Veles Water Weekly Report

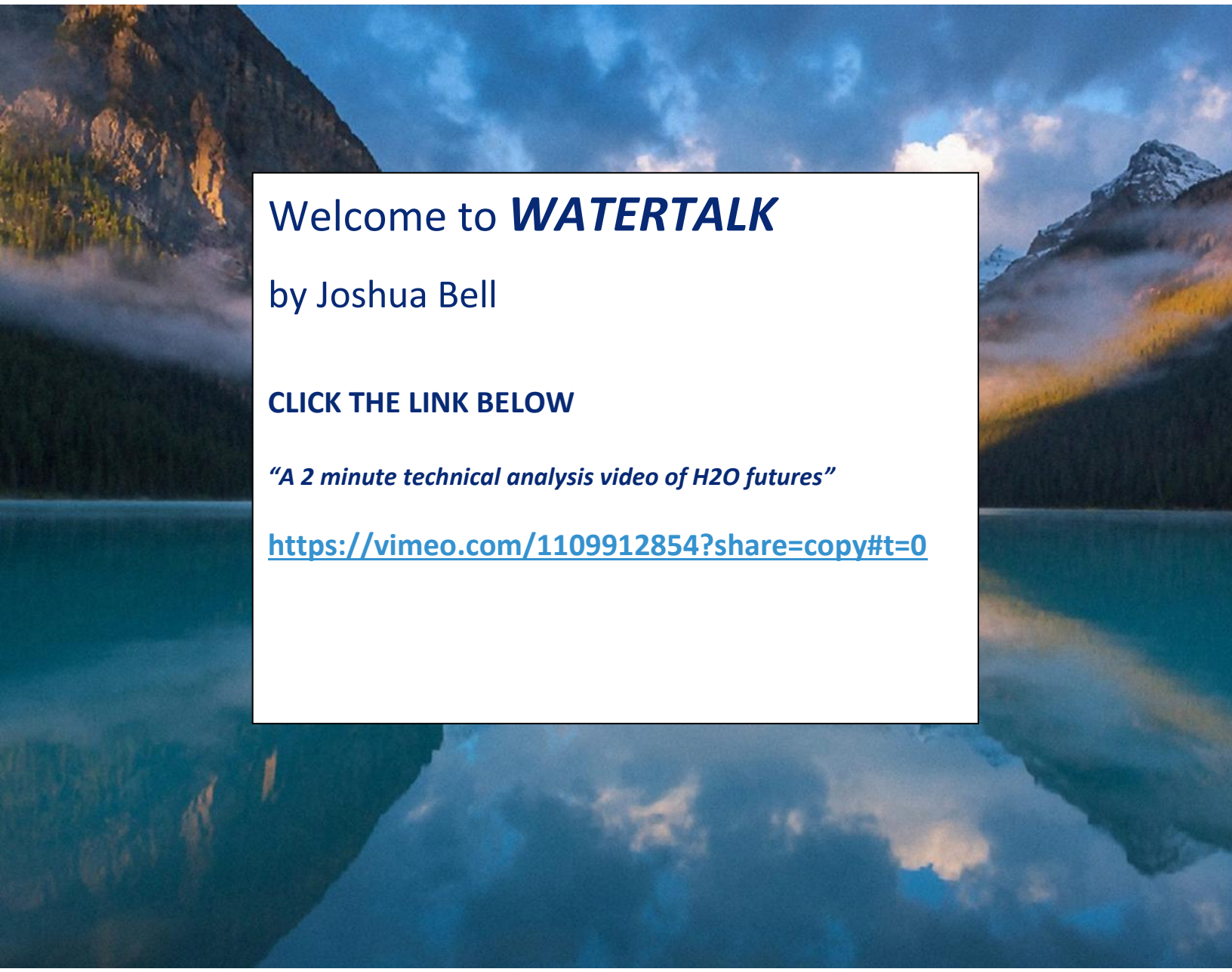
August 14th 2025

Authors:
Lance Coogan - *CEO*
Joshua Bell - *Research Analyst*

research@veleswater.com
+44 20 7754 0342

Veles Water

WATER FUTURES MARKET ANALYSIS



Welcome to ***WATERTALK***

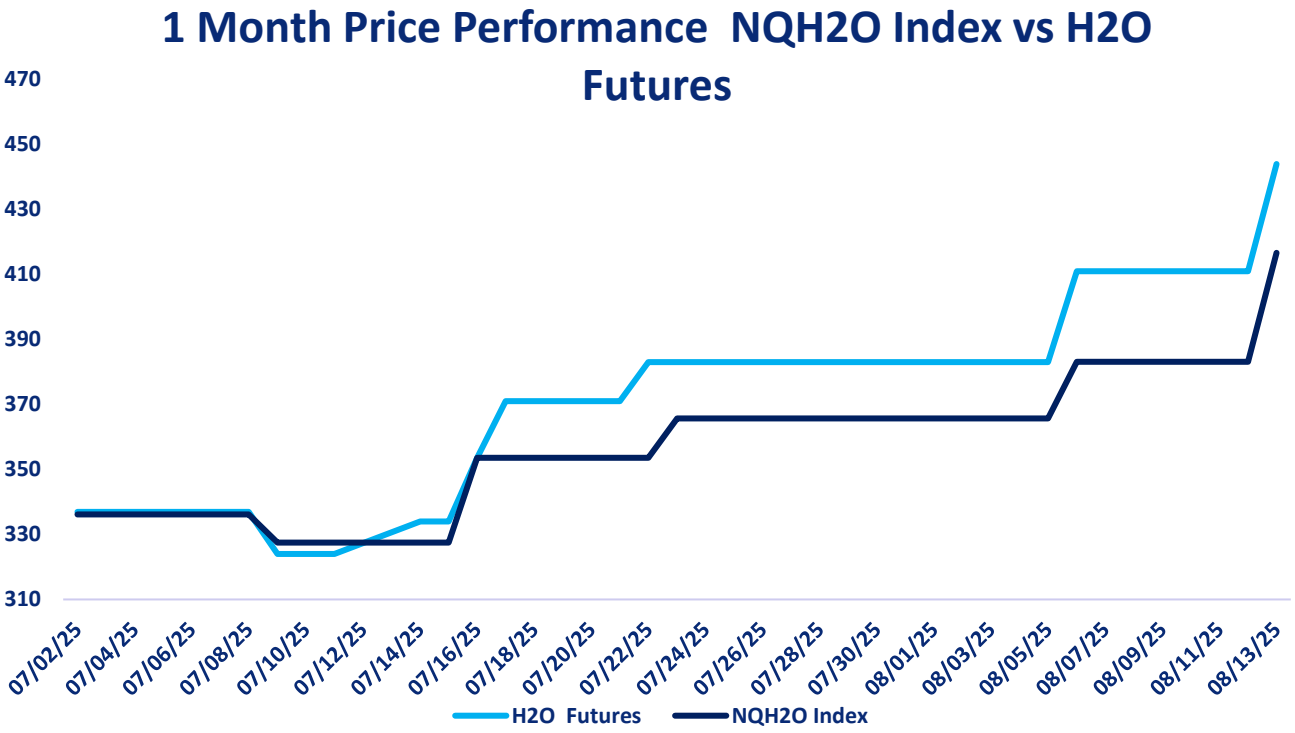
by Joshua Bell

CLICK THE LINK BELOW

"A 2 minute technical analysis video of H2O futures"

https://vimeo.com/1109912854?share=copy#t=0

NQH2O INDEX PRICE vs H2O FUTURES PRICE



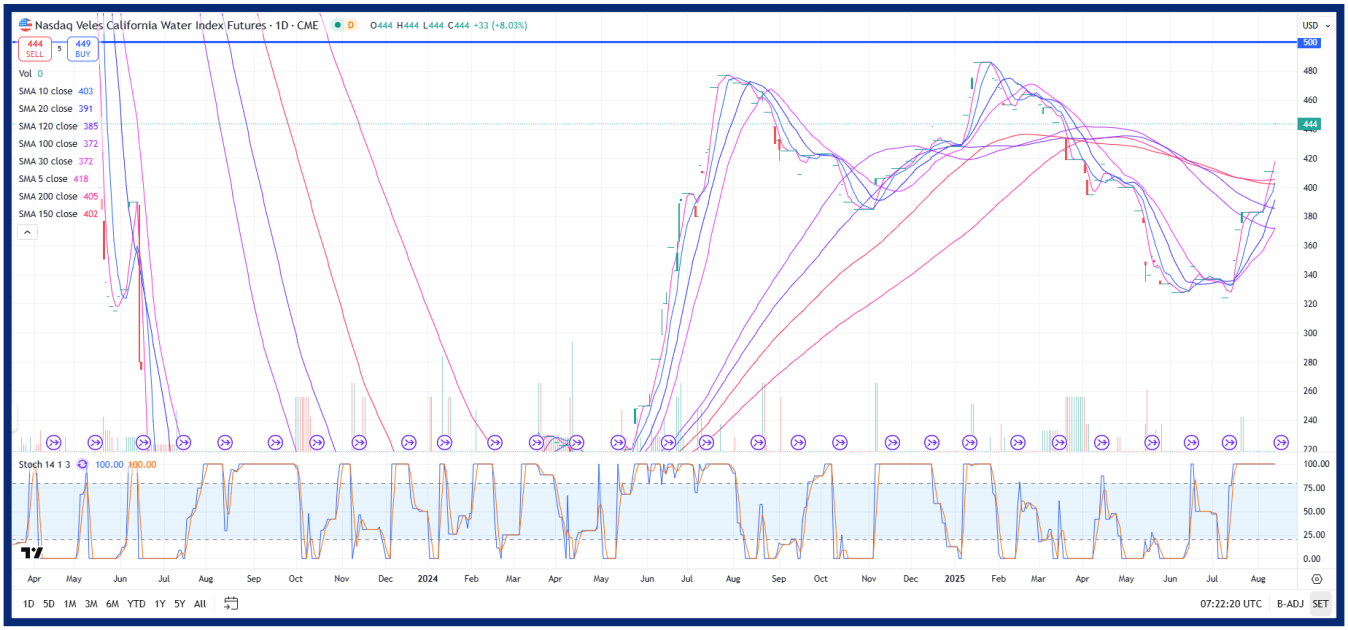
Price Chart Based upon Daily Close

The new NQH2O index level of $416.67 was published on August 13th, up $33.51 or 8.75% from the previous week. The August contract is considered the front month. The futures prices closed at a premium of $27.33 to $27.84 versus the index over the past week.

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

Aug 25	444@449
Sept 25	459@494
Dec 25	464@475
June 26	500@510

H2O FUTURES TECHNICAL REPORT



Trend Overview

- **Current Price**: 444 (+8.03%)
- **Recent Rally**: The index has rallied sharply from **~320** to **444**, breaking through multiple moving averages.
- **Momentum**: Strong upside momentum visible with large green candles and widening separation between short- and long-term SMAs.

Moving Averages

- **Short-Term (SMA 5–30)**:
  All short-term SMAs (5, 10, 20, 30) have turned upward and are converging with longer-term averages – a bullish signal.
- **Long-Term (SMA 100–200)**:
  SMA 100 (372) and SMA 200 (405) are flattening out. Price has **broken above both**, indicating potential **trend reversal**.

Stochastic Oscillator (Bottom Panel)

- Both %K and %D are at **100**, in **overbought territory**, suggesting:
  - **Momentum is strong**, but
  - A **pullback or consolidation** could occur in the near term.

Resistance & Support

- **Immediate Resistance**:
  Around **500**, a historical ceiling.
- **Support Zones**:
  - **SMA cluster zone**: ~380–405
  - Psychological: 400

Volume

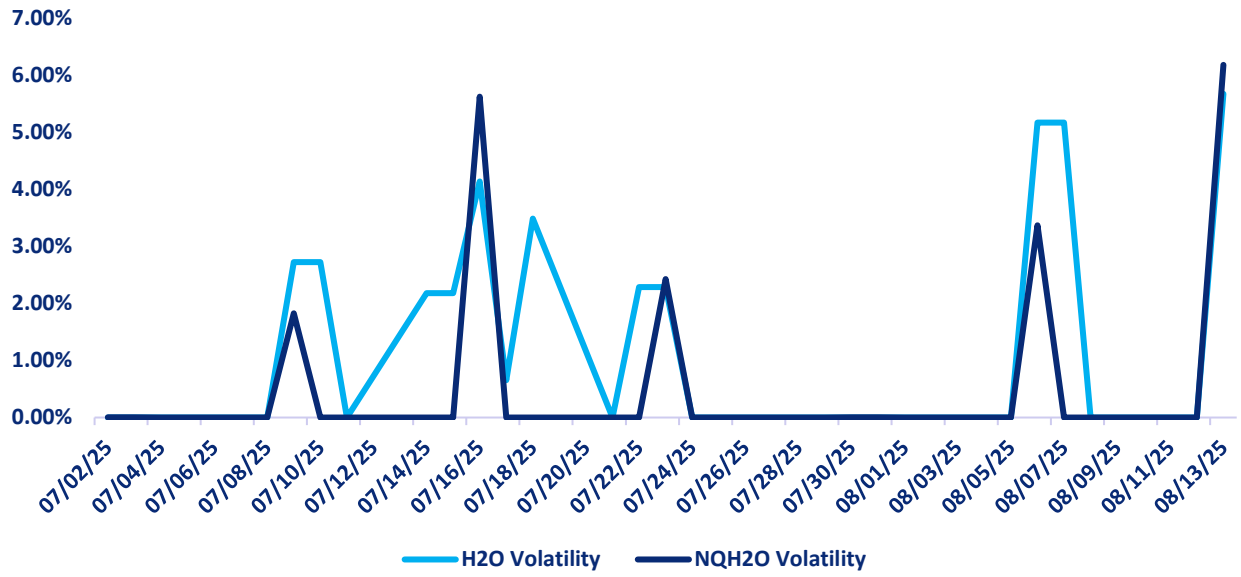
- Volume remains **relatively low**, so this rally may be **price-led** rather than demand-driven. Watch for confirmation via volume increase.

Summary

Water futures have staged a **significant recovery** from 320 to 444, now **above all major SMAs**, with **strong momentum**. However, **overbought indicators** suggest we may see a **short-term pause** or **pullback** before continuation.

H2O FUTURES AND NQH2O INDEX VOLATILITY ANALYSIS

Daily H2O Futures Volatility vs Daily NQH2O Index Volatility



DAILY VOLATILITY

Over the last week the August contract daily future volatility has been 0%.

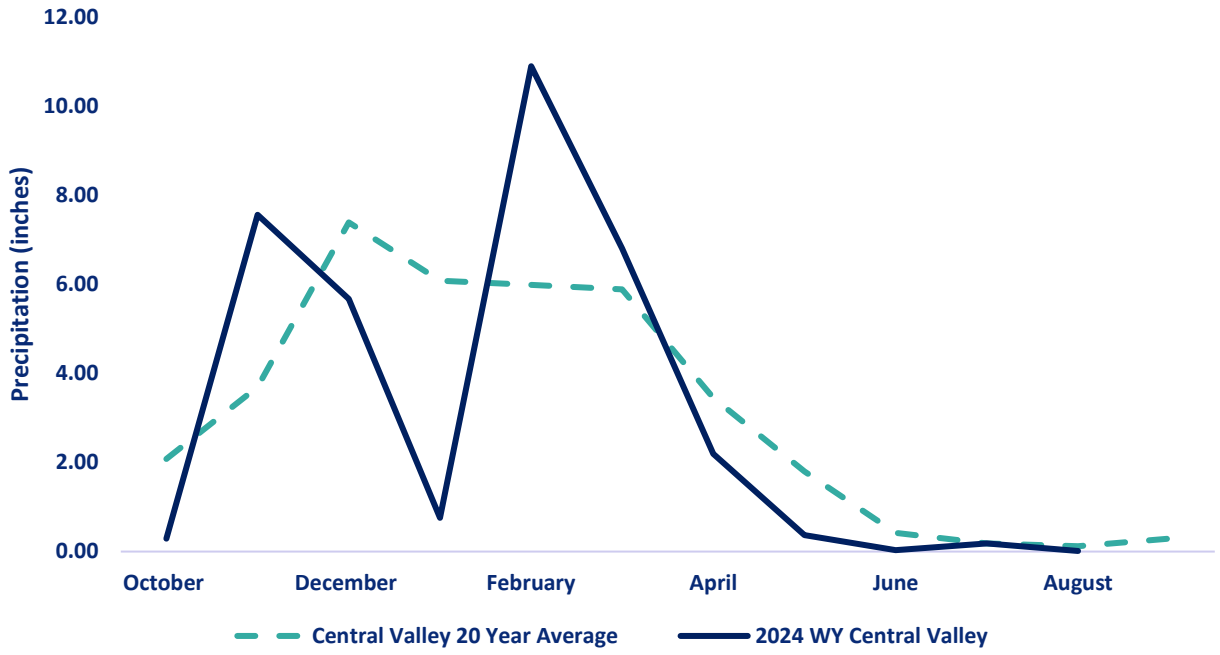
ASSET	1 YEAR (%)	2 MONTH (%)	1 MONTH (%)	1 WEEK (%)
NQH2O INDEX	**19.22%**	**10.86%**	**8.75%**	**3.98%**
H2O FUTURES	N/A	**14.07%**	**11.47%**	**8.03%**

For the week ending on August 13th, the two-month futures volatility is at a premium of 3.21% to the index, down 2.00 from the previous week. The one-month futures volatility is at a premium of 2.72% to the index, down 2.74%. The one-week futures volatility is at a premium of 4.05% to the index volatility.

*The above prices are all **HISTORIC VOLATILITIES**. All readings refer to closing prices as quoted by CME.*

CENTRAL VALLEY PRECIPITATION REPORT

Central Valley Precipitation Index



Central Valley average is calculated using data from 19 weather stations in Central Valley, California.
Data as of 13/08/2025

STATION	MTD (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF 20 YEAR AVERAGE MTD	2025 WYTD VS 2024 WYTD %	2025 WY VS 20 YEAR AVERAGE TO DATE %
SAN JOAQUIN 5 STATION (5SI)	0	0	0.00	83	78
TULARE 6 STATION (6SI)	0	0	0.00	81	82
NORTHERN SIERRA 8 STATION (8SI)	0.04	0	29.37	90	106
CENTRAL VALLEY AVERAGE	0.01	0	11.08	85	89

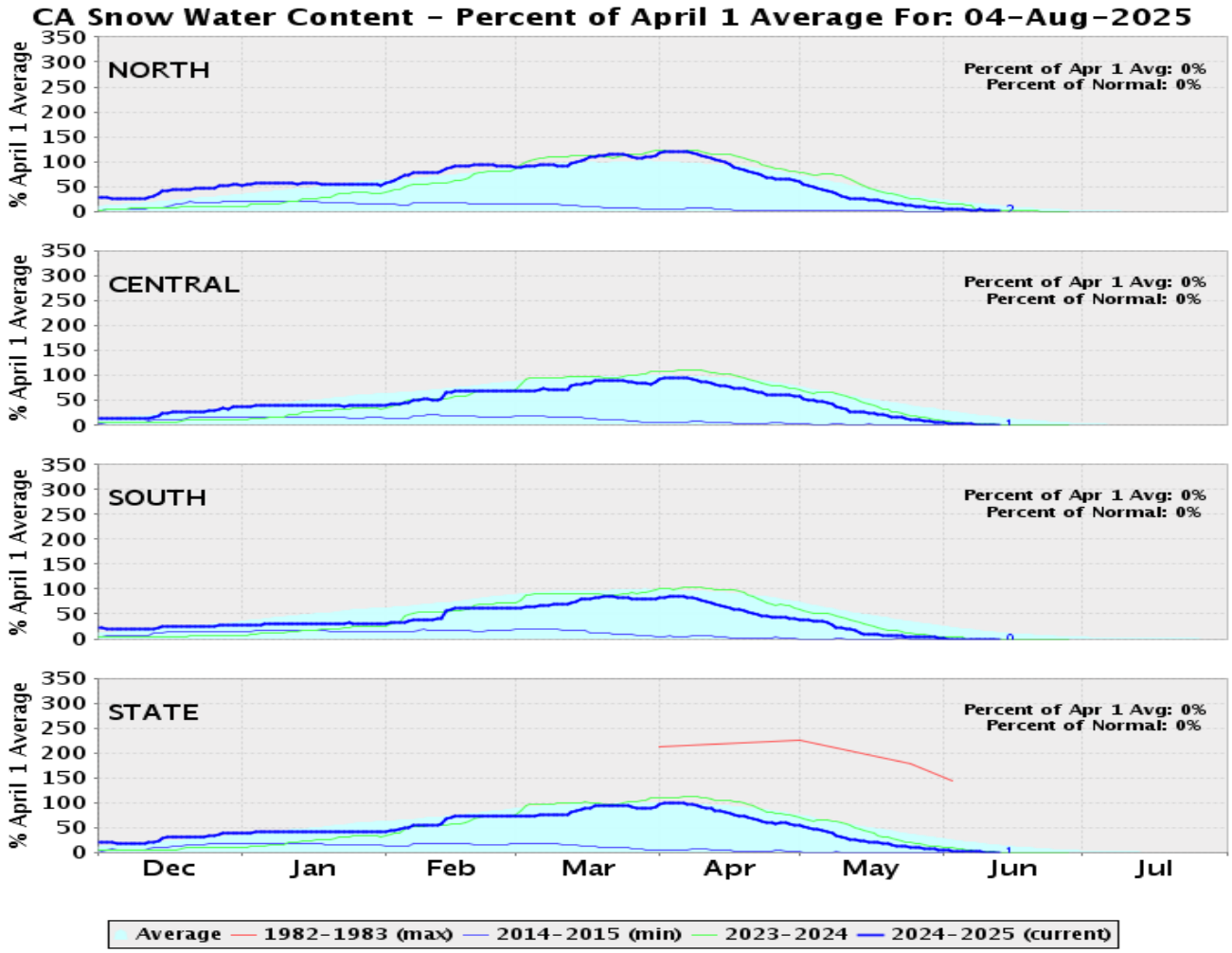
RESERVOIR STORAGE

RESERVOIR	STORAGE (AF)	% CAPACITY	LAST YEAR % CAPACITY	*% HISTORICAL AVERAGE
TRINITY LAKE	2,036,767	83	77	120
SHASTA LAKE	3,050,150	67	72	103
LAKE OROVILLE	2,575,292	75	76	115
SAN LUIS RES	794,323	39	43	94

*% Historical Average is based on a daily average that is interpolated from historical monthly averages. The monthly averages are computed using monthly data from water year 1991 to 2024. The monthly averages are updated every 5 years using a sliding 30 year period.

Reference: California Water Data Exchange

SNOWPACK WATER CONTENT



REGION	*SNOWPACK WATER EQUIVALENT (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF AVERAGE LAST YEAR	% OF 20 YEAR HISTORICAL AVERAGE	% OF HISTORICAL **APRIL 1ST BENCHMARK
NORTHERN SIERRA	0.5	0	18	18	2
CENTRAL SIERRA	0.2	0	6	6	1
SOUTHERN SIERRA	0	0	0	0	0
STATEWIDE	0.2	0	7	7	1

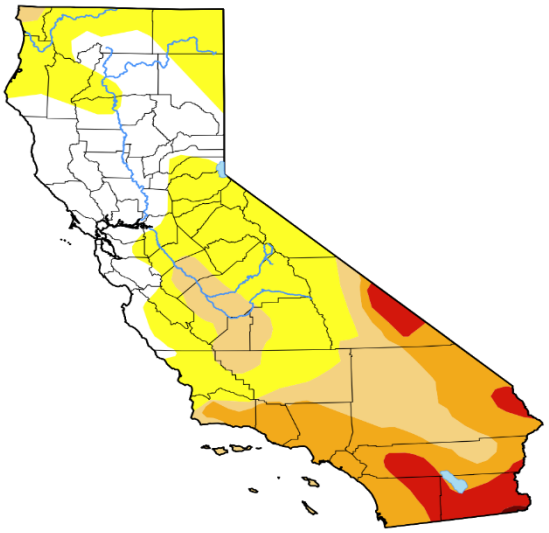
Snow Water Equivalent*, **or SWE**, is a commonly used measurement used by hydrologists and water managers to gauge the amount of liquid water contained within the snowpack. In other words, it is the amount of water that will be released from the snowpack when it melts. SWE has regional variance.**

**** April 1st is used as the benchmark as it when the snowpack in California is generally deepest. It has been used the benchmark date since 1941 by DWR and can be used to predict spring river flow.**

DROUGHT MONITOR

California

Home / California



Map released: Thurs. August 7, 2025

Data valid: August 5, 2025 at 8 a.m. EDT

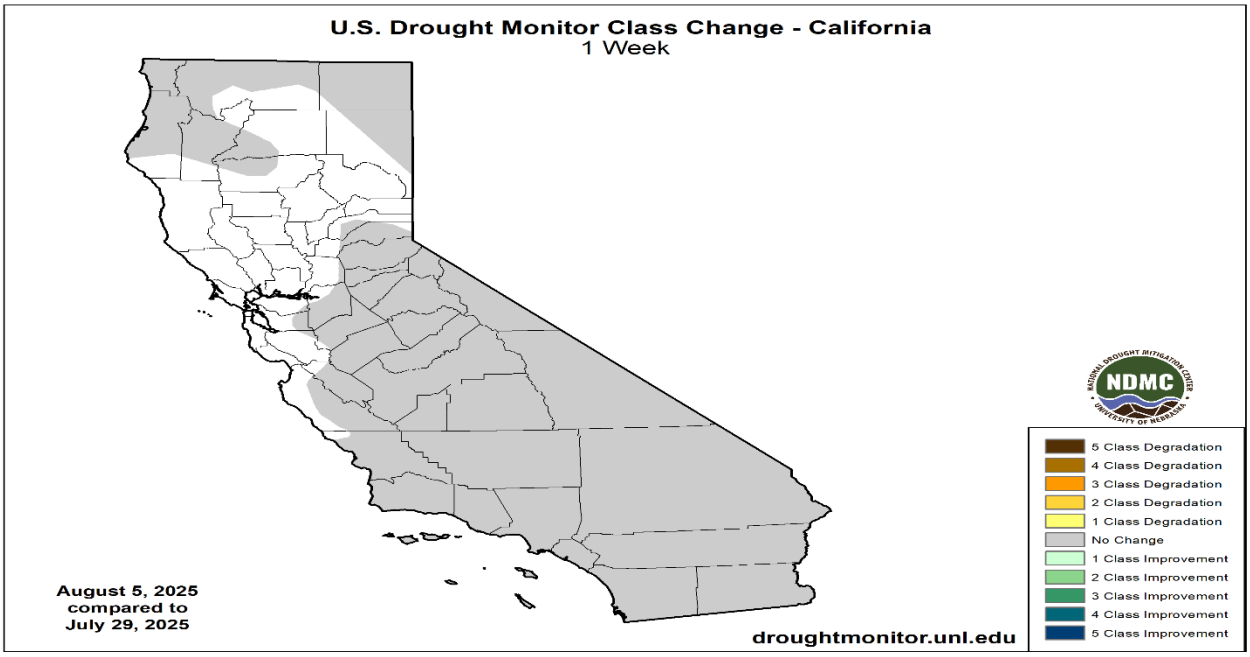
Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Authors

United States and Puerto Rico Author(s):
Richard Tinker, NOAA/NWS/NCEP/CPC

Pacific Islands and Virgin Islands Author(s):
Lindsay Johnson, National Drought Mitigation Center



Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	2025-08-05	23.98	76.02	39.56	23.01	5.90	0.10	145
Last Week to Current	2025-07-29	23.98	76.02	39.56	23.01	5.90	0.10	145
3 Months Ago to Current	2025-05-06	43.73	56.27	39.81	24.73	8.30	0.10	129
Start of Calendar Year to Current	2024-12-31	40.90	59.10	31.52	5.70	1.06	0.00	97
Start of Water Year to Current	2024-10-01	28.40	71.60	10.67	0.08	0.00	0.00	82
One Year Ago to Current	2024-08-06	77.26	22.74	5.32	0.00	0.00	0.00	28

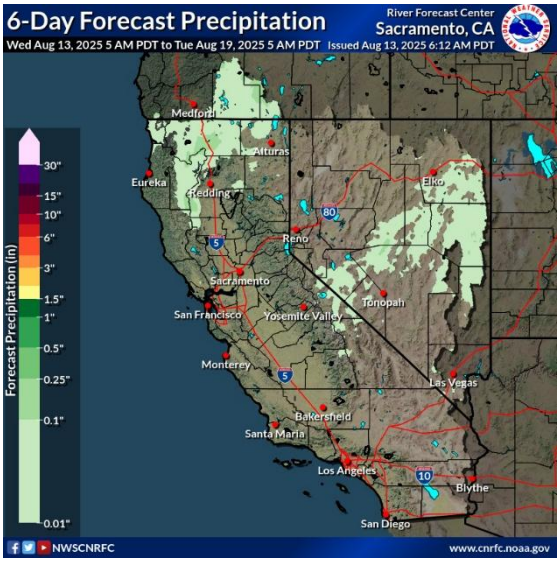
The U.S Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC.

CURRENT SATELLITE IMAGERY

The satellite picture shows a mostly clear US with a storm system to the east of Chicago. The eastern US is dominated by various different storm systems stretching northwards from Florida to New York area. High priority is being given to Tropical Storm Erin which is moving over the Atlantic towards the Florida region.

10 Day Outlook

Map Ref: Zoom Earth



In between these lows offshore, high pressure will build and shift towards the coast the rest of the work week as the southwest low hovers near Baja. By Friday afternoon, the ridge will be firmly overhead with 500 mb heights exceeding 590 dm. This will keep dry conditions over the region and bring well above normal (+10 to +20 deg F) afternoon temperatures. Overnight lows will also be well above normal by similar amounts through Saturday. Many locations across CA are already under heat related products (please see local WFO pages for heat risk/alert information). Into Sunday, a trough will move through the PacNW as the ridge shifts further inland. Troughing will dig into nrn CA/NV as well while the low offshore of Baja finally begins to move inland. This will provide some relief across the region with coastal areas back to near/below normal and afternoon temperature anomalies inland down to about +5 to +15 deg F.

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

WESTERN WEATHER DISCUSSION

Heavy precipitation prompted significant areas of improvement across the southeastern and northern sections of the West Region, but hot and dry weather has caused dryness and drought to intensify in central parts of the Region, across Utah, eastern Nevada, and northeastern Arizona (similar to the situation in western parts of Colorado and Wyoming). Reports of 2 or more inches of rain were fairly common across southeastern and north-central through northwestern Montana as well as northeastern New Mexico, with lesser amounts in other parts of these states. These rains brought 2-week totals to between 2 and 5 inches in much of New Mexico and Montana, with locally higher totals, especially in north-central Montana and northeastern New Mexico. This prompted broad improvements through both states, but even so, areas that missed most of the rain in these states remained entrenched in drought. Exceptional drought (D4) persisted in part of southwestern New Mexico, and extreme drought (D3) remained across north-central and southwestern parts of the state, along with a significant swath of west-central Montana. Moderate to severe drought still affected a large part of the remainders of these states despite improvements, and only the southeastern quarter of Montana and northeastern New Mexico have completely emerged from any designation of dryness or drought. Farther west, showery weather has occurred periodically for the past few weeks in central and eastern Oregon, leading to a reduction in the coverage of dryness and drought there. Across central parts of the West Region from eastern Nevada through Utah, rainfall has been far less generous, and drought either persisted or deteriorated here. The entire region is experiencing at least moderate drought at this point, with widespread D2 conditions across eastern and western Utah, and adjacent Nevada. Some expansion of extreme drought (D3) occurred in east-central and northeastern Utah, where conditions have been similar to those observed across western parts of Colorado and Wyoming. Elsewhere, no changes were observed, and broad areas of drought remained entrenched. USDA reports that 50 percent of the Barley crop and 48 percent of the spring wheat crop in Washington was in poor or very poor condition, as were 26 percent of the barley crop and 47 percent of spring wheat in Montana. In addition, 90 percent of Nevada rangeland was in poor or very poor condition.

Reference:
Lindsay Johnson, National Drought Mitigation Center
Richard Tinker, NOAA/NWS/NCEP/CPC

WATER NEWS

CALIFORNIA WATER NEWS

Sinking land is driving down home values in California's Central Valley, study shows

Sinking ground in California's Central Valley is causing property values to sink, according to a new study by UC Riverside.

"When we see droughts, we see larger subsidence, we see more extraction of groundwater, we see larger subsidence, and that's a sign for many other problems, like water availability, job availability and so on," said Mehdi Nemati, author and UC Riverside Enviro Economics and Policy assistant professor.

Professor Nemati is part of a group of researchers looking into how excessive groundwater pumping is impacting the housing market.

To determine how this sinking is impacting home values, researchers used satellite-based radar data to measure ground-level changes.

They compared data on impacted areas in eight counties to nearly 200,000 home sale transactions, including San Joaquin and Stanislaus counties.

Researchers found the average losses ranged between $6,689 to as much as $16,165 per home. They estimated that losses totaled $1.87 billion across the region from 2015 to 2021.

One of the areas most impacted is San Joaquin County.

"What we see is in areas that are heavily dependent on agriculture jobs, and these areas also see larger impact of subsidence on housing value, which, again, that means subsidence is a sign of many other things, including labor market," Nemati said. "If you heavily depend on agriculture, that means less jobs and other things, which translates into housing value."

He also points to home buyers not wanting to buy properties where the land is unstable. Insurance limitations and higher maintenance costs from bad foundations and sinking roads are also making an impact, according to the study.

CBS Sacramento asked a realtor in Lodi if they've had any discussions about land subsidence impacting home values in the area.

"We do have regular meetings once a week at the board, which is a meeting and tour, and there's discussions of a variety of things, and there hasn't been any discussion of that at all," Schaffer and Co Realtors Co-Owner Margo Cook shared.

While realtors say the sinking ground hasn't swallowed up the housing boom just yet, researchers say the concern is there so long as the ground continues to drop.

"We can come up with a better understanding of where we are, what are the costs, and so, what are some of the benefits and what we can do in terms of policy in general?" Nemati said.
Nemanti said this issue isn't unique to just California. Desert communities like those in Arizona and Utah are also experiencing significant sinking of the land.
He hopes this study and the methods they used can be utilized by other areas in the U.S. and around the world.
Original Article: CBS News by Carmela Karcher

Potter Valley project ending: How will this impact winegrowers?

Here's the plain-English version of what's about to happen — and what it means if you grow grapes or buy fruit in Sonoma County.
PG&E has now filed its formal surrender application to take down Scott Dam (Lake Pillsbury) and Cape Horn Dam — the backbone of the old Potter Valley setup that fed the Russian River for a century. In the same breath, they asked FERC to let the new Eel-Russian Project Authority (ERPA) build a pump-station replacement at the former Cape Horn site so we still get seasonal (wet-weather) transfers into the Russian River system. That filing is real and live.
Two big shifts to understand. First, the near-term operating rules are tightening. FERC just approved PG&E's 2025 flow variance, which prioritizes holding more water back on the Eel to protect fish and manage dam-safety risks. Practically, that means lower (and more variable) Potter Valley/Russian River diversions this year, with releases allowed to dip below 25 cfs when needed. If you're counting on late-summer trickles above Lake Mendocino, plan for less.
Second, the long-term geometry of our supply changes from "year-round trickle" to "catch it in the rain." ERPA's New Eel-Russian Facility (NERF) is a pump station that only runs when the Eel is up — fall through spring — pushing water through the existing tunnel to the East Branch and, ultimately, Lake Mendocino. Modeling suggests seasonal diversions on the order of tens of thousands of acre-feet in wet seasons; in plain terms: load up in winter, live off storage in summer.
Meanwhile, Lake Pillsbury is already being managed down for safety. PG&E has chosen to keep Scott Dam's spillway gates open indefinitely due to seismic risk, effectively cutting the reservoir's usable space and establishing a conservative "planning minimum" as levels drop. That policy is now echoed and supported in commission documents. It means less carryover and less flexibility upstream of Lake Mendocino ahead of removal.
What does Sonoma County feel on the ground? Start upstream and work down. Less reliable inflow from the East Branch puts more pressure on Lake Mendocino to be smart and full when we hit summer. There is some help coming: the U.S. Army Corps is advancing a Water Control Manual update for Coyote Valley Dam that would formalize

Forecast-Informed Reservoir Operations (FIRO) and allow discretionary encroachment — an extra 11,650 acre-feet — when forecasts say it's safe. That's meaningful, but it's not a magic wand; it makes the winter-capture play better, it doesn't replace year-round imports.

Downstream in Sonoma County, the direct exposure varies. If your diversions depend on flows released from Lake Mendocino, you're closer to the action. If you're primarily buffered by Lake Sonoma (Warm Springs), you'll still see ripple effects in drought sequences — curtailments, coordination, and tighter timing — because the watershed is interconnected operationally and biologically. The rule book isn't getting looser.

Costs and responsibilities are becoming clearer. ERPA pegs the NERF construction at a preliminary ~$50 million, with Russian River water users taking on operations and maintenance once it's built. Expect ongoing conversations about who pays what — and for what level of reliability. The design/permitting window spans years and is intended to move in step with dam removal so we don't experience a long gap.

Frost protection deserves its own paragraph. The State Water Board's special Russian River frost rule still governs everything from March 15 to May 15, including hydraulically connected groundwater: you must operate under a Board-approved Water Demand Management Program (WDMP). In tight years, WDMPs will have less room to maneuver, so telemetry, coordination, and contingency methods (e.g., wind machines, targeted overhead) need to be squared away early.

Original Article: Sonoma Country Gazette by Roger Coryell

California's water system must be prepared for climate change

California's water system, constructed in partnership with the federal government, was built on a predictable weather cycle every calendar year. Throughout the winter, snow piles in the Sierra before it melts in late spring and flows throughout the state just when farms need it most. For decades, this cycle, paired with our world-class water infrastructure, allowed for reliable water deliveries, captured excess flows in reservoirs and efficiently moved supply to refill our groundwater tables. But that rhythm is slowly changing. State climate indicators show the Sacramento River's peak runoff now arrives nearly a month earlier — in March instead of April — compared with the mid-20th-century record. Looking ahead, the Department of Water Resources projects the Sierra's April 1st snowpack will shrink by roughly half to two-thirds before the end of the century. In short, the water is coming sooner, in bigger bursts and disappearing before summer demand even begins, while we fail to store more. At the same time, increased regulations have compounded the state's water shortages and decreased the reliability of water allocations that can be expected year to year. This year, for example, inflows in Northern California were above average, but some south-of-the-Delta users received just 55% of their standard allocation. These intensifying issues will increase in severity in

the coming years if not addressed, but the effects are already seen today. When early runoff flows before it can be used, without sufficient infrastructure to store it, millions of acre-feet simply spill through the Delta and out to sea. The Sites Reservoir Authority calculated that, had the proposed off-stream Sites facility been operating these last two wet years, it would already hold its entire 1.5-million-acre-foot capacity. This water could have been captured and stored between early 2023 and April 2024, while still meeting every environmental flow requirement. TOP VIDEOS Updated modeling this spring found that Sites could have stored more than 550,000 acre-feet in just five months of the current water year — enough to supply water to millions of Californians each year or to keep tens of thousands of acres of prime farmland in production during the next drought. South of the Delta, the proposed Del Puerto Canyon Reservoir — an off-stream project tied to the Delta-Mendota Canal — could store up to an additional 82,000 acre-feet of new storage every year. Together, these projects would give the state a place to bank the desperately needed resource. This issue should be apolitical, but when the House debated an energy and natural resources package earlier this year that included $2 billion dollars for Central Valley water storage, I was the lone Democrat to vote yes because reliable water is critical to my district and the state. Most of the $1 billion that ended up in the final bill is expected to support the enlargement of existing facilities, such as Shasta Dam and San Luis Reservoir. This is a good start, but many more projects are needed. State leaders on both sides of the aisle must work together to address our current water shortages and prepare California's water system not only for today's needs, but for generations to come. Climate change is not going to wait for us to get our act together, and infrastructure projects cannot be built overnight. Without action today, our farms, wildlife refuges and communities throughout California will be insufficiently prepared to meet our water needs. With additional and strengthened infrastructure, we can capture those earlier flows, convey water where it is needed throughout the state and adapt to the future we know is fast approaching.

Original Article: The Sacramento Bee by Adam Grey

Local streamflows are 'significantly below normal'

Although the San Juans have seen a smattering of monsoon storms this season, the rains have not been as consistent as needed to help pull the western part of Colorado out of drought. And with more lightning and less rain, wildfire risk also goes up.

Just stepping outside, it's easy to see the effect of these dry conditions on local ecosystems.

"The forests are dry. There are no mushrooms. The streams are at base flow," Adrian Bergere, executive director of the San Miguel Watershed Coalition told the Daily Planet. "The (spring) runoff actually lasted longer than I was expecting, but then all of a sudden

it was early July, and it looked like late August, or even September or October. The streams are just a trickle."

The drought conditions are exacerbated by a dry winter and lower-than-average snowpack. Warmer temperatures in April and May also caused snow to melt earlier than usual.

"We did not have the best winter across southern Colorado," Karl Wetlaufer, a hydrologist at the Natural Resources Conservation Service (NRC), told the Daily Planet. "And then through the remainder of the runoff period, we had below normal precipitation, but not exceptionally so."

In Colorado, seasonal streamflow values are calculated as the total volume of water from the start of April through the end of July, which is the primary runoff period.

"We just got a lot of our final April through July observed streamflow values, which are pretty telling of both how the winter was, and then also bleeding into the spring and first half of summer," Wetlaufer said.

Locally, the San Miguel River, measured at the Placerville gauge, ended up at 62% of normal total streamflow volume for the April through July period, and the Uncompahgre River at Ridgway Reservoir was at 66%. The Animas at Durango was also at 62% of median, and the Dolores was at 52%.

"Coming out of the western San Juans, we're in that same ballpark around 50 to 65 percent of normal streamflow, so certainly significantly below normal," Wetlaufer said.

Some of these streamflows are historical lows. This year's observed streamflow for the Dolores and Animas is only in the ninth percentile out of more than 100 years of observation.

"The bottom 10 percent in over 100 years of observation, I think that's a striking value," Wetlaufer said.

Concerning drought, San Miguel County is doing slightly better than counties farther north on the Western Slope, many of which — including Delta, Mesa and Grand — are under extreme drought conditions. Western San Miguel County is in severe drought, and the eastern side is in moderate drought, as of the latest data from the U.S. Drought Monitor on Aug. 5.

"We're below normal, but still faring better than much of northern Colorado and really across the whole northern part of the Upper Colorado River Basin. So that was good, but the observed stream flows for that primary peak season this year were well below normal and quite low compared to the period of record," Wetlaufer said.

Similar trends across the West also put water supplies at risk. Combined with April's lower precipitation levels, less water is likely to flow into the major Colorado River Basin this summer, according to NOAA. This can negatively impact major reservoirs.

"Lake Powell's inflow was in the six percentile out of 116 observations. That's very low. That's the eighth lowest on record," Wetlaufer noted.

The reservoir's levels are dropping enough that there is a risk that Lake Powell could lose its power production capabilities if there is another bad winter.

"It's back in the range where, if we have even one more dry winter next year, then Lake Powell is going to be most likely at risk of losing enough elevation to lose power production capability," Wetlaufer said. "One more bad winter would put a lot of things in that Upper Colorado Basin in a much more precarious position, both from the standpoint of base water supply, but also that power production pool at Lake Powell."

Along with dry conditions, temperatures have also been higher than normal and are expected to stay that way.

Original Article: Telluride Daily Planet by Sophie Stuber, Assistant Editor

Tangled Ecosystems: Protecting California from Invasive Water Species

A few strands of thin, feathery, green plants growing under the dock didn't catch anyone's attention last spring. But those strands spread quickly and within months the lake's calm waters were tangled in mats of the feathery Eurasian watermilfoil, an aggressive aquatic plant that grows quickly and clogs everything in its path. The repercussions of this invasion then rippled through the community; swimming areas were closed for the summer, anglers returned empty-handed, boats were quarantined, and the local ecosystem was disrupted.

This isn't just an isolated incident; it's happening across California. Aquatic invasive species are spreading faster than ever, infesting our ponds, creeks, reservoirs, lakes, and rivers. Now is the time to learn about aquatic invasive species; what they are, how they spread, and what we can do to stop them. When we understand the issue, we can make smart choices and protect California's waters.

A boat motor tangled in the invasive aquatic plant hydrilla. Photo credit: Wilfredo Robles

Impacts from Invasive Aquatic Species

Aquatic invasive species, like plants, fish, and mussels, are non-native species that live in water (freshwater or marine) that can cause harm to the environment, impact the economy, or negatively affect human health. Once established in an ecosystem, they are incredibly hard to remove, requiring eradication and management efforts that cost millions of dollars. They can outcompete native species, alter habitats, and even transmit diseases.

How Aquatic Invaders Spread

These species often don't spread on their own. They are commonly introduced (brought in) to new areas through human activities. Some of the most harmful aquatic invasive species found in California originated as aquarium plants and pets or were ornamental species used in water gardens and ponds. Aquatic invasive species can be spread unintentionally when:

- Aquarium water or pets are dumped in storm drains or waterways
- Water gardens or ponds overflow
- Leftover bait is discarded into nearby waterways
- Mussels or plant fragments hitchhike on boats, equipment, or in ballast water

A residential pond overtaken by invasive aquatic plants. Photo credit: Leslie J. Mehrhoff

The ease of buying and selling plants and animals online makes it simple to import exotic species, especially for aquarium and water garden use. In one concerning case, moss balls, a common aquarium item, were found to carry invasive zebra and quagga mussels, which were unknowingly introduced to aquariums and water gardens by unsuspecting consumers.

California's Current Threats

Aggressive aquatic invasive plants like Eurasian watermilfoil, hydrilla, and caulerpa have been found in creeks, lakes, rivers, and even stormwater channels across the state. These invaders grow fast, clogging pipes, tangling boat motors, and choking out native plants. They are nearly impossible to control. Read more about the status and management of aquatic invasive plants in California on the State Parks Division of Boats and Waterways website.

Agencies across California are working to stop the spread of golden mussels, another invasive threatening our waterways. These aggressive invaders were accidentally introduced to California waterways after escaping from a ship's ballast water. Golden mussels join the lineup of hitchhiking invasives troubling our state, and like the invasive zebra and quagga mussels, they require ongoing boat inspections to slow their spread. Learn more about invasive mussels and other invasive species threatening California's waterways by visiting the California Department of Fish and Wildlife's website.

Original Article: University of California by Cherie Shook

California taxpayers gave PG&E a huge, supposedly safe loan. The losses are already mounting

Two weeks before the 2022 legislative session ended, Gov. Gavin Newsom's administration came to lawmakers with a big ask: authorize a $1.4 billion state loan to keep open California's last nuclear power plant, Diablo Canyon. The money was supposed to be a stopgap that would be fully repaid by an expected federal award. There was even a fail-safe: if the award fell short, other federal funds or profits from Diablo Canyon's final year could cover the difference.

The bill passed.

Despite promises from Newsom's administration and legislators at the time, CalMatters found the state may be required to forgive as much as $588 million, about 42% of the loan.

That's partly because the maximum available federal award would never have covered the full loan. PG&E applied for even less than was available because an incentive fee allowed under the 2022 law isn't eligible for federal reimbursement.

One source of funding that could make up the difference—profit from the plant—is, by PG&E projections, unlikely to materialize. The only other avenue the state is considering—using federal money for nuclear waste storage—would cover a fraction of the shortfall and may not be legal.

And the total is still mounting: PG&E said in a January filing that it expects its costs for the plant to exceed the state's loan.

The shortfall is emerging at a time when the state's general fund is already facing a $12 billion budget hole, and advocates, lawmakers and regulators have raised concerns about portions of the loan benefiting PG&E shareholders, which the law forbids.

"It's not a loan," Matthew Freedman, lawyer for The Utility Reform Network, said. "It's a gift."

Diablo Canyon is currently slated to stay open until 2030, five years after it was originally scheduled to shut down for economic reasons. The lifespan extension is meant to provide energy stability while California transitions to all-renewable sources by 2045. About 8% of California's total energy comes from the San Luis Obispo County plant, as well as 17% of its carbon-free energy.

"It's not a loan. It's a gift."

Matthew Freedman, lawyer, The Utility Reform Network, on California state loan of $1.4 billion to PG&E to keep the Diablo Canyon nuclear power plant operating

Newsom's administration and other proponents of the loan said it would be paid back fully with funding from the U.S. Department of Energy's "Civil Nuclear Credit" program, an initiative by former President Joe Biden aimed at keeping open financially ailing nuclear power plants.

Ana Matosantos, Newsom's cabinet secretary at the time, testified before the state Assembly in August 2022 that the administration believed the funding "will offset the entirety of the loan." Santa Cruz Democratic Sen. John Laird, a key vote to pass the bill, echoed this in a statement:

"The $1.4 billion loan expenditure will be matched with $1.4 billion in federal revenue, which limits the requirement of any ratepayer or taxpayer money for that purpose," he said in September that year.

But the federal award couldn't have covered the full loan, CalMatters found. By law, the Department of Energy can only award $1.2 billion each cycle – $200 million less than the general fund loan. And after the bill passed, PG&E applied for even less – $1.1 billion.

The gulf of $300 million between the state loan and Department of Energy funds is money allowed under the 2022 law that rewards PG&E for keeping the plant online. The

fee is not eligible for reimbursement under the Department of Energy nuclear credit program since it does not go into the cost of running the plant.

The Department of Energy eventually approved the funding, but that doesn't mean the state will get the full $1.1 billion. It is made up of a base award of $741.4 million and can go up to $1.1 billion if certain conditions are met by the end of 2026. Those conditions include expenses from unexpected outages, emergencies or new and unanticipated compliance requirements by the end of 2026, according to its agreement with the Department of Energy.

Todd Allen, chair of the University of Michigan's department of nuclear engineering and radiological sciences, said that the latter two conditions – emergencies and new compliance requirements – are unlikely. Emergencies are rare, and new compliance requirements are uncommon. More likely, he said, are unexpected outages. But those have been relatively uncommon at the plant – Diablo Canyon has had five unexpected outages in the past 10 years, the most recent in March 2024, according to reports filed with the U.S. Nuclear Regulatory Commission. PG&E said it does not currently anticipate any unexpected outages.

"I would expect, if I was asked to bet on this, that the government payoff would be closer to the lower number," said Allen.

The California Department of Water Resources was assigned to disburse the loan to PG&E and ensure that the funds were used for authorized costs. In a February report to the Legislature, the water agency said it expected at least the guaranteed amount of the federal funding to be used to repay the loan, but "at this point DWR is not able to forecast how much of the loan will be repaid." It won't know for sure until the Department of Energy begins to release the money in coming years.

One way the shortfall could be made up, according to the loan agreement, is through profit from the plant in its final year of operation – November 2029 to November 2030. The 2022 law defines this as "market revenues exceeding costs and expenses." But PG&E doesn't currently expect to have money to spare from the plant during that period. In its most recent projections, the company anticipates that its costs for Diablo Canyon will exceed the revenue from selling its energy on the wholesale market, leaving customers with a requirement to pay the difference.

PG&E spokesperson Jennifer Robison did not directly answer questions about the plant's projected financial performance. Instead, she said the plant would "provide an annual $540 million net cost benefit," in large part through its resource adequacy contribution, a state requirement that each utility be able to generate enough energy to meet customer demand.

In other words, Diablo Canyon could help state utilities avoid running out of power and having to buy it at higher prices, saving them hundreds of millions of dollars. Robison

declined to answer further questions about this, including whether that benefit could be used to pay off the loan, and if so how much of it.

The California Public Utilities Commission, PG&E's regulator, said the resource adequacy figure PG&E referenced is not part of the cost of running the plant, thus is not included in profit calculations. It is "more accurately described," commission spokesperson Adam Cranfill said, as "an avoided cost."

The other possible source for repayment is unspecified federal funds, which the law said PG&E is required to "take all necessary steps to secure." The water department's February projections said the most likely source for this is payment PG&E expects to receive for storing spent nuclear fuel. Because the federal government did not build a promised national repository for the fuel, the Department of Energy pays to have it stored elsewhere until a national facility is built. PG&E expects to receive about $63 million from this from 2026 to 2030.

These funds, however, have historically been used to offset ratepayer costs. The 2022 law authorizing the state loan to PG&E specifies that "ratepayer funds shall not otherwise be used in any manner to repay the loan." When asked how using these funds for the loan fits within the law, water department spokesperson Ryan Endean said the spent fuel money isn't accounted for in any other ratemaking processes. Experts CalMatters reached out to were divided on whether these funds would count as ratepayer funds. Should they be allowed, they alone would not be enough to cover the difference between the state's loan and the federal award.

Aggrieved legislators and 'no leverage left' over PG&E

PG&E did not answer CalMatters' questions about what other federal funds it is pursuing to repay the loan. When describing how the loan could be paid back, Robison omitted other federal funds as a source that could be used for this.

Lawmakers raised concerns about whether the loan would be fully repaid as soon as the legislation was introduced.

Sen. Scott Wiener, the San Francisco Democrat who chairs the state's joint legislative budget committee, sent a series of letters to the California Department of Finance early last year requesting more information about the loan and its repayment, expressing dissatisfaction at the lack of details available.

"Given the condition of the general fund, we believe it is poor financial judgment to provide a loan of this magnitude to an investor-owned utility without having basic loan repayment information," Wiener said in a March 2024 letter. At the time, the water department had not seen a copy of the funding agreement between PG&E and the federal government, according to the finance department.

"It's another thing that undermines public trust."

Tasha Boerner, San Diego Democratic Assemblymember, on issues with PG&E's loan

Wiener's committee attempted to stop the final installment of the loan from being given to PG&E last year, striking it from the budget. But less than a week later, it was added back with a new requirement for the water department to submit biannual reports about the loan's repayment.

"The state has no leverage left to hold over PG&E," David Weisman, executive director of the Alliance for Nuclear Responsibility.

San Diego Democratic Assemblymember Tasha Boerner, who voted against the 2022 legislation, said "it's another thing that undermines public trust."

"Had we gone through the normal process in January, even if it was a special session in January to fast-track it and have that time to do the hearings, to do that due diligence," she said, it "would have made a lot of people more comfortable."

If no federal funds are found outside of the Department of Energy award and Diablo Canyon does not have additional revenue in its final year to pay the remaining loan, the state may be required to forgive any unpaid amount. Its contract with PG&E specifies that those three categories are the only sources of funding that can be used to repay the loan.

Laird, who voted in favor of the 2022 bill, said having to forgive a portion of the loan would be "a big deal because that's not the intent of the bill."

"However much they [receive] short of $1.4 billion, we will be asking how that's going to be made back without going on the taxpayers or the ratepayers," he said. "We sort of set a standard, and we're going to work to make sure they meet it.'

As long as the loan funds are spent, PG&E isn't on the hook for repaying any of the loan itself.

PG&E expects to have spent those funds and more.

The company forecasts overspending the loan by about $157 million through next year, according to a January filing in an unrelated lawsuit. When asked if that was still the company's current forecast, PG&E said it is "actively working to implement its Diablo Canyon extended operations transition costs in alignment with the loan amount," declining to provide a specific figure.

Original Article: CalMatters by Malena Carollo

Gavin Newsom's tunnel vision: Sacrificing Northern SJ Valley to keep LA water cheap

Do not ever accuse Gov. Gavin Newsom of forward thinking when it comes to California, water, and climate.

Newsom is ignoring his own climate warnings and going literally full bore ahead with a water solution born in the Stone Age of environmentalism in California where people were still allowed to use empty 55-gallon oil drums as residential burn barrels in the Los Angeles Basin.

His archaic water project?
The Delta Conveyance Project better known as the Delta tunnel.
Yes, the state Department of Water Resources website currently describes it "an essential climate strategy (that) protects against future water supply losses caused by climate change, sea level rise, and earthquakes."
Such an assertion is simply the latest snake oil salesman gibberish for a state bureaucracy beholden to the Southern California Development-Mega Corporate Agriculture Complex.
It also conveniently wallpapers over dozens of other reasons the DWR paraded front and center over the years as to why the conveyance project nail should by driven into the Delta ecological system and Northern San Joaquin Valley so they can die for monied California interests.
The idea of a Delta Conveyance Project has been floating around since the 1940s.
It was driven as a way to avoid saltwater intrusion into water supplies flowing to Southern California taps and what farmland.
It ultimately would avoid the need for expensive desalination plants at the end of the California Aqueduct.
Brackish groundwater far from the ocean is being treated in desalination plants. There are in nearly 20 locations, including six in San Bernardino County that is about as far as you can get from the Pacific Ocean in California.
A 2024 DWR report on brackish water treatment noted there is also a small desalination plant for surface water in Death Valley.
Such plants cost end users more money.
That has always been the driving issue.
It isn't the supply of water flowing from the Delta as much of the quality.
And in order to keep the fresh water quality high, the state must avoid sending a drop of it through the Delta, the largest estuary in the West Coast and only delta on the Pacific Ocean in the Western Hemisphere.
Earthquakes were never a concern until some DWR hack two years after the 1991 Loma Prieta earthquake launched the strategy that involved telling everyone the levees in the Delta shake like Jello in earthquakes and therefore are at a risk of collapse.
Given no levees have collapsed in an earthquake nor are any major quake faults in the Delta, the DWR raced past the shoring up the levees solution directly to the need to revive the Peripheral Canal option voters statewide rejected overwhelmingly in 1982.
In 2009, that revived project that was a combo canal and tunnel endeavor was pegged at $53 billion in a study the was commissioned by the California Legislature and presented to them 16 years ago this month.

Now, through the miracle of discount Sacramento project estimators — the same folks that said high speed rail between Los Angeles and San Francisco would cost less than $40 billion — we are told an all-tunnel solution will cost a mere $20 billion.
Original Article: Manteca Bulletin by Dennis Wyatt

US WATER NEWS

Eastern Washington's rapidly declining groundwater highlighted in new study

With groundwater in parts of eastern Washington declining at an alarming rate, a new study confirms which areas are most vulnerable to the problem and could help set clearer goals for recovery efforts.

The Washington State University study evaluated groundwater levels throughout the Washington portion of the Columbia Plateau Regional Aquifer System, which spans areas of Washington, Oregon and Idaho, and supplies up to a third of the region's irrigation water.

Researchers found that the Odessa region and the Yakima Basin in eastern Washington are seeing groundwater levels drop by at least 2 to 3 feet per year. The declines in those areas are primarily attributed to a combination of groundwater overuse and climate variability.

"This gives a quantitative target of how much water needs to be either put back into the ground or needs to be managed around to bring us back to some sort of steady condition," said Sasha McLarty, study author and associate professor of civil and environmental engineering at Washington State University

The Washington state Department of Ecology estimates that groundwater supplies drinking water to over 60% of Washington residents.

Odessa region shows most significant groundwater level decrease

Most municipalities have groundwater wells, and rural residents typically have wells on their properties, according to Jaime Short, section manager for the department's Eastern Regional Office.

In eastern Washington, Short said, groundwater is primarily used for irrigated agriculture.

The Odessa region showed the most significant groundwater level decreases over the largest geographic area in Washington. The study notes that groundwater is the main water supply for the Odessa area.

If groundwater levels continue to decrease at their current rate, the Odessa region will likely lose 10% of accessible groundwater by 2040 and 50% within the next 70 years, according to the study.

The Yakima Basin showed steep declines in the deepest aquifer layer, making it more difficult to address the groundwater loss, McLarty said.

The study confirms what the Department of Ecology and local stakeholders have known for decades, said Department of Ecology hydrogeologist Chris Beard.

“Where it’s declining, it’s been declining for a long time,” Beard said.

Mitigating declines in groundwater levels

In general, communities in areas where groundwater levels are dropping have already initiated efforts to mitigate and reverse the decline, Beard said.

The Department of Ecology and communities that depend on the Odessa Subarea Aquifer have been aware of declining groundwater levels since the 1960s, according to Smith.

A consortium of state, local and federal partners has been working since 2013 on a project to swap groundwater with surface water supplies from the Columbia River for agricultural users, so they can eventually stop using their wells.

The Odessa Groundwater Replacement Program secured nearly $45 million in this year’s capital budget to build a new irrigation system.

The project has so far eliminated the use of 16 wells and conserved 5.3 billion gallons of water annually in the Odessa Subarea Aquifer.

In the Yakima Basin, state, federal, tribal, business, and community organizations partnered in 2009 to develop the Yakima Basin Integrated Plan, which established a 30-year resource management strategy for the basin.

Positive groundwater trends in areas of Spokane, the Lower Snake River and Klickitat

Of the 15 subareas in Washington included in the study, 12 showed groundwater levels dropping every year, while three — Spokane, the Lower Snake River and Klickitat — were found to be gaining water.

The positive trends in those areas are primarily due to active management and monitoring efforts, according to McLarty.

While communities that know they’re losing groundwater have taken action to mitigate that loss, there are significant gaps in groundwater level data around the state.

“Our groundwater data measurements are actually pretty clustered in certain areas, so there are large parts of the state where we simply don’t have data,” Short said.

Most of those data gaps are in areas that are not heavily populated, according to Short. Filling in those data gaps so researchers can track groundwater trends statewide over time is a goal for the Department of Ecology, Short said. The Washington State University study was part of the ongoing effort to do so.

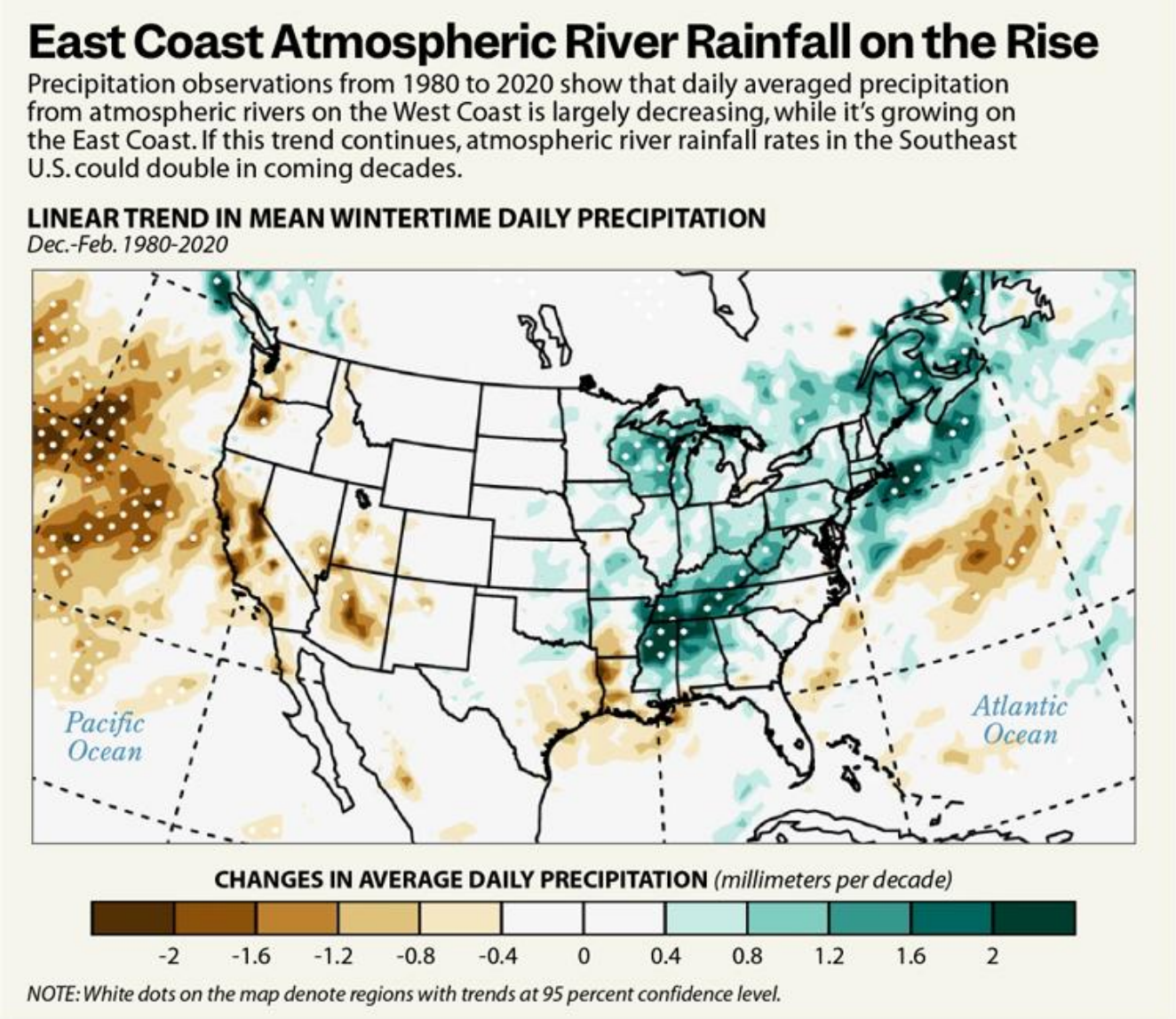
It emerged from a legislatively-mandated project established in 2006, which calls for an estimate of current and future water supply and demand to be collected every five years.
This year's study was the first to incorporate an observation-based analysis across the whole Columbia Basin Aquifer, McLarty said.
That strategy allowed researchers to document trends in different geographic areas of Washington, as well as trends within different layers of the aquifer, to better pinpoint where water is available and where it's declining.
The study was also the first to take well infrastructure into account when determining what areas are vulnerable to groundwater loss.
Original Article: Idaho Capital Sun by Emily Fitzgerald

Atmospheric Rivers May be Diminishing on the West Coast and Surging in the East, Study Finds

It makes sense that atmospheric rivers would flood West Coast headlines as well as its coastlines. Eighty percent of all West Coast flood damage is attributable to these immense highways of water vapor, which can drench Central California with a season's worth of rain or freeze Seattle in place with a blizzard. Damages to Pacific states from the surges of precipitation can add up to about a billion dollars annually.
But what about East Coast atmospheric rivers?
The daughter of former NOAA research scientist, Wenhao Dong, posed that exact question to her father when she was in first grade.
"She was listening to the report about an atmospheric river over California," he recalled. "She asked me, 'Dad, do we have atmospheric rivers [in New Jersey]?'"
Dan Gearino's habit-forming weekly take on how to understand the energy transformation reshaping our world.
That question partly motivated Dong and his collaborators to investigate how atmospheric rivers might be impacting the East Coast and West Coast differently. In a study published earlier this year in Nature that looked at 40 years of water vapor, precipitation and wind speed observations, Dong and his co-authors found that wintertime atmospheric rivers are growing significantly more frequent and intense over the Eastern U.S. while diminishing over the West. Their research showed that, over a 20-year period, atmospheric rivers could double the amount of rain falling in parts of the Southeast.
And while they might not produce as many headlines, East Coast atmospheric rivers are far from forgettable. One that hit New England at the end of 2024 left over 80,000 homes without electricity. But research into the phenomenon in the Eastern U.S. is limited. More than three-fourths of all atmospheric river studies focus on either the Western U.S. or Western Europe, Dong said. That bias makes sense because atmospheric

rivers are the West's grand rainmakers, while hurricanes, large thunderstorms and Nor'easters dominate at least the news about Eastern weather. But the two coasts' big storms might have more in common than the headlines suggest.

"When you look at the data—the precipitation contribution from [atmospheric rivers]—you will see comparable contributions over the West and the Eastern U.S.," Dong said.



Dong's team found that between 1980 and 2020, atmospheric river frequency over the Eastern U.S. increased by almost five percent each decade, with the storms slamming the South particularly hard. Parts of Mississippi, Alabama and Tennessee saw average atmospheric river rainfall rates increase by as much as two millimeters per day per decade over the last 40 years. With average daily precipitation in Mississippi being about 3.9 millimeters per day, if this trend continues, atmospheric rivers could double the average rainfall in some parts of the state in 20 years. Extreme rainfall rates in parts of

Georgia have risen by almost four millimeters per day per decade, according to the study.

In the meantime, states such as Washington, Oregon and California have seen atmospheric river frequency decrease by nearly 4 percent per decade since 1980, the researchers found. This has led to long-term wintertime drying of the West Coast. Portland, Oregon, for example, has seen its average atmospheric river rain rate decrease by over two millimeters per decade. Its average daily rainfall over the past 20 years has been just over 2.5 millimeters. While the West is drying out overall, there is an increase in extreme precipitation events that are associated with catastrophic atmospheric rivers, Dong added.

Forming a river in the atmosphere requires tropical water vapor sources, jet streams to push that moisture and favorable regional weather conditions such as low-pressure systems. Dong and his colleagues investigated these and other background atmospheric and oceanic conditions, which can change on seasonal, annual or even longer timescales to transform atmospheric river patterns.

This study looked at a handful of changes to these "modes of variability," including more common La Niña-like, or colder, temperatures in the Pacific and variations in the location of the East Asian Subtropical Jet Stream, to determine what was happening to atmospheric rivers. Modes of variability often work in tandem—two or three overlapping at a time—to impact atmospheric rivers by changing the intensity of atmospheric circulations in the East Pacific and tropical Atlantic. For example, warm waters in the Eastern Pacific during an El Niño year could change the location of the East Asian Subtropical Jet Stream, leading atmospheric rivers to hit Los Angeles instead of Seattle.

Long-term changes in these modes of variability are bringing dry, cold air down from the Arctic to dry out the East Pacific, cutting off the flow of tropical, moist air that would drive atmospheric rivers to the West Coast. This is bringing a measured decline in atmospheric river frequency in California, Oregon and Washington.

Original Article: Inside Climate News by Chad Small

A paradigm shift on the Colorado River is the only way to confront the water crisis

For millions of years, water flowing through the Colorado River shaped the geography of the West, carving out features like the Grand Canyon. Now, the Colorado River sustains the cities, farms and industries of the southwestern U.S., providing 40 million people with water. The river winds through canyons, alpine tundras, deserts and forests, underpinning ecosystems, vitalizing trout fisheries, feeding migratory birds and maintaining river deltas.

The Colorado River is remarkable in and of itself, it lays the foundation for remarkable habitats, and, apparently, can precipitate remarkable political alliances. This month, all 10 of Colorado's U.S. legislators, from the most progressive representatives to MAGA Lauren Boebert, sent a letter to President Donald Trump calling for the release of funding for Colorado River water projects.

The water in the Colorado River is distributed among seven Western states, separated into two groups — Upper Basin and Lower Basin states — via terms established in a 1922 compact. Individuals and businesses within those states are allocated water by the doctrine of prior appropriation, which, in Colorado, was established in 1876. The prior appropriation doctrine grants permanent rights to (surface) water on a first come, first served basis, more frequently known as "first in time, first in right" — although the true first-comers, Native Americans, were excluded from the doctrine and only secured water rights through a series of lawsuits throughout the 20th century.

There are many faults with the 1922 Colorado River Compact and prior appropriation doctrine, but one of the greatest is that the river is perpetually over-allocated. In fact, the Colorado River is dammed and diverted to such an extent that most years it fails to reach the Pacific Ocean. When government officials estimated how much annual flow was available for use back in 1922, they settled on 20 million acre-feet — nearly double the approximately 12 million acre-feet flowing through the river today.

Three-quarters of water diverted from the Colorado River irrigates farmland, and 62% of that is used for hay to feed dairy and beef cows in the U.S., China, Japan, Saudi Arabia and elsewhere. Over the years, existing water rights have been concentrated into fewer hands. About 20 farming families, producing mostly hay, control about 15% of the water allocated to Lower Basin states. One family in California's Imperial Valley uses more water than the entire Las Vegas metropolitan area annually — again, mostly to grow hay.

Climate change is exacerbating the Colorado River water shortage by extending droughts and aridifying the Southwest. That's why the $150 million appropriated to Colorado for water projects to improve drought resiliency, ecosystem conservation, and aging infrastructure is so essential. The projects — awarded to coalitions of local governments, tribes and nonprofits — would benefit agriculture, recreationists, municipalities, endangered species … and ultimately all of the stakeholders reliant upon the Colorado River. The Trump administration's decision to withhold the funding while re-reviewing the projects benefits nobody and hurts everybody, thereby instigating a true bipartisan effort to release the funds.

The money allocated to Colorado's water projects represents only a small portion of the $4 billion set aside in the Biden administration's 2022 Inflation Reduction Act for Colorado River water conservation programs. Much of that money was spent on direct payments to farmers for not using their full "water rights" — instead, the farmers were

compensated for letting acreage go fallow. This program and its sudden end under the Trump administration demonstrate several points. One, that the nation's food supply does not rely on all farmers in the West maximizing their yields. Two, that local and state officials cannot rely on federal funding to solve the Colorado River water shortage. And, three, that voluntary solutions that work within the current framework of water allocation are not sustainable or sufficient in the long run.

Ultimately, the federal government should release the owed water project funding — what better use is there for taxpayer dollars than ensuring Western communities have access to plentiful drinking water, vibrant ecosystems and healthy economies? But also, the only way to truly confront this water crisis is a paradigm shift; a reallocation of the river's water, not just among states, but also uses. The prior appropriation doctrine was designed to stimulate industrial and colonialist expansion. It's an inappropriate framework to handle modern priorities of sustainability, conservation and equity. Undermining certain tenets of the doctrine is warranted.

Solutions — many of which are controversial — exist, like charging more for using water that isn't beneficial to the region or country (e.g., irrigating alfalfa to feed Saudi Arabian cattle) or outlawing wasteful irrigation techniques. Bold policies are needed to preserve the remarkable Colorado River and life in the West. Stakeholders must rethink current systems of water allocation.

Original Article: Colorado Newsline by Sammy Herdman

As the Colorado River slowly dries up, states angle for influence over future water rights

The Colorado River is in trouble: Not as much water flows into the river as people are entitled to take out of it. A new idea might change that, but complicated political and practical negotiations stand in the way.

The river and its tributaries provide water for about 5 million acres of cropland and pasture, hydroelectric power for millions of people, recreation in the Grand Canyon, and critical habitat for fish and other wildlife. Thirty federally recognized Native American tribes assert rights to water from the Colorado River system. It is also an important source of drinking water for cities within the Colorado River Basin, including Phoenix, Tucson and Las Vegas, and cities outside the basin, such as Los Angeles, San Diego, Salt Lake City, Denver and Albuquerque.

The seven Colorado Basin states have been grappling with how to deal with declining Colorado River supplies for a quarter century, revising usage guidelines and taking additional measures as drought has persisted and reservoir levels have continued to decline. The current guidelines will expire in late 2026, and talks on new guidelines have been stalled because the states can't agree on how to avoid a future crisis.

In June 2025, Arizona suggested a new approach that would, for the first time, base the amount of water available on the river's actual flows, rather than on reservoir level projections or historic apportionments. While the proposal has been praised as offering "a glimmer of hope," coming to agreement on the details presents daunting challenges for the Colorado Basin.

The Colorado River Compact

The 1922 Colorado Compact divided the 250,000-square-mile Colorado River Basin into an Upper Basin – which includes parts of Colorado, New Mexico, Utah and Wyoming, as well as the northeastern corner of Arizona – and a Lower Basin, encompassing most of Arizona and parts of California and Nevada. The compact apportions each basin 7.5 million acre-feet of water from the river each year. An acre-foot of water is enough to cover 1 acre in water 1 foot deep, which amounts to approximately 326,000 gallons. According to a 2021 estimate from the Arizona Department of Water Resources, 1 acre-foot is sufficient to supply 3.5 single-family households in Arizona for one year.

Anticipating a future treaty with Mexico for sharing Colorado River water, the compact specified that Mexico should be supplied first with any surplus available and any additional amount needed "borne equally" by the two divisions. A 1944 water-sharing treaty between Mexico and the U.S. guarantees Mexico at least 1.5 million acre-feet of Colorado River water annually.

The compact also specified that the Upper Basin states of Colorado, New Mexico, Utah and Wyoming "will not cause the flow of the river … to be depleted below an aggregate of 75,000,000 acre-feet for any period of 10 consecutive years."

The Lower Basin states of Arizona, California and Nevada contend that this provision is a "delivery obligation," requiring the Upper Basin to ensure that over any 10-year period, a total of at least 75 million acre-feet flows to the Lower Basin.

By contrast, the Upper Basin states contend that the language merely creates a "non-depletion obligation" that caps their collective use at 7.5 million acre-feet per year in times when additional use by the Upper Basin would cause less than 75 million acre-feet to be delivered to the Lower Basin over a 10-year period.

This disagreement over the compact's language is at the heart of the differences between the two basins.

A small source area

Nearly all of the water in the Colorado River system comes from snow that falls in the Rocky Mountains in the Upper Basin. About 85% of the Colorado Basin's flows come from just 15% of the basin's surface area. Most of the rest of the basin's lands are arid or semi-arid, receiving less than 20 inches of precipitation a year and contributing little to the flows of the Colorado River and its tributaries.

Rain and snowfall vary dramatically from year to year, so over the course of the 20th century, the Colorado Basin states – with the assistance of the U.S. Bureau of

Reclamation, the agency of the Department of the Interior responsible for operating federal water and power projects in the U.S. West – developed a complex system of reservoirs to capture the extra water in wet years so it could be available in drier years. The most notable reservoirs in the system are Lake Mead, impounded by Hoover Dam, which was completed in 1936, and Lake Powell, impounded by Glen Canyon Dam, completed in 1966.

Over the past 25 years, the quantity of water stored in Lake Mead and Lake Powell has declined significantly. A primary driver of this decline is a lengthy drought likely amplified by climate change: One study estimated that the region may be suffering its driest spell in 1,200 years.

But human errors are also adding up. The Colorado Compact's original negotiators made unrealistically optimistic assumptions about the river's average annual flow – perhaps knowingly. In their book "Science be Dammed," Colorado River experts Eric Kuhn and John Fleck document how compact negotiators willfully or wishfully ignored available data about the river's actual flows. Kuhn and Fleck argue the negotiators knew it would be decades before demand would exceed the river's water supply, and they wanted to sell a big vision of Southwestern development that would merit massive federal financing for reservoirs and other infrastructure.

In addition, the current Colorado River system accounting does not factor in the roughly 1.3 million acre-feet of water lost annually from Lake Mead due to evaporation into the air or seepage into the ground. This accounting gap means that under normal annual releases to satisfy the apportionments to the Lower Basin and Mexico, Lake Mead's water level is steadily declining.

Stabilization efforts

The seven Colorado River states and Mexico have taken significant steps to stabilize the reservoirs. In 2007, they agreed to new guidelines to coordinate the operations of Lake Mead and Lake Powell to prevent either reservoir from reaching catastrophically low levels. They also agreed to reduce the amount of water available to Arizona and Nevada depending on how low Lake Mead's levels go.

When the 2007 guidelines proved insufficient to keep the reservoir levels from declining, the Colorado Basin states and Mexico agreed in 2019 to additional measures, authorizing releases from Upper Basin reservoirs under certain conditions and additional cuts to water users in the Lower Basin and Mexico.

By 2022, projections for the reservoir levels looked so dire that the states started negotiating additional near-term measures to reduce the amount of water users withdrew from the river. The federal government helped out, too: $4 billion of Inflation Reduction Act funding has helped pay the costs of water-conservation measures, primarily by agricultural districts, cities and tribes.

These reductions are real. In 2023, Arizona, California and Nevada used only 5.8 million acre-feet of Colorado River water – their lowest combined annual consumption since 1983. The Lower Basin's total consumption in 2024 was slightly higher, at 6.09 million acre-feet.

A new opportunity?

With the 2007 guidelines and additional measures expiring in 2026, the deadline for a new agreement looms. As the Colorado River states try to work out a new agreement, Arizona's new proposal of a supply-driven approach offers hope, but the devil's in the details. Critical components of that approach have not been ironed out – for instance, the percentage of the river's flows that would be available to Arizona, California and Nevada.

If the states can't agree, there is a chance that the secretary of the Interior, acting through the Bureau of Reclamation, may decide on his own how to balance the reservoirs and how much water to deliver out of them. That decision would almost certainly be taken to court by states or water users unhappy with the result.

And the Lower Basin states have said they are fully prepared to go to court to enforce what they believe to be the Upper Basin's delivery obligation, which, the Upper Basin has responded, it is prepared to dispute.

In the meantime, farmers in Arizona's Yuma County and California's Imperial County cannot be sure that in the next few years they will have enough water to produce winter vegetables and melons for the nation. The Colorado River Basin's municipal water providers are worried about how they will meet demands for tap water for homes and businesses. And tribal nations fear that they will not have the water they need for their farms, communities and economies.

Original Article: Renewable Energy World by Sarah Porter

As drought concerns grow, Arizona universities, Board of Regents work to safeguard groundwater

As concerns about Arizona's water future grow, the state's public universities and the Arizona Board of Regents (ABOR) are working to safeguard groundwater.

A Regents' Grant is funding the Arizona Tri-University Recharge and Water Reliability Project.

Kathy Jacobs is a professor of environmental science at the University of Arizona and director of the Center for Climate Adaptation Science and Solutions. She said the Arizona Department of Water Resources asked them to find ways to capture precipitation and runoff before it evaporates to replenish the state's aquifers.

"The reason that's a big issue is that more than 95% of the water that falls on the ground either as snow or rain in Arizona evaporates back into the atmosphere," Jacobs said. "So

if we're able to capture even a small proportion of that, that could make a big difference, particularly in rural areas."

Groundwater accounts for about 40% of Arizona's water supply, but monitoring it remains complex, especially in less populated areas. Jacobs said they're using some of the most sophisticated modeling that's been done in the state and possibly the U.S.

"We're using machine learning and the national water model as well as locally adjusted models that look at the entire hydrologic cycle in very small detail," Jacobs said. "So we're able to actually generate new information about the water cycle in every watershed in the state. This is not information people have had in the past."

In a press release about the project, ABOR said the initiative is a scientific foundation for water reliability as Arizona communities face prolonged drought and reduced Colorado River allocations. Landscapes are under unprecedented stress with low soil moisture, drought-stricken vegetation and heightened fire danger.

Original Article: KJZZ by Bridget Dowd

Texas Land Agency Warns Fracked Water Is Threat to Oil Fields

A Texas agency overseeing 13 million acres of state land is warning that toxic waste fluid from shale drilling threatens to contaminate oil wells in North America's most prolific crude basin.

The General Land Office of Texas, which was founded in 1836 and generates billions of dollars for public schools by leasing land to oil companies, said plans by Pilot Water Solutions LLC to add three wastewater disposal wells in the Permian Basin near New Mexico would damage its nearby oil reserves.

Original Article: Bloomberg Law by David Wethe and Kevin Crowley

Under water: How FEMA's outdated flood maps incentivize property owners to take risks

When Camp Mystic wanted to build in Central Texas areas considered high risk on Federal Emergency Management Agency flood insurance maps, it did what many property owners do: It hired engineers to take a closer look.

FEMA's flood maps are often outdated and can be inexact, particularly in areas where the agency hasn't performed detailed studies. This left an opening for Camp Mystic to generate a more precise analysis of the terrain and to ask FEMA to change how its flood zones were designated.

This was a common practice. From 2013 to 2020, the overnight girls camp asked FEMA to redesignate the flood risk for 65 of its buildings at its sprawling facilities in Texas' Guadalupe Valley — more buildings than previously known.

The government agency told NBC News that in that period of time it altered the status of 60 buildings, changing the risk designations of both decades-old buildings and its new construction from “high” to “moderate” or “low,” on paper. Five buildings remained in high-hazard zones.

This summer, on July 4, a flood beyond anyone’s expectations killed 28 campers and staffers, inundating many of the Camp Mystic buildings.

A review of documents related to Camp Mystic — from county floodplain development records, an engineering study, FEMA flood map determinations and federal flood insurance studies — offers a window into a process that experts say plays out for thousands of properties each year, quietly shrinking the footprint of the nation’s flood risk on paper, even as climate change makes flooding a more severe threat on the ground.

The trail of documents from Camp Mystic details the ease with which property owners can remold how the federal government assigns flood risk. And they spotlight a national issue relevant beyond Texas: In some areas, FEMA’s main tool for assessing flood risk is stuck in time.

FEMA’s mapping alongside Cypress Creek, where the camp expanded in 2018, is 15 years old and represents a rough estimate of flood risk. It relies on imprecise topography maps, and the rainfall data it uses was last updated in the 1970s. Moreover, the FEMA maps of the area do not account for modern projections for storms intensified by climate change.

“One of the problems with FEMA is it appears to be negotiable as opposed to an empirical or science-based understanding of risk,” said Jeremy Porter, the chief economist at First Street, a research firm that studies housing and climate risks. “It’s based on the ability to create an engineering study and negotiate with FEMA.”

Properties in flood zones are often required to get costly flood insurance, and being in this area, on paper, can drive down property values. In most areas, construction in flood zones is more tightly regulated. In Kerr County, site of the most devastating Texas floods last month, property owners have to elevate structures at least 12 inches above the base flood level and take other flood precautions if they’re found to be in the floodplain.

Better flood maps might not have made a difference for Camp Mystic, whose owner spoke often about the perils of living near the waterways. The deluge dumped two to three months’ of rainfall in about six hours, surprising local officials with its intensity. But the documents reviewed by NBC News show how widely flood maps can vary for a place like Camp Mystic, depending on who draws them.

Flood insurance requirements and stricter local development rules in floodplains are designed, in part, to encourage construction away from those areas. It’s not clear whether the new maps affected the camp’s decision-making or development plans.

"The unknown is whether being drawn out of those flood lines affected the choices the camp made of where to develop further cabins and structures," said Sarah Pralle, an associate professor of political science at Syracuse University's Maxwell School who has studied federal flood policy.
Original Article: NBC News by Evan Bush

As drought, climate change pressure El Paso water supply, farmers innovate to sustain orchards in one of nation's biggest pecan-growing hubs

Inside a nondescript building off North Loop Drive, where longtime farmland sits adjacent to new housing developments, Girisha Ganjegunte is one of several Texas A&M University researchers studying how to save – or maybe just prolong – agriculture in the Lower Valley.
He talks about math formulas and soil chemistry, and pulls up graphs on his computer indicating some of his experiments have shown promise at reducing salt levels in pecan orchards, one of many things bedeviling farmers in the El Paso region.
Farmers, he said, don't always care to know the mathematical details of his work. They just want to know how to maintain their pecan orchards or crop farms with the salty groundwater they're forced to use when the Rio Grande only flows for a couple of months like it is this year – hardly long enough to sustain a crop.
Ultimately, it's all about fighting off drought so that farmers can keep farming and pass on the practice to future generations instead of selling their land to urban developers.
"Farmers want to do one thing most of all: They want to make sure that the ground is in good shape so their family can keep farming in the future," said Isaiah Ulmer, a farmer who grows pecans on several hundred acres in Canutillo, near the New Mexico-Texas state line. "It's just that simple."
Borderland researchers such as Ganjegunte – a professor of water resources salinity management with Texas A&M's AgriLife Research Center in El Paso – are trying to help farmers here sustain and innovate in the face of drought, escalating temperatures and increasingly salty groundwater.
Ganjegunte said the idea of selling land becomes more alluring to growers as environmental challenges mount and land prices increase to as high as almost $1 million per acre for plots near Interstate 10, he said.
"Then put it in the bank and just retire. Why fight with lack of water, salinity and an uncertain future?" Ganjegunte said during an interview at his office at Texas A&M's research farm in Socorro. "It's uncertainty that's kind of making people worried about agriculture."
This year, farmers have been grappling with a brief river season – the Rio Grande began flowing in June and will run only through August – about five months shorter than a

typical season. And when the river doesn't supply enough water to grow a crop, farmers have to spend money to pump groundwater with higher salinity that some crops such as pecans don't like.

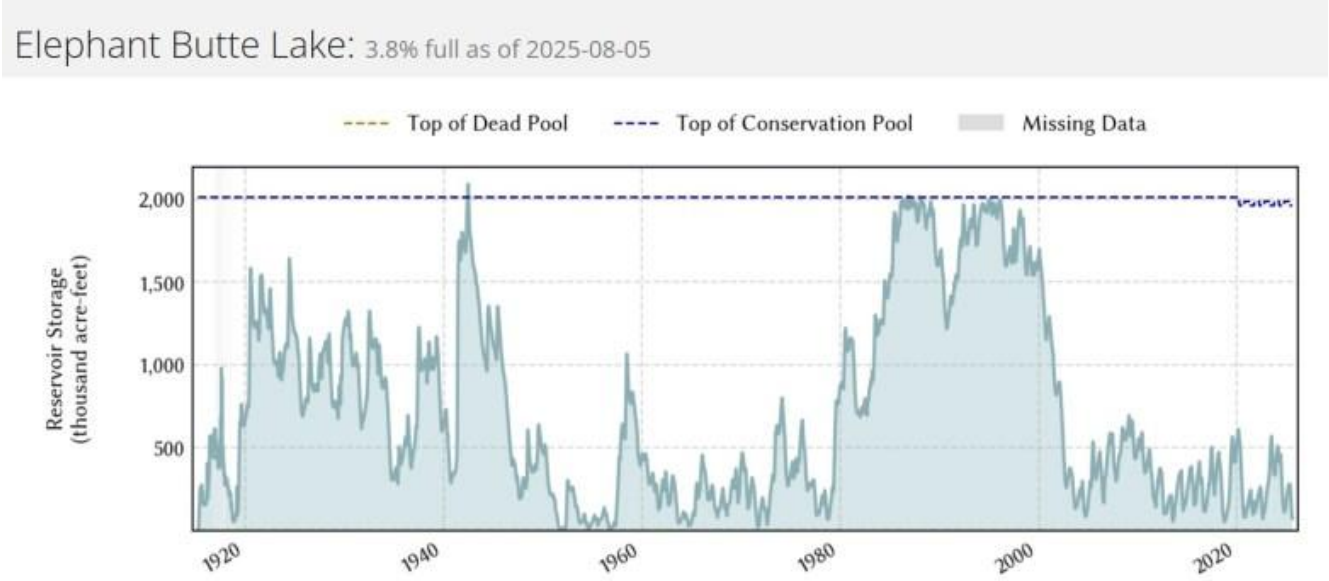
Researchers have a confluence of factors to untangle: water use, the cultural history of farming in the region, and the economic importance of agriculture in the borderland – one of the major pecan-growing areas in the United States.

A water future for residents and farmers?

The challenge facing agriculture – and especially pecan growers – in El Paso is clear.

Growers in the Upper and Lower valleys rely on water flowing through the Rio Grande to irrigate their crops.

The length of time that the Rio Grande flows in any year – and the amount of water available for farmers – depends on how much snow packs up in the mountains of southern Colorado and northern New Mexico and then melts and flows into Elephant Butte in New Mexico.



A chart published by the Texas Water Development Board shows how full Elephant Butte has been over time. Over the last two decades, water levels in the reservoir have been chronically low. (Water Data For Texas)

Elephant Butte, about 120 miles north of El Paso, was built in the 1920s to control the flow of water to prevent flooding and so that planners could divide the water. Over the last 20 years, drought has led to consistently low levels of water stored in the reservoir – especially compared with the 1980s and 1990s.

In recent years, that's left farmers far more reliant on pumping the region's salty groundwater to sustain their crops. For pecans, salty water can lead to smaller nuts and lower yields, which makes farming less economical.

"From when I was born, it was the golden years – until I was 21 or 22, it was only surface water, no groundwater," said Shannon Ivey, a 45-year-old fourth-generation pecan farmer in Tornillo in far East El Paso County.

In the early 2000s, Ivey's father salvaged old wells on the family's farm to start pumping groundwater as the drought that persists today first set in.

"My entire life, I had never seen (wells on the farm) because, sometime in the '70s, when the drought had broken, my dad had pulled the motors, engine blocks, pump, column pipe, everything, and stored a lot of it or sold a lot of it," Ivey said. "And they were capped with just covers on a hole in the ground."

Short river seasons could become the norm.

Researchers at the University of Texas at El Paso have used computer models to predict water levels at Elephant Butte based on snowfall trends at the head of the Rio Grande watershed.

"It does look like there'll be less water – substantially less water – and that the number of consecutive years where we're below the full (river) allocation will increase," said UTEP professor Alex Mayer, director of the university's Center for Environmental Resource Management. "And that's primarily due to climate change in the headwaters."

Less river water means farmers shift to rely on the underground aquifers that El Paso and Ciudad Juárez also tap for drinking water supplies.

Mayer said it's difficult to measure how much water is stored in either the Mesilla Bolson aquifer west of the Franklin Mountains or the larger Hueco Bolson that's on the east side of the mountain range, where water sits deep below the surface in between particles of sand and rock.

But from his calculations, he said there's only "a matter of decades of fresh water left in the Hueco Bolson."

In recent years, city-owned El Paso Water has dialed back its groundwater pumping to preserve the aquifers. And water managers with the utility say there's still a vast amount of brackish – or slightly salty – groundwater available to meet the city's water needs for many years to come.

That's why El Paso Water built the Kay Bailey Hutchison Desalination plant near El Paso International Airport in 2007, which it's expanding to produce as much as 33.5 million gallons per day. That's equal to about 30% of the average amount of water the utility's customers use every day.

Original Article: El Paso Matters by Deigo Mendoza-Moyers

GLOBAL WATER NEWS

Thames Water crisis: Ministers line up administrator for utility giant

Ministers have lined up insolvency practitioners to prepare for the potential collapse of Thames Water, Britain's biggest water utility.

Sky News can exclusively reveal that Steve Reed, the environment secretary, has signed off the appointment of FTI Consulting to advise on contingency plans for Thames Water to be placed into a Special Administration regime (SAR).

Sources said on Tuesday that the advisory role established FTI Consulting as the frontrunner to act as the company's administrator if it fails to secure a private sector bailout - although approval of such an appointment would be decided in court.

Thames Water, its largest group of creditors and Ofwat, the industry regulator, have been locked in talks for months about a deal that would see its lenders injecting about £5bn of new capital and writing off roughly £12bn of value across its capital structure.

The discussions are said to be progressing constructively, although they appear to rely in part on the prospect of the company being granted forbearance on hundreds of millions of pounds of regulatory fines.

Responding to an enquiry from Sky News on Tuesday, a government spokesperson said: "The government will always act in the national interest on these issues.

"The company remains financially stable, but we have stepped up our preparations and stand ready for all eventualities, including applying for a Special Administration Regime if that were to become necessary."

Insiders stressed that FTI Consulting's engagement by the Department for the Environment, Food and Rural Affairs (DEFRA) did not signal that Thames Water was about to collapse into insolvency proceedings.

A SAR would ensure that customers would continue to receive water and sewage services if Thames Water collapsed, while putting taxpayers on the hook for billions of pounds in bailout costs - a scenario the chancellor, Rachel Reeves, is keen to avoid at a time when the public finances are already severely constrained.

The SAR process can only be instigated in the event that a company becomes insolvent, can no longer fulfil its statutory duties or breaches an enforcement order, according to insiders.

Mr Reed has repeatedly stressed the government's desire to avoid taking Thames Water into temporary public ownership, but that it was ready to deal with "all eventualities".

"Thames Water must meet its statutory and regulatory obligations to its customers and to the environment--it is only right that the company is subject to the same consequences as any other water company.

The company remains financially stable, but we have stepped up our preparations and stand ready for all eventualities," he told the House of Commons in June.

Thames Water, which has about 16m customers, serves about a quarter of the UK's population.
It is drowning under close to £20bn of debt, and was previously owned by Macquarie, the Australian infrastructure and banking behemoth.
Its most recent consortium of shareholders, which included the Universities Superannuation Scheme and an Abu Dhabi sovereign wealth fund, have written off the value of their investments in the company.
The government's SAR process has only been tested once before, when the energy retailer Bulb failed in 2021.
Bulb was ultimately sold to Octopus Energy with the taxpayer funding used to save and run the company since having been repaid.
Thames Water is racing to secure a rescue plan involving funds such as Elliott Management and Silver Point Capital, with a deadline of late October to appeal to the Competition and Markets Authority against Ofwat's final determination on its next five-year spending plan.
Ofwat has ruled that Thames Water can spend £20.5bn during the period from 2026, with the company arguing that it requires a further sum of approximately £4bn.
Mike McTighe, a veteran corporate troubleshooter who chairs BT Group's Openreach division, has been parachuted in to work with the funds.
The company said in its accounts last month that there was "material uncertainty" over whether it could be solvently recapitalised.
Original Article: Sky News by Mark Kleinman

Experts discuss plans to save water as dry conditions worsen across England

A nationally significant water shortfall is gripping England, the government has warned, as experts say the conditions could last until mid-autumn.
The National Drought Group met to discuss actions to save water across the country, and Steve Reed, the environment secretary, briefed the chancellor of the duchy of Lancaster, Pat McFadden, about the risks posed by the dry weather.
Water companies are preparing to take more drastic measures to conserve water as supplies dwindle.
Southern Water, some of whose customers are already under a hosepipe ban, has applied for a non-essential use ban that would prohibit businesses from taking actions such as filling swimming pools or cleaning their windows.
The company has also applied for an emergency order to take water from a rare chalk stream after it drops below its ecologically safe water flow.
The drought is hitting many sectors across the country, with many canals shut to navigation due to low water levels, farmers struggling to grow crops and feed livestock,

and higher numbers of fish die-offs being reported by anglers and others who use England's rivers.

Two rivers, the Wye and the Great Ouse at Ely, were at their lowest on record for July, and only 89% of long-term average rainfall was recorded for the month across England. This is the sixth consecutive month of below-average rainfall.

Five areas of England are in drought: Yorkshire; Cumbria and Lancashire; Greater Manchester, Merseyside and Cheshire; East Midlands; and West Midlands.

Dry conditions could last well into October, the UK Centre for Ecology & Hydrology has warned, which would put higher pressure on water supplies as rivers, reservoirs and aquifers are at very low points after a very dry spring and summer.

Its latest hydrological outlook says: "Normal to below normal groundwater levels are likely to persist through both August and the August-October period." It added the situation would continue for "low river flows across central and southern England".

More parts of the country could be at risk of being plunged into drought conditions as aquifers are depleted. These are underground stores of water which take a long time, and a lot of sustained rainfall, to recharge.

These were full after a very wet winter in 2024 and the start of 2025, but the dry conditions have caused them to become depleted.

At the moment, it is mainly areas reliant on reservoirs and chalk streams that are facing drought and hosepipe bans, as areas such as London have been able to use the resources from the chalk aquifer.

The hydrological forecast warns: "The outlook for August is for normal to below normal levels, with notably to exceptionally low levels for the southern chalk and carboniferous limestones in central southern England, south Wales and the South Downs. Over August-October, normal to below normal levels are the most likely outcome."

The National Drought Group – which includes the Met Office, the government, regulators, water companies, the National Farmers' Union, the Canal & River Trust, anglers, and conservation experts – used the meeting to highlight the water-saving measures each sector is taking.

Original Article: The Guardian by Helena Horton

National Drought Group meets to address "nationally significant" water shortfall

The National Drought Group met today (Monday 11 August) with the current water shortfall situation in England now defined as a "nationally significant incident."

Five areas are officially in drought, with six more experiencing prolonged dry weather following the driest six months to July since 1976.

Despite the unsettled weather last month, many river flows and reservoir levels in England continued to recede compared to June.

Rainstorms and showers helped mask the fact that July was still the fifth warmest on record.

August has started to see a return of drier conditions and the fourth heatwave of the summer - putting more pressure on already struggling public water supplies and navigational waterways.

The National Drought Group - which includes the Met Office, government, regulators, water companies, the National Farmers' Union, Canal & River Trust, anglers, and conservation experts – used the meeting to highlight the water-saving measures each sector is taking.

They also praised the public for reducing their own daily usage, with Yorkshire Water reporting a 10% reduction in domestic demand following their hosepipe ban. This equates to saving up to 80 million litres per day – equivalent to 32 Olympic-sized swimming pools.

The less water that is used, the less needs to be abstracted from local rivers – therefore protecting the health of our waterways and wildlife.

The Environment Agency's Director of Water and NDG chair, Helen Wakeham said:

The current situation is nationally significant, and we are calling on everyone to play their part and help reduce the pressure on our water environment.

Water companies must continue to quickly fix leaks and lead the way in saving water. We know the challenges farmers are facing and will continue to work with them, other land users, and businesses to ensure everyone acts sustainably.

We are grateful to the public for following the restrictions, where in place, to conserve water in these dry conditions. Simple, everyday choices – such as turning off a tap or deleting old emails – also really helps the collective effort to reduce demand and help preserve the health of our rivers and wildlife.

The recent rainfall has been welcomed by growers, although the impacts from the dry weather remain as farmers continue their harvest.

The National Farmers Union noted how water shortages have impacted the growing season this year.

NFU Vice-President, Rachel Hallos said:

British farmers and growers continue to face extremely dry conditions, with harvest underway and crop yields proving mixed across the country. Some farms are reporting a significant drop in yields, which is financially devasting for the farm business and could have impacts for the UK's overall harvest.

Farming is a long-term industry and there is growing concern about the months ahead. Minimal grass growth means many livestock farmers are already tapping into winter feed stocks, raising the risk of higher production costs later in the year.

Access to clean, reliable water is essential for food production. What's worked well during this drought has been early, coordinated communication with stakeholders

around licence restrictions and drought permits and orders and it's crucial this continues.

To avoid the swing between extreme drought and flooding and to secure water supplies for food production, we urgently need investment in water infrastructure and a more effective planning system.

Periods of dry weather and low rivers reduce oxygen levels in water that can lead to fish kills and more algal blooms. Lower river flows also prevent wildlife from moving up or downstream.

Drying out wetlands can be devastating for species that depend on those habits while England has seen an increase in wildfires, devastating vulnerable areas of heathland and moorland.

The Met Office updated the group on the future weather outlook, noting drier weather has returned.

Original Article: UK Government

Water Resources department plans to install artificial recharge shafts to replenish groundwater sources across Tamil Nadu

For the first time in years, the Water Resources Department (WRD) will launch a project to install artificial recharge shafts on a large scale to boost percolation and help stabilise the water table in over-exploited and critical blocks in various districts across the State.

The State government has recently approved a proposal to install nearly 576 artificial recharge shafts in 23 districts at a cost of ₹6.74 crore. The WRD's State Ground and Surface Water Resources Data Centre will implement the projects in districts, including Ranipet, Salem, Erode, Tirupattur, Vellore, Tiruvannamalai, Cuddalore, and Tenkasi. Officials said recharge shafts would be installed close to waterbodies or storage structures such as check dams to direct rainwater into the deeper aquifers.

Original Article: The Hindu by K. Lalshmi

Amazon to launch groundwater recharge project in Maharashtra's Vaitarna basin

Amazon recently announced a groundwater recharge project for the Vaitarna basin in Maharashtra, which will replenish over 1.3 billion litres of water every year once operational in 2027. The project, designed in partnership with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), is intended to benefit smallholder farmers and enhance water supply in the area.

The project will target the Vaitarna hydro basin, which is also one of the major water sources for the Mumbai Metropolitan Region. The Lower Vaitarna and Tansa reservoirs, situated close to the project location, provide over 870 million litres of drinking water

every day to the city. Authorities claim that the initiative will improve urban and rural water scarcity in the region.

The interventions planned are rainwater harvesting pond construction, field bunding to prevent runoff, improved drainage systems and soil erosion control measures. They aim to augment groundwater recharge, irrigation supply, and agricultural production in areas of Palghar district, including villages like Abhitghar and Kabra.

Story continues below this ad

The Maharashtra government has also backed this initiative, citing its viability to benefit farmers in water-scarce regions. “The collaboration between Amazon and ICRISAT to replenish groundwater in the Vaitarna basin is a vital step in enhancing climate resilience in water-stressed communities. The Vaitarna River is crucial not only for the Mumbai metropolitan region but also for Maharashtra’s agro-systems and communities. Its regeneration will directly benefit our communities, farmers, and food systems,” Chief Minister Devendra Fadnavis said.

Amazon is planning to return more water to the Indian communities than it extracts in its direct operations by 2027. The new project in Maharashtra complements its current water replenishment efforts in the states of Telangana, Karnataka and Delhi.

ICRISAT has estimated that the project in Maharashtra will benefit approximately 700 farm families, especially during the Rabi crops season, and could boost household incomes by as much as 80 per cent. The effort will also help reduce the impact of soil degradation and enhance water scarcity resilience, according to the organisation.

The Vaitarna project will be completed in two years and work is expected to start later this year. It is likely to have direct benefits to the local agriculture sector and indirect benefits to the water supply system of Mumbai.

Story continues below this ad

The government will also be tracking the project, along with Amazon and ICRISAT, to monitor developments and gauge the impact. Officials state that the results will help inform subsequent groundwater recharge efforts in other regions of Maharashtra.

Original Article: Indian Express by Siddhant Konduskar

The world needs a new economics of water

As African leaders gather in Cape Town for the African Water Investment Summit, there can be no equivocation: the world faces an unprecedented water crisis that demands a paradigm shift in how we value and govern our most precious resource.

The scale of the challenge is staggering. Over half the world’s food production now comes from areas experiencing declining freshwater supplies. Two-thirds of the global population faces water scarcity at least one month per year. More than 1,000 children under five die every day, on average, from water-related diseases. And if current trends

continue, high-income countries could see their GDP shrink by 8% by 2050, while lower-income countries (many in Africa) face losses of 10-15%.

Yet this crisis also presents an extraordinary opportunity. As South Africa assumes the G20 presidency (for which I have been appointed special adviser to President Cyril Ramaphosa), it can champion a new economics of water that treats the hydrological cycle as a global common good, rather than as the source of a commodity to be hoarded or traded.

The economic case for action is compelling. The International High-Level Panel on Water Investments for Africa shows that every $1 invested in climate-resilient water and sanitation delivers a return of $7. With Africa requiring an additional $30bn annually to meet the Sustainable Development Goal (SDG) on water security and sustainable sanitation, the financing gap is significant; but it is surmountable with the right strategy. The Global Commission on the Economics of Water (which I co-chaired with Ngozi Okonjo-Iweala, the director-general of the World Trade Organisation, Johan Rockström, the director of the Potsdam Institute for Climate Impact Research, and Singaporean President Tharman Shanmugaratnam) recently called for such a strategy.

Treating water as a global common good and adopting mission-oriented approaches to transform the crisis into an opportunity requires that we recognise three critical facts. First, water connects us all – not just through visible rivers and lakes, but through atmospheric moisture flows that travel across continents. Second, the water crisis is inseparable from climate change and biodiversity loss, each of which accelerates the others in a vicious cycle. And, third, water runs through every SDG, from food security and health to economic growth.

Yet too often, water investments follow the failed playbook of climate and development finance. There is a tendency to derisk private capital without ensuring public returns; to fund projects without strategic direction; and to treat water as a technical problem, rather than a systemic challenge. Such approaches risk creating water infrastructure that serves investors more than communities, exacerbates existing inequalities, and fails to address the interconnected nature of the water, climate, and biodiversity crises.

This interconnectedness demands a new economic framework that aims to shape markets proactively rather than simply fixing failures after the fact. We need to move from short-term cost-benefit thinking to long-term value creation, and that calls for mission-oriented investments that shape markets for the common good.

Missions require clear goals – like ensuring that no child dies from unsafe water by 2030. Once goals are established, all financing can be aligned with them through cross-sectoral approaches spanning agriculture, energy, manufacturing, and digital infrastructure. Rather than picking sectors or technologies, the point is to find willing partners across all industries to tackle shared challenges. Such mission-oriented investments can also lead to economic diversification, creating new export opportunities and development pathways.

Consider Bolivia's approach to lithium extraction. Rather than simply exporting raw materials, the country is developing strategies to avoid the traditional "resource curse" by building domestic battery-production capabilities and participating directly in the energy transition. In doing so, it is converting its resource wealth into innovation capacity, strengthening value chains, and creating new export markets for higher-value activities.

As matters stand, more than $700bn per year is channelled into water and agriculture subsidies that often incentivise overuse and pollution. By redirecting these resources toward water-efficient agriculture and ecosystem restoration, with clear conditions attached, we could transform the economics of water overnight. To that end, public development banks can provide patient capital for water infrastructure, while requiring private partners to reinvest profits in watershed protection.

Africa is uniquely positioned to lead this transformation. Its vast supply of groundwater remains largely untapped, with 255mn urban inhabitants living above known supplies. Combined with affordable solar power, these supplies present an opportunity to revolutionise agriculture. By focusing on efficiency and reuse, as well as on capacity building, data-sharing, and monitoring and evaluation, this relatively stable groundwater resource, accessed by solar-powered pumps, can be a decentralised alternative minimising the emissions, waste, and other environmental costs implied by larger infrastructure projects that disrupt natural waterflows. Through Just Water Partnerships – collaborative frameworks that pool such solar-groundwater projects for increased bankability while ensuring community ownership – international finance can be channelled toward water infrastructure that serves both national development goals and the global common good.

South Africa's G20 presidency – the first ever for an African country – offers a historic platform to advance this agenda globally. Just as Brazil has used its G20 leadership and role as host of the upcoming UN Climate Change Conference (COP30) to drive climate action, South Africa can make water security central to the global economic agenda.

With the 2026 UN Water Conference on the horizon, and with the international community recognising that climate change cannot be tackled without also addressing the water crisis, the time is right for bold leadership.

The African Water Investment Summit is not just another gathering, but should be a watershed. This is the moment when we should shift from treating water as a local resource to governing it as a global common good, moving from crisis management to proactive market shaping and from viewing mission-oriented investment as a cost to recognising it as the foundation of sustainable growth.

Water security underpins Africa's aspirations for health, climate resilience, prosperity, and peace. With young Africans set to constitute 42% of global youth by 2030, investing in water is tantamount to investing in the world's future. The question isn't whether we can afford to act, but whether we can afford not to. – Project Syndicate
Original Article: The Gulf Times by Mariana Mazzucato

Enhancing Water Sector Resilience through Nature-based Solutions in South Asia

South Asia is among the world's most climate-vulnerable regions, with countries like Bangladesh, India, Nepal, and Pakistan consistently ranking among the top ten most affected nations in the Global Climate Risk Index. Nature-based Solutions (NbS) are emerging as a promising and holistic approach to addressing the impacts of climate change on water resources.
A review of climate and water policies in these four countries shows that NbS principles are increasingly being integrated into national frameworks. Based on this context, the report outlines five strategic directions for national governments to prioritise in order to accelerate the mainstreaming and scaling up of NbS, thereby strengthening water resilience for communities and economic sectors.
Original Article: IUCN