

Veles Water Weekly Report

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September 30th 2021

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WATER FUTURES MARKET ANALYSIS

Welcome to ***WATERTALK***

by Joshua Bell standing in for Robin Bieber

CLICK THE LINK BELOW

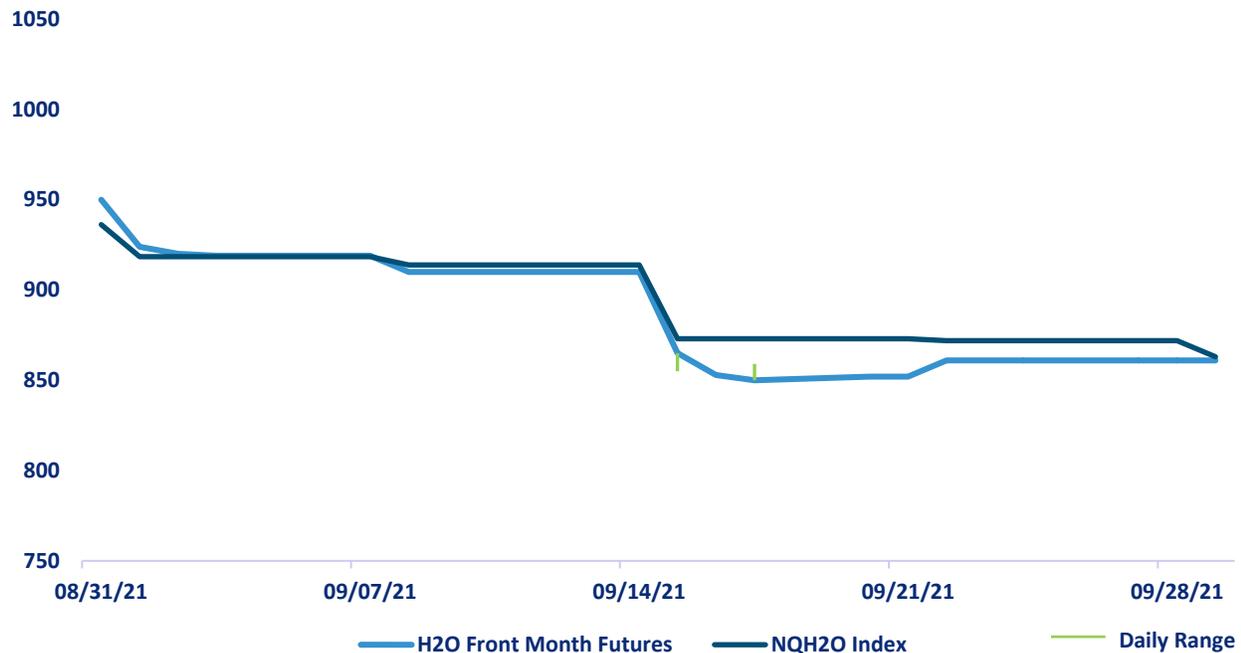
“A 2 minute technical analysis video of H2O futures”

<https://vimeo.com/618798624>



NQH2O INDEX PRICE vs H2O FUTURES PRICE

1 Month Price Performance NQH2O Index vs H2O Futures



Price Chart Based upon Daily Close

The September 29th new index level was \$863.04, down \$8.92 or 1.02%. Throughout the week the futures have closed at a discount to the index of \$2.04 - \$10.96. The futures have been closing flat this week at \$861. NQH2O is up 72.67% YTD.

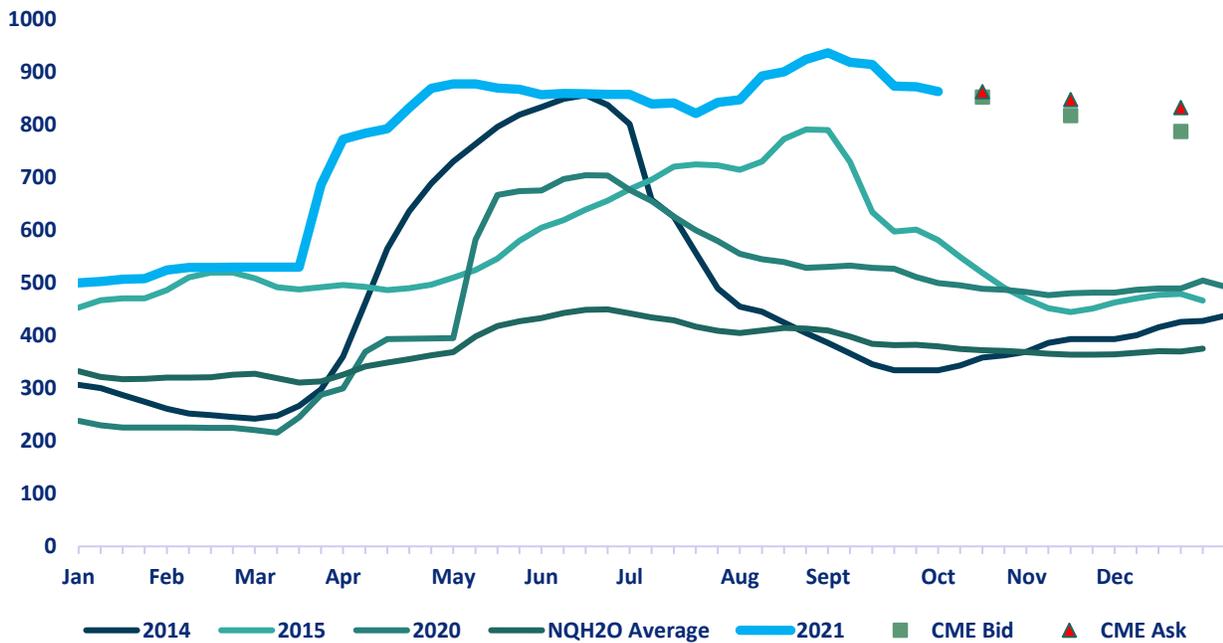
Below are the bid offer prices on different expiries being quoted in the market.

| | |
|----------|----------|
| October | 852@862 |
| November | 817@847 |
| December | 787@832 |
| March 22 | 725@950 |
| June 22 | 975@1045 |



NQH2O INDEX HISTORY

NQH2O Seasonal Pricing/ CME H2O Futures Quotes



The graph above lays out the Nasdaq Veles water index by year, showing 2014, 2015, 2020, 2021 plus an average price of the last eight years. In very dry years, prices clearly rise through the spring, peaking in May to July (with the exception of 2015) as demand for water from farmers peaks. Prices then taper off heading into the winter on reduced demand, and the possibility of rain/snow.

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

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

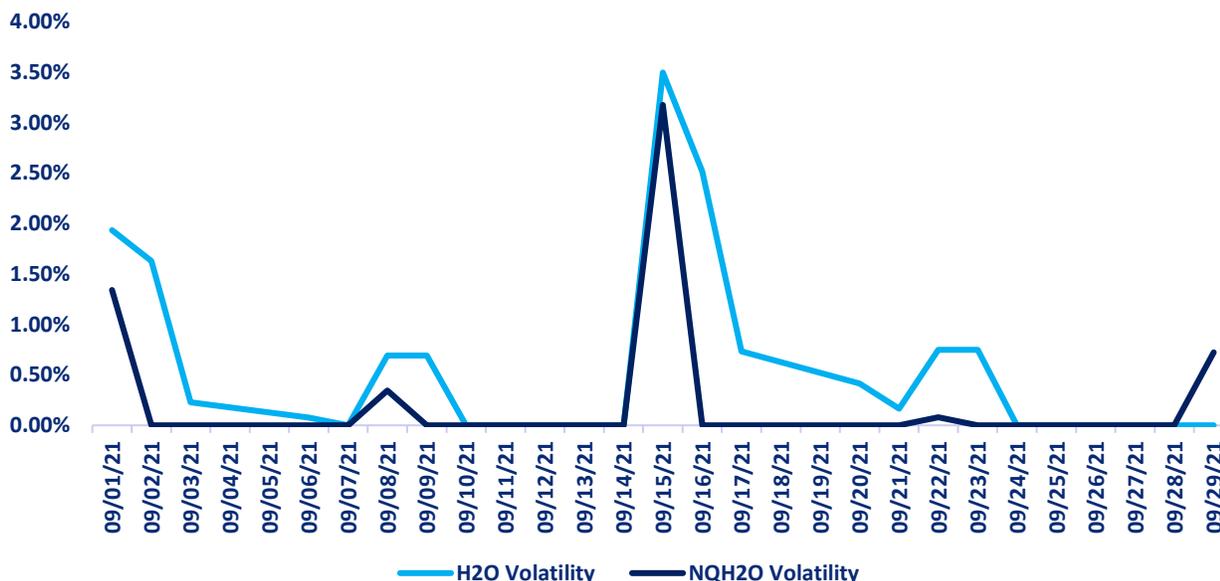
Current bids and offers in the market are still higher than historic prices showing that expectations are that this is an exceptionally dry year and prices may not fall seasonally as much as they have in prior dry years.

(Reference: John H Dolan, CME Market Maker)



H2O FUTURES AND NQH2O INDEX VOLATILITY ANALYSIS

Daily H2O Futures Volatility vs Daily NQH2O Index Volatility



DAILY VOLATILITY

Over the last week the September future volatility high has been 0.75% on September 23rd and the low of 0% for the rest of the week.

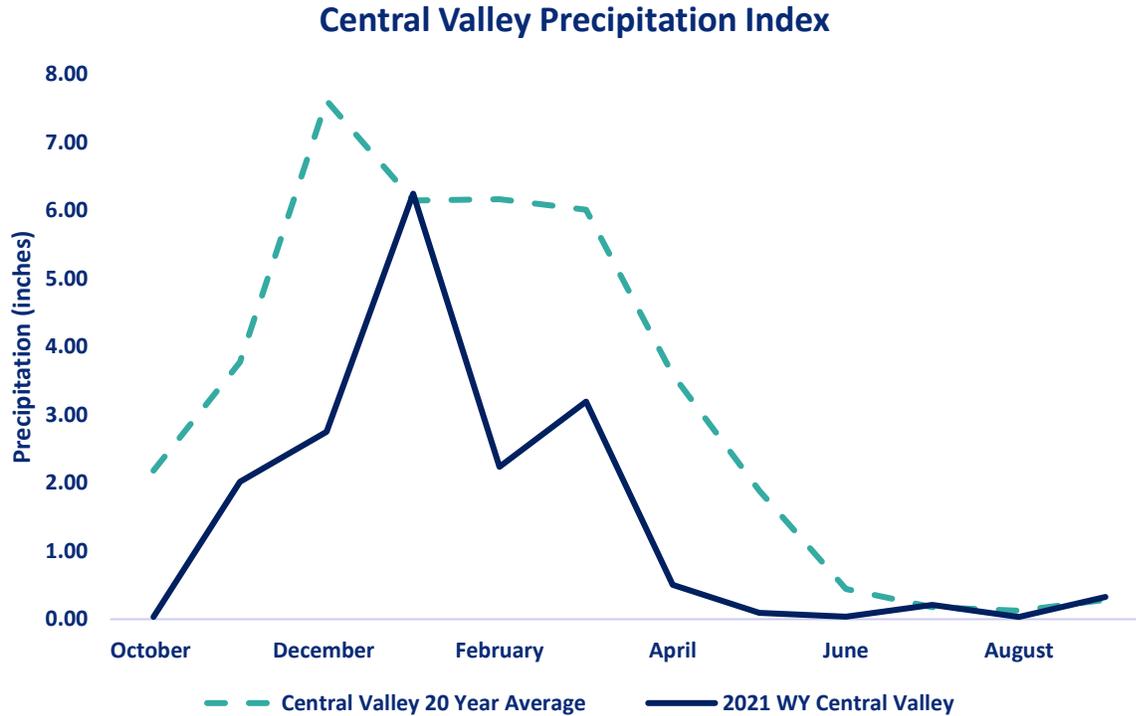
| ASSET | 1 YEAR (%) | 2 MONTH (%) | 1 MONTH (%) | 1 WEEK (%) |
|-------------|------------|-------------|-------------|------------|
| NQH2O INDEX | 33.76% | 7.44% | 4.02% | 0.912% |
| H2O FUTURES | N/A | 6.70% | 5.28% | 0.96% |

For the week ending on the 29th September the two-month futures volatility is at a discount of 0.74% to the index, a reversal of 1.34% from the previous week. The one-month futures volatility is at a premium of 1.26% to the index, down 0.62% from last week. The one-week futures volatility is at a premium of 0.05% to the index, down 0.62%.

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



CENTRAL VALLEY PRECIPITATION REPORT



Central Valley average is calculated using data from 19 weather stations in the Central Valley, California.
Data as of 22/09/2021

| STATION | MTD (INCHES) | WEEK ON WEEK CHANGE (INCHES) | % OF 20 YEAR AVERAGE MTD | 2021 WYTD VS 2020 WYTD % | 2021 WY VS 20 YEAR AVERAGE TO DATE % |
|---------------------------------|--------------|------------------------------|--------------------------|--------------------------|--------------------------------------|
| SAN JOAQUIN 5 STATION (5SI) | 0.09 | 0.00 | 34.62% | 61 | 47 |
| TULARE 6 STATION (6SI) | 0.10 | 0.00 | 90.50% | 65 | 34 |
| NORTHERN SIERRA 8 STATION (8SI) | 0.79 | 0.19 | 162.72% | 61 | 46 |
| CENTRAL VALLEY TOTAL | 0.98 | 0.19 | 95.94% | 62 | 42.33 |

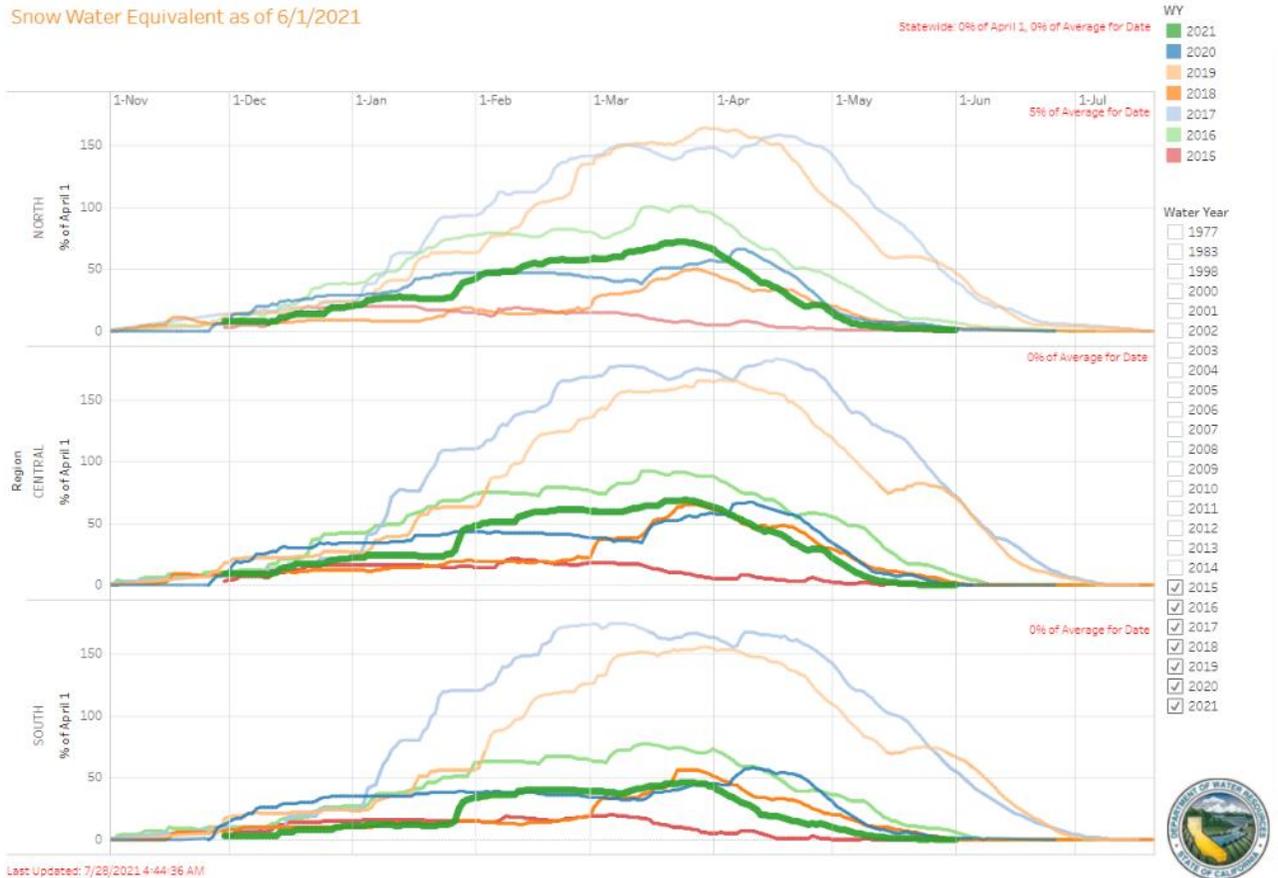
RESERVOIR STORAGE

| RESERVOIR | STORAGE (AF) | % CAPACITY | LAST YEAR % CAPACITY | HISTORIC ANNUAL AVERAGE CAPACITY % |
|---------------|--------------|------------|----------------------|------------------------------------|
| TRINITY LAKE | 724,947 | 30 | 56 | 43 |
| SHASTA LAKE | 1,087,966 | 24 | 49 | 40 |
| LAKE OROVILLE | 788,574 | 22 | 47 | 36 |
| SAN LUIS RES | 256,011 | 13 | 48 | 27 |



SNOWPACK WATER CONTENT

Snow Water Equivalent as of 6/1/2021



| REGION | *SNOWPACK WATER EQUIVALENT (INCHES) | WEEK ON WEEK CHANGE % | % OF AVERAGE LAST YEAR | % OF 20 YEAR HISTORICAL AVERAGE | % OF HISTORICAL **APRIL 1ST BENCHMARK |
|-----------------|-------------------------------------|-----------------------|------------------------|---------------------------------|---------------------------------------|
| NORTHERN SIERRA | 0 | 0.00% | 0 | 0 | 0 |
| CENTRAL SIERRA | 0 | 0.00% | 0 | 0 | 0 |
| SOUTHERN SIERRA | 0 | 0.00% | 0 | 0 | 0 |
| STATEWIDE | 0 | 0.00% | 0 | 0 | 0 |

*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

U.S. Drought Monitor California

September 21, 2021
(Released Thursday, Sep. 23, 2021)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|--|-------|--------|--------|-------|-------|-------|
| Current | 0.00 | 100.00 | 100.00 | 93.93 | 87.88 | 45.66 |
| Last Week <i>09-14-2021</i> | 0.00 | 100.00 | 100.00 | 93.93 | 87.94 | 45.66 |
| 3 Months Ago <i>06-22-2021</i> | 0.00 | 100.00 | 100.00 | 94.73 | 85.44 | 33.32 |
| Start of Calendar Year <i>12-29-2020</i> | 0.00 | 100.00 | 95.17 | 74.34 | 33.75 | 1.19 |
| Start of Water Year <i>09-29-2020</i> | 15.35 | 84.65 | 67.65 | 35.62 | 12.74 | 0.00 |
| One Year Ago <i>09-22-2020</i> | 15.62 | 84.38 | 67.09 | 35.27 | 3.39 | 0.00 |

Intensity:

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

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

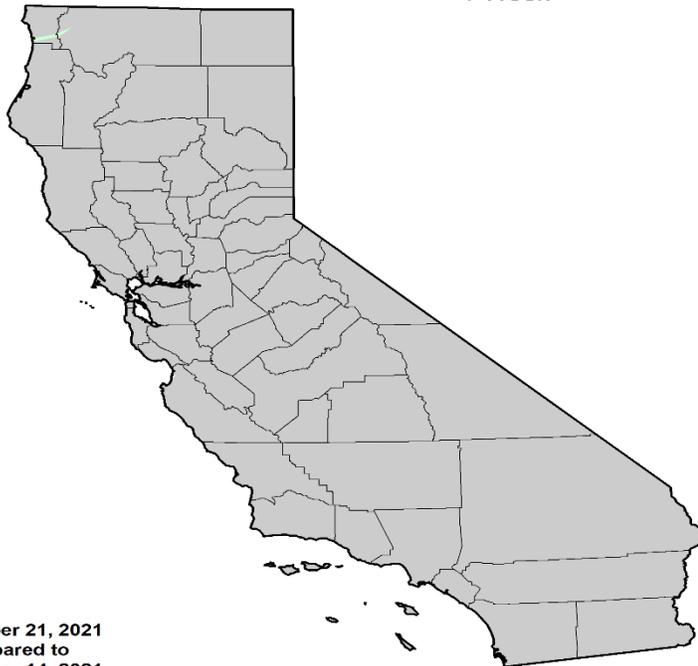
Author:

Brad Rippey
U.S. Department of Agriculture



droughtmonitor.unl.edu

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



September 21, 2021
compared to
September 14, 2021



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

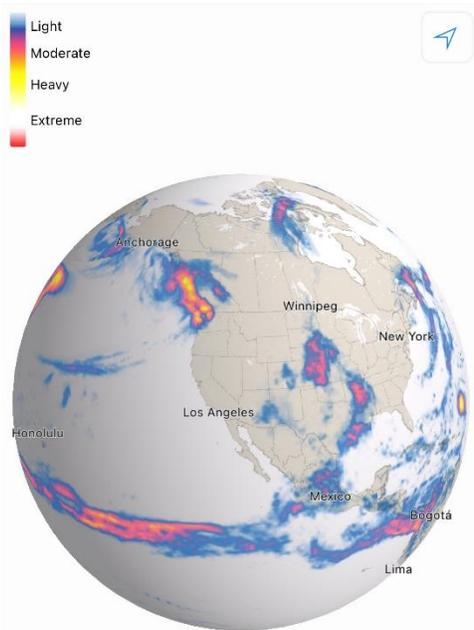
droughtmonitor.unl.edu

The US Drought Monitor release their statistics with a 1-week lag to this report. Over the past week there has been a 0.06% improvement in D3 drought conditions in Northern California.

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



CURRENT SATELLITE IMAGERY



The current satellite picture shows a relatively dry western region of the US. Monsoonal effects have brought some moisture to the Southern and Eastern Arizona regions with this moisture moving in a North Easterly direction. The Monsoonal effect is appearing to dissipate over Mexico.

There is a frontal activity over the NW Pacific but this may only bring some light precipitation to Northern CA. Further NW behind this system there is another frontal system forming which may bring greater precipitation to N CA.

Our long-term models are still showing the potential for greater precipitation to reach the SW and Western US this winter.

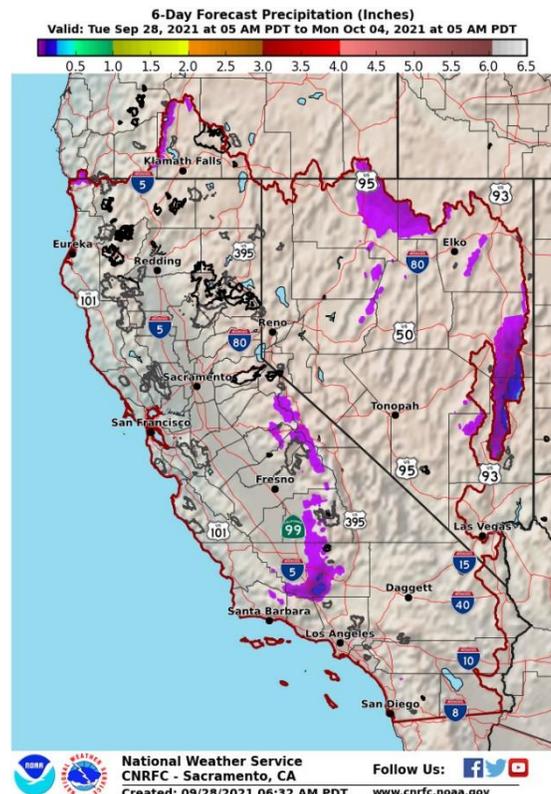
Ref. Dark Sky

10 Day Outlook

Dry conditions will be the rule as the short wave trough affecting the region the past couple days shifts off toward the east and high pressure builds in from the south and west. A system moving toward the Pacific Northwest is expected to split as it reaches the coast with the southern piece forming a weak upper low as it drifts south just off the California coast.

Into next week, the upper ridge will be displaced slightly downstream as an upper trough deepens over the northeast Pacific. However, the influence from the high pressure will continue dry conditions through Monday and possibly later in the week.

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





WESTERN WEATHER DISCUSSION

Any meaningful precipitation was confined to the northern Rockies and the Pacific Northwest, resulting in modest improvement in the drought depiction for those areas. As colder air arrived on September 19, precipitation changed to snow in Yellowstone National Park and other high-elevation sites in the northern Rockies and Northwest. In Oregon, record-setting rainfall totals for September 18 reached 1.31 inches in Portland and 1.13 inches in Salem. With a 0.42-inch sum, Spokane, Washington, also collected a record-setting total for September 18. Portland's 3-day (September 17-19) rainfall reached 2.52 inches. However, Washington's topsoil moisture, as reported by the U.S. Department of Agriculture, improved only from 100 to 90% very short to short during the week ending September 19. The precipitation had little impact east of the northern Rockies; Montana led the nation on the 19th with topsoil moisture rated 95% very short to short.

Meanwhile, producers along and northwest of a line from California to Wyoming continued to deal with abysmal rangeland and pasture conditions, which (as reported by USDA) ranged from 55% very poor to poor in Idaho to 91% in Montana and Washington. Farther south, the 2021 North American monsoon has withdrawn from the Southwest, roughly on schedule, following a summer of beneficial rainfall that provided relief from short-term drought but left significant, underlying long-term drought issues such as groundwater depletion and low reservoir levels. Areas that received substantial monsoon-related rainfall are designated on the map with an "L" label, indicating that long-term drought persists. Elsewhere, several wildfires continued to actively burn, especially in parts of California. The latest "hot spot" for wildfire activity was the southern Sierra Nevada, where the Windy Fire and the KNP Complex were the most significant incidents. The KNP Complex, a 28,000-acre, lightning-sparked fire, was burning in California's Sequoia National Park. The Windy Fire, which has charred more than 31,000 acres of vegetation and was also igniting by lightning, was burning in several jurisdictions, including the Tule River Indian Reservation and the Sequoia National Forest

Reference: Brad Rippey, U.S. Department of Agriculture
Richard Heim, NOAA/NCEI



WATER NEWS

CALIFORNIA WATER NEWS

California moves on climate change, but rejects aggressive cuts to greenhouse emissions

As California trudges into another autumn marred by toxic wildfire smoke and drought-parched reservoirs, state lawmakers have cast climate change as a growing public health threat for the state's 40 million residents.

But they were willing to push the argument only so far.

On Thursday, against the smoldering backdrop of Sequoia National Park, where the KNP Complex is burning uncontained, Gov. Gavin Newsom signed a \$15 billion legislative package that he described as an unprecedented investment by any state in climate resiliency. The legislation outlines significant new efforts to bolster wildfire prevention, expand clean water supplies, and build a network of community-level safeguards to protect people from episodes of extreme and potentially deadly heat. The measure is one of several bills targeting the health impacts of perennial seasons of fire and drought that sailed through this year's legislative session.

Still, the Democratic-controlled Legislature stopped short of taking the momentous action that climate experts argue is central to the health of current and future generations: Lawmakers failed to pass legislation to more quickly and aggressively reduce the state's share of the greenhouse gas emissions warming the planet.

"There were good environmental bills that passed, but they were incremental," said Mary Creasman, CEO of California Environmental Voters, formerly called the California League of Conservation Voters. "We can't give ourselves credit for doing anything less than science tells us we have to, and science says we are nowhere near doing what we need to be doing."

Among the climate health bills that still await Newsom's consideration are measures to make the state's emergency stockpile of N95 masks available to farmworkers on days of dangerously smoky air and a requirement for the state to create detailed guidelines that counties can incorporate into emergency response plans when air quality is poor because of wildfire or other pollution. Even short-term exposure to wildfire smoke can trigger asthma and heart attacks and has been linked to increased risk of illness.

Original Article: [The San Francisco Chronicle by Samantha Young](#)

California's rainy season is changing. Here's what that means for already worsening fire danger.

After two dry years, the California is in desperate need of rain and snow. October marks the beginning of California's new water year, which will run through Sept. 30 next year.



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This also signals the transition from the long, dry summer months to the wetter time of year. But new research is showing a delay to California's rainy season.

Jelena Lukovic, an associate professor at the University of Belgrade, Serbia and lead author of a new study on California's rainy season, said the onset of the rainy season has been progressively delayed since the 1960s. Specifically, 27 days later than six decades ago. This pushes the start of the state's annual rainy season from November to December.

Their research looked at 60 years worth of data from weather stations. They used this time period so they could gather weather information from instruments rather than modeling or even tree rings.

Even though California has a Mediterranean type of climate, they found a unique pattern. Along with a shorter rainy season, the dry months are getting drier and the wet months are becoming wetter. In fact, they found December and January are trending wetter than 60 years ago.

The shifting pattern means a longer period of dry weather and an extended, more intense peak wildfire season. This aligns with climate models predicting drier autumns for California in a warming world.

Original Article: [abc10 news by Monica Woods](#)

Already unrecognizable at only 24% full, Lake Shasta still falling in 2nd-worst year on record

Recent rainfall hasn't been nearly enough to make a dent in Lake Shasta's precariously low water levels.

The lakebed where the water has receded still shows cracks where mud has hardened and over the summer, dust devils have swept the fine, dried silt into the air.

The drought has dropped Lake Shasta to its second worst level since the last bucket of concrete was poured for Shasta Dam in December 1945.

"We got a couple hundredths of an inch (of rain) and it made no impact at all," said Donald Bader, the Bureau of Reclamation's area manager for the Northern California Area Office at Shasta Dam.

"It usually takes us two to three pretty good substantial storms to start getting runoff into the lake," he said. "We hope we get those storms obviously come October into November."

As of Tuesday, the lake was 24% full and about 175 feet down from the top of the dam, Bader said. The lake's historic lowest level was in the summer of 1977 when it was down 230 feet and "far and away the worst year," he said.

As the shoreline has receded and boat docks left high and dry, the lake still isn't done dropping.

"We're going to bottom out at approximately 195 feet (from the top of the dam), so we're still going to be 35 feet above where 1977 levels were, but it's still the second worst on record when all is said and done," Bader said.



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The fullest part of the lake is in the lake's main channel near the dam, which is 343 feet deep, he said.

Original Article: [Redding Record Searchlight by Mike Chapman](#)

Toxin Levels Spike, Prompting Drinking Water Emergency in Northern California

Amid a withering drought, a severe harmful algal bloom in California's second-largest freshwater lake is producing exceptionally high toxin levels, resulting in a drinking water emergency for hundreds of residents who draw water directly from Clear Lake.

The colorful but noxious mats of cyanobacteria in the Northern California lake have also led to difficulties for public utilities that have more sophisticated treatment systems than individual households.

Lake County public health officials on September 15 notified residents along the Lower and Oaks arms not to drink water from their private lake intakes. The warning, which could last a month or more, was issued after water samples from those areas showed astronomically high levels of the liver toxin microcystin.

The warning applies to about 280 households that use the lake as a water source and are not connected to a public water system. Boiling water does not kill the toxins. Alternative water supplies for those affected by the advisory are being arranged. Emergency rooms and veterinary clinics have been briefed on symptoms of cyanotoxin exposure, which can be deadly for pets who drink contaminated water.

Surrounded by oak forests and rolling hills about 100 miles north of San Francisco, Clear Lake lives up to its name in the cooler months. In summer and fall, though, harmful algal blooms have plagued the lake for years, clogging the shores, emitting odors akin to sewage, and producing toxins. Local officials expected a bad summer, considering that water and weather conditions were ripe for explosive cyanobacteria growth. The outcome, though, has been far worse than they expected.

Samples taken near Redbud Park on September 7 showed 160,377 micrograms per liter of microcystin, 10 times higher than the lake's previous record. The reading is more than 20,000 times higher than the U.S. Environmental Protection Agency health advisory for recreational waters where people swim and boat, which is 8 micrograms per liter.

The sample results have been "eye opening," according to Sarah Ryan, the environmental director for Big Valley Rancheria, a territory of the Big Valley Band of Pomo Indians that sits on the ancient lake's western shore. Ryan runs a program to sample and test lake water for cyanotoxins.

Original Article: [Circle of Blue by Brett Walton](#)

California agency shares graphic with shocking differences in water savings by region

An eye-catching takeaway from a graphic shared by the California agency overseeing the state's water supply: The northern part of the state has generally done a better job of cutting water use — whether by taking fewer showers or letting lawns go dry — than the southern half amid historic drought conditions and a call for voluntary reductions.



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The map shared Tuesday at the California State Water Resources Control Board's monthly meeting showed that the South Coast region, which includes Los Angeles and San Diego, saw use in July 2021 drop by a mere 0.1% compared to the same month last year.

Meanwhile, the North Coast was the region with the biggest drop, falling 17% in July 2021 compared to July 2020. The San Francisco Bay Area cut use by 8.4%.

These numbers were released more than two months after California Gov. Gavin Newsom urged residents statewide to voluntarily reduce water use in 2021 by 15% compared to last year.

On Tuesday, the board revealed water use statewide only fell by 1.8% in July. You can see how each region did in the map above.

"We believe that 15% is achievable because we've gotten down to these state water use levels before," Marielle Pinheiro, a research data specialist for the board, said Tuesday. Pinheiro later addressed the state's failure to meet the goal: "It's not entirely unsurprising. The call went out on July 8, and it takes some time for conservation to be reflected in the numbers."

While the state is urging every day consumers to help conserve California's supply as reservoirs reach record-low levels, it's also calling on major industrial and agricultural users to play an even bigger role.

The board will release August numbers next month.

Original Article: [SF Gate by Amy Graff](#)

As California's drought deepens, water use drops only 1.8%

Californians reduced their water use at home by a meager 1.8% statewide in July compared to last year, even after Gov. Gavin Newsom urged residents to conserve 15% and drought continues to spread across the state.

Officials on Tuesday warned water providers south of the Delta who rely on state water allocations — already slashed to 5% this year — to brace for the possibility of zero supply next year.

The Department of Water Resources also cautioned that next year's cuts in supply could expand to growers and others known as settlement contractors, whose claims to the water predate California's massive systems of reservoirs, aqueducts and canals.

"Californians always have hope, and that's healthy. But we need to be prudent," Karla Nemeth, director of the state Department of Water Resources, said in an interview. "We're doing more conservative planning than we've ever done."

Drought conditions deemed extreme or worse now cover nearly 90% of the state. Hundreds of domestic wells are running dry, and levels in major reservoirs have dropped drastically below historic averages — which bodes ill for supplies next year.

"The challenge is there is no water," Nemeth said.



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"We're planning for the worst, but we are hoping for something better," Nemeth added at Tuesday's meeting of the State Water Resources Control Board.

In early July, Newsom urged Californians to voluntarily cut domestic water use by 15%, but in the absence of a statewide mandate, a patchwork of restrictions has emerged. The result: Californians used about 191.5 billion gallons of water in their homes, businesses and other industrial or institutional spaces in July, only 1.8% less than a year earlier.

"I'm not here to say 1.8 is a good number," said Joaquin Esquivel, chair of the State Water Resources Control Board, at a Monday press briefing. "We're going to have to continue to dig in deeper and look forward to seeing what the numbers show then in August."

When asked when to expect statewide conservation orders, Esquivel said that for now, the board is reflecting on the data. "We need to continue to see that response and decision-making, and the state's here to make sure that if we need to go mandatory, that's where we're going."

Original Article: [Palo Alto Online by Rachel Becker/ Cal Matters](#)

CA authorizes \$5.2B for water quality and drought resilience

Yesterday, California passed a funding package that authorizes more than \$15 billion to tackle wildfire and drought challenges, build climate resilience in communities, promote sustainable agriculture and advance nation-leading climate agenda.

The funding package signed yesterday by Governor Gavin Newsom includes 24 bills covering a wide range of areas of interest including water quality and drought resilience. Of the \$15 billion authorized, \$5.2 billion will support water and drought resilience, \$3.7 billion will support climate resilience and \$1.1 billion will support climate smart agriculture.

Water and Drought Resilience Package

Climate change is making droughts more common and more severe. The California Comeback Plan invests \$5.2 billion over three years to support immediate drought response and long-term water resilience, including funding for emergency drought relief projects to secure and expand water supplies; support for drinking water and wastewater infrastructure, with a focus on small and disadvantaged communities; Sustainable Groundwater Management Act implementation to improve water supply security and quality; and projects to support wildlife and habitat restoration efforts, among other nature-based solutions.

Climate Resilience Package

Focusing on vulnerable front-line communities, the package includes \$3.7 billion over three years to build resilience against the state's multi-faceted climate risks, including extreme heat and sea level rise. Investments to address the impacts of extreme heat include urban greening projects, grants to support community resilience centers and projects that reduce the urban heat island effect, and funding to advance the Extreme



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Heat Framework as part of the state's Climate Adaptation Strategy. The package also supports coastal protection and adaptation measures, efforts to protect and conserve California's diverse ecosystems, and community-based investments to build resilience, such as grants to support environmental justice-focused initiatives and funding for the California Climate Action Corps, which supports local climate action projects in disadvantaged communities.

Climate Smart Agriculture Package

Amid climate-driven drought and extreme heat challenges, California is committing \$1.1 billion over two years to support sustainable agriculture practices and create a resilient and equitable food system. These efforts include investments to promote healthy soil management, support for livestock methane reduction efforts, funding for the replacement of agricultural equipment to reduce emissions and technical assistance and incentives for the development of farm conservation management plans. The package also supports programs to expand healthy food access for seniors and in schools, other public institutions and non-profit organizations.

The package includes the following funding allocations specifically related to water and wastewater issues included in SB 170 by Sen. Nancy Skinner (D-Berkeley):

- \$650 million for drinking water projects
- \$650 million for wastewater projects
- \$200 million for small community drought relief
- \$200 million for multibenefit projects
- \$200 million for groundwater cleanup and water recycling projects
- \$30 million for PFAS remediation
- \$197 million for the Urban Flood Risk Reduction Program
- \$180 million for Sustainable Groundwater Management Act implementation
- \$165 million to the California Natural Resources Agency for water resilience projects that improve environmental conditions to promote recovery of native fish species in the Sacramento-San Joaquin watershed
- \$100 million for urban community drought relief
- \$100 million for water conveyance projects
- \$101 million to the Department of Water Resources for immediate drought support
- \$25 million for watershed climate studies
- \$20 million for an Aqueduct Solar Panel Pilot Study
- \$50 million to the Department of Conservation to implement the Multibenefit Land Repurposing Program for groundwater sustainability projects that reduce groundwater use, repurpose irrigated agricultural land, and provide wildlife habitat
- \$40 million for the Salton Sea

Original Article: [Water World/ CA Gov Office Gavin Newsom](#)



Could LA water recycling be a miracle for parched West?

With severe drought strangling the West, the country's largest water provider has embarked on a multibillion-dollar project that could help them cope with increasingly frequent shortages exacerbated by climate change.

The Metropolitan Water District of Southern California wants to recycle Los Angeles' wastewater, creating a new supply stream that would significantly reduce the city's reliance on imported water from Northern California and the Colorado River.

It would mark a new paradigm in Western water infrastructure. Instead of the dam-building and constructing massive pipelines and aqueducts to connect far-flung rivers to cities, Metropolitan's proposal focuses on producing "new" water locally. And it seeks to utilize what has historically been wasted; Los Angeles' wastewater is currently treated and discharged into the Pacific Ocean.

"Anything with respect to water recycling is a positive. It's a new source of water to augment surface and groundwater supplies," said Jack Simes, acting area manager of the Bureau of Reclamation's Southern California Area Office. "Certainly with the challenges that we are all facing, especially on the surface water side, this is a supply source to help fill that gap."

Fully built, the Regional Recycled Water Program would produce up to 150 million gallons a day — enough water to supply 500,000 homes.

It isn't cheap. Metropolitan estimates that it would cost at least \$3.4 billion to build.

But other states, seeing the potential benefits of the project in reducing California's reliance on the Colorado River, are chipping in.

Nevada has inked a deal to help fund the exploratory phases. In return, if the project is built, it would get to take some of the water allocated to California that it doesn't need out of Lake Mead, the lower basin's main reservoir.

Arizona is in the process of finalizing a nearly identical deal.

The project "is an important step toward addressing the long-term challenges in the Colorado River basin," said Chuck Collum, Colorado River programs manager for the Central Arizona Project, which shuttles the river's water to Phoenix and elsewhere.

"What it's focused on is trying to put an unused resource back into the system," he added. "It has the potential to benefit all the users in the lower basin."

Solutions are needed as the water situation up and down the Colorado River continues to deteriorate due to climate change and a two-decade-long megadrought that some scientists are now saying may be a new, drier normal.

The Colorado River provides water to 40 million Americans.

Last week, Reclamation reported that water levels at Lake Powell, the main reservoir in the upper basin that is used to send water downriver to Lake Mead and the Lower Basin



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states, are dropping precipitously. Reclamation's latest projections suggest there is a 1-in-3 chance that levels will fall below what is needed for the dam to produce hydropower as early as next July (Greenwire, Sept. 23).

"The latest outlook for Lake Powell is troubling," Reclamation's Upper Colorado Basin Regional Director Wayne Pullan said in a statement. "This highlights the importance of continuing to work collaboratively with the Basin States, Tribes and other partners toward solutions."

Reclamation also last month declared a shortage on the Colorado River for the first time ever — because of Lake Mead's plunging water level — triggering cuts for Arizona, Nevada and Mexico (Greenwire, Aug. 16).

And in California, residents have so far failed to meet Democratic Gov. Gavin Newsom's July request to cut their water use by 15%. The state announced last week that Californians had only saved 1.8%. (Greenwire, Sept. 22).

Original Article: [E&E News by Jeremy P. Jacobs](#)

US WATER NEWS

Drought Forces West to Turn to Fuels That Helped Cause It

An unlikely energy sector is emerging as a winner from the West's megadrought: fossil fuels, whose heavy use has been blamed for creating the conditions causing the drought in the first place.

The drought has slashed the electricity-generating capacity of major hydroelectric dams, forcing buyers to spend millions of dollars to buy extra power from an expensive sellers' market. Some wholesale electricity consumers—including cities and towns, rural electric cooperatives, public utility districts, irrigation districts, federal and state agencies, and Native American tribes—are replacing emissions-free hydropower with dirtier energy sources.

Fossil fuels are considered a key driver of global climate change and a leading cause of the hot and dry conditions sapping water levels at Bureau of Reclamation reservoirs through the agency's 11-state Western region.

"Hydropower is generally used as a backup for intermittent resources when the wind doesn't blow or the sun doesn't shine," said Leslie James, executive director of the Colorado River Energy Distributors Association, an organization of utility systems and agencies serving more than 4 million consumers in six Western states. "But as hydropower reliability declines, what are you going to back those up with? Probably gas."

"It's ironic, isn't it?" James said of the move to fossil fuels.

The Energy Information Administration forecasts that hydropower electricity generation in the U.S. will be 14% lower in 2021 than in 2020, saying the extreme and exceptional drought has lowered reservoir levels in the West — especially California and the Pacific Northwest, home to most of the nation's hydropower capacity.



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The West's two largest reservoirs, Lake Mead and Lake Powell, are at their lowest since filling, and are nearing minimum levels for their turbines to produce power. Powell sits about 58 feet above the minimum power pool level of 3,490 feet, and every foot of lake decline means about 3 megawatts of lost generating capacity at the lake's 1.3 gigawatt Glen Canyon Dam.

The bureau estimates a 3% chance Powell will dip below power pool in 2022, forcing its turbines to shut down. The likelihood rises to 29% in 2023.

"For years, hydropower was a steady and reliable source of emission-free, predictable power, but because of the drought, it's no longer the reliable source it once was," said Ashley Wald, partner in the Denver office of Holland & Hart.

The drought has threatened states' ability to meet standards for renewable-energy usage as well as greenhouse gas emissions reductions targets in states that have them. Twenty-nine states have a so-called "renewable portfolio standard," or RPS, requiring increased production from wind, solar, hydroelectric, and other renewable sources.

Original Article: [Bloomberg by Tripp Baltz](#)

La Niña is about to take the Southwest drought from bad to worse

Global scientists reported in August that due to the climate crisis, droughts that may have occurred only once every decade or so now happen 70% more frequently. The increase is particularly apparent in the Western US, which is currently in the throes of a historic, multiyear drought that has exacerbated wildfire behavior, drained reservoirs and triggered water shortages.

More than 94% of the West is in drought this week — a proportion that has hovered at or above 90% since June — with six states entirely in drought conditions, according to the US Drought Monitor. On the Colorado River, Lake Mead and Lake Powell — two of the country's largest reservoirs — are draining at alarming rates, threatening the West's water supply and hydropower generation in coming years.

Though summer rainfall brought some relief to the Southwest, the unrelenting drought there is about to get worse with La Niña on the horizon, according to David DeWitt, director at the National Oceanic and Atmospheric Administration's Climate Prediction Center.

"As we move into fall, from October on, the Southwest US, based on all the best information that we have, they're going to see persistent intensification and development of drought," DeWitt told CNN. "There's, at this point, not any indication that they'll see drought relief."

La Niña is a natural phenomenon marked by cooler-than-average sea surface temperatures across the central and eastern Pacific Ocean near the equator, which causes shifts in weather across the globe. In the Southwest, La Niña typically causes the jet stream — upper-level winds that carry storms around the globe — to shift northward. That means less rainfall for a region that desperately needs it.



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NOAA's latest projections show a 70% to 80% chance of La Niña emerging during the Northern Hemisphere winter season. With La Niña conditions coupled with warming temperatures, DeWitt said the Southwest will see enhanced evaporation that will intensify drought in certain places.

"The net water balance going forward, from this point as the summer monsoon ends, is that we're going to see conditions continue to dry out," DeWitt said. "Places that have droughts will kind of persist or intensify, and places that don't have drought right now because it was recently ameliorated, we expect drought is going to redevelop."

NOAA published a report this week on the Southwest's historic drought, addressing a key question of when it might end. The answer, according to the report, is that the current drought could last into 2022 — or potentially longer.

Original Article: [Mercury News by CNN.com Wire Service/ Rachel Ramirez](#)

Almost half a million US households lack indoor plumbing: 'The conditions are inhumane'

Yan Yu Lin and her seven-year-old daughter live in a tight studio in San Francisco's Chinatown, in a century-old building where 60 or so residents on each floor share a bathroom.

Along the back wall of the room is a plastic potty — the kind designed for toilet training toddlers. The shared bathrooms are out of order so often, so rank and unhygienic, that Lin has her daughter use the plastic potty instead. "It's safer," she said.

This Dickensian-sounding living situation is more common in the US than most would think.

Almost half a million American households lack basic indoor plumbing, with renters and people of color in some of the country's wealthiest and fastest growing cities most likely to be living without running water or flushing toilets, new research reveals.

While some rural and indigenous communities have never had indoor plumbing, the vast majority of unplumbed Americans are in fact found in urban areas, with one in three affected households living in just 15 cities, according to research by the Plumbing Poverty Project (PPP), a collaboration between King's College London (KCL) and the University of Arizona.

The full analysis, based on data from annual community surveys by the US Census Bureau, is published today in collaboration with the Guardian as part of our long-running series exposing America's water crisis.

It reveals how so-called plumbing poverty has gotten markedly worse in San Francisco and Portland — two booming ostensibly progressive west coast tech hubs with a growing wealth gap and homelessness crisis.

In San Francisco, which according to Wealth-X has more billionaires than any global city other than New York and Hong Kong, almost 15,000 families live in homes without proper plumbing. Median house prices have tripled since 2000 while the number of families in substandard housing with incomplete plumbing increased by 12%.



Original Article: [The Guardian by Nina Lakhani and Maanvi Singh](#)

Southwest U.S. drought, worst in a century, linked by NOAA to climate change

Human-caused climate change has intensified the withering drought gripping the Southwestern United States, the region's most severe on record, with precipitation at the lowest 20-month level documented since 1895, a U.S. government report said on Tuesday.

Over the same period, from January 2020 through August 2021, the region also experienced the third-highest daily average temperatures measured since record-keeping began near the end of the 19th century, according to the National Oceanic and Atmospheric Administration's (NOAA) drought task force.

The study warned that extreme drought conditions are likely to worsen and repeat themselves "until stringent climate mitigation is pursued and regional warming trends are reversed."

The drought emerged in early 2020 in California, Nevada and the "Four Corners" states of Arizona, Utah, Colorado and New Mexico and has led to unprecedented water shortages in reservoirs across the region, while fueling devastating western wildfires over the past two years, the report noted.

The study also cited dwindling reservoir levels that have threatened or disrupted drinking supplies, irrigation systems, hydropower generation, fishing and recreational activities, with immediate economic losses in the billions of dollars.

Much of the record below-normal wintertime precipitation was likely due to natural weather variations, including a La Nina pattern, while research suggests that successive summers of scant monsoonal rainfall may also occur by chance, the NOAA report said.

However, unusually high temperatures coinciding with the Southwest's historic dry spell are symptomatic of human-caused climate change and have intensified the drought, making it "more impactful" in a number of ways, the report's authors concluded.

Above-normal heat helps dry up surface and soil moisture and reduces snowfall in winter, which in turn diminishes dry-season surface water storage from snow-melt runoff, the report said.

Low snowpack and parched soil can also create a "land-atmosphere feedback" that deepens a drought by helping raise ground temperatures while leaving less moisture available to evaporate for future precipitation, according to the study.

Original Article: [Reuters by Steve Gorman](#)

U.S. projections on drought-hit Colorado River grow more dire; California likely to get more cuts by 2025

The U.S. government released projections Wednesday that indicate an even more troubling outlook for a river that serves 40 million people in the American West.

The Bureau of Reclamation recently declared the first-ever shortage on the Colorado River, which means Arizona, Nevada and Mexico will get less water than normal next



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year. By 2025, there's a 66% chance Lake Mead, a barometer for how much river water some states get, will reach a level where California would be in its second phase of cuts. The nation's most populated state has the most senior rights to river water.

While the reservoir on the Nevada-Arizona border is key for those three lower Colorado River basin states, Lake Powell on the Arizona-Utah border is the guide for Colorado, New Mexico, Wyoming and Utah in the upper basin. Smaller reservoirs upstream of Lake Powell have been releasing water into the massive lake so it can continue producing hydropower. But any bump from the releases that started this summer isn't factored into the five-year projections, the Bureau of Reclamation said.

The agency's projections show a 3% chance Lake Powell will hit a level where Glen Canyon Dam that holds it back cannot produce hydropower as early as July 2022 if the region has another dry winter.

"The latest outlook for Lake Powell is troubling," Wayne Pullan, the bureau's director for the upper basin, said in a statement. "This highlights the importance of continuing to work collaboratively with the basin states, tribes and other partners toward solutions."

Original Article: [KTLA 5 by Associated Press](#)

Northern Water, two others get state stimulus water grants

Three water projects in the region will get \$4.7 million from the Colorado Water Conservation Board. The board's giving doubled this year due to COVID-related stimulus funds.

Northern Colorado Water Conservancy District in Berthoud is getting \$3.8 million toward connecting the Colorado River above and below the Windy Gap reservoir in Grand County, district spokesman Jeff Stahla said.

The work is associated with the construction of Chimney Hollow reservoir in Larimer County. The channel connection will cost \$26 million. The grant goes for the channel, which is still being designed.

"Colorado River Connectivity Channel is a major modification to Windy Gap," Stahla said. He said the channel's funding is nearly complete. The grant "isn't the final piece. We anticipate all the pieces coming together" by mid-2022.

Two other area projects got grants.

A "Poudre Headwaters Restoration – Grand Ditch Barrier" effort by Colorado Trout Unlimited in Denver got about \$300,000 toward restoring 38 miles of stream and 110 acres of lake habitat. The specific project involves the Greenback cutthroat trout.

A \$1.2 million irrigation infrastructure effort got half its costs from this round of water board funds. The grantee is Colorado State University, through its Fort Collins campus, to use on work to boost water and energy efficiency and agricultural production. The specific project is to build storage ponds, upgrade the existing equipment and add irrigation systems and other infrastructure for research on soil and crops and to launch a farm management competition to improve agricultural profitability.



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Original Article: [Greely Tribune by Paul Hughes](#)

Florida announces recipients of \$114 million in wastewater treatment grants

Nearly half of that cash will go to projects helping to clean up the Indian River Lagoon. Gov. Ron DeSantis and the Department of Environmental Protection (DEP) are sending \$114 million to help fund wastewater treatment efforts and improve water quality across the state.

The grants come courtesy of the Wastewater Grant Program, which was created as part of the Clean Waterways Act. Around 46% of this year's funding will go toward projects in the Indian River Lagoon (IRL).

"Since I first took office, expediting water quality restoration has been one of my top priorities," DeSantis said Friday.

"The Indian River Lagoon covers 40% of Florida's east coast and is one of our state's most iconic and critical natural resources, contributing an estimated \$2 billion annually for tourism and recreation and \$767 million to the marine industry. I am happy to join DEP and project partners here today to celebrate these projects that will help protect and restore the lagoon for future generations."

The two largest grants announced Friday will go to septic-to-sewer conversion projects. Nearly \$37 million will go to Wekiwa Springs in Orange County, while just over \$20 million will fund a project in Hillsborough County's Gibsonton area.

Original Article: [Florida Politics by Ryan Nicol](#)

How Samsung would find enough water, power if it puts \$17B plant in Taylor

With Taylor the frontrunner for Samsung Electronic Co.'s \$17 billion chipmaking plant, many wonder how the largely rural city would be able to support one of the most critical elements of semiconductor operations: utilities.

Semiconductor plants use an enormous amount of electricity and water every day, and the facilities run 24 hours a day, seven days a week. With a 6-million-square-foot chipmaking factory expected, Samsung has unique utility needs wherever it lands, and the tech giant's plans will also impact the rush of residents and companies expected to follow it, plus those already in Taylor.

If it chooses the Taylor area, the tech giant will partner with a division of Canada-based Epcor Utilities Inc. to funnel millions of gallons of water into Williamson County for its project. It would be a positive outcome for a region where water resources are front of mind, Williamson County Judge Bill Gravell said.

The site Samsung is considering — roughly 1,200 acres west of Taylor — is also in the utility area of Oncor Electric Delivery Co., which is Texas' largest transmission and distribution electric utility.

"Utilities are a make or break deal for a semiconductor plant. They're extremely important," said Angelos Angelou, head of Austin-based consulting firm



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AngelouEconomics. "The average use of electricity for a semiconductor plant is probably 100 times, if not more, of an average tower downtown with equivalent square feet."

Samsung spokesperson Michele Glaze said the tech giant has not made a final decision in the search for a plant site — which has been months in the making — and Austin, Phoenix and upstate New York remain under consideration. Samsung is looking to build a next-generation factory where it can produce smaller, more advanced computer chips to compete with rival Taiwan Semiconductor Manufacturing Co. At least 1,800 jobs are promised, along with thousands of indirect jobs. The project will be one of the largest foreign investments in U.S. history due to the amount that will be invested to build the cutting-edge plant.

Reliable utilities are front of mind for Samsung executives after their North Austin chipmaking plant — in operation since 1997 — was shut down for more than a month earlier this year by a winter storm. The Austin American-Statesman reported the shutdown cost Samsung at least \$268 million in damaged products, and Austin Energy's decision was criticized by manufacturing leaders. Samsung has kept largely silent about the massive economic blow during the February storm and how it could shape its decision.

"The availability of reliable utilities is fundamentally important to all semiconductor manufacturing," Glaze said in a statement. "A semiconductor manufacturing facility uses several millions of gallons of ultra-pure water per day and more than a 100 megawatts of power each day. As we have shared, it is one of many variables in the selection process."

Gravell said access to water was one of the hurdles local leaders had to clear the last few months as they courted Samsung.

"We couldn't take away from our existing water supplies here," Gravell said. "We've got thousands of homes under construction and businesses. We knew that we had to be innovative and creative."

Gravell said the county brought together Samsung and Epcor, which hashed out an agreement to funnel millions of gallons of water into Williamson County from adjacent Milam County. The water would come from the Carrizo-Wilcox Aquifer, if Samsung chooses Taylor. Epcor will also provide wastewater services.

Original Article: [Biz Journals by Kathryn Hardison](#)

Nevada lawmakers hopeful that \$1.2T infrastructure bill will pass

Nevada lawmakers and business leaders are cautiously optimistic that a \$1.2 trillion infrastructure bill with funding for Silver State projects will pass in the House, which will begin debate on the legislation as early as Monday.

The bill includes funds for water projects, wildfire prevention, expanded broadband access, highway spending for Interstate 11 from Las Vegas to Phoenix and improvements for Interstate 15 to Southern California, as well as funding and grants for passenger rail.



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In all, Nevada could see roughly \$4 billion in program funding, including \$2.5 billion for highway spending alone, according to White House figures.

But hurdles remain as Democratic factions battle over passage of a larger \$3.5 trillion package with spending for climate, education and health, paid for by tax increases.

The \$3.5 trillion bill is opposed by Republicans and moderate Democrats.

Original Article: [Las Vegas Review Journal by Gary Martin](#)

Montana tribe finalizes historic \$1.9 billion water rights settlement

After decades of negotiations, the Confederated Salish and Kootenai Tribes (CSKT) have finalized a \$1.9 billion water rights settlement that resolves thousands of tribal claims tied to waterways throughout western Montana.

U.S. Secretary of the Interior Deb Haaland signed the long-pending water compact last week, executing a complex agreement that confirms CSKT's water rights and authorizes funding to modernize a federal irrigation project comprising 1,300 miles of aging canals also known as the Flathead Indian Irrigation Project. The agreement, which was initially introduced in Congress in 2016 before being passed last year, also provides funding for habitat restoration and transfers control of the National Bison Range to the tribes.

Although the compact requires CSKT to relinquish thousands of off-reservation water rights claims, the final agreement received broad support from both the tribes and many of the non-Native water users who rely on rivers that flow through tribal lands in Montana.

According to attorneys involved in the negotiations, the \$1.9 billion being put into trust represents the largest amount ever awarded to a tribe as part of a water rights settlement.

Original Article: [Grist by Mark Armao](#)

Drought-resistant crops not taking root

Nina Sajovec, director of the Ajo Sustainability Center for Agriculture, a nonprofit whose mission is to support the development of local sustainable food system through the preservation and revitalization of traditional Tohono O'odham crops and agricultural techniques, said not many farmers off the reservation utilize the crops to the extent they could.

An example of a crop that could be used more is tepary beans, which can be farmed using little water or by using monsoon rains alone. Other plants and trees such as okra, agave, amaranth, hibiscus, moringa trees, nopalito cactus and squash, have been able to survive in dry climates, such as deserts, with low levels of water

One drawback to these crops is slow grow times.

"They are not appealing, perhaps, to larger commercial growers because they take longer, especially if you're waiting for the rains," said Sajovec.

Requiring little amounts of water means they can be grown year-round.



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Sajovec, who is also a farmer, noted that some farmers who are trying to conserve water are missing out on the potential of tepary beans and other drought-tolerant crops.

Original Article: [AZ Capitol Times by Obren Manjencich](#)

La Niña Developing In Pacific Could Affect Texas

A developing La Niña event in the Pacific Ocean could mean warmer and drier conditions for Texas in the next few months, said a Texas A&M University expert.

John Nielsen-Gammon, a regents professor at Texas A&M who also serves as state climatologist, said a La Niña event appears likely. A La Niña happens when cooler than normal temperatures occur across the central and eastern Pacific Ocean. The results often mean less rain and warmer temperatures for the Southwest, where many areas have been hard hit by lingering drought conditions

“Right now, water surface temperatures are cooling off, but temperatures below the surface to about 750 feet deep are already a few degrees cooler than normal,” he said.

“So a La Niña appears to be gearing up.

“Typically, a La Niña brings enhanced chances of drier and warmer conditions for most of the Southwest United States, including Texas. Last year’s La Niña helped produce the driest November through March since 2014 for Texas.”

A La Niña could spell bad news for the western U.S., which has been hit hard by record-breaking temperatures and extreme drought conditions for the past year. Lake Powell (Arizona and Utah) and Lake Mead (Arizona and Nevada) are experiencing some of their lowest water levels in history.

“The good news is that it appears this La Niña event may be relatively weak and short-lived, probably over by springtime,” Nielsen-Gammon said.

He said the Climate Prediction Center’s outlook for the rest of the year is consistent with a weak La Niña, with slightly enhanced chances of below-normal precipitation from now through the end of winter.

“The outlook favors above-normal temperatures, but that’s nothing special since global warming makes above-normal temperatures more likely anyway.

“If Texas is entering an extended dry period, some parts of the state are better off than others,” he said. “The relatively wet spring and summer means that many ranchers were able to get more than one hay cutting from warm-season grasses, so there should be ample hay supplies to tide things over. Also, because of the wet spring and summer, water supplies in most areas are doing fine. If things dry out quickly, the most vulnerable areas are the Panhandle and the interior portion of South Texas because that area has been very dry over the past month or more.”

Original Article: [Texas A&M Today by Keith Randall](#)



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Research aims to increase crop drought tolerance using biotechnology

John Cushman, foundation professor with the University of Nevada, Reno, has been awarded a \$1.55 million grant from the National Science Foundation to conduct research on improving drought tolerance and water-use efficiency of plants to help preserve agricultural productivity in the face of rising temperatures and prolonged droughts.

As droughts are becoming more frequent and severe and crop productivity is declining at an accelerated rate, Cushman, with the University's College of Agriculture, Biotechnology & Natural Resources, is conducting work on a synthetic biology approach to allow the transfer of drought-tolerant traits from certain plants to major crops. The goal of his research team in the Department of Biochemistry & Molecular Biology is to create drought-tolerant crops to aid global food production during periods of intense drought.

Specifically, Cushman and his departmental colleague Assistant Professor Won Yim, and international collaborator Assistant Professor Sung Lim at Sangji University, South Korea, are aiming to use an alternative form of photosynthesis known as crassulacean acid metabolism (CAM). Plants with CAM and associated traits, such as agave and cactus, avoid water loss by absorbing carbon dioxide through open pores, or stomata, in their leaves and storing it as malic acid at night, since water vapor is less likely to escape the leaves in the cooler, more humid night conditions. During the day, the stomata stay closed while the plant uses the stored malic acid and sunlight to convert carbon dioxide into sugars and starch.

Cushman is combining this process with work on increasing tissue succulence in plants. Improving on his team's past work using *Arabidopsis*, or mouse-eared cress, he is using biotechnology to increase the tissue succulence of the plant by making the leaves about 40% thicker, allowing them to store more water. Plants with high tissue succulence, such as the saguaro cactus, are more adapted to surviving in arid climates.

Original Article: [Nevada Today by Hannah Alfaro](#)

Importing water for drought fix huge project

As droughts force local communities to find alternative solutions to water shortages, Arizonans could turn to importing flood water in the future.

An interstate pipeline would be a lengthy project in terms of time and effort that in a race against time isn't an immediate answer, rather a commitment that would test the resolve of the state Legislature and Arizonans.

As conversations in the Legislature continue to move forward regarding water, it's clear more needs to be hammered out.

Rep. Regina Cobb, R-Kingman, described the atmosphere when addressing water shortage resolutions.

"Pretty contentious, for the most part," said Cobb. "We all know that we need more water in Arizona; it's just how to get it here."



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Currently 54.2% of Arizona is in severe drought and an additional 16.5% of the state is in extreme drought, according to drought.gov.

Farmers, who used 72% of Arizona's water supply for agricultural purposes in 2019, are among the most affected by intense droughts, with over 26 million acres of farmland in jeopardy or just over one-third of the state's total acreage.

In 2019, importing water was removed from further consideration in the Long-Term Water Augmentation Options for Arizona report due to legal constraints, actual water availability, and extremely high costs.

There's still talk of importing water, but the question remains whether it's a viable solution.

The answer is: it's complicated, as past concerns still remain, as well as the longevity of a high-stakes project being completed.

Rep. David Cook, R-Globe, equates the idea to one of America's greatest achievements.

"I think the idea is a great concept, like putting a person on the moon," said Cook, underscoring the amount of hard work and scientific knowledge needed.

Determining the amount of water needed for a pipeline to work is critical in Cook's opinion.

"We need the experts to say how much water, is it feasible and cost effective that we would need to move," said Cook.

The cost of a new pipeline and one that would cross multiple states is likely to surpass that of the Central Arizona Project pipeline, which finished construction 28 years ago. For comparison, the Central Arizona Project cost more than \$4 billion and covers 338 miles from the Colorado River at Lake Havasu City to Tucson. Attached to that pipeline is a \$1.646 billion plus interest repayment obligation, that ends in 2045. As of last January, 40% of the principal (\$656 million) has been repaid.

Original Article: [AZ Capitol Times by Obren Manjencich](#)

GLOBAL WATER NEWS

Dam frustration compounded by drought

Two years on from the decision to lower the wall of the Paradise Dam, CANEGROWERS says a lack of direction for the future of the water storage is adding insult to the injury of the region's drought and pushing the impact into 2022 and beyond.

CANEGROWERS Isis Chairman Mark Mammino is again calling for the 50% water price rebate being offered for horticulture crops to be extended to other irrigated crops.

"We are trying to farm in continuing drought conditions with only 22% of our water allocations available to use in the Paradise part of the irrigation scheme," Mr Mammino said. "Even though only 22% of the water is available, we still have to pay the high fixed charges on the total nominal allocation no matter what is available for use."



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“The Queensland Government could show some compassion and provide us with immediate financial relief by making its inequitable water price reduction policy fairer and extending the 50% rebate to all crops.

“It’s so frustrating that we have excellent sugar prices but not the water to get the most out of our cane crop this year or next, because now is when the young cane should be getting a start for 2022.”

Business

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“It’s so frustrating that we have excellent sugar prices but not the water to get the most out of our cane crop this year or next, because now is when the young cane should be getting a start for 2022.”

It’s not just sugarcane which is being held back in the Childers and Bundaberg regions.

“Some cane growers who usually grow peanuts in rotation are holding back on preparations for a crop because it’s too dry,” Mr Mammino said. “That means the 2022 peanut harvest from February to June is also at risk.

“No wonder growers are questioning what the situation would be like if the 100,000+ megalitres of water wasn’t released from the dam two years ago to allow for work to start. Would we have better allocations now if that water was still in the system and would our crops and farm finances be looking healthier?”

The immediate anxiety is on top of the long-running frustration about a lack of clear direction for the future of water storage in the region. This uncertainty is having significant impact on grower’s mental health.

“We’ve been waiting and waiting for various reports on the options for the future of the dam to be completed and handed down but nothing seems to be happening,” Mr Mammino said.



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“We’ve been calling for a quick decision but two years on we are still unable to move on and plan our futures with any certainty. The Government needs to come clean on what the future of irrigation in this region will look like.”

Original Article: [Mirage News](#)

Pepsi to replenish groundwater

PepsiCo would invest Rs160 million on a groundwater replenishment project under a Memorandum of Understanding (MoU) signed with WWF-Pakistan, a statement said on Friday.

According to the MoU, the investment would be made in a community water stewardship project with the aim for groundwater replenishment of 343 million liters at local watersheds near their food manufacturing plants by 2023. The project launch was announced during the climate week.

Further, the company has pledged to replenish more water than it uses in its operations through numerous initiatives including rainwater harvesting, floating treatment wetlands, and agricultural water-usage efficiency improvement.

The signing of this MoU recognises water conservation and replenishment is critical for tackling climate change-related water scarcity in Pakistan. The collaboration on water stewardship is attached with the company’s global ambition for becoming net water-positive by 2030 in high water-risk sites.

The project will also raise awareness among local communities on rainwater conservation, re-usability of conserved water for secondary purposes, and groundwater replenishment.

Speaking on the MoU signing ceremony, Director Sales PepsiCo Pakistan Mohammad Khosa said the water scarcity was correlated with the escalating climate crisis and the company had doubled its commitments to tackle climate change through water stewardship in the operations.

‘Water stewardship is a top priority for company in water-stressed Pakistan to support our government in developing and managing the water sector for optimal use and community benefit,’ he observed.

Original Article: [The News](#)

First deadline for Belize's blue tender

Belize will see in the next few days if its ambitious plan of restoring its finances while protecting one of its prime natural resources, an area of the Caribbean containing the world’s second-largest coral reef, has gained traction.

Under a proposal outlined earlier this month, Belize has invited holders of its US\$533m 4.94% 2034 bond to tender their notes at a 45% discount to their principal and at the same time pledged to earmark US\$23.4m for a marine conservation endowment account.



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The monies, which will be administered by non-profit body The Nature Conservancy, will solely support marine conservation projects off the Belize coast. A bondholder committee, holding close to 50% of the bonds by principal value, has already agreed to the deal.

The first closing date for tender offer was September 24. The offer will only go ahead if holders of more than 75% of the bonds by value agree to the transaction. The final closing date, after possible extensions, will be November 19.

If the super-majority is achieved then the deal will go ahead and all bondholders will be swept up under collective action clauses and see their notes bought back. The bondholder committee comprises Aberdeen Standard, Grantham, Mayo, Van Otterloo and Greylock Capital.

The buyback will be funded by The Nature Conservancy's blue bonds programme. That allows private sector capital to refinance public debt of countries that sign up to its ocean conservation work. Credit Suisse is arranging the blue bonds financing and Potomac Capital is advising TNC.

The US International Development Finance Corporation is also supporting the blue bond issue.

"The resulting cashflow savings will materially assist in the alleviation of the devastating consequences of the Covid-19 pandemic as well as help to achieve important environmental conservation goals," Belize said in the offer document.

Belize's GDP fell by 14% in 2020 as a result of the pandemic preventing most tourism, which contributes to a major part of its economy. Its overall debt to GDP rose by 30 percentage points to 127%. Carrying out the tender offer and clearing the bond debt will be a remarkable transformation.

Original Article: [IFR by Christopher Spink](#)

Iraq may take Iran to Court over Water Rights

It has been reported that the Iraqi Minister of Water Resources has said that Baghdad may take its dispute with Iran over water rights to the International Court of Justice (ICJ).

Al Khaleej Online quotes Mahdi Rashid (pictured) as saying that Iran is digging tunnels and trying to alter the natural water flows, adding that Iraqi will not concede its water rights.

The problem of water shortage is becoming more acute in Iraq.

Original Article: [MENA FN by John Lee](#)

United Utilities Sees Higher Profit as Office Water Usage Rebounds

Britain's United Utilities said on Monday it expects higher first-half profit and revenue as workplace water consumption improves after the easing of pandemic curbs, while household demand remains high due to remote working.



VELES WATER WEEKLY REPORT

The company, one of the largest publicly traded water utilities in the country, said half-yearly underlying revenue is expected to rise by around 4%. It reported revenue of 894.4 million pounds for the six months ended September 2020.

British water utilities had been struggling with a sharp drop in non-household consumption and rising defaults during the early stages of the pandemic. However, trends have improved since COVID-19 restrictions were lifted in mid-July.

United Utilities said underlying profit would rise despite higher costs due to inflationary pressures.

In May, the utility firm predicted marginally lower revenue for the year ending March 2022, because of regulatory changes in inflation accounting.

Original Article: [U.S News/ Reuters](#)

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