs and irrigate farmland at the driest times of the year.

“The April 1st snow-water equivalent in the Sierra Nevada roughly doubles the surface reservoir storage of California,” explains Rhoades. “Not only that, snow is this bridge between when precipitation starts to shut off — like when we start to stop getting atmospheric rivers or these major storm events that drive precipitation — and then when peak demand occurs.”

But warmer temperatures from our burning of fossil fuels are changing how much snow falls. It’s also leading to runoff occurring earlier in the year, which may not align with when it’s needed most by people — or plants and animals.

Warming temperatures also mean that even less water may reach downstream reservoirs because it’s being absorbed by thirstier soil and plants along the way — further diminishing water supply.

Original Article: [The Revelator by Tara Lohan](#)

### **Hundreds of millions to remove lead pipes flowing into Illinois as city replaced just a fraction of total this year**

Illinois is expected to get \$288 million for lead-pipe replacements and other water-related programs in the coming weeks under the recently passed federal infrastructure law, money that advocates hope will force Chicago and other cities to act on promises to address a major health threat.

Chicago has nearly 400,000 lead-service lines for drinking water, the highest number for any U.S. city. Critics say city officials should have tackled the multi-billion dollar problem years ago, and Mayor Lori Lightfoot last year criticized former Mayor Rahm Emanuel for not replacing the lines, saying the “time for reckoning is now.” Her administration has since overseen only a small number of lead-line conversions after promising hundreds would be completed.

It’s not yet known how much money Chicago <https://www.nevadaappeal.com/news/2021/dec/07/nevada-receive-71-million-water-infrastructure-fun/> will eventually get with the federal windfall, which is the first annual allotment over five years.

With so many homes in need of replacements, it will cost billions of dollars and the initial money won’t be able to solve the problem entirely. However, with hundreds of millions



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expected to flow into the state over the next several years, Lightfoot will be hard pressed to maintain a go-slow approach.

“This is really a once in a lifetime opportunity for a problem that has been plaguing Chicago for decades,” said Erik Olson, a senior strategist at the Natural Resources Defense Council in Washington. “Now that there’s money, there really isn’t an excuse not to do this.”

The NRDC has advocated for cities to recognize lead pipes as a crisis and replace them with any means possible.

Newark, New Jersey, replaced almost 23,000 lead lines in less than three years — nearly all of the pipes that were in need of replacement — but that did not come without a fight. Lawyers for NRDC represented a group of Newark teachers who sued to get the city to get rid of the lead lines.

Original Article: [Chicago Sun Times by Brett Chase](#)

### **‘Double dip La Niña’ ahead**

Kirsten Couevas and her husband, Nathan, are surrounded by cows, chickens and pigs roaming their Sublime Pastures farm in Tomé, just south of Los Lunas.

But the farmers know that what’s under the surface – the soil and water – are what will help them weather extreme drought.

New Mexico farmers and ranchers are preparing as the state heads into a “double dip La Niña” – the second consecutive winter forecasted to have warm, dry conditions.

Kirsten Couevas has worked to build healthy soil with lots of organic matter since she took over the Valencia County farm four years ago.

“The answer is not letting land fallow, it’s cover crops and native grasses,” she said. “You keep that moisture, that will stay in the soil, and then we’re retaining water and we’re fighting drought.” Couevas upgraded the pastures’ irrigation system to leverage limited water allotments and underwhelming precipitation.

Smaller kunekune pigs from New Zealand and Aberdeen Angus cows graze, but don’t tear up the soil.

The Couevas’ use the animals for what’s known as rotational grazing. The method lets pastures rest so grass can regrow and soil can better capture rain or snow.

“We’re not wasting any water,” she said. “It’s all about building armor for the soil to prepare it for the winter.”

Richard Strait, a soil scientist with the U.S. Natural Resources Conservation Service, said regional snowfall is “starting out really slow” this year. “Typically, the second (La Niña) winter is better than the previous one, and that’s what we’re hoping for this year,” said Strait, who manages the agency’s New Mexico snow surveys. “But we’re just not seeing it yet.”

Predicting spring runoff hinges on how much water is in the snowpack and the soil.

The higher those numbers are, the more likely that snowmelt will show up as healthy flows in rivers and streams.





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But there's not much snow on the mountains so far, and soil moisture is depleting rapidly with the continued warm, dry days.

"Those two combined lead to a situation where things in the short term don't look really good for runoff," Strait said.

Snow water equivalent in the Upper Rio Grande Basin was at 73% of normal this time last year.

This year, that number is 21%.

Peak snowpack in the Upper Rio Grande typically occurs in March, so the state has a few months to catch up.

But even a big snowstorm won't be enough to overcome two years of dry winters and less-than-impressive monsoon seasons for New Mexico.

"This drought took some time to develop, and getting over it is not going to be a quick fix," Strait said.

Original Article: [Albuquerque Journal by Theresa Davis](#)

### **Rio Verde water debate postponed until next year**

The Maricopa County Board of Supervisors will wait to address a serious water issue until a new supervisor is named.

However, officials recently announced plans to limit their supply to people and businesses within city limits because of the drought.

As ABC15 previously reported, Rio Verde homeowners are getting their water from the City of Scottsdale.

Maricopa County isn't in charge of providing water but they can approve or deny plans to create a water district.

"When I found this land out here, I thought I found a gold mine," said Ari Phillip, a Rio Verde resident.

"I feel like when I got my land if there was going to be some issue with water, I should have known then," she said.

Still, she's surprised the issue hasn't been addressed.

"To me, it shouldn't be at the point where it's at now...provisions needed to be done before now," she said.

Whether the district gets approved is up to the county. However, it won't be put on an agenda until next year.

When asked about the delay, a spokesperson said sent a statement that reads in part:

"...It is common practice at the county for the supervisor who represents the area in question to take the lead on these types of issues. It's important that folks in this area have representation, but ultimately, the county's role is only as a facilitator since the State of Arizona regulates water and the county is not a water provider or utility."

The board is currently looking to fill the seat left by former Supervisor Steve Chucri, who resigned in November.

Original Article: [ABC 15 by Patrick Hayes](#)

**Nevada to receive \$71 million in water infrastructure funding**

Nevada will receive \$71.6 million in 2022 through the Bipartisan Infrastructure Law for water infrastructure repairs and upgrades.

The letter to Gov. Steve Sisolak from EPA Administrator Michael Reagan urges the state to focus on projects that remove lead from drinking water as well as chemical contaminants.

The funding is part of the \$50 billion in the infrastructure package for water programs and initiatives nationwide.

Reagan's letter said nearly half of the funding is in the form of grants or principal forgiveness loans to encourage investing in underserved communities. The 2022 allocation is the first of five years of water infrastructure investments. According to EPA officials, lead pollution in drinking water is especially dangerous for children and can cause irreversible health effects including decreased IQ and academic achievement.

Original Article: [Nevada Appeal](#)

**GLOBAL WATER NEWS****Tamil Nadu opens shutters of Mullaperiyar dam, irks Kerala**

Tamil Nadu opened nine shutters of the Mullaperiyar dam on Monday night in view of the rising water level in the reservoir and shut down three of them after 10 pm, the Idukki district administration said.

Kerala water resources minister Roshy Augustine rushed to Idukki after many areas in downstream got inundated. "The decision of the Tamil Nadu was irresponsible," the minister said.

The district administration, in a statement, said all nine shutters of the dam, which were initially opened at 7.45 pm by 60 centimetres each, were raised by 120 cm (1.20m) to release 12,654.09 cusecs of water. Thereafter, three of the shutters were shut down at 10 pm and six were kept open to release 8,380.50 cusecs of water, it added.

The Tamil Nadu authorities had raised the shutters to 120 cm after the water level of the dam reached 141.90 feet at 8.30 pm.

This is first time nine shutters of Mullaperiyar are getting opened at night. According to district officials, more than 100 families have been shifted from Idukki.

Augustine said the issue of water being released at night would be raised before the Supreme Court. He added that he will be present at Idukki to help with the rescue efforts and to persuade people to evacuate to camps wherever necessary.

The Mullaperiyar dam, built in 1895 on the Periyar river in Idukki district of Kerala, is operated by the Tamil Nadu government for its irrigation and power needs. Kerala has



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been insisting on building a new dam, citing safety concerns, but Tamil Nadu is against it, saying the present structure is strong.

Meanwhile, the Idukki district administration sounded an orange alert as the water level in the reservoir there touched 2,401.12 feet.

The authorities also expect further rise in water level in Idukki reservoir due to the excess flow of water to it from the Mullaperiyar dam.

They said that if the water in the reservoir rises excessively, one shutter of Cheruthoni dam will be raised at 6 am on Tuesday from 40 cm to 150 cm.

The district collector said that people in the area below the Cheruthoni dam and on both sides of the Periyar should be extremely careful.

Original Article: [Hindustan Times by HTC and Agency](#)

### **‘One size fits all’: how water-sharing rule changes threaten Hunter Valley farms**

Standing on an embankment knee deep in kikuyu grass, Stephen Osborn points over his alluvial plains to his potato crop. He’s expecting to get 12 tonnes of potatoes per acre this year.

Stephen and his twin brother, Roger, are vegetable growers from Pitnacree, a highly fertile agricultural area surrounded by the rapidly expanding New South Wales Hunter Valley city of Maitland.

The Osborn family have grown produce on their 120-hectare (300-acre) farm for the last 80 years, but now fear that potential changes to water-sharing rules could close their business.

These fears have been sparked because the 10-year water-sharing plan that governs irrigators like the Osborns is coming to an end, with a new draft being prepared.

In preparation for its release, the water division of the NSW Department of Planning, Industry and the Environment (DPIE) has notified irrigators of a proposed cease to pump rule which may replace the water-sharing plan.

The current plan covers an extensive area, stretching from the Liverpool Ranges to the Newcastle coastline.

Water managed under the current plan provides flows to the Ramsar-listed Hunter Estuary wetlands. Concerns around environmental water reaching these wetlands have prompted the DPIE to introduce a new ruling to protect environmental flows.

For the Hunter Estuary, the environmental flow starts at the top of the catchment, comes through tidal pool areas and eventually enters the wetlands and then goes out to the ocean. In the replacement plan, the DPIE is seeking to put in place environmental flow rules to ensure enough water passes through the tidal pool to the estuaries during dry times.

Environmental flow rules are normally in the form of cease to pump rulings. In tidal pool water sources, where water levels are based on tides, cease to pump rules are determined by salinity levels. These levels are measured by the electrical conductivity (EC) of water.



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In September this year, the DPIE proposed a cease to pump rule when the EC at Green Rocks, at Duckenfield near Maitland, reaches 4,000 EC, for all irrigators from the Hunter tidal pool.

Original Article: [The Guardian by Sophie Nichols](#)

### **Bushfire-affected community asks for water storage, gets dance lessons**

Residents of a Blue Mountains community that lost 12 houses in the Black Summer bushfires are pleading to be pork-barrelled after they unsuccessfully applied for a grant to secure their water supply, only to become the bewildered recipients of dance lessons. Bilpin residents applied for a Bushfire Local Economic Recovery grant last year to pay for a pump for the creek, a bore for extra water, storage tanks and tar for a sealed parking area for NSW Fire and Rescue trucks to refill with water at the Kurrajong Heights Bowling Club, which is the town's disaster staging area.

But the application was rejected after they attached an incorrect document to the form. Resident Kooryn Sheaves said the group rang Resilience NSW after they identified their error and asked if they could amend their application, but were told it was too late.

So they were dismayed to learn recently that a community group from the unburnt side of the mountains had been granted \$300,000 to provide dance lessons in their town, through a separate process - the Bushfire Community Recovery and Resilience Fund (BCRRF).

Peppercorn Inc, a not-for-profit agency of the Hawkesbury City Council, is providing the classes in Bilpin, Wiseman's Ferry, Richmond and Colo Heights, to foster connection and build community resilience.

Ms Sheaves said the project did not appear to have met the funding application guidelines which stipulate that grants will not be delivered to projects that supplement the core business of the lead organisation, and nobody in the community had asked for them.

"The community was absolutely horrified to be landed with these dance lessons," she said.

"It's important that we look after our mental health, but to do that we need community-driven responses. We desperately need roadside water storage at our disaster management areas to make us more resilient in bushfires."

Documents obtained by Bilpin residents under Government Information (Public Access) laws show that a panel of Resilience NSW officers determined in February that the dance classes were "meritorious" but could not be funded under the BCRRF. However, Resilience NSW later went on to award Peppercorn the highest amount payable under that scheme.

Original Article: [The Sunday Morning Herald by Harriet Alexander](#)



***Note the attachment is not an inducement to trade and Veles Water does not give advice on investments.***