

'Completely white': Ash, smoke fall on Tahoe Basin

Amy Graff, Julie Brown, SFGATE

Aug. 6, 2021



Smoke from the Northern California wildfires was impacting the air quality in the Lake Tahoe Basin on Friday, Aug. 6, 2021.

US Forest Service / ALERTWildfire

Winds pushed smoke from Northern California's Dixie Fire to the south Friday, choking the Lake Tahoe Basin with toxic air.

The mountains ringing the lake that straddles the California-Nevada border were hidden behind a curtain of smoke, and there were reports of ash falling from the sky throughout the Truckee-Tahoe region.

"I definitely can't see across the lake, whereas normally I would be able to see the mountains," said Andy Plascencia, who was speaking to SFGATE from Tahoe Park Beach on the West Shore. Plascencia, 19, grew up in Tahoe and has worked at the beach for the last four summers. "Right now it just looks completely white, kind of like the ocean."

As of mid-day Friday, the air quality forecast for North Lake Tahoe was "unhealthy," but earlier in the morning, air quality in the Lake Tahoe Basin had reached the worst indicator, "hazardous," according to AirNow, a government website that tracks air quality.

"You can smell the smoke, and this morning, there were also some ashes on my car," Plascencia said.



axis-fallenleaflake elev:6398' X:+4.91 Y:-7.24 Z:1.0 NFEldorado.swylie.07-31T14:25 © NV Seismo Lab 2021/08/06 08:30:47.35 ALERTWildfire.c

Smoke from the Northern California wildfires was impacting the air quality in the Lake Tahoe Basin on Friday, Aug. 6, 2021.

Tahoe Prosperity Ctr / ALERTWildfire

The first smoke arrived Thursday night as a low pressure system moved across Northern California and southern Oregon, shifting the winds from a southwesterly direction to northeasterly, National Weather Service meteorologist Marvin Boyd said.

The winds changed direction as the Dixie Fire exploded in size and pumped out towering clouds of smoke, pushing the sooty air to the south.

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Tahoe Prosperity Ctr / ALERTWildfire

"With the strong winds on Thursday created extreme fire conditions and the Dixie Fire put out a lot of smoke ... then the winds shifted and that's all being pushed southeast," Boyd said.

Boyd said visibility was impacted in Reno where he works. In the Reno area, the smoke seemed to put an orange filter on the light and visibility and blotted out the mountains on the horizon.

"This morning the sun was just really dull red circle in the sky," he said.

When smoke impacts air quality to such extreme levels, authorities in Lake Tahoe receive an influx in calls from visitors and residents, said Lisa Herron, spokesperson for the U.S. Forest Service Lake Tahoe Basin Management Unit.

"[The smoke] is a direct impact of the conditions we're seeing," Herron said. "We're back in a severe drought. Conditions are really dry. Fuels are really dry. Yesterday, we had a red flag warning."

Herron said the wildfire smoke today is bad, but she remembers air quality in Tahoe during Yosemite's 2013 Rim Fire as being much worse. "During the Rim Fire, that was terrible," Herron said. "That was probably the worst I've seen it. I remember distinctly because it was so bad. We had about three weeks of solid smoke in the basin from that."

Boyd said it's difficult to determine exactly when the smoke will clear. "I expect we could possibly start to see some relative improvement today, but honestly, it's not going to be until tomorrow and Sunday and especially Sunday when west and southwest winds pick back up and push the smoke back toward the fire."

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Smoke from the Northern California wildfires was impacting the air quality in the Lake Tahoe Basin on Friday, Aug. 6, 2021.

US Forest Service / ALERTWildfire

A Twitter user shared a screenshot from the website Purple Air at 7:42 a.m. Friday showing some locations with air quality readings in the 300s, 400s and 500 and higher.

The Air Quality Index operates, typically, on a scale from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. An AQI value of 50 or below represents good air quality, while an AQI value over 300 signals hazardous conditions.

PurpleAir's numbers are measured in real-time (averaged over the previous 10 minutes). AirNow's figures — which are based on Environmental Protection Agency standards — are calculated using a complex algorithm that "uses longer averages during periods of stable air quality and shorter averages when air quality is changing rapidly." Results are updated hourly but delayed compared with PurpleAir.

Air quality in Lake Tahoe area is some of the worst in the world this morning as smoke from northern California fires drifts south, as predicted. Many Zoomies are caught up in this, having overrun mountain towns for "safety".

[pic.twitter.com/RevmNh9yt0](https://www.facebook.com/RevmNh9yt0)

– Paul Kedrosky (@pkedrosky) August 6, 2021

The Dixie Fire grew more than 100,000 acres in 24 hours, with its total burn area increasing from 322,502 acres Thursday to 432,813 acres Friday morning, making it the third largest blaze in state history. Started near Cresta Dam in the Feather River Canyon on July 14, the blaze is burning about 280 miles northeast of San Francisco and is spread across four counties: Plumas, Butte, Lassen and Tehama.

The fire has pumped out multiple massive pyrocumulonimbus clouds since it first sparked in July.

"I can tell you conditions are ripe right now for pyrocumulonimbus cloud development," said Mitch Matlow, a spokesperson with the multi-agency team managing the fire. "I'm looking out my window at one right now, which is very large."

These massive, mushroom-shaped clouds of hot, smoky air towering thousands of feet into the sky are caused by a natural source of heat such as wildfires, according to NASA. Rising warm air from the fire carries water vapor, ash and smoke up into the atmosphere, forming clouds.

Latest updates on California wildfires

— [Maps show how close Caldor Fire is burning to Lake Tahoe](#)

NEWS

Q&A with NV Energy: What you need to know about the scheduled power outages

Kristin Oh Reno Gazette Journal

Published 5:17 p.m. PT Aug. 10, 2021

On Monday, NV Energy announced that that they will be shutting off power to more areas in Northern Nevada with elevated fire risk.

The idea, according to NV Energy, is to prevent wildfires.

The Reno Gazette Journal spoke with Jesse Murray, NV Energy's vice president of gas delivery and natural disaster protection, about how the power outages will affect residents, wildfire mitigation efforts and any potential changes in energy bills.

Residents in Carson City, Washoe, Lyon, Storey, Humboldt, Douglas and Elko counties will be affected by the scheduled power outages.

Which neighborhoods will be affected?

NV Energy created a map that goes into more detail:

When will residents be alerted of a scheduled outage?

NV Energy will monitor weather patterns seven to 10 days ahead for any concerning weather patterns. By the 72-hour mark, NV Energy will begin to communicate with local emergency management officials and discuss where they see potential risks.

By the 48-hour mark, NV Energy will begin to alert customers.

The power will remain off during the weather event, which could last anywhere from a couple hours to at least a day.

After the weather event is concluded, the power will be restored within 24 hours.

What can residents to do prepare for an outage?

Murray said that people should have extra water, flashlights, food and a first aid kit on hand in the event of an outage. Residents should also update their contact information to receive updates from NV Energy.

Additional information on preparation can be found on NV Energy's website at [NvEnergy.com/psom](https://www.nvenergy.com/psom).

Preparation tips from their website include:

- keeping hard copies of emergency numbers
- signing up for the county's alert system
- identifying backup charging methods for phones

Murray said that individuals with electric cars should have enough notice to charge their vehicles before the power goes out.

He added that in the event of an outage, there may be areas in the city where power may be available.

How is this going to affect customers who need life-sustaining medical equipment?

NV Energy customers can apply for the Green Cross Program available on NV Energy's website.

During a scheduled power outage, NV Energy will deploy a generator to power medical equipment to qualifying customers. NV Energy will also send the customers to a hotel to remain in a powered environment.

Murray emphasized that NV Energy customers who need life sustaining medical equipment update their contact information with the company.

Is NV Energy also planning on burying power lines to prevent wildfires?

NV Energy is proceeding with plans to bury approximately one mile of power lines near Lake Tahoe.

Wildfire mitigation strategies will differ for each region in Northern Nevada. NV Energy will have to evaluate each area to determine which strategy will work best.

Other wildfire mitigation efforts include vegetation management near powerlines, increasing inspection and maintenance.

How will an outage affect customers' bills?

Customers will likely see a slightly reduced energy bill after a scheduled outage, Murray said. Customers will not be using up any electricity when the power is turned off so they will not be paying for anything.

Murray added that customers will not see additional charges or fees from experiencing a planned outage event.

Additional information about the scheduled power outages and maps of the affected areas can be found on their website at nvEnergy.com/psom

Kristin Oh is a public safety reporter for the Reno Gazette Journal. She can be reached at koh@rgj.com or at 775-420-1285. Please help support her work by subscribing.

Senate OKs \$1 trillion infrastructure bill with benefits for Nevada



In this July 6, 2021, file photo, U.S. Sen. Catherine Cortez Masto (D-Nev.) speaks as she joined Henderson officials to highlight the \$39.8 million in federal funding she helped secure for vital updates to Boulder Highway, which is currently the most dangerous stretch of roadway in Nevada. (Bizuyayehu Tesfaye/Las Vegas Review-Journal) @bizutesfaye

By **Gary Martin** Las Vegas Review-Journal



August 10, 2021 - 8:57 am

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Updated August 10, 2021 - 5:10 pm

WASHINGTON — Federal funds to repair Nevada's dilapidated roads and bridges, build proposed water projects, prevent wildfires and expand broadband services and access throughout the state are part of a \$1 trillion infrastructure bill the Senate passed on Tuesday.

Nevada Sens. Catherine Cortez Masto and Jacky Rosen joined Democratic colleagues and 19 Republicans who voted for the bipartisan bill, 69-30, giving President Joe Biden a key legislative victory on compromise legislation that the White House helped broker.

Biden called bill the framework for a "long-term boom" that would create jobs.

"This is a blue-collar blueprint to rebuild America," Biden told an East Room ceremony at the White House to celebrate Senate passage of the legislation that critics had recently pronounced as dead due to partisan gridlock.

Biden thanked Democratic and Republican senators: "Today we proved that democracy can still work."

Nevada's two senators worked to include specific program funding for the state in the massive bill that passed after a grueling weekend session on amendments.

"This is what we can do when we work together," Cortez Masto said.

She said she is "eager to see these historic investments uplift our state and spur an economic recovery that will benefit all Nevada families."

The measure now goes to the House for consideration.

Bipartisagroupforgescompromise

A bipartisan group of 22 senators worked hours and weekends to forge a bill that addressed concerns of conservatives and progressives, and that could muster the votes to overcome a filibuster and pass with support from lawmakers in both parties.

The bipartisan Senate group produced legislation that Rosen, one of the architects of the legislation, said would be "the most significant investment in American infrastructure since we built the interstate highway system."

The bill provides \$65 billion for broadband expansion, much of it proposed by Rosen and other senators to provide telehealth, education and economic opportunities to rural and urban areas nationwide.

Rosen said it would make broadband access affordable to "unserved and underserved communities across Nevada."

Nevada would receive at least \$100 million for broadband coverage across the state, providing access to 123,822 residents who currently lack it, according to White House estimates. About 825,000 Nevadans would be eligible for a connectivity benefit, based on income.

The broadband funding is part of \$550 billion in new spending in the bill that would also pay for repair of roads, bridges and water infrastructure systems throughout the country.

Nevada has 28 bridges and over 1,090 miles of highway in poor condition, according to White House estimates. Based on funding formulas, the state would receive about \$2.5 billion over five years for road projects, and \$225 million for bridge repairs and replacement during that time.

Cortez Masto's language in the bill would allocate \$450 million for a grant program for large-scale water recycling projects.

The funds could support a regional recycled water plant being sought by the Southern Nevada Water Authority and the Metropolitan Water District of Southern California to provide water to serve more than 500,000 homes in Nevada and Southern California.

Rep. Susie Lee, D-Nev., introduced the same bill in the House, citing the need for the project due to drought in the West.

Wildrepventiofundsforairports

09-15-21 BOARD Press Clinic
In addition, the Senate bill includes Cortez Masto's request for \$3.4 billion in wildfire prevention activities, and \$10 million for wildfire detection, including ALERTWildfire cameras for Lake Tahoe.

Rosen was instrumental in inserting \$25 billion for airports, including \$5 billion in available funds for projects in states like Nevada that rely heavily on tourism, an industry economically hard hit during the pandemic.

The state would also receive \$38 million over five years to implement plug-in charging systems for electric vehicles, part of the Biden administration's effort to decrease emissions.

The U.S. Conference of Mayors, the National Governors Association, trade unions and business leaders urged Senate passage of the infrastructure bill, expected to create jobs and boost employment while addressing needs to the nation's aging transportation and water systems.

"The bipartisan deal is an historic investment in our future," said Dan Langford, CEO of Southwest Regional Council of Carpenters.

The union council helped organize workshops, visits and tours that included one attended by Vice President Kamala Harris in Las Vegas.

The Nevada AFL-CIO also endorsed the package as one that would create new construction jobs and good wages in the state.

House Speaker Nancy Pelosi, D-Calif., plans to take up the legislation when lawmakers return from their summer break later this month.

Rep. Dina Titus, D-Nev., a senior member of the House Transportation and Infrastructure Committee, inserted about \$51 million in specific transportation projects for Southern Nevada in a bill passed earlier in the House.

Other projects for North Las Vegas and Pahrump were also inserted by Rep. Steven Horsford, D-Nev., and northern highway projects were requested and included in the House bill by Rep. Mark Amodei, R-Nev.

Contact Gary Martin at gmartin@reviewjournal.com. Follow [@garymartindc](https://twitter.com/garymartindc) on Twitter.

Annual Report Assesses the State of Lake Tahoe

Reports Since 1968 Show Impact of a Changing Climate

by Andy Fell | August 12, 2021



The clarity of Lake Tahoe's cobalt blue waters tends to peak during the wintertime. (Brant Allen/UC Davis TERC)

The UC Davis Tahoe Environmental Research Center, or TERC, today (Aug. 12) released its annual [Tahoe: State of the Lake Report](#). The report informs nonscientists about important factors affecting the health of Lake Tahoe and provides the scientific underpinnings for ecosystem restoration and management decisions within the Lake Tahoe Basin.

The report summarizes data collected during 2020 in the context of the long-term record of research at Lake Tahoe. UC Davis researchers have been continuously monitoring the lake since 1968.

TERC director Geoffrey Schladow, professor of civil and environmental engineering at UC Davis, will present highlights of the report during a webinar at noon Aug. 12. Registration for the event is available [here](#).

Some highlights of this year's report:

Weather and climate change

Climate change is evident in the long-term meteorological measurements at Lake Tahoe, with rising air temperatures and rain replacing snow. Research also shows that climate change will have even larger impacts on the lake in the coming decades, including warming temperatures, changes in peak streamflows, and effects on mixing and stability of the lake's waters. Peak streamflows could increase up to three times their historical flow rates, due to the loss of snowpack storage and the increasing frequency of rain. This could result in lake levels rising at unprecedented rates, up to 10 inches per day. Such increases may present risks to downstream communities if they result in uncontrolled releases from the outlet at Tahoe City.

2020 was a relatively warm year. The annual average maximum temperature was 58.2 F, an increase of 3.2 F from 2019. The 2020 annual average minimum was 32.4 F, which was 0.9 F warmer than the previous year. Precipitation, measured at Tahoe City, was below the long-term average at 20.1 inches. The low values of 2020 came after just four years of average or above-average precipitation. Snow represented 45.1% of the 2020 total precipitation.

A dry winter led the lake level to fall by almost 2 feet from January to December 2020. It is likely that the lake will fall below its natural rim by October this year, at which point Lake Tahoe water will cease to flow down the Truckee River.

The average lake surface water temperature was 52.8 F in 2020, warmer than 2019. The lake has shown a warming trend of 0.38 F per decade since 1968.

One consequence of climate change is the increasing vertical stability of the lake's waters, leading to stagnation of the deep water. During winter, surface water cools and sinks, mixing oxygen and nutrients in the lake. In summer, the water forms vertical layers with less mixing. In February 2020, the maximum mixing depth was just 476 feet (less than half the average depth of 1,000 feet). Since 1968, the amount of time the lake is in its stratified, "summer"-state has increased by a month.

Clarity

The lake's average clarity, measured by the depth at which a white Secchi disk can be observed, was about the same as the previous year at 63 feet, [as reported recently](#). Clarity peaked in February at over 80 feet and was at its lowest in May, about 50 feet. While the average clarity of the lake has been relatively stable over the past 20 years, there is a long-term trend of reduced summer clarity.

Wildfire

While there were no significant wildfires in the Tahoe Basin itself in 2020, the lake was impacted by the fires of August and September that blanketed much of the western U.S. in smoke, producing hazardous air quality with high levels of inhalable PM2.5 particles. Measurements showed that sunlight and UV radiation levels were far below their usual values because of the shield of thick smoke during this time. The UV radiation decreases, the reduction of sunlight and the introduction of nutrients, toxic chemicals, and other materials in smoke and ash have the potential to alter the tiny floating plants and animals that form the basis of the food web in the lake.

Researchers from TERC, along with collaborators at the University of Nevada, Reno, and Crater Lake National Park, have been funded by the National Science Foundation to research the impacts of direct particle deposition from the 2020 fires on lakes in the western U.S. The ongoing research is looking at over 20 lakes of different sizes, latitudes and altitudes to explore the problem.

A changing nearshore

The nearshore is where streams and drains enter the lake and also where most recreation takes place. It's a place where conditions can change rapidly and where people are most likely to perceive changes in the lake.

Researchers have found that metaphyton, unattached mats of green, filamentous algae at the lake bottom close to shore, have been increasing over time. The increase is associated with the introduction of Asian clams to Lake Tahoe. TERC scientists and collaborators are quantifying the changing extent of metaphyton as well as the evolving species. Climate change is also expected to greatly increase the extent and duration of the algal blooms.

The State of the Lake Report also includes summaries of current research projects and outreach and educational efforts, as well as comprehensive data on weather, physical properties, clarity, nutrients and particles, and biology of Lake Tahoe.

The report's production was funded by the California Tahoe Conservancy, Tahoe Fund, Tahoe Regional Planning Agency, Tahoe Lakefront Owners' Association, Nevada Division of Environmental Protection, Lake Tahoe Marina Association, Parasol Tahoe Community Foundation, League to Save Lake Tahoe, Tahoe Water Suppliers Association, TruePoint Solutions and Incline Village Waste Not program.

Media Resources

Find more details about innovative research underway at Lake Tahoe
at www.tahoe.ucdavis.edu.

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Researchers trying to improve Lake Tahoe's clarity, ecosystem



by: [Melanie Townsend](#), [Jose Fabian](#)

Posted: Aug 12, 2021 / 10:30 PM PDT / Updated: Aug 12, 2021 / 10:30 PM PDT

(KTXL) — The last time researchers were able to see 100 feet down into Lake Tahoe's clear water was in 1960.

But in the last several years, the average depth of visibility was no more than 70 feet due to environmental changes. Dr. Geoffrey Schladow with Tahoe Environmental Research Center says it is keeping them from reaching their goal of improving Tahoe's health and clarity.

The biggest factors are heat and microscopic organisms.

"The important thing to take away from this is our temperature is increasing, so this temperature of 20 degrees Celsius, 68 degrees Fahrenheit, is actually a threshold for cyanobacteria," Schladow said.

Lake Tahoe also dropped 2 1/2 feet last year. Schladow says that combined with the reduction of UV radiation from wildfire smoke and warmer surface water temperatures will only exacerbate the buildup of an invasive species of asian clams and algae called metaphyton.

So, what can be done to save a lake from harmful bacteria and clams? TERC researchers may have come up with several solutions and one of them comes in the form of animal treats.

“They may look cute but up close they’re really ugly,” Schladow said.

The plan is to harvest tiny, yet highly destructive shrimp in Tahoe called mysis.

“Turn them into delicious dog treats as a way of suddenly engaging people’s awareness of invasive species,” Schladow said.

For now, TERC scientists will continue to monitor Tahoe with drone flyovers, diving expeditions and PSAs for keeping Lake Tahoe blue.

’re trying to improve beyond just having improved clarity but an improved

“We
86°
ecosystem,” Schladow said.

Schladow says if more solutions are proposed and things improve at Lake Tahoe, they may reach their goal to see at least 80 feet down by the year 2025.

'Ticking time bomb': Toxic chemicals found in drinking water of nearly 2,800 US cities

by **ABC7 News** — 11:33 AM EDT, Thu August 12, 2021

ABC News — Colorless and tasteless man-made chemicals, largely unregulated by the U.S. Environmental Protection Agency, has been detected in the drinking water in thousands of American communities, officials said.

The chemicals referred to as PFAS, widely known as “forever chemicals” because they do not break down in the environment, have links to liver damage, high cholesterol, weakened immune systems and cancer, scientists said.

“They basically fulfill the characteristics of a ticking time bomb,” said Dr. Bo Guo, a University of Arizona hydrologist and expert on per- and polyfluoroalkyl substances, which are commonly used in hundreds of consumer products and in firefighting foams, a top source of PFAS contamination.

“They’re very dangerous and they’re migrating very slowly,” Guo said of the heat-resistant chemicals.

Health concerns surrounding PFAS are not new, but greater detection of the chemicals in water systems nationwide has alarmed state and local leaders and prompted Congress to consider urgent action.

Some level of PFAS has been found in water samples of 2,790 communities across 49 states, according to an analysis by the Environmental Working Group (EWG), an independent research and consumer watchdog organization pushing to limit exposure to chemicals through water, food, and household products.

The contamination is likely to be much more widespread because the EPA doesn’t require testing for the chemicals and has not set a mandatory limit for how much PFAS are safe to drink in tap water.

“It’s likely an issue in every community, and that’s why we need testing to find out,” said Sydney Evans, an EWG water quality analyst who has conducted PFAS testing across the country.

In 2016, concerned by emerging health study data, the EPA issued **an advisory** to local water systems warning that prolonged exposure to the chemicals over 70 parts-per-trillion (ppt) may result in “adverse health effects.” The agency encouraged utilities to voluntarily monitor and filter to below that level but does not enforce a standard.

During President Joe Biden’s 2020 presidential campaign, he pledged to accelerate the study and regulations PFAS. His EPA has yet to designate the class of substances as hazardous under the Safe Drinking Water Act.

There is, however, growing momentum in Congress to pressure the agency over the issue. The House **approved a bill** that would force the EPA to establish mandatory national limits for PFAS in drinking water within two years, requiring more water systems to start filtering the chemicals out. The Senate’s pending bipartisan infrastructure bill would include billions to help communities get the job done.

The chemicals have been detected on the shores of Michigan lakes, in the neighborhoods around

old Naval Air Stations in Pennsylvania, and even in the groundwater of a New Mexico dairy farm whose owner alleges in federal court documents that PFAS has poisoned the cows.

Analysts with EWG estimated that more than 200 million Americans could be drinking some amount of PFAS in their tap water every day.

The EPA declined ABC News’ request for an interview but said in a statement that addressing PFAS in drinking water is “a top priority” and that the agency is “developing a multi-year strategy to deliver critical public health protections.”

 AUGUST 13, 2021

California's dry season is turning into a permanent state of being

by David R Baker, Brian K Sullivan and Josh Saul



Credit: CC0 Public Domain

Drought across the Western U.S. has forced California to ration water to farms. Hydroelectric dams barely work. The smallest spark—from a lawnmower or even a flat tire—can explode into a wildfire.

While this region has always had dry summers, they're supposed to follow a pattern that leads to relief with the arrival of the annual rainy season in November. But a break is no longer guaranteed.

In fact, there are now both short- and long-term factors drying out the Western U.S. Under the influence of fast-warming temperatures, as documented in detail by this week's report from the U.N.-backed Intergovernmental Panel on Climate Change, the region may be entering a drier state. Drought season might be giving way to a drought era.

Here are three forces desiccating the region.

A second consecutive La Nina looms

The Climate Prediction Center just issued a forecast water managers in the Western U.S. didn't want to hear. The latest report, released Thursday, puts the odds in favor of a second straight year of La Nina conditions in the Pacific Ocean.

La Nina tends to steer the storm track north of California, leaving most of the state and the Southwest parched. Last year's La Nina is one of the reasons for the current drought. If the forecast had instead called for El Nino, the odds would have favored a wetter than average winter for California and the Southwest—something the region badly needs.

"If we want to see improvement of the drought across the West, the last thing you want to see is a back-to-back La Nina," said Tom Di Liberto, a meteorologist with the National Oceanic and Atmospheric Administration. While it doesn't always lead to a dry winter, it stacks the deck in favor of one.

La Nina is driven by a vast pool of unusually cool water near the equator in the eastern Pacific, just as El Nino is driven by warmer water in the same place. The consequences of La Nina aren't all bad, since additional storms sent into the Pacific Northwest and Western Canada will help subdue devastating wildfires there.

The effects in Northern California are harder to predict. "California has the highest variability in precipitation anywhere in the U.S." said Jeanine Jones, interstate resources manager for the California Department of Water Resources. "We cannot say what next year is going to be like."

If the coming winter brings little rain and snow, the results will be troubling. California has already suffered through two dry years, leaving the soil so parched that what little snow fell in the Sierra Nevada Mountains last winter either evaporated into the air this spring or sunk straight into the dirt, leaving little runoff for rivers and reservoirs. Even with average winter rain and snowfall, runoff would remain low just because the land is so dry.

"If you have a string of dry years, that sets you up for low runoff efficiency in the next year," Jones said. "It is going to take above average precipitation to get average runoff."

How warmer air creates parched ground

While La Nina can influence rainfall patterns over the course of a year, longer-range effects are also in play. One is hard to avoid because of climate change: hotter air.

Hot air holds more moisture, so the warming atmosphere is sucking up more water from plants and soil day after day, said Park Williams, a climate scientist at the University of California, Los Angeles. Williams studied tree-ring data stretching back 1,200 years and found four periods when the Western U.S. was gripped by "megadrought," a dry period of unusual severity lasting decades. Only the most recent one, at the end of the 1500s, had soil moisture levels as low as California has experienced in the first two decades of the current century.

That means the impact from warmer air might already be registering in the soil. "The normal really is changing to a drier state, and that trend is becoming clear," Williams said.

If annual precipitation increased substantially, this could compensate for the daily drying. But Williams said most climate models don't predict more rain. To make matters worse, his tree-ring study showed that the 20th century was actually an unusually wet period.

Our expectations of "normal" rainfall, in other words, have always been a little skewed. "Modern society really developed in the Western U.S. in the 1900s—that's when all the infrastructure was built—and we're experiencing conditions it wasn't built to handle," Williams said. "In the 1900s, society was able to really evolve in a period of ignorant bliss."

In the short-run, meanwhile, the drier earth can amplify heat waves like the recent record-breakers in the U.S. and Canada. "Droughts lead to drier grounds, which lead to higher temperatures. It's a vicious cycle," Di Liberto said.

The Hadley Cell brings dry air from above

Think of the Hadley Cell as two constantly spinning wheels in the atmosphere, moving in opposite directions. Moist, hot air rises near the equator, then drops most of its moisture as rain before flowing towards the two poles. One current runs north, the other runs south. These currents descend back toward the surface drier than at the start of the cycle.

In the Northern Hemisphere, the current ends up close to the southern border of California, Arizona and New Mexico.

Scientists have speculated for years that climate change would expand the Hadley Cell, pushing its drier edge in each hemisphere closer to the poles. This week's IPCC report found that's happening, although only in the Southern Hemisphere could they blame the effect on global warming with confidence. (In the Northern Hemisphere, the change so far lies within a range that could be explained by natural variability.)

As it expands, California and much of the Western U.S. will fall more clearly in the bulls-eye of the cell's drier air. Richard Seager, senior research scientist at Columbia University's Lamont-Doherty Earth Observatory, wrote about the effect in 2007, citing it as one of several factors that would lead to a drier climate in the West. Seager said there will be years when natural cycles like El Nino—

with its wetter winters in California—will counteract some of the longer-term forces like the expansion of the Hadley Cell. But the overall trend is toward a more arid future.

"There are better cases and worse cases, but there aren't any models saying that water availability in the Southwest will get better with climate change," he said. "It's a case of less bad or more bad."

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HOMEPAGE

Lake Tahoe-area towns at risk of future flooding, UC Davis scientists warn in annual report

BY CHRISTINE DELIANNE

AUGUST 13, 2021 05:00 AM



A scuba dive team and volunteers have removed 8,122 pounds so far in a 72-mile cleanup of Lake Tahoe's shoreline that began May 14 and will be completed in November 2021. BY **DAVID CARACCIO** ✉

Water in Lake Tahoe could rise to unprecedented levels, [potentially placing communities downstream in jeopardy](#), according to a study from environmental scientists at UC Davis' Tahoe Environmental Research Center.

In the past two years, California saw brutal heatwaves and droughts shrink Lake Tahoe's water level to a point [so low that some boats couldn't be launched](#). However, that's expected to change. While temperatures aren't projected to cool off, Lake Tahoe could see a rapid depletion of its snowpack and an influx of water during the coming years.

"The lake is going to be low in the future and there will be droughts. We're going to have a similar amount of average precipitation, but the fraction of snow and rain is going to change," said Professor Geoffery Schladow, director of the Tahoe Environmental Research Center.

Right now, about half of Tahoe's precipitation is snow, contributing to the Sierra snowpack, one of California's most important water resources. But if the hot temperatures intensify and water comes down as rain, then the rainfall will fill the lake's stream quicker and cause the existing snowpack to melt.

When that happens, the peak streamflow of the lake could triple its historic rates and the water level could rise nearly a foot every day, according to the State of Lake Tahoe report.

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There is a six-foot difference between the rim of the lake and the top of the dam.

“Literally in a matter of days, the water can be released in an uncontrolled fashion,” Schladow said.

Towns located downstream from the lake’s natural shore, like Truckee or Reno, could suffer extreme flooding, which wouldn’t be a first. In 1997, the Truckee River flooded and caused millions of dollars in damages to the Reno-Sparks area in Nevada.

“In the future, it’s going to be even bigger,” Schladow said.



Floodwaters in January 1997 inundated 250 square miles of California's Central Valley, damaging or destroying 23,800 homes and 1,900 businesses. Nine people died and 120,000 residents were evacuated. BY JOSE LUIS VILLEGAS

There are 63 streams that come into Lake Tahoe. If all flow at record high levels, the lake water levels would rise at a rapid rate and cause intense flooding. Yet another harrowing sign of the impact climate change will have on the state during the upcoming decade.

“This isn’t just a Tahoe problem, this is going to impact all of California,” Schladow said. “The snowpack stores a huge amount of water, so if we don’t have the snow packs anymore, if we just have rain, then the dams in California aren’t going to be large enough to hold it all.”

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Santa Cruz

By **Carina Nocon**

August 13, 2021 8:46 AM Published [August 13, 2021](#) 7:27 AM

Water Department considers overuse penalties as drought conditions worsen statewide

Water Department considers overuse penalties as drought conditions worse...



SANTA CRUZ, Calif. (KION) The Santa Cruz Water Department is closely monitoring water supplies and water use in Santa Cruz amid the worsening drought throughout the state. The department is considering adding penalties to residents' water bills if their water use exceeds the household water budget.

The Water Department says without significant precipitation this fall, a Stage 2 Warning could be issued within the next 6 months.

If a Stage 2 Warning is declared, penalties will be applied to water bills for customers who use more water than the allocated amounts.

The warnings are in place or being considered due to the state's ongoing and worsening drought conditions.

According to the department, Loch Lomond-- the city's only drinking water reservoir-- is now at over 60% capacity, even as hundreds of Santa Cruz residents are already struggling to stay within their monthly water budgets.

To help residents manage their water use, the department is encouraging customers to sign up for WaterSmart-- an online tool to help keep customers aware of their water use. It says 30% of customers have signed up this summer.

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MORE NEWS

IPCC SIXTH ANNUAL CLIMATE ASSESSMENT PAINTS DIRE PICTURE FOR WESTERN U.S.

Seven visualizations of the climate future - to 2100

By Brian Bahouth - August 15, 2021



News Brief

On August 11, 2021, the Intergovernmental Panel on Climate Change (IPCC) released its [sixth annual Assessment Report](#), and part of the online report includes interactive access to several important climate modelling projects and associated visualizations.

The [Coupled Model Intercomparison Project](#) (CMIP) began in 2008. The ongoing effort incorporates a wide variety of historical data, seasonal factors, and diverse models to provide a multi-model context for predicting future climate conditions across the planet.

Worth noting, based on the visualization below, the future western U.S. will be warmer but not less wet in the aggregate. The form of that precipitation will largely shift from snow to rain. Average atmospheric temperatures will be higher, and less water will be banked as snow.

What these changing climactic conditions mean for weather, wild res, the availability of water, wildlife, and the health of existing ecosystems is yet to play out, but the following set of visualizations is somehow ominous given the observed changes in the climate to date and the accuracy of past modeling efforts.

Variables for the visualizations below are projected to the year 2100 and include – mean temperature, maximum temperature, number of days with maximum temperature above 35 degrees Celsius (90 degrees Fahrenheit), number of days with maximum temperature above 40 degrees Celsius (104 degrees Fahrenheit), total precipitation, and snowfall.

The IPCC Assessment is a sprawling document not easily encapsulated. The Ally encourages visitors to give [the report](#) some time. The following visualizations are based on CMIP6, the sixth and latest iteration of the Coupled Model Intercomparison Project.

The base graphics for the following images were created by the Intergovernmental Panel on Climate Change and are licensed under Creative Commons 4.0. The following visualizations are for the western United States, which means all states west of Montana, Wyoming, Colorado, and New Mexico, inclusive.

First-ever water cuts declared for Colorado River in historic drought

By Rachel Ramirez, CNN

🕒 Updated 8:30 AM ET, Tue August 17, 2021

The climate crisis is taking these farmers' most valuable resource 05:53

(CNN) — The federal government on Monday declared a water shortage on the Colorado River for the first time, triggering mandatory water consumption cuts for states in the Southwest, as climate change-fueled drought pushes the level in Lake Mead to unprecedented lows.

Lake Mead, the largest reservoir in the US by volume, has [drained at an alarming rate](#) this year. At around [1,067 feet above sea level](#) and 35% full, the Colorado River reservoir is at its lowest since the lake was filled after the Hoover Dam was completed in the 1930s.

Lake Powell, which is also fed by the Colorado River and is the country's second-largest reservoir, [recently sank](#) to a record low and is now 32% full.

"It's very significant," Brad Udall, senior water and climate scientist at Colorado State University, told CNN. "It's something that those of us in the climate community have been worried about for over a decade, based on declining flows due to climate change."

With the lake expected to remain at around 1,066 feet of elevation into 2022, according to the US Bureau of Reclamation's latest [monthly projections](#), the agency announced that the Colorado River will go into the first tier of water cuts beginning January 1.

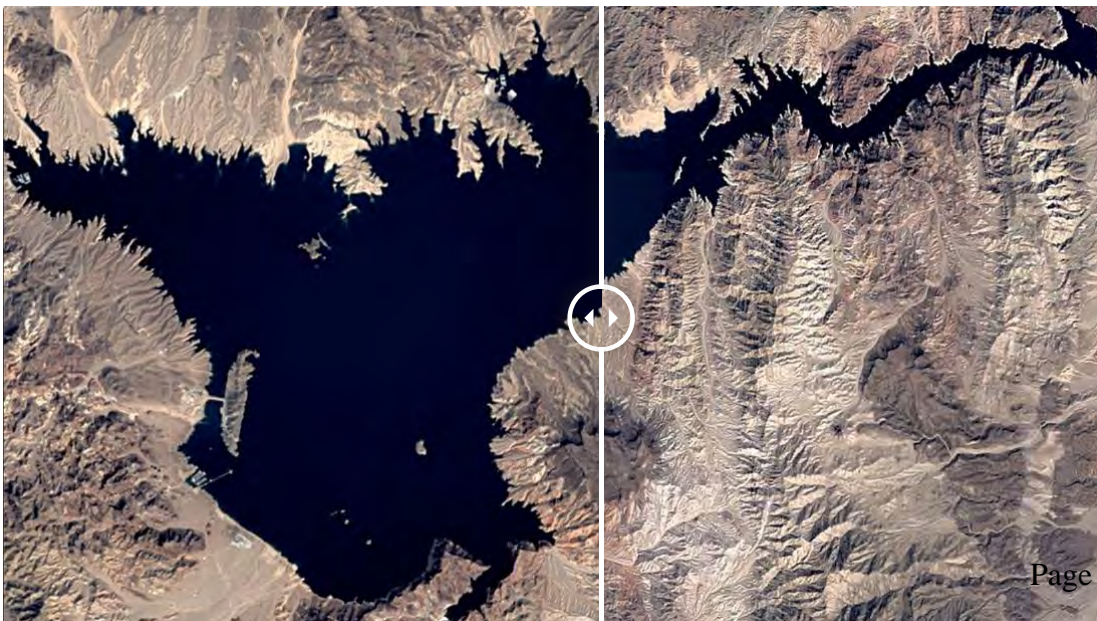
"Given ongoing historic drought and low runoff conditions in the Colorado River Basin, downstream releases from Glen Canyon Dam and Hoover Dam will be reduced in 2022 due to declining reservoir levels," the report said.

Lake Mead provides water to roughly 25 million people in Arizona, Nevada, California and Mexico, according to [the National Park Service](#). Under the complex priority system, Arizona and Nevada will be affected by the tier-1 shortage.

Arizona will see an 18% reduction in the state's total Colorado River supply, primarily impacting agriculture. Although Nevada will need to adhere to a 7% reduction in its Colorado River water supply in 2022, the state had already reduced its deliveries and no change is expected due to the shortage, according to John Entsminger, general manager of the Southern Nevada Water Authority.

Additional cuts -- each tier with worsening impact on agriculture and municipal water -- are expected if Lake Mead continues to fall. The second tier of cuts, triggered at 1,050 feet, could come as soon as 2023.

GOOGLE EARTH TIMELAPSE (GOOGLE, LANDSAT, COPENICUS)



Snaking its way through the Rocky Mountains to the Gulf of California, the Colorado River's volume have been dwindling due to extreme heat and drought.

T.J. Atkin, a cattle rancher in Utah and Arizona, described the toll the drought was taking on his family's business and his animals.

"Everyone else I've talked to says in 85 years, it has not been this bad," [Atkin told CNN in June](#). "We have 85 years' worth of our own drought data that says we've never done this ... not to this extent."

At a news conference announcing the cuts, US officials said climate change is behind the West's water shortage.

[A UN report](#) released last week emphasized the role human-caused climate change plays in drought frequency and intensity. Globally, droughts that may have occurred only once every 10 years or so now happen 70% more frequently, according to the report. The link is particularly strong in the Western US, scientists said, which is currently in the grips of a historic, multi-year drought.

More than [95% of the West was in drought](#) as of last week, the largest area in the history of the US Drought Monitor.

"There's no doubt that climate change is real -- we're experiencing it every day in the Colorado River Basin and in other basins in the West," said Tanya Trujillo, assistant secretary for water and science at the US Department of the Interior. "I think the best strategy for planning is to think about a broad range of scenarios and a broad range of potential hydrology, and to work closely with our partners in the basin to try to think through all of those scenarios."



On average, the Colorado River's flow has declined by about 20% over the last century, according to a [2020 study](#) by US Geological Survey scientists. Over half of that decline can be attributed to warming temperatures across the basin, researchers said.

Without any significant reductions to planet-heating emissions, particularly from the burning of fossil fuels, the study found the Colorado River's average discharge could shrink by 31%, compared to the historical average, by the middle of this century -- a theme consistent with the UN climate report.

The significance of the reservoirs' rapid decline cannot be overstated. The Colorado River supplies water to more than 40 million people living across seven US states and Mexico.

Lake Mead and Lake Powell provide a critical supply of drinking water, hydropower and irrigation for many communities across the region including rural farms and tribal nations.

As the climate rapidly changes, Udall said the West should prepare for more shortages.

"Climate change is water change, and many of the worst impacts we're going to see out of climate change are through changes in the water cycle," Udall said. "Not only do we have to plan for these undesirable water outcomes, but we also have to get our act together and reduce greenhouse gases as fast as we can."

[Return to ASDWA's Newsroom](#)

EPA UPDATES DRINKING WATER HUMAN HEALTH BENCHMARKS FOR PESTICIDES

📅 August 16, 2021 👤 Deirdre White 💬 0 Comment 📄 Drinking Water Headlines, Source Water



EPA has published its Updated 2021 Human Health Benchmarks for Pesticides (HHBPs) in drinking water or source water for noncancer and cancer health endpoints. This update reflects the latest toxicity information available through the pesticide registration and registration review processes and the latest information on potential exposure. EPA provides HHBPs for use by states, tribes, water systems, and the public to help determine whether the detection of a pesticide in drinking water or source water may indicate a potential health risk and to help prioritize monitoring efforts for pesticides without drinking water health advisories or standards. EPA first published HHBPs in 2012 and issued updates in 2013 and 2017. The 2021 Update includes toxicity values for 43 additional pesticides, for a total of 430 HHBPs. For more information and to view the Updated 2021 table, fact sheet, and technical document, visit the [EPA website](#).



Home > Featured > Sponsored > The Truckee Meadows water system: a network of upstream sup

The Truckee Meadows water system: a network of upst resiliency (sponsored)

By ThisIsReno | Published: August 18, 2021 | Last Updated on A



The Lake Tahoe Dam. Image courtesy of TMWA.

A remarkable agreement.

That's what Truckee Meadows Water Authority (TMWA) leaders call the Truckee River Oper Agreement (TROA), because it puts the region in a much better position to manage its water supply through drought.

This year is the first drought season the region has experienced since the agreement was signed in 2 and it has meaningfully improved the way it can manage its upstream reservoirs.

"We had roughly 28,000 acre feet of storage before TROA," said TMWA's Andy Gebhardt, Director Operations and Water Quality. "And with 28,000 acre feet, we were comfortable. We had plenty of storage during the last drought (2015)."

But with TROA in effect, TMWA's water reserves this summer have almost doubled.

"Now we have 53,000 acre feet," Gebhardt added. "It just magnified what TROA has done. You can overstate it."

This storage is even more important when the annual snowpack in the Sierra fluctuates. During dry years when there is minimal natural flow in the Truckee River, water stored in reservoirs such as Prosser, Stampede and Boca is available for release to be used by TMWA customers.

*"Water conservation is smart, especially when we live
in the high desert."*

In the summers, groundwater also comes online to supplement the supply until demand lessens when cooler months arrive. This helps to reduce what is released upstream.

“For over 20 years we’ve been building upon a conjunctive use strategy that uses surface and groundwater in a coordinated way, which has made our water system more resilient.” said Bill Hau Senior Hydrologist at TMWA. “We’ll use groundwater to supplement supply when demand is high then when demand decreases we use that opportunity to rest our wells so groundwater can recharge

The community-owned water utility runs projections annually for how much water the Truckee Meadows will need in the future. Additionally, an in-depth water resource management plan is published every five years that is presented to the TMWA’s Board of Directors for approval.

Gebhardt notes that even with the worst snowpack projections going out decades, TMWA’s water resources will continue to provide for the community into the future and in consideration of growth has been projected for the region.

To help the public understand more how water is managed in the community, TMWA’s [Smart About Water website](#) was created for just that purpose.

Why conservation is always needed

Residents are required to water on designated days, and TMWA’s water watchers work with residents ensure proper watering and fix leaks and irrigation systems to function properly.

Just because you have \$1,000 in the bank doesn’t mean you should take it out and spend it. That’s the analogy Gebhardt uses. When the region is in a drought, the banked water can flow into the Truckee River when it’s most needed.

“Water conservation is smart, especially when we live in the high desert,” he explained. “The community has had a strong conservation ethic for years. We’ve had assigned day watering since the mid-’80s. It was voluntary in the mid-’80s. In the mid-’90s, it became mandatory back when we were owned by Sierra Pacific.”

The utility’s water watchers serve an educational role, not a punitive one. Going to metered water, a mandatory watering days, provides TMWA opportunities to work with residents. If a household is using an abnormally high amount of water, TMWA staff can help identify inefficiencies or leaks in the residence’s system.

It’s as much about helping the greater community to conserve as well as helping individual consumers use water wisely to save on their water bill.

Water meters were required of all customers in 2015. “We found people, if they had leaks and they were metered, they jumped on fixing those leaks in a heartbeat,” Gebhardt said. “It’s one of the main reasons our per capita usage has decreased 30% since the early 2000s.

Smart water use, increased efficiency in the water system and upstream storage all work together to ensure Truckee Meadows residents have the necessary amount of water well into the future.

“The community has a diverse portfolio of water resources, a system that is resilient, and a proactive approach to water resource management and planning” Gebhardt added. “We feel pretty good about that.”

Learn more

Learn more about water conservation in the Truckee Meadows by visiting [Smart About Water](#).

At annual Tahoe summit, lawmakers offer dire warning, hope about lake's future



Jazmin Orozco Rodriguez

August 20th, 2021 at 2:00 AM

Environment

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Lake Tahoe on Monday, November 26, 2018. (David Calvert/The Nevada Independent)

The growing threat of catastrophic wildfires blazing across the West and the resulting detrimental effects, such as hazardous air quality, were top of mind for Nevada and California leaders gathered on a slightly hazy shore Thursday morning for the 25th annual Lake Tahoe Summit.

Before speakers launched into remarks on climate change, wildfires, infrastructure and legislation aimed at preserving the popular year-round tourist destination, Washoe Tribe of Nevada and California Chairman Serrell Smokey began with a prayer.

"We're in a changing world right now," he said. "The waters are low. We pray for snow. We pray for better weather, we pray for better change to come ... We have a lot of fires going on around right now, a lot of areas being wiped out. We pray for restoration, we pray for regrowth and new beginnings."

The air quality across the Tahoe region was labeled as "moderate" on Thursday as the Caldor Fire, which is zero percent contained and has scorched more than 65,000 acres, burns less than 100 miles from the southern shore of the lake. While favorable winds provided some relief during the event, a huge plume of smoke from the fire caused the region's air quality to plummet to hazardous levels earlier this week.

"We know that fires and drought and sky-high temperatures are already taking a toll on Lake Tahoe's people and their plants and their animals," said Sen. Catherine Cortez Masto (D-NV).

Elected officials offered solutions against the backdrop of discouraging trends for the lake during the annual event that brings together bistate leadership to collaborate on preservation efforts.

According to the 2021 [State of the Lake report](#) published by the Tahoe Environmental Research Center, the region's annual average temperature increased by more than 3 degrees last year to 58 degrees. The area saw diminished snowpack and increased rain, with annual precipitation below average at 20 inches. Snow made up less than 50 percent of the precipitation average last year.

The precipitation data shows a break in a prior four-year trend of average or above-average levels.

As a result, the lake's water levels fell by two feet last year. In the report, researchers said it's likely that the lake will [fall below its natural rim](#) for the first time in a decade by October, at which point the water will stop flowing to the Truckee River. The river delivers 80 percent of all drinking water to Reno and Sparks residents and is the main water source for Pyramid Lake.

"It's easy to get overwhelmed by the evidence of climate change all around us," Cortez Masto said, "but standing here today, we can also see clear reasons for hope."



UNR President Brian Sandoval, Sen. Catherine Cortez Masto (D-NV), Sen. Jacky Rosen (D-NV), Gov. Steve Sisolak, Interior Secretary Deb Haaland, Sen. Alex Padilla (D-CA) and Rep. John Garamendi (D-CA) gathered at the annual Lake Tahoe Summit on August 19, 2021. (Photo courtesy of the office of Sen. Catherine Cortez Masto/The Nevada Independent).

Tahoe preservation efforts in legislation

Sisolak, Cortez Masto and Sen. Jacky Rosen (D-NV) highlighted the [\\$1.2 trillion infrastructure bill](#), recently approved by the Senate and awaiting a vote in the House, focused on roads, transit, airports and broadband, plus other legislation that provides funding for programs aimed at preserving the Tahoe region.

Cortez Masto said the infrastructure bill includes millions of dollars for environmental protection, habitat restoration programs and wildfire management. She's also spearheading efforts to extend the [Lake Tahoe Restoration Act](#), saying the coming 2024 expiration could be "devastating" to the lake.

Rosen said the funding from the infrastructure bill will help address road and trail repairs, "making [Tahoe] more accessible for everybody."

In addition to the environmental protection programs, the measure requires coordination between federal, state, local and private groups, including the Environmental Protection Agency (EPA) and the Tahoe Regional Planning Agency.

The [original bill](#) was approved in 2000, authorizing \$300 million in federal funds for a decade-long effort to clean up the lake. The legislation expired in 2010 and wasn't reauthorized until 2016.

The effort to extend the legislation is [widely supported](#) by public and private Tahoe groups, such as the regional planning agency and the League to Save Lake Tahoe, and all six members of Nevada's congressional delegation.

Interior Secretary Deb Haaland, the keynote speaker at the summit, pointed to the Biden administration's "30 by 30" goal to restore and conserve 30 percent of U.S. land and ocean by 2030.

"It's a vision that recognizes that nature offers some of the most cost-effective ways to address the climate crisis that we need to do to stem the steep loss of nature and wildlife," said Haaland, who is an enrolled member of the Laguna Pueblo Tribe in New Mexico. "And that we need to address the inequitable access to the outdoors for communities of color."

Haaland, one of the first Native American women elected to Congress and the first to serve as a U.S. cabinet secretary, said the initiative supports ranchers, farmers and private landowners while honoring the sovereignty of tribes and elevating Indigenous-led conservation efforts.

Nevada lawmakers also approved a "[30 by 30" resolution](#) during this year's legislative session.

The cabinet secretary added that the Department of Interior is taking steps to hire more firefighters and convert more than 500 seasonal firefighters into permanent career positions this year. The Biden administration also announced earlier this week that [federal re ghters will receive a pay raise](#) starting next week.

Members of a crew from the East Fork Fire Protection District during a press event with Governor Steve Sisolak and California Governor Gavin Newsom on Penrod Court in Douglas County on Wednesday, July 28, 2021. (David Calvert/The Nevada Independent)

The next 25 years

Many of the state leaders who spoke during the summit pointed to the future, prompting listeners to think about the state of the Tahoe region in 25 years.

Rep. John Garamendi (D-CA) compared the lake to a scrapbook that keeps records of human and geological activity.

"What will the lake record of us?" he said. "Failure is an option. This lake will record the highest temperatures ... and then literally the destruction of this lake ... if we fail to have the courage to step forward."

While all-time high tourism levels boost the \$5 billion Tahoe economy, it also increases trash, pollution and at times overwhelms local infrastructure. A [2018 study](#) for the Tahoe Prosperity Center reported that the region sees as many as 24 million visitors each year.

Lake clarity, which is used as a factor to determine the health of the lake, decreases during the peak tourism months, according to researchers.

Measured by the depth at which a white disk can be seen, clarity levels were best in February 2020 at 80 feet and least clear in May at 50 feet. When researchers from UC Davis first began monitoring clarity levels in 1968, the white disk could be seen at 102 feet deep. The clarity restoration target is 97.4 feet.

As Tahoe continues to face abundant environmental threats caused by climate change and increased tourism, leaders at the summit urged one another to do more to protect the lake.

Summit host Sen. Alex Padilla (D-CA) said he visited the region with his children in 2017, emphasizing the opportunity and obligation to ensure visiting the region will be possible for the next 25 years and beyond.

“But scientists and environmental experts continue to remind us that our window to do so is closing,” Padilla said. “Time is of the essence.”

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- Steve Sisolak – \$3,200



Jazmin Orozco Rodriguez

Jazmin Orozco Rodriguez is a staff reporter covering Nevada's Native American and Latino communities.



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Sensus is expected to provide the communications infrastructure for smart water meters. The water meters will remotely send consumer consumption data 6 times a day to the utility for processing, a development that will help improve water billing and the detection of water leaks.

In addition, approximately 24,208 existing gas meters will be retrofitted with Sensus gas meter end-point radios.

The smart meters will be hosted on a cloud meter data management system to be provided by US-based SmartWorks.

E Source and SAP are expected to be awarded contracts for project management and system integration.



Nicholas Nhede



Nicholas Nhede is an experienced energy sector writer based in Clarion Event's Cape Town office. He has been writing for Smart Energy International's print and online media platforms since 2015, on topics including metering, smart grids, renewable energy, the Internet of Things, distributed energy resources and smart cities. Originally from Zimbabwe, Nicholas holds a diploma in Journalism and Communication Studies. Nicholas has a passion for how technology can be used to accelerate the energy transition and combat climate change.

in  



ENVIRONMENT

Lahontan water level extremely low due to drought conditions

by Nevada State News | August 21, 2021



The Lahontan Reservoir is fed by the Carson River and by the Truckee River with water diversions from the Derby Dam, supplying water for irrigation. Pictured here in 2014, in the third year of a four-year drought, much of the lake was completely dry. Image: UNR

SILVER SPRINGS – The water level at Lahon in 2020, measuring 3,974 acre-feet as of Aug. acre-feet of water, and more than double that

Minimum pool level for the reservoir—the low ordinary conditions—is about 5,000 acre-feet

Nevada State Parks officials said boating in th well. Most access points are difficult to reach, swimmable water.

“Visitors should use caution while driving, as layer may look dry while the layers below rem
(Below, drone footage of Lahontan Reservoir



Last winter's below average snowpack has led
River, which feeds into the reservoir, has had
Officials said they don't expect the water level
or the coming winter's snowpack improves.

To find an alternative state park with water re

Conditions at Lahontan State Recreation Area
visit <http://parks.nv.gov/parks/lahontan> follo
call (775) 577-2226.

Source: Nevada State Parks



Map: Lake Tahoe campgrounds, trails, resorts closed at least through Labor Day

Wildfire danger shuts down national forests, state parks

By **BAY AREA NEWS GROUP** |

PUBLISHED: August 21, 2021 at 9:28 p.m. | UPDATED: August 24, 2021 at 9:14 a.m.

Wildfire danger has prompted the closure of many recreational areas near Lake Tahoe at least through Labor Day.

These closures were announced this week:

- **Eldorado National Forest**, closed through Sept. 30. With the Caldor Fire burning in its southwest quadrant, the entire forest is under an [emergency closure order](#) that began Aug. 17. Its approximate boundary is shown on the map in purple.
- All other **Northern California national forests**, closed from 11:59 p.m. Aug. 22 to 11:59 p.m. Sept. 6 (Labor Day). In the Tahoe area they include the Lake Tahoe Basin Management Unit (light blue border), surrounding the lake, and the Tahoe National Forest, to the north. [Also closed](#) are Six Rivers, Modoc, Klamath, Shasta-Trinity, Lassen, Plumas and Mendocino forests. The notice prohibits virtually all public use of the forests, including trails and forest roads. The Lake Tahoe unit is in charge of national forest land within its boundaries, which includes the Fallen Leaf, Bayview, Meeks Bay, Kaspian, William Kent, Nevada Beach and Zephyr Cove campgrounds (orange dots).



• **Certain backcountry areas** in the Lake Tahoe Basin Management Unit, closed through Sept. 19. In addition to the full unit shutdown through Sept. 6, the Tahoe unit [announced closures through Sept. 19](#) of several of its backcountry areas (blue dots on map), including Desolation Wilderness, the Meiss Backcountry Area, Barker Pass Road, Blackwood Creek Road, Eagle Lake, Little Round Top and some popular trails including the McKinney Rubicon Trail and the segment of the Pacific Crest Trail from Barker Pass north to the Tahoe Rim Trail. People who own cabins in the Meiss Backcountry Area will be allowed to get to those properties but may not travel anywhere else in the closure area.

• Emerald Bay, D.L. Bliss and Ed Z'berg Sugar Pine Point **state parks**, closed until further notice. Effective Saturday, Aug. 21, these three California [state parks](#) (green dots) on Lake Tahoe's west shore were closed.

• **Resorts** that have announced they will be closed through Labor Day: [Camp Richardson](#), [Meeks Bay](#), [Angora Lakes](#) and [Zephyr Cove](#), including the MS Dixie cruises (red dots).

• **Nevada state parks** announced a shorter closure because of bad air quality. To be closed until at least Aug. 27 are its properties in the Tahoe basin, including Sand Harbor, Spooner Lake, Cave Rock and Van Sickle (green dots).

• **Camp Shelly** (yellow dot), which is run by Livermore's parks department, has closed for the rest of the season.

Related maps:

- [Map: All Northern California national forests closed through Labor Day](#)
- [Highway 50 closure: How to get to Tahoe, when will road reopen?](#)
- [Map: Caldor Fire perimeter and evacuation zone](#)
- [Map: Caldor Fire structures destroyed, including Grizzly Flat](#)
- [Map: 14 large wildfires burning in California](#)

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In Southern Nevada's endless water crisis, we're well past the time to be lawn gone



John L. Smith

August 22nd, 2021 at 2:00 AM

Opinion



Sprinklers water a lawn in Las Vegas on Tuesday, March 23, 2021. (Jeff Scheid/The Nevada Independent)

The front lawn came with the house we moved into a couple years ago.

The patch of Bermudagrass was smaller than an average putting green and easy to mow. The splash of deep green was cute as far as that goes, but it was out of place on a street that had largely made the transition to colored rock and water-smart landscaping.

Beyond the postcard aesthetics, it made zero sense to continue to water a lawn in the desert. Setting aside the politics of climate change and our arid land with its endless water crisis — a basic definition of “desert” — there were no children at home to play on it. And I could live with the dogs’ disappointment. In short, there was nothing to debate.

Earlier this summer, we had the grass removed and replaced with a mesquite tree and several flowering shrubs that are durable in the desert. It’s all on a drip system and a timer, and I think it looks great. I’ve already given away the lawnmower.

Now it dawns on me that I’ve awakened inside a Southern Nevada Water Authority conservation commercial. I half expect hockey hitman and SNWA water conservation “specialist” Ryan Reeves to slam me into the garage door.

In keeping with that theme, SNWA General Manager John Entsminger’s voice played in a loop in my head this past week after the U.S. Bureau of Reclamation declared its first-ever emergency water shortage declaration, which will reduce the amount of water Southern Nevada will be able to draw from its essential Colorado River source, Lake Mead. The cuts were triggered after years of drought, thinning snowpack and the increased aridification in the West dropped the level of the lake below 1,075 feet.

Nevada, California and Arizona are the states immediately hit, along with Mexico. But there will be more. I’ve heard no credible source predict these conditions will improve.

Now our deficit has a deficit, Lake Mead's bathtub ring is synonymous with a West in crisis, and everything Entsminger says during an SNWA information video sounds like understatement. Even, "It means we have to seriously step up water conservation."

He was talking about the seven billion gallons needed to offset the mandated 2022 cut. Replacing nonessential turf with water-smart landscaping, following approved watering schedules, and fixing sprinkler leaks when they occur would result in meeting that daunting multi-billion-gallon goal, he says in a calm voice. After reminding skeptics that single-family homes and their landscape irrigation use far more water than the Strip's fountains and the region's golf course, he adds, "If you have grass that serves no recreational value, get rid of it." And, at last, even more bluntly, "We live in a desert. It's time to act like it."

That's right. This doesn't mean every tree in Summerlin needs to go, or that Green Valley is turning khaki. At least, not yet. But something's gotta give.

That seven billion-gallon cut may sound like a lot, but consider the fact that Lake Mead's water level sits three trillion gallons below capacity and now has set off an alarm for the first time in history. For the Colorado River system as a whole, water storage is at 40 percent of capacity — a drop from 49 percent in a single year in what Reclamation's Assistant Secretary for Water and Science Tanya Trujillo stated is the result of ["unprecedented and accelerating challenges."](#)

Whether it's due to an extended drought, climate change, an exceptionally dry spring or a declining snowpack, the Colorado River's latest annual flow, the Great Basin Water Network's Executive Director Kyle Roerink reminds me, is less than a third of the 16.5 million acre-feet necessary to meet its obligations.

It's a key reason his group and a growing number of environmental organizations are challenging the sprawling Southern Nevada Economic Development and Conservation Act, a federal land bill that its advocates call a ["blueprint"](#) for a balanced approach to growth in Clark County. One problem, Roerink says, is that no matter how much Southern Nevada conserves its most precious natural resource, political and environmental factors beyond its control threaten to turn that blueprint into a cartoon.

"If everyone were doing as well (at conserving water) as Nevada, I think we could all feel a little bit better," Roerink says. "But Nevada doesn't exist in a vacuum as it relates to the river."

Depleted reservoirs not only spell real trouble in the present, but they may play havoc with development plans in even the near future.

"Our reservoirs are like savings accounts, and what happens when you're not saving any money and you just keep withdrawing, withdrawing and withdrawing, eventually you're going to get to the point where you're overdrafted."

Roerink lauds the SNWA's conservation marketing, but calls it part of a "silver buckshot approach" when a silver bullet doesn't exist. "Unfortunately, all those silver pellets aren't within our control," he says. "It's one river used by seven states, sovereign tribes, and the country of Mexico. This is geopolitics at its finest."

It's 2021. It shouldn't have taken a federal emergency declaration for us to get the message, but I suppose Ryan Reeves can't be everywhere. We live in a desert, a wise man once said. It's time to act like it.

It's probably unrealistic, but I'll end on an optimistic note.

The front-yard lantana has begun to bloom. Once the mesquite tree fills out, there will be a touch more shade in a sunbaked land.

John L. Smith is an author and longtime columnist. He was born in Henderson and his family's Nevada roots go back to 1881. His stories have appeared in Time, Readers Digest, The Daily Beast, Reuters, Ruralite and Desert Companion, among others. He also offers weekly commentary on Nevada Public Radiostation KNPR. His newest book—abiography of iconic Nevadacivilrightsandpoliticalleader, Joe

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Neal— "Westside Slugger: Joe Neal's Lifelong Fight for Social Justice" is published by University of Nevada Press and is available at Amazon.com. He is also the author of a new book, "Saints, Sinners, and Sovereign Citizens: The Endless War Over the West's Public Lands." On Twitter: @jlnevadasmith.

Environment & Energy

Megadrought to Pit Fish Lives Against Human Needs in U.S. West

By Bobby Magill

Aug. 23, 2021, 3:01 AM

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- Battles loom over water rights for streams and fish
 - Finding ways to share more water poses challenge
-

Water cuts aimed at farmers amid the West's megadrought have set the stage for bitter legal and political fights over one of the most overlooked water uses—the right of water to remain in streams to sustain fish and endangered species, lawyers say.

The drought is poised to call that right into question, pitting drinking water providers and food growers against conservationists who want to keep streams wet so that fish can survive.

"When the choice is between drinking water for a community and water for flora and fauna, I think that's where we'll see conflict begin," said Fred Breedlove, a water rights lawyer and counsel at Snell & Wilmer LLP in Phoenix.

The Interior Department's Bureau of Reclamation this week announced a first-ever water shortage in the Colorado River Basin that is expected to force Arizona farmers to cut their water use and eventually force further cuts across all seven states in the basin.

The declaration has "major implications for the stream flow and the health of rivers and streams around the basin," said Leon Szeptycki, a University of Virginia law professor and former executive director of Water in the West at the Stanford University Woods Institute for the Environment.

First to Lose

As the West dries up, flows set aside for the environment are likely to be the first to lose, said Buzz Thompson, a water lawyer and of counsel at O'Melveny & Meyers LLP.

"As a result, you see environmental groups and others who favor in-stream flows working to try to accord environmental water the same degree of security as other water," he said.

Water left in rivers is important not only for the survival of endangered fish and other species, but also for recreation, Szeptycki said.

The megadrought's effect on streamflows aren't limited to the Colorado River Basin. Already this year, salmon runs are drying up in California and Oregon, and keeping them wet will require a greater sacrifice from people who use the water upstream for human uses, Szeptycki said.

Varying Rights

Historically, water rights for streams weren't considered legitimate under the West's water rights legal framework—known as the system of prior appropriation—because water in a river was considered to have no beneficial use.

That started to change in the 1970s, when some states began recognizing water rights for rivers, known as in-stream flow rights, or environmental rights.

framework for establishing and transferring in-stream water rights, but Nevada, Arizona and New Mexico lack such a framework, said Szeptycki, who co-authored a state-by-state legal analysis on environmental water rights in 2015.

Today, each Western state allocates water for streams differently. Colorado and Oregon have a clear legal Idaho gives in-stream flow rights a lesser status compared to other water uses, he said.

But even in states with a clear legal framework and system for keeping water in rivers, the river can still lose out.

"In Colorado, those rights tend to be fairly junior, so you have irrigation rights that tend to be much more senior so they can take that water even if you have an in-stream flow water right," said Mely Whiting, senior counsel for Trout Unlimited, which advocates for streamwater rights.

In-stream flow rights often are considered to have no economic value, and are among the first to be curtailed in a water shortage, said Riley Snow, a water rights attorney working in Arizona and Utah.

"An in-stream right can only survive if it is not impairing more senior water right users," Snow said in an email. "Such impairments become more likely as water becomes more scarce."

Sharing Uses

In Colorado—the headwaters of the Colorado River Basin—some groups have found that the best way to ensure streams remain wet amid water shortages is by finding more ways to share water between different uses, said Andy Schultheiss, executive director of the Colorado Water Trust.

The trust is a nonprofit dedicated to keeping Colorado's streams flowing by acquiring senior water rights to run the water in rivers using the state's unique legal framework for in-stream flow rights. The group helps to "develop smooth water markets that can produce water savings that remains in streams, as well as supporting agricultural production," Schultheiss said.

In the meantime, the trust is advocating for strategically releasing water into streams from reservoirs when streams are running dangerously low in drought, he said.

But often, the biggest tool conservationists have to keep water in rivers is the Endangered Species Act. Water users usually go out of their way to avoid legal entanglements involving it, Schultheiss said.

Even so, conflict remains a possibility.

When a listed species is found in a river that's drying up, the federal government steps in and mandates that water remain in the river, "and that provokes a legal conflict over water," Szeptycki said.

And so litigation over in-stream water rights looms.

"If the drought continues for the long-term, I think what we are going to see is increased competition for a finite resource and thus potential litigation over the legitimacy of some of those in-stream flow rights," Breedlove said.

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Lahontan Reservoir's Low Water Level Impacts Farmers, Wildlife And Recreationists

By [LUCIA STARBUCK \(/PEOPLE/LUCIA-STARBUCK\)](#) • AUG 25, 2021



(http://www.kunr.org/sites/kunr/files/styles/x_large/public/202108/lahontan_state_recreation_area_water_level_drought.jpeg)

The intake tower at Lahontan Reservoir, Nev., on Aug. 24, 2021. Smoke is filling the air from wildfires burning in California.

COURTESY OF NEVADA STATE PARKS

Drought has drastically impacted water levels at the Lahontan State Recreation Area, and the effects are being felt by farmers, wildlife and recreationists.

The water level at Lahontan State Recreation Area is about 6,000 acre-feet, according to Lahontan Park Supervisor Tony Beauregard. That's about 6,000 football fields covered with one foot of water. The reservoir has the capacity to hold 300,000 acre-feet of water, but the water level is roughly 2% of what it can hold.

The main source of water comes from the Carson River, which has received a below-average amount of snowpack melt. Farmers in Fallon use the water, but irrigation came to a stop a few weeks ago, according to Beauregard.

"Typically, they would be able to water crops into like the first of October, so they're losing about two months' worth of water," Beauregard said.

Beauregard also said that the low water level is causing stress on fish and migratory birds. He said the Nevada Department of Wildlife is considering adding what is essentially a bubbler in the reservoir, which will oxygenate the water for the fish.

This isn't the first time the reservoir has lost this much water.

"I think it happened sooner this year than in the past years. It was drier and hotter; the water kind of went away faster than it has the last couple of times it's dried up like this. You know, this is the second time it's happened in about eight years," Beauregard said.

The boat launch areas at Silver Springs and Lahontan Dam are closed. Boating in the reservoir isn't advised, and swimming is not possible at the Silver Springs side of the park because it is mostly mud.

Lucia Starbuck is a corps member with Report for America (<https://www.reportforamerica.org/>) an initiative of the GroundTruth Project (<https://thegroundtruthproject.org/>)

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Washoe County to take over regional homeless services, oversee \$38 million in upgraded services



Tabitha Mueller

August 31st, 2021 at 2:00 AM

Local Government

Northern Nevada



Reno Councilwoman Neoma Jardon walks around the Nevada Cares Campus shelter with Gov. Steve Sisolak in Reno, Nevada On May 17, 2021 (David Calvert/The Nevada Independent).

Washoe County is set to gain primary responsibility for Northern Nevada's homeless services, taking authority from the City of Reno for directing an estimated \$15.6 million annual budget program aimed at helping the region's unsheltered populations.

Leaders from Washoe County, the City of Reno and the City of Sparks met Monday to approve the new arrangement, a decade-in-the-making transition designed to streamline resources and expand services and housing options. Officials estimate that the transition will take about a year and ideally finish by July 2022.

Since 2008, the City of Reno has directed regional efforts to address housing insecurity but needed to receive approval from the county for funding, creating an inefficient process, Reno City Councilwoman Neoma Jardon told *The Nevada Independent*.

"Today's vote aligns resources, expertise and facilities with the needs of our homeless population," Jardon said. "It allows us to fundamentally change and improve the way we help our region's most vulnerable."

The decision to hand off authority to the county includes a formalized cost-sharing agreement divided in accordance with tax projection percentages between the three local governments. For annual operating costs projected to be about \$15 million, the county will cover a little less than 70 percent of the costs, Reno will take on around 23 percent and Sparks will cover about 8 percent.

Under the agreement, one-time costs for setting up the shelter and other services will amount to an estimated \$38 million in 2022, with Washoe County taking on roughly 68 percent of the price, Reno covering around 21 percent and Sparks paying for approximately 10 percent.

Though each of the jurisdictions has committed to providing its share of the funds, none of them have yet specified where its part of the funding will come from. Dollars could come from general funds, coronavirus relief aid or other sources of money such as grants, Jardon said.



Beds at the Nevada Cares Campus shelter in Reno, Nevada On May 17, 2021 (David Calvert/The Nevada Independent).

Based on [shelter and housing service records](#), roughly 1,712 individuals in Washoe County were unhoused as of June of this year. But officials and housing advocates warn that these numbers are likely under-estimates because they do not include the population of people not using services. They also fear that the region's unhoused population will grow as rent prices increase, wildfires threaten housing and evictions take place following the end of the federal eviction moratorium.

To address [a need for shelter space that would support safe, social distancing practices during the pandemic](#) and to meet the needs of the expected rise in the region's unhoused population, the cities of Sparks and Reno, along with the county, [built the Nevada Cares Campus](#), a 46,000 square foot shelter with 604 beds and lockers, and set aside land for a temporary campground. Plans for the shelter included adding space for couples and pets and wraparound services such as healthcare facilities. The change in jurisdiction to the county will maintain operations as they exist, but the county says it plans to hire additional staff to increase support services.

One-time costs outlined in the agreement will go to the planned expansion of the campus with funding also going toward the creation of pet facilities, 50 transitional housing units, case management services, healthcare services, a day center hub offering resources for both unhoused and housing insecure populations and other additions.

The roughly \$17.6 million campus was the product of a joint agreement between the three local jurisdictions and was supported by federal coronavirus relief funds. Annual funds will support operating costs at the campus and various shelters, safe camps and other facilities in the region.

Washoe County Commissioner Alexis Hill, who chairs the region's Community Homelessness Advisory Board, said that the county will be focusing efforts on transitional housing and offering services to help people on the brink of houselessness. She added that some of the funding will also go toward hiring housing specialists and setting up supportive services to keep residents housed and help unsheltered populations find permanent housing.

"We want to transition out of the emergency housing game and transition to the permanent housing game," Hill told *The Nevada Independent*. "As a region we are moving past the days of trying to treat the symptoms of homelessness and moving towards addressing the root causes. "



Tabitha Mueller

Tabitha Mueller is a general assignment reporter at *The Nevada Independent* who also covers the Legislature.

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"It's Critical That The Rivers Continue to Flow." Environmental Activist Nicole Horseherder on Reclaiming Water Rights for Native Americans



Nicole Horseherder, executive director of Tó Nizhóní Ání Darcy Padilla

BY EBEN SHAPIRO

AUGUST 30, 2021 9:31 AM EDT

(To receive weekly emails of conversations with the world's top CEOs and business decisionmakers, [click here.](#))

Nicole Horseherder lives in Hard Rock, Ariz., population 53. Hard Rock sits on the Black Mesa, which takes its **NEXT LEADER SPEAK** name from the numerous coal seams running through the plateau in western Arizona.

Horseherder's home has no running water, as it is prohibitively expensive to drill down to the nearest aquifer that has potable water. Twice a week, she drives her 20-year-old, three-quarter-ton GMC pickup—towing a 500-gal. tank mounted on a flatbed trailer—to a community well 25 miles away.

Coal and water have dominated Horseherder's life and work for the past decade.

Horseherder is executive director of Tó Nizhóní Ání, an advocacy group she helped form in 2000, which is dedicated to ending the "industrial use of precious water sources." Tó Nizhóní Ání means "sacred water speaks" in Horseherder's native Diné or Navajo. Horseherder and other activists won a tremendous victory with the 2019 decommissioning and subsequent January 2021 demolition of the Navajo Generating Station, one of the largest coal-burning plants in the West. In a related move, two coal mines, the Kayenta and Black Mesa mines, were also closed down in 2019.

Horseherder's work has now shifted to ensuring that there are adequate funds to reclaim and restore the land. She recently testified at an oversight hearing before a U.S. House subcommittee on unfulfilled coal reclamation obligations and the need to ensure that reclamation efforts are enforced. While the amount has not been finalized, Arizona Public Service, the local power company, has proposed over \$100 million to be spent on restoring land impacted by coal.

Profile 25 Defining Words for the Black Rebirth Series: Trade Imbalance

Horseherder, who grew up on the reservation, got involved in the work when she returned home after college and noticed that the watering holes where she had helped graze the family's sheep as a young girl had dried up as the local water had been redirected to be used in coal production.

She is on the front lines of an increasingly urgent battle that will have to be played out repeatedly in coming years to ward off the most severe consequences of climate change, according to a recently released study by the

U.N., which called for a "sharp reduction in greenhouse gas emissions in coming decades." There were more than 1,000 coal-fired power plants in the U.S. in 2019, according to the U.S. Energy Information Administration.

Horseherder is just one of many examples of the grueling effort that goes into closing a single coal mine. "It's tremendously difficult to fight coal companies and power plants," she says.

(This interview has been condensed and edited for clarity.)

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Earlier this summer, the Bureau of Land Management for the first time declared a water shortage in the Colorado River. That is your neighborhood. What was your reaction?

We knew that this was going to happen. We knew this day was coming. Fifty years have gone by, and industry has had an enormous impact: irreversible in many instances, on both groundwater and surface water. That water in the upper-basin Colorado River belongs to the Navajo people. Whatever is left has to be carefully managed and carefully used. It's critical that the rivers continue to flow. The Southwest has a "use it or lose it" law for the water of the Colorado River, and it is very destructive. It's the perfect example of the colonial mindset in the Southwest. That's what's going to destroy the population until we have a mindset change. Now more than ever, an Indigenous mindset is needed.

Can you tell me a bit more about the role water plays in your culture?

One of the teachings of water is that it has the ability to give life, and it has the ability to take life. Human beings were born from and conceived in water and grow in a womb that is filled with water. Water nourishes our development and growth. When we are born, it's the water that breaks, and so we're actually born through the force of water. Life springs from water. In our teaching, water was given to us, and it has specific prayers and a specific name and water has a

song. There are specific songs that are just water songs. There's a way of speaking to water and greeting water and making a relationship with water, the

same way you make a relationship with your mother. Everywhere you go, you always greet water as your mother. In the Colorado River, that's your mother flowing, and her body is long, and her body can wind, and her body is pure, and

Profile 25 Defining Words for the Black Rebirth Series: Trade Imbalance

it glis

powerful. These

are the principles that we try to pass down to our children.

That's a different mindset.

In America, you know, we are kind of encouraged to make relationships with other things. We are encouraged to have relationships with corporate executives and boardrooms and money and big houses and fast cars. In our teachings, we have to maintain relationships to the earth and to the sky to the four-leggeds and the wings and the plant life and the water and the sunlight and the air. You have to continue to maintain your responsibility to be a life among life, to be considerate of all things, to not take more than you should and to give when you can. You share this earth with every living being.

How did you get started in this work?

I came home in 1998 and noticed that there was no water here and found out that it was due to the mining, and then organized a group and gave it a name and started advocacy to shut down the industrial use of the water by the coal company [Peabody Coal]. We did everything that we could to raise awareness and compel our local leadership to end the pumping for industrial use.

After a decade of work, how did you feel when the decision was made to close the plant and coal mines?

It was a big sense of relief. The land out here and the people have endured and absorbed so much, and they have lost so much. To lose your water source is no little thing.

You are now focused on reclamation and a transition to a sustainable economy. Over \$100 million has been proposed by Arizona Public Service, the utility, for a "just energy transition" for the Navajo Nation. How will that be spent?

I hope that the money is used to help all impacted communities recover. It's not been decided yet because the ~~next one~~ ~~amount~~ ~~hasn't~~ ~~been~~ ~~given~~ yet. APS has agreed to provide those kinds of transition funds to the Navajo Nation, but the final



ance



Port of Los Angeles Harbor Seaport Authority State Trade Imbal
decision still rests with the Arizona Corporation Commission.



What does sustainable energy look like in Arizona?

We're pushing for renewable energy to replace coal. The reason I'm pushing so hard for renewable energy—and it's not a silver bullet, it doesn't solve all the problems; there's a lot of problems with solar as well—the material used to make solar panels, and such, but right now it's the most viable replacement for coal. Anything that continues to be extractive and require combustion requires an enormous amount of water, and water is just something we don't have in the Southwest. The Indigenous people, especially the Diné people, can't afford to give up any more water. We cannot afford to negotiate another drop of water for industry.

Based on your experience, how hard will it be to transition off coal nationwide and shut down the hundreds of coal plants still operating in this country?

It's tremendously difficult to fight coal plants and coal mining. They have good lawyers; they can afford all the best experts in the world, and they can have these experts write their reports for them any way they want. It's taken a toll on my health, my family. If you're Indigenous living in America and you're doing this work, it is tough work, and you are fighting for the lives of every single person in this country because these issues will impact everybody. If not today, it will tomorrow.

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ENVIRONMENT

Devastating fires could damage Lake Tahoe's iconic blue waters



BY RACHEL BECKER
AUGUST 31, 2021



Lake Tahoe is blanketed by smoke from the rapidly spreading Caldor Fire on Aug. 27, 2021. Photo by Noah Berger, AP Photo

IN SUMMARY

Researchers have already seen drops in Lake Tahoe's clarity during the fires. The damage could be temporary, or it could last years. Its extent depends on how much soot is released into its famous blue waters.

Smoke and ash from wildfires near Lake Tahoe — one of the deepest lakes in the world — is already clouding the lake's famously clear water, researchers say.

While the long-term effects are unclear, ash and soot are now coating the surface of the High Sierra lake and veiling the sun, which can disrupt the lake's ecosystem and its clarity. More debris and sediment are likely to wash into the lake from runoff and rain this fall and winter.

"It's not going to turn the lake green or anything like that, in my opinion. But certainly the clarity of the lake, how deep you can see in the lake, could be affected for several years," said Randy Dahlgren, emeritus professor of soils and biogeochemistry at the University of California, Davis. "It all depends on Mother Nature."

Researchers are now trying to figure out what the residue and flames from the Caldor Fire, which crossed a granite ridge and spread into the Lake Tahoe basin on Monday, could mean for the iconic cobalt-blue lake.

"We've never had a fire of this extent before... This one is off the charts," said Geoffrey Schladow, director of the University of California, Davis' Tahoe Environmental Research Center.

The research center's tests of the lake already show that its clarity declined in recent days, although Schladow said it may be temporary. The changes could be caused by a combination of factors: smoke preventing sunlight from penetrating the lake's depths, ash muddying its water or more algae growing near its surface.

"Normally around this time of year, we would expect to see down maybe 65 feet. Right now we're seeing down maybe 50 feet," Schladow said.

Over the past half-century, the alpine lake has lost 40% of its clarity, largely due to runoff [containing particles and plant-feeding nitrogen and phosphorus](#). In recent years, its clarity – a sign of its improving health – [has](#)

[begun to stabilize](#) as state and local officials in California and Nevada took steps to protect the lake.

Lake Tahoe is about 40% less clear than it was 50 years ago

Lake Tahoe's clarity has declined in the past half-century, with visibility at 63 feet in 2020 compared to more than 100 feet in 1968. The main culprits are sewage, runoff and fertilizer. Scientists measure clarity by dropping a white disk into the water and calculating what depth it reaches before they lose sight of it. This is called a Secchi test.

The degree of damage to Lake Tahoe will depend on the degree of devastation to the forest and buildings around it. It also will depend on the months ahead: Severe rain following a fire forces more sediment and nutrients into the runoff and ultimately the lake.

For fine particles, nutrients, and toxic chemicals, "most deposition occurs on the land and continues to be washed into the lake many months after the fires have been extinguished when winter returns,"

[a 2020 report by UC Davis' Tahoe Environmental Research Center.](#)

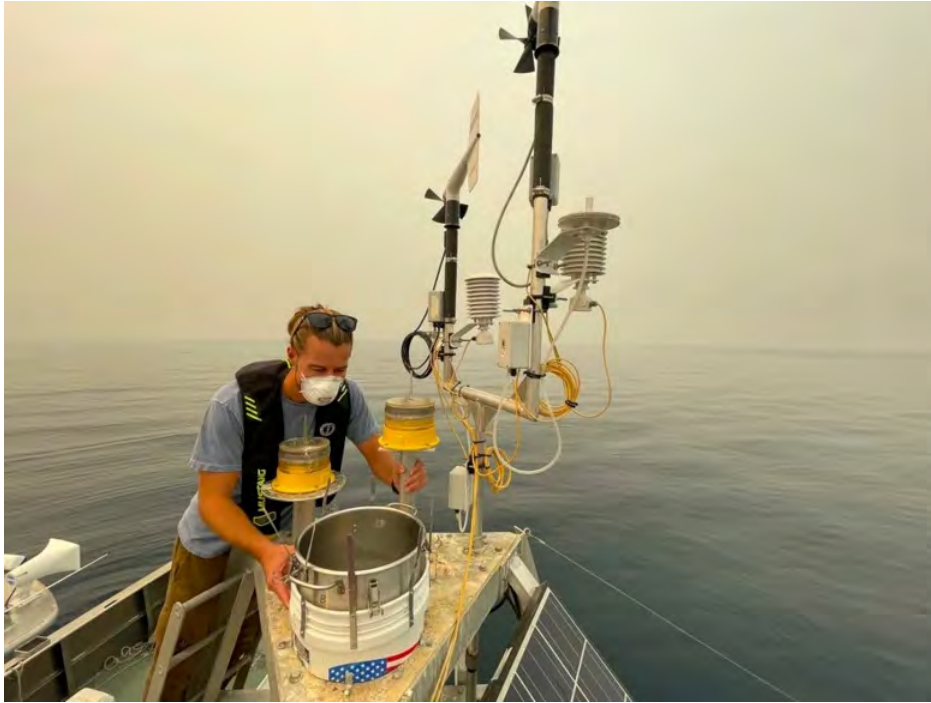
Nestled into the elbow between California and Nevada, Lake Tahoe is a hub of outdoor recreation in both summer and winter, drawing in more than \$3 billion in tourism dollars yearly, according to the [Tahoe Prosperity Center](#).

During the fires, Schladow's team is taking measurements every few days, venturing out on the water to collect water samples and measure UV radiation, water clarity, nutrients and algae.

"The eeriest thing is that here we were at the end of August, on Lake Tahoe. And you could not hear another boat on the lake. That's sort of unheard of in the middle of the day at Lake Tahoe in August," Schladow said.

Lake Tahoe and its surrounding lands and waters are home to [abundant wildlife](#), including Lahontan cutthroat trout, which are a threatened species, as well as mountain whitefish, black bears, beavers, marmots, deer, raptors, rare flowering plants and [a wingless stonefly](#) that lives on the bottom of the deep lake and provides [food for fish](#).

"I am not as worried about the clarity but the sensitive, endemic (only found in one location) species that are hanging on in the lake...The clarity may be able to rebound but will we lose these species that are already having a tough time?" said [Sudeep Chandra](#), professor of biology at the University of Nevada, Reno.



As the Caldor Fire fills the air with smoke, researcher Brandon Berry replaces the particle sampler on one of UC Davis' research buoys on Lake Tahoe on August 25, 2021. Photo by Brant Allen, UC Davis courtesy of S Geoffrey Schladow

[Alexander Forrest](#), an associate professor at UC Davis, has launched an autonomous underwater vehicle that seesaws up and down through the water column, crossing the lake once every 15 hours to measure particle sizes and concentrations. His team expects to collect the robot and retrieve its data in a few weeks.

"There's this sort of layer on the surface and then below, you stir it up with your hand, and you can see these particles drifting around in the water," Forrest said. "What we're trying to sort of elucidate or try to understand is, what are the implications?"

Soot and ash, which can wash into the lake if it falls within its expansive watershed, can have different effects on Lake Tahoe's algae at different depths. Particles can darken the water and cool the lake — making it less hospitable to some algae. But it also can introduce nutrients, such as nitrogen, that algae and other organisms feed on, potentially fueling algal blooms at the surface.

"The whole food web is being turned on its head, I expect," Schladow said. "The measurements we're taking (are) to see how true that is and how things are changing."

That's what happened at Castle Lake in Siskiyou County after smoke choked the region for 55 days in the summer of 2018, a team of researchers from the University of Nevada, Reno [recently reported](#). Light dimmed in the waters, and temperatures dropped. Algae flourished in shallow waters but dwindled to near zero in the depths. Trout disappeared from the edges of the lake.

"As a result, you completely restructure the internal architecture of a lake," said Chandra, one of the study's authors. "The question for Lake Tahoe becomes, does the internal architecture restructure for a short period of time and rebound? Or does it restructure more permanently?"

"The question for Lake Tahoe becomes, does the internal architecture restructure for a short period of time and rebound? Or does it restructure more permanently?"

– [SUDEEP CHANDRA](#), UNIVERSITY OF NEVADA, RENO.

[In recent weeks](#), the region has been choked with smoke from fires burning throughout Northern California, turning the air hazardous. On Monday, [mandatory evacuations](#) from the Caldor Fire [spread to South Lake Tahoe](#), home to resorts and camps that usually are full in late summer.

The Caldor Fire has burned [about 300 square miles](#) of El Dorado County over the past 15 days. The fire spilled [into the Tahoe Basin](#) on Monday and is lapping at the edges of [the Upper Truckee River Watershed](#), the [biggest contributor to the waters](#) of Lake Tahoe.

"Conceivably, much of the upper Truckee River Watershed could burn," said Dahlgren. "That's the worst-case scenario."

Fires can also [contaminate water used for drinking supplies](#).

Scientists fear that the extreme wildfire season could be signs of the damage that climate change will inflict on waterways like Lake Tahoe in years to come.

"That may be a warning or a harbinger of what the future may have in store for Tahoe and for other lakes," Schladow said.

"If we're going to have these big fires every summer, and we start getting these temporary effects every year, at what point does that temporary become the norm?"



Rachel Becker

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Rachel Becker is a reporter with a background in scientific research. After studying the links between the brain and the immune system, Rachel left the lab bench with her master's degree to become a journalist... [More by Rachel Becker](#)

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New oxidation technology can enhance waste water reuse at lower cost

Aug 31st, 2021



Image by PublicDomainPictures from Pixabay

A new technology may soon enhance the reuse of waste water in an affordable and sustainable manner, according to a news release from India's Department of Science and Technology. The new technique, which uses UV-Photocatalysis, can treat municipal sewage and highly polluting industrial wastewater streams and increase its

With ever-increasing water crisis, it becomes imperative for industries and utilities to reuse treated water. However, the current treatment practices are inefficient because of high dependence on biological treatment systems, which are unable to bear shock loads. This is followed by tertiary treatment systems involving reverse osmosis and multi effect evaporators (MEE). These systems have large carbon footprints and maintenance costs making the wastewater treatment highly unsustainable and unaffordable.

The Energy and Resources Institute, New Delhi, has developed a technology called The Advanced Oxidation Technology or TADOX® which can reduce less dependence and load on biological and tertiary treatment systems and help achieve zero liquid discharge (ZLD). It can bring down capital expenditure on ZLD by 25-30% and operating expense by 30-40% for industrial wastewater treatment.

The Advanced Oxidation Technology developed by TERI New Delhi for wastewater treatment is an effort in this direction. The Department of Science and Technology's GoI- Water Technology Initiative (WTI) has supported TERI to develop this technology at bench scale collaboration in tie-up with ONGC Energy Centre (OEC), Delhi.

The technology supported by the Water Technology Initiative involves UV-Photocatalysis as an advanced oxidation process (AOP) at the secondary treatment stage leading to oxidative degradation and mineralization of targeted pollutants. It improves biodegradability, thereby preventing bio-fouling of membranes and enhancing life span and efficiency of RO systems as also overall load on evaporators like multiple effect evaporators and mechanical vapor recompression (MVR). It can reduce chemical oxygen demand (COD), biological oxygen demand (BOD), dissolved organics, pathogens, persistent organic pollutants (POPs), and micropollutants.

TADOX® could be integrated and retrofittable in existing treatment systems making it a viable option as a novel decentralized wastewater treatment technology (DWTT) applicable in upcoming and existing infrastructural projects, townships, commercial complexes, green buildings, and smart cities.

The John F. Kennedy Center for the Performing Arts in Washington, D.C. recently settled alleged Clean Water Act violations at its facility in Washington, D.C., the U.S. Environmental Protection Agency announced.

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Chemical

LANXESS acquires Emerald Kalama Chemical

The second-biggest acquisition in LANXESS's history sees the company expanding its range of specialty chemicals for industrial applications, especially for the plastics, paints and coatings as well as adhesives industries.

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Company agrees to \$1M settlement over CWA violations at Colorado oil facilities

Noble Energy, Inc., Noble Midstream Partners LP, and Noble Midstream Services, LLC have agreed to pay \$1 million and implement enhanced containment measures and electronic sensors at tank

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RYAN MOORE | SEP 01, 2021



THE SURPRISING PLACES PFAS ARE BEING FOUND

From the arctic to your blood, PFAS are ubiquitous on our planet



A recent study assessed 29 PFAS coming into and out of the Arctic Ocean.

In the last five years, the environmental problem known as PFAS has become mainstream public knowledge and a growing public concern. Aided by popular movies, books, and environmental advocates, including dozens of recently-formed citizen action groups, many have now heard of PFAS — shorthand for per- and polyfluoroalkyl substances — and are familiar with one or more potential health consequences from prolonged exposure to these chemicals — e.g., cancer, immune system malfunctions, hypertension, thyroid and kidney disease.

When introduced to the marketplace in the early 1950's due to features like oil and water repellency, flame retardancy, and general indestructibility, PFAS have been used in industrial and product manufacturing for at least eight decades. Their seemingly ubiquitous usage in a wide range of consumer products and frequent daily contact with these "forever chemicals" is assured for most people. For instance, PFAS is found in:

- Carpets and upholstery (including child car seats!);
- Cosmetic and personal hygiene products such as dental floss and makeup;
- Food wrappers and carry-out containers;
- Water resistant shoes and clothing; and
- Cookware.

While exposure to PFAS in these everyday items is becoming increasingly well known, new information continues to surface pointing to some of the more surprising places PFAS can be found, on the far away to the very local.

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f well known, new information
t on the far away
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RELATED: PFAS 101: "Forever Chemicals" in Drinking Water

(<https://www.wwdmag.com/contaminants/pfas-101-forever-chemicals-drinking-water>)

PFAS in the Remote Arctic

A recent study assessed 29 PFAS coming into and out of the Arctic Ocean. The study identified the widespread distribution of 11 PFAS, including PFOA, which has mostly been phased out of the industry, and a newer replacement PFAS: HFPO-Dimer Acid (sold under the trade name Gen-X). Higher levels of PFAS were detected in the water exiting the Arctic Ocean compared with the water entering the Arctic from the North Atlantic, suggesting that more of these compounds arose from atmospheric sources than from ocean circulation.¹ PFAS has also been shown to bioaccumulate in the Arctic marine ecosystem, including in seals, waterfowl and even the brain tissue of polar bears.²

PFAS in Fracking Chemicals

Many are not looking for another reason to disfavor the practice of using hydraulic fracturing (i.e., fracking) to extract oil and gas from the ground. And by now, many more communities are becoming less enamored with the thought that PFAS has been so widely used in so many products and processes for so long. But the idea of using PFAS chemicals for fracking represents a severe double negative. And yet, a recent report, Fracking with "Forever Chemicals," published by the Physicians for Social Responsibility, suggests that the practice of using certain PFAS in the fracking chemical mixture has been going on for the past decade. Despite environmental concerns posited by the EPA, the use of "trade-secret non-ionic fluorosurfactants" was approved by the agency and has been applied at more than 1,200 wells in six states.³

PFAS in The Vegetable Drawer?

Dietary intake is a major potential exposure pathway for PFAS that continues to be assessed. A 2018 study by the U.S. Food and Drug Administration (FDA) sampled foods, including lettuce, cabbage, corn and tomatoes, from areas of the country with known PFAS contamination. Of the 20 samples, 16 were found to contain PFAS.⁴ Produce using irrigation water or soil contaminated with PFAS readily uptake the chemicals, with contaminant transfer influenced by concentrations and mixtures of PFAS, plant species,

soil organic carbon and other factors.⁵ Thus, dietary exposure to PFAS is very likely when contaminated irrigation water is used, pointing to the need for further studies, testing, and establishing water PFAS limits for irrigation water.

PFAS in Blood

According to the U.S. Center for Disease Control (CDC) data, PFAS is found in almost all Americans' blood, regardless of age, race, or gender. And although the CDC states, "Human health effects from PFCs at low environmental doses or at bio-monitored levels from low environmental exposures are unknown," the fact that the average total PFAS in blood serum currently exceeds 5,000 parts per trillion (ppt) should make one pause.⁶ Trends over time indicate these levels are slowly decreasing as PFAS materials are gradually phased out of manufacturing. Nevertheless, there is much work to be done to identify and remove the PFAS sources contributing to all the various source of PFAS in our blood. One of the most potentially significant of these PFAS sources, we have been advised to consume regularly.

PFAS in Drinking Water

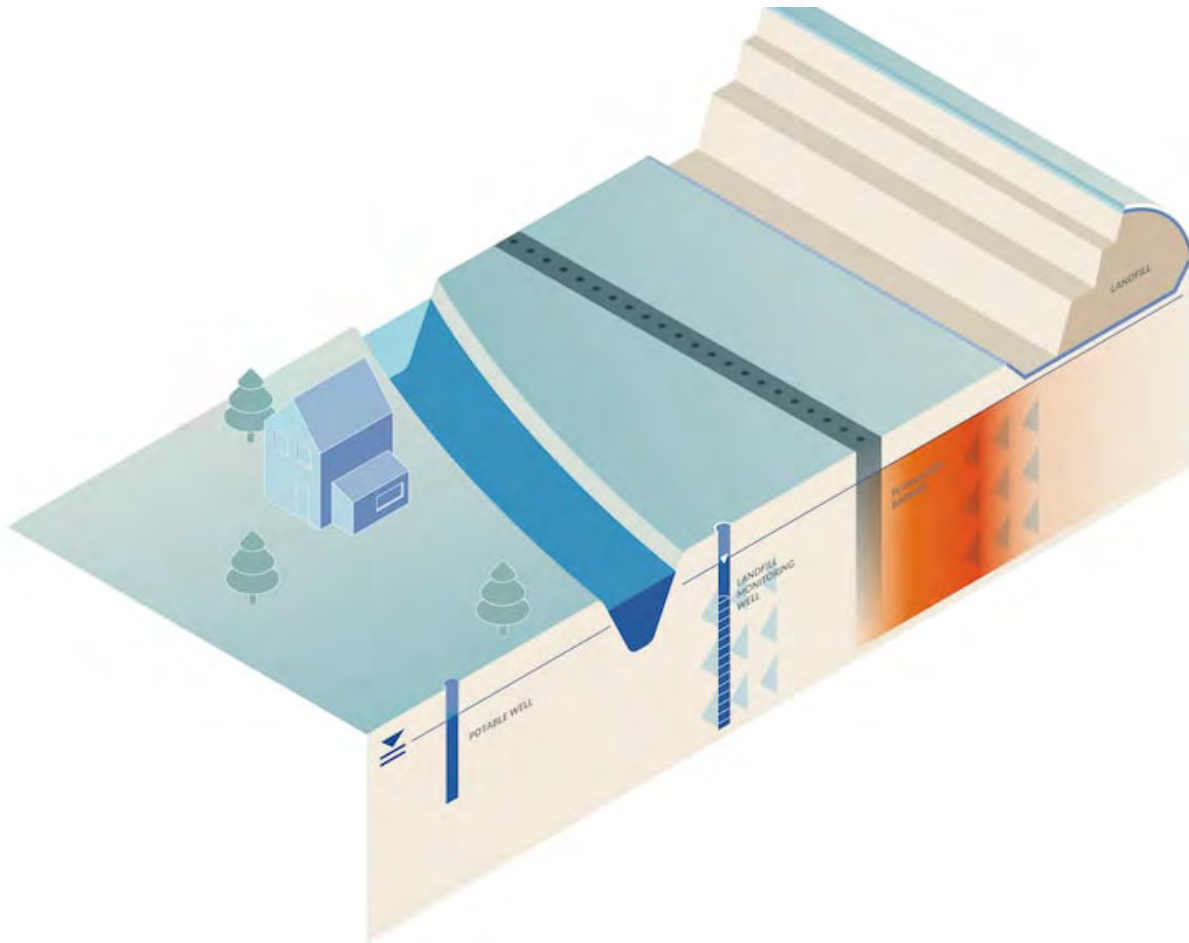
After nearly 80 years of manufacturing, uncontrolled releases, and disposal practices, it should not be too surprising that PFAS is found in drinking water. It is, however, the vast extent of these impacts that is both surprising and unsettling. According to recent estimates by the Environmental Working Group, more than 200 million Americans may be exposed to PFAS simply by drinking a glass of water. And to date, more than 2,200 public water supplies have been identified with PFAS contaminants.⁷ From the lens of human health and risk assessment, much of the nation's drinking water is now considered a source of PFAS exposure.

Groundwater supplies approximately 40% of U.S. drinking water.⁸ The risk of PFAS groundwater contamination is most significant where it is encountered at shallow depths and where there are PFAS sources nearby (e.g. a fire training area at a military base). It is impossible to know, as we are only beginning to comprehend, how many PFAS-contaminated groundwater sites exist, but there are undoubtedly many thousands. Fortunately, a field-proven method is available and being used now to effectively address PFAS contamination in groundwater near these source areas and cut off these contaminants from potential human and environmental exposure.

RELATED: What to Expect for PFAS (<https://www.wwdmag.com/contaminants/what-expect-pfas>)

Colloidal Activated Carbon Barriers for PFAS Removal

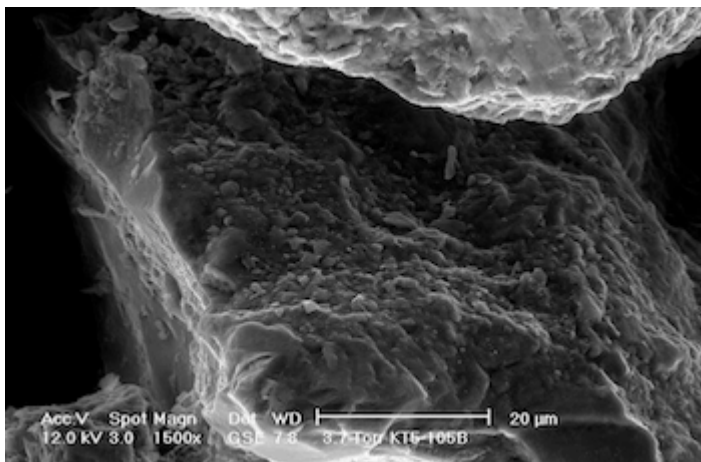
This PFAS treatment approach uses a colloidal form of activated carbon applied *in situ* – i.e. directly into the groundwater. The colloidal activated carbon (CAC) treatment works by intercepting and removing contaminants that move naturally through established groundwater pathways. To accomplish this, CAC is injected through a line of delivery points into the affected aquifer zone to form a permeable reactive barrier (PRB). As groundwater migrates across the PRB, PFAS sorbs onto the carbon, removing it from the water. With PFAS removed from the water, the exposure pathway is eliminated and so is the risk.



Schematic of an *in situ* CAC PRB preventing migration of PFAS to sensitive receptors.

Material scientists developed CAC to overcome the challenge of evenly dispersing a solid injected material (i.e., activated carbon) through aquifer soils. Activated carbon particles are ground to 1 to 2 microns — the size of a red blood cell — and treated with a proprietary and drinking water-safe, anti-clumping agent that allows the CAC to permeate through and then adhere to the surface of individual soil grains.

In situ CAC treatments have been used to capture and treat groundwater contaminants since 2014 and applied at numerous PFAS-contaminated groundwater sites. Over one hundred PFAS projects have been implemented or are in the planning stages. The longest-running application has reduced PFAS for five years, with the treatment expected to be maintained 50 years based on independent, peer-reviewed modeling estimates.⁹ The approach is substantially more cost effective and technically feasible compared



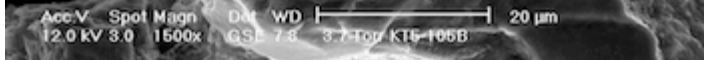
Micro-scale image showing CAC coating individual sand grains

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to any of treatment alternative.

Performance-based evaluation options are available from the many water utilities and contractors tailored to a project's needs.

PFAS Article References

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ABOUT THE AUTHOR

Ryan Moore, CHMM, is Rregenesis PFAS Program Manager. In this capacity, he is focused on collaborating with environmental professionals and the industry at large in communicating effective, proven approaches to manage sites where PFAS contaminants exceed regulatory standards. Moore has managed the use of PlumeStop, Colloidal Activated Carbon, available exclusively through Regenesis, to treat PFAS and other organic pollutants since its inception in 2014. Moore can be reached at 219.286.4838.



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[Top Projects Nomination Form \(/top-projects-nomination\)](#)

How much will Caldor Fire affect Lake Tahoe's iconic blue waters?

by Ben Margiott

Tuesday, September 7th 2021



How much will Caldor Fire affect Lake Tahoe's iconic blue waters?

SOUTH LAKE TAHOE, Calif. (News 4 & FOX 11) — Lake Tahoe is majestic, breathtaking and part of what makes living in northern Nevada so special.

But will the [destructive Caldor Fire, which has burned hundreds of thousands of acres](#) and rained ash on the lake for weeks, affect the clarity of Lake Tahoe?

News 4-FOX 11 asked [UNR Professor Sudeep Chandra, who is director of the Global Water Center](#) and has studied Lake Tahoe for nearly 30 years, to find out.

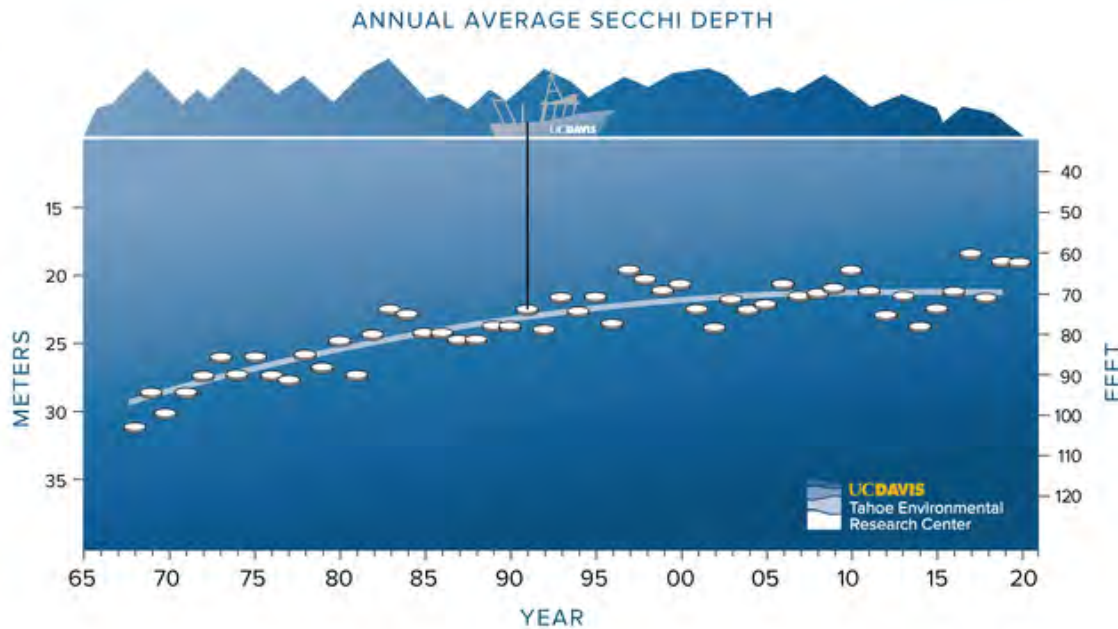
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Lake Tahoe's clarity, measured annually by how deep down researchers can see, has decreased about 33 feet over the last 40 years, Chandra said. But thanks to the efforts of [organizations such as Keep Tahoe Blue](#), the lake's clarity has leveled out in the last decade at around 60 feet.

How much the clarity will be affected over the next several years or decade is an open question that researchers will continue to study, Chandra said.

Chandra fears Tahoe's clarity will likely decrease in the short-term as a result of smoke settling in the basin for weeks and ash falling onto the water.

"My feeling is that we're going to see a reduction in clarity this year," he said.

“*That's a no brainer based on the amount of particles deposited in the lake. Is it going to be 15 feet? 20 feet? I'm not sure about that.*”



Lake Tahoe clarity from 1968-2020 (Courtesy: UC Davis Tahoe Environmental Research Center)

How much will Caldor Fire affect Lake Tahoe's iconic blue waters?

In addition to the smoke and ash particles, Chandra is also worried about burnt debris that runs off into the Lake Tahoe watershed during rain events:

“ How quickly are those materials going to run off? What's in those materials?

"Don't forget that when we put fires out we're using fire retardant and those can be high in nutrient concentrations," Chandra said.

While he expects clarity to drop next year, Chandra said it's still unclear how Lake Tahoe's precious ecosystem and watershed will be affected in the long-term. But studies done on other small northern California lakes give them clues.

"What we do know is that when smoke and particles come in to an atmosphere above the lake, it can actually restructure and re-architecture the whole lake."

"We do know that smoke particles affect how much algae grows, where it grows. Does it grow in the top of the water or maybe deeper down into the water? How the organisms that eat the algae restructure and migrate through the water totally change."

Chandra called the Caldor Fire the most significant event to disrupt Lake Tahoe's ecosystem

since the 1800s, when the basin was deforested to support mining operations on the

Pointing to how the basin recovered from that event, he was optimistic Tahoe can rebound, though it may take years.

“ My general feeling is yes. There's going to be a recovery period. It may be a few years to a decade.

Email reporter Ben Margiott at bjmargiott@sbgvtv.com. Follow [@BenMargiott](https://twitter.com/BenMargiott) on Twitter and [Ben Margiott KRVN](https://www.facebook.com/BenMargiott) on Facebook.

WATCH the full interview with Professor Sudeep Chandra below:

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Lahontan Valley News (<https://www.nevadaappeal.com>)

Museum presents 7-part lecture series on Newlands Project



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The V-line canal is one of many waterways constructed for the Newlands Project

By Steve Ranson (/staff/steve-ranson/)

Wednesday, September 8, 2021 (/news/2021/sep/08/museum-presents-7-part-lecture-series-newlands-pro/)

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(<http://twitter.com/intent/tweet?text=http://nevadaappeal.com/news/2021/sep/08/museum-presents-7-part-lecture-series-newlands-pro/>)

Water has been a lifeline to the Lahontan Valley since construction of the Newlands Project began more than a century ago.

Construction commenced in 1903 on a project that would cover land in a four-county area and, according to the Truckee-Carson Irrigation District, provide water for 57,000 acres of irrigated land in Churchill County near Fallon and the bench lands near Fernley in Lyon County. The two other affected counties are Washoe and Storey.

Two divisions — the Carson and Truckee — ensure water from two basins eventually flows into the Lahontan Reservoir. The Newlands Project called for a number of dams and 700 miles of canals, lateral and open drains to move the water.

The importance of the Newlands Project to the Lahontan Valley is the subject of this fall's lecture series presented by the Churchill County Museum. All presentations are free and open to the