SEPTEMBER 8, 2021

Study reveals dramatic impact of climate change in the Sierra Nevada

by University of Kentucky

Credit: CC0 Public Domain

In California, the impacts of climate change are becoming increasingly obvious. Turn on the news and you will hear about extreme heat waves, droughts and frequent wildfires plaguing the state.

"Climate change is one of the grand challenges facing society," said Michael McGlue, associate professor in the University of Kentucky's Department of Earth and Environmental Sciences in the College of Arts and Sciences. "California, our most populous state and one of the largest economies globally, faces major threats from hot, dry conditions. This is manifested in the four major fires burning, largely uncontained, in the state right now."

Climate change will significantly impact the Sierra Nevada mountain range, which runs along the state's eastern border with Nevada. The Sierra Nevada's snowpack serves as the most important water source in state. Under normal conditions, snow falls on the mountains in the winter and remains frozen until spring. It then melts and runs off into major rivers that feed into central and southern California, sustaining vast agricultural fields and urban areas.

However, a new study led by UK researchers reveals just how dramatically climate change has impacted aquatic ecosystems in the Sierra Nevada, and calls for action to protect them.

"Climate change is disrupting the water cycle in the Sierra Nevada in ways that are challenging to predict, which lowers society's resilience by limiting water resources," said McGlue, who is senior author of the study. "As a consequence, major hazards like droughts, floods and wildfires threaten California more than ever before."

McGlue and his team conducted their study at June Lake, a small glacial lake in Mono County, California, on the eastern side of the Sierras. There, the team obtained sediment core samples from the bottom of the lake and were able to "read" the layers of sediment from the samples.

Historical weather records don't extend far enough back in time to fully understand California's climate system, but the lake sediment records allowed the team to precisely reconstruct the region's climate history over the past 3,000 years. To do this, they specifically studied diatoms, a type of algae that leave behind tiny silica fossils that get preserved in lake sediments. By studying the changes in fossil diatoms and dating the sediments, the team was able to learn all about the aquatic ecosystem's response to climate change in the Sierra Nevada and when those changes occurred.

The diatoms revealed a detailed history of the lake and its response to changing seasonality, including in the Late Holocene Dry Period and the Medieval Climate Anomaly, which are well-known periods of ancient drought in the region.

But the most striking feature of the fossil record is the uniqueness of the ~1840-2016 period. The team detected the most dramatic changes to the June Lake ecosystem at that time, with the fossils suggesting low water levels, low nutrient concentrations and strong water column stratification. The data suggest that "hot droughts" of the Industrial Era altered the lake state to conditions unseen in the last three millennia.

"The ecosystem appears to have shifted in response to a warmer climate" said Eva Lyon, co-author, UK alumna and professor at Washington and Lee University.

The team says these findings have major implications for future water resources in California.

"Scientists can use the insights on how the Sierra Nevada has changed in the recent past in order to anticipate changes coming in the near future, and how those changes might influence water availability," said Kevin Yeager, co-author and professor at UK.

"June Lake is a clear example of how sensitive lakes in the Sierras can be to changing climate," said Jeffery Stone, co-author and professor at Indiana State University (ISU). "Sediment archives like these are one of the few tools we have for recording long-term natural variability and without them we would not be able to clearly observe the profound nature of changes in the lake ecosystem in response to a warming climate."

"This study shows that anthropogenic warming has been impacting aquatic ecosystems in the Sierra Nevada for much longer than generally thought, and this needs to be taken into account when developing policies to protect them," said lead author Laura Streib, a UK alumna who is now a doctoral student at Syracuse University.

The research article, "Anthropogenic climate change has altered lake state in the Sierra Nevada (California, U.S.)," published today in *Global Change Biology*.

More information: Laura C. Streib et al, Anthropogenic climate change has altered lake state in the Sierra Nevada (California, USA), *Global Change Biology* (2021). doi.org/10.1111/gcb.15843

Journal information: Global Change Biology

Provided by University of Kentucky

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California's major water reservoirs are way below where they should be

By Tom Vacar | **Published** September 9 | Drought | KTVU FOX 2

California's major water reservoirs are way below where they should be

KTVU FOX 2's Tom Vacar reports.

MARIN COUNTY, Calif. - Key indicators show California's drought appears to be accelerating. That will last until substantial rains come much later in the year. The best advice: Treat water like gold, or it will soon cost as much.

California's biggest reservoirs are way below where their levels should be this time of year. Shasta, the biggest reservoir by far, is only a quarter full. Oroville: less than a quarter full. Trinity, a third full. San Luis Reservoir, 13 paltry percent.

Heather Cooley is a water research expert at the Pacific Institute "This is a tremendously severe drought and it's on the tail of another previously severe drought," said Ms. Cooley.

Nicasio Reservoir in Marin County at below-average levels amid sustained drought

Nicasio Reservoir is located in the Nicasio Valley region of Marin County. As of Wednesday, September 8, 2021, the Marin Municipal Water District says their five reservoirs are currently have 28,982 acre-feet of water in them. Compared to the average for this date, 2021 levels are at 49.90 percent of normal. The district has a total capacity of 58,088 acre-feet.

California's drought is getting worse and worse, threatening people, farms, businesses, wildlife, plant life, commerce, the environment. everything. "One

of the things in particular that I have found surprising how bad things have gotten, how quickly things have gotten this bad," said Cooley.

100% of the state is, at the very least, in moderate drought. 94% of the state is in severe drought, 88% in extreme drought - where water is inadequate for agriculture, wildlife, and urban needs. Almost 50% of the state is in the worst level of all, exceptional drought. Under these conditions, food can't grow, crop yields are low or non-existent, orchards fail and have to be removed, wetlands dry up, tree death accelerates, survival of native plants is low and wildlife dies.

UC Davis Agricultural Economist Professor Daniel Sumner says it's not looking good. "It is dire. I never used the word crisis, so I won't now, but it's damn close," Sumner said.

Phoenix Lake in Marin County has nearly vanished

Water levels at Phoenix Lake, located on the northeastern slope of Mount Tamalpais, are extremely low. As of Wednesday, September 8, 2021, the Marin Municipal Water District says their five reservoirs are currently have 28,982 acre-feet of water in them. Compared to the average for this date, 2021 levels are at 49.90 percent of normal. The district has a total capacity of 58,088 acre-feet.

Sumner says agriculture has been efficient and resilient in keeping the most profitable crops and leaving lesser crops to others. "We know none of that can continue year after year But, it's sorts of when something hits you scramble and keep it going," said Sumner.

Working with the Oakland-based Pacific Institute, a just-released study shows that we must become far more water efficient than now and conserve more than now, or face releasing even more greenhouse gases into the atmosphere.

Why? One-fifth of the state's energy is used is pump, process and treat water for homes, businesses and agriculture. Most of that energy comes from fossil fuels.

San Pablo Reservoir water level at 47 percent of capacity

As of Thursday, September 9, 2021 the San Pablo Reservoir in El Sobrante has 17,880 acre feet of water, just 47 percent of full capacity, 37,915. The water level is at 284.21 feet, and at maximum capacity can hold up to 313.68 feet. It serves East Bay Municipal Utility District customers.

"In the next few years, we're gonna see a significant increase in the amount of natural gas used, the amount of diesel used; we're gonna see greenhouse gases go up significantly," said Noel Perry of the Next 10 Think Tank, which commissioned the Pacific Institute study.

Significant rains are not expected to arrive until late November or in December.

USGS
science for a changing world

Nevada Becomes 39th State to Create Multi-Agency Cooperative Research Unit

Release Date: SEPTEMBER 9, 2021

The newly formed Nevada Cooperative Fish and Wildlife Research Unit brings state and federal wildlife-management resources together, providing for a cooperative partnership that ensures resources are best serving Nevada's wildlife and wild places.

The partnership consists of the Nevada Department of Wildlife; the University of Nevada, Reno; the Wildlife Management Institute (WMI); the U.S. Fish and Wildlife Service; and the U.S. Geological Survey (USGS) to focus on scientific research and conservation of fish and wildlife in the state and region.

The Nevada Cooperative Research Unit will include three scientists employed through the USGS who will have adjunct faculty appointments to the University of Nevada, Reno. Based on the University campus, the program will focus on wildlife research, ecology, and management, and will promote collaboration among the participating partner organizations. In addition, the program will support a focus on human dimensions and the importance of wildlife conservation to the public's overall quality of life.

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In Nevada's Humboldt County, College of Agriculture, Biotechnology and Natural Resources undergraduate and graduate students conduct field tests of native plants for restoration in cheatgrass-invaded rangelands.

(Image courtesy of University of Nevada, Reno)

"Nevada's creation of a Cooperative Research Unit is a monumental success for the scientific research and conservation efforts for the state's wildlife and habitat," said Nevada Department of Wildlife Director Tony Wasley. "This partnership brings the state's top wildlife and research agencies together at the table and allows us to enhance the effectiveness of our conservation science and delivery through collaboration."

"We are excited to welcome Nevada to the Cooperative Research Unit family," said USGS Cooperative Research Unit Chief Jonathan Mawdsley. "We look forward to working with all of our collaborators to train the next generation of conservation professionals and provide high-quality science and technical assistance to meet the needs of our partners in Nevada."

Since 1935, the Cooperative Research Unit program has grown from the original nine wildlife-only units and today—with the addition of the Nevada Unit—now includes 41 units located on university campuses in 39 states. The mission of the Cooperative Research Unit program focuses on developing the conservation workforce of the future through applied graduate education, helping fulfill the training and technical assistance needs of the cooperators, and delivering actionable science to cooperating agencies and organizations. The unique model of the Cooperative Research Unit program increases productivity and capacity by allowing partners to benefit from each other's strengths, developing better management at every level of fish and wildlife conservation.

"The addition of Nevada to the Cooperative Fish and Wildlife Research Unit system is a proud moment for WMI, the only national, private cooperator," said WMI

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President Steve Williams. “WMI was involved in the creation of the Unit system in 1935, and we applaud the 2021 agreement.”

“We are very excited about the establishment of the new Nevada Cooperative Research Unit,” said Paul Souza, Regional Director for the U.S. Fish and Wildlife Service’s California-Great Basin Region. “The Unit will serve as a model for researchers to work collaboratively with the conservation community to benefit wildlife and their habitats. At the same time the Unit will provide a wonderful way for students to connect to their natural world, students who will be our next generation of conservation leaders.”

All partners will link their respective research and training missions, sharing scientific expertise while training students interested in conservation to enter the workforce. Advised by unit scientists incorporating cutting edge academic training from university cooperators, graduate students will conduct applied research projects that directly address current natural resource concerns identified by state and federal partners.

“It is especially exciting to have this multi-agency program connected to the development of our graduate students,” said University President Brian Sandoval. “The University of Nevada, Reno has an impressive track-record of outstanding research and teaching in the natural resources, biology, ecology, and many other areas of study related to wildlife conservation and environmental settings. Bringing together the passion and expertise of these agencies, people, and resources will open new doors of opportunity, and apply the science and discovery of our faculty and students to realworld, real-time challenges.”

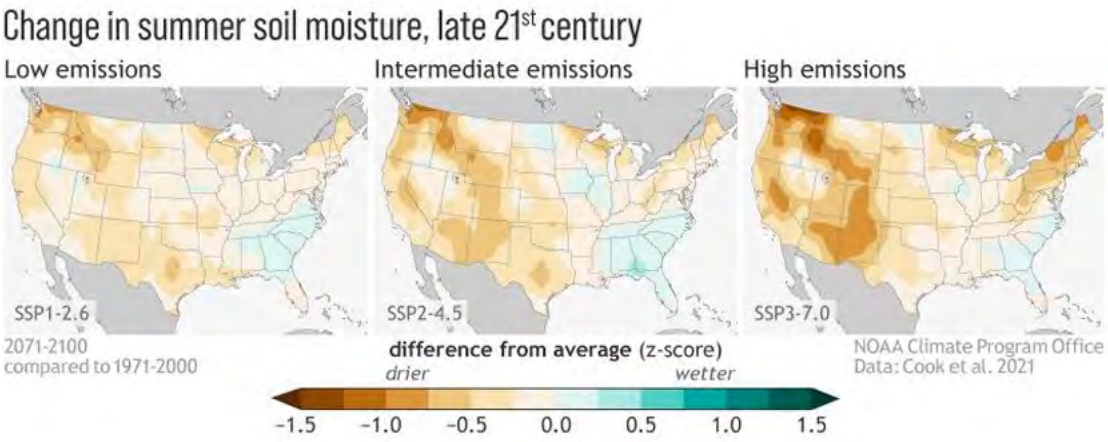
The experience prepares graduates to be effective members of the natural resource workforce; in fact, one of the greatest legacies of the program is the placement of students in natural resource agencies and organizations. Nationwide, the Cooperative Research Unit program educates more than 500 graduate students annually in conservation and natural resource management. Alumni of the program currently hold important leadership positions in nearly every state and federal fish and wildlife management agency.

“Nevada is facing unprecedented environmental change. Native plant communities and their associated fish and wildlife species are challenged by invasive weeds, increased fire frequency and intensity, water quantity and quality, and development associated with a growing human population,” said University Vice President for Research and Innovation Mridul Gautam. “Establishing a Cooperative Research Unit at the University of Nevada, Reno will significantly enhance the efforts of the University, the Nevada Department of Wildlife and other partners to address these natural resource management priorities.”

The state of Nevada—along with its fish, wildlife, and habitat—stands to benefit greatly from the partnership. By working closely together and toward the same goals, the state’s management agencies can ensure that Nevada’s resources are used effectively and responsibly, keeping wildlife wild for generations to come.

Western US faces future of prolonged drought even with stringent emissions control

Am Geophysical Union (AGU)



- Southwestern North America can expect more of the extended, severe drought the area has experienced in the last two decades even under the mildest climate warming scenarios, new research finds, but curbing greenhouse gas emissions is still key to limiting severity.

10/09/2021

Seasonal summer rains have done little to offset drought conditions gripping the western United States, with California and Nevada seeing record July heat and moderate-to-exceptional drought according to the National Oceanic and Atmospheric Administration (NOAA). **Now, new research is showing how drought in the region is expected to change in the future, providing stakeholders with crucial information for decision making.**

The western United States is headed for prolonged drought conditions whether greenhouse gas emissions continue to climb or are aggressively reined in, according to the new study published in the, *Earth's Future*, AGU's peer-reviewed journal for interdisciplinary research on the past, present and future of our planet and its inhabitants.

However, the new study also showed the severity of acute, extreme drought events and the overall severity of prolonged drought conditions can be

About the entity

General 311

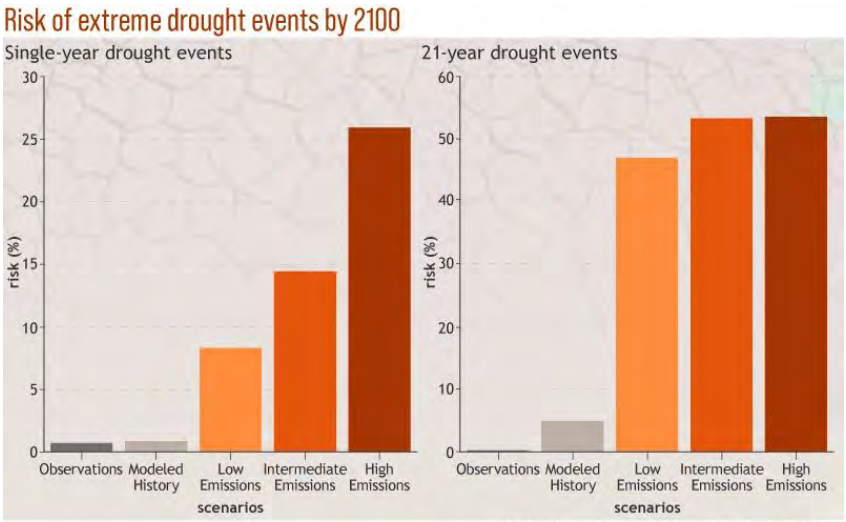
Am Geophysical Union (AGU)

AGU galvanizes a community of Earth and space scientists that collaboratively advances and communicates science and its power to ensure a sustainable future.

reduced with emissions-curbing efforts compared to a high-emissions future. **This is important information for decision-makers considering two tools they can use to reduce climate impacts: Adaptation and mitigation.**

THEMES

DROUGHT | RESEARCH AND DEVELOPMENT



As greenhouse gas emissions increase and Earth's temperature rises, new research forecasts the southwestern United States will become drier, with the risk of future soil moisture deficits increasing as emissions increase. From figure 8 of the new study. Credits: NOAA Climate Program Office / Anna Eshelman.

Adaptation is a term used by the scientific community and policymakers to describe policies that address impacts that will occur or are already occurring. For example, adaptation to rising sea levels might include relocating low-lying infrastructure. By contrast, mitigation—efforts to reduce the amount of greenhouse gases in the atmosphere—can limit the severity of future impacts or even prevent them from happening by limiting how much the climate changes. Switching to cleaner energy sources and reducing greenhouse warming-driven ice melt are examples of mitigation to sea level rise.

Rather than representing competing options, adaptation and mitigation can both be used to address climate impacts. This new research shows how the two can complement each other when it comes to drought.

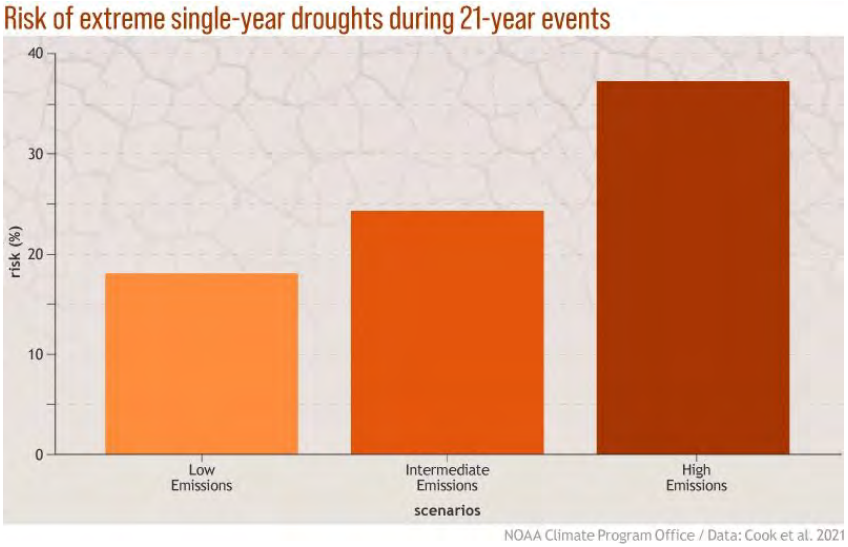
"Mitigation has clear benefits for reducing the frequency and severity of single-year droughts," said lead author Ben Cook, a research scientist at NASA's Goddard Institute for Space Studies (GISS) and an adjunct associate research scientist at Columbia University. "We may have more of these 20-year drought periods, but if we can avoid the really sharp, short-term, extreme spikes, then that may be something that's easier to adapt to."

Turning to the past to understand the future

Both acute single-year and prolonged multi-year droughts occur naturally due to variations in ocean currents, precipitation and other factors. But climate change is turning up the heat in addition to these natural variations, causing even more water to evaporate from plants and soil, resulting in increased dryness even in the absence of major precipitation deficits.

To understand the southwest's vulnerability and tendency towards drought and the factors that contribute to it, the team selected the severe single-year drought of 2002 and the extended drought of 2000 to 2020 as examples of acute and prolonged droughts respectively. **They then looked at how common these acute and prolonged droughts were, not only during the period of instrumental records,** but also using reconstructed drought conditions stretching back more than a thousand years and state-of-the-art supercomputer simulations of the future.

The team reconstructed soil moisture from the years 800 to 1900 using tree ring data from the region. The thickness of tree rings varies due to the wetness or dryness of each year, providing scientists with a reliable way of estimating how much rain fell in a given year. For years after 1900, they used directly measured soil moisture values. To look at a range of possible futures, the team used data from the latest version of the Coupled Model Intercomparison Project, or CMIP6. CMIP6 is an ensemble of climate model simulations that provide climate change projections depending on a range of possible greenhouse gas emission scenarios, allowing scientists and policymakers to directly compare the impacts of different emissions policies. And under different emissions scenarios, drought behaves differently.



In addition to single- and multi-year droughts alone, there's also a risk of intense single-year droughts occurring within longer periods of drought. This risk increases as greenhouse gas emissions increase, according to the study. Credits: NOAA Climate Program Office / Anna Eshelman

The southwestern United States has been prone to drought for millennia. But warming temperatures dry the soil further, and the region's natural aridity becomes the backdrop for a higher risk of severe and prolonged droughts if greenhouse gas emissions continue to climb, said Kate Marvel, a research scientist at GISS and Columbia University.

"The paleoclimate record shows that this region is prone to drought," she said. "There have been really, really severe droughts in the past: For instance, we know there were megadroughts in the 13th century. But against the backdrop of natural climate variability — the things the climate would do even without human influence — we are confident increases in greenhouse gases make the temperature rise, and we're fairly confident that increases drought risk in this region."

A future not yet set in stone

Understanding that some amount of increased drought can be expected under high and low emission scenarios alike has implications for adaptation strategies like rationing water usage and changing agricultural practices. At the same time, the study's finding that greenhouse emissions reductions still matter for extreme drought underscores the value of mitigation.

"The ongoing southwestern drought highlights the profound effects dry conditions have on people and the economy," said Ko Barrett, senior advisor for climate in NOAA's Office of Research and vice-chair of the Intergovernmental Panel on Climate Change's Sixth Assessment Report. "The study clearly highlights the impact that greenhouse gas mitigation could have on the occurrence and severity of Southwestern drought. It is not too late to act and blunt impacts like severe Southwestern drought periods and short-term drought events."

Marvel agreed. "There's going to be a new normal regardless," she said.
"There's going to have to be some adaptation to a drier regional climate. But the degree of that adaptation – how often these droughts happen, what happens to the drought risk – **that's basically under our control.**

Drought Drying Carson River Hits Nevada Pastures, Ranchers

Sixth-generation rancher Devere Dressler remembers seeing the Carson River teeming with fish as it flowed out of the eastern Sierra Nevada range, where the peaks were always capped with snow.

By Associated Press

Sept. 12, 2021

RENO, Nev. (AP) — Sixth-generation rancher Devere Dressler remembers seeing the Carson River teeming with fish as it flowed out of the eastern Sierra Nevada range, where the peaks were always capped with snow.

Now, as the impacts of severe drought are felt across the West, Dressler sees a river running low, with far fewer fish, and bare mountain tops.

Dressler, who has lived and worked in the northern Nevada Carson River Basin for 71 years, called it “disturbing” to no longer see suckerfish or minnows in the river and only an occasional trout. He remembers always seeing snow in the Sierra into July and August, but in 2021, the snow was gone in June.

“This is the worst I’ve seen. I’ve never seen snow go away,” he said.

As the Carson River runs low and the land dries up, ranchers like Dressler are feeling the impacts on their lives and livelihoods.

Dressler, who operates a ranch southwest of Gardnerville with his wife, has cut down the size of his herd of cattle by a third. He's allowed some of the 1,200 acres (4.86 square kilometers) that the cattle roam on go dry, opting to use less water from the river on the land.

“I don’t want to take too much water out of the river. I leave it in for the other users, and my biggest concern is the wildlife,” he said. “Next year, if we have a repeat dry year, we may have to reduce our numbers more. Time will tell.”

The rights to use the water are based on seniority and availability. With the river running low, some agricultural producers haven't received any water allocations since June.

Water rights on the river date back to 1849, leaving those with water rights dated in 1910 to still be considered “junior" water rights. This year, only those with the oldest rights, considered “senior” water rights, are getting water allocations.

“Seniors get the water and juniors don’t get anything, unless they are next to a senior water user (and get some runoff),” Dressler told the Reno Gazette Journal. “And if you’re a good irrigator, you’re not going to let much get by. A junior water irrigator is out of luck.”

The Carson River has almost no water kept in upstream reservoirs for year-round water storage, unlike the Truckee River, and this year the river’s flow is levels set in 1977 and 2015, the driest on record, according to Carson Water Subconservancy District General Manager Ed James.

Chris Moreno, a Nevada Department of Agriculture environmental scientist, said the drought and low water levels have left such poor conditions on the pastures that some ranchers have stopped using federal grazing areas and instead have put their livestock back on ranches. Those ranchers need feed, but the high price of hay at $300 a ton has squeezed the industry further.

“Folks are just selling off whatever (livestock) they can because they can’t afford feed,” Moreno said.

The Carson River flows into Lake Lahontan, which now looks like a bed of dry, cracked mud and sand with a dry boat launch and pier. It's usually 60 feet (18 meters) deep but is now a small pool of water.

The reservoir, which also takes in water from the Truckee River, is the largest storage area on the Carson River. These days, there is no water anywhere close to the dam.

“If we have another dry year next year,” James said, "it’s going to be really ugly.”

BY BRIAN BAHOUTH September 12, 2021

The annual Truckee River Cleanup Day set for September 25, 2021 is a 17 year-old beautification tradition. Every year, the nonprofit organization Keep Truckee Meadows Beautiful (KTMB) organizes hundreds of volunteers who, in a four-hour period, remove trash, erase graffiti, and stencil a warning on storm drains along a 20-mile stretch of the river, from Verdi to Lockwood.

Last year, in one day, some 500 volunteers removed over 35 tons of trash and green waste from the Truckee River Watershed.

KTMB also holds the Great Community Cleanup in April, a 700-volunteer effort that focuses on the cleanup of illegal dump sites in nearby open spaces and the removal of noxious weeds before they bloom and spread. The Great Community Cleanup has removed as much as 60 tons of illegally dumped trash and green waste in a day.

But trash is only one environmental threat to the Truckee.

Pollution from storm drains flows into the Truckee River bringing chemicals from yards, roads, vehicles and industrial activity – photo: Brian Bahouth/the Ally

The Truckee River winds roughly 125 miles from Lake Tahoe to Pyramid Lake. The river flows across the California/Nevada border and in a way unites communities along its course, but nearly a half a million people in the Reno Sparks metroplex depend on the river for 80 percent of their water. The collective nonpoint source pollution from that many people and other related factors inflict a seemingly infinite number of environmental insults on the river.

Yesterday I stood on the bank of the Truckee near Idlewild Park and spoke with Kim Rios, sustainability coordinator for Keep Truckee Meadows Beautiful about threats to the river's health and what KTMB is doing to help clean up the watershed.

See music credits below.

The Truckee River Trail is a popular recreation venue in the region, but the trail affords great access to the river, andlitter isaproblem– photo:Brian Bahouth/thAlly

NEWS

City of Boise moves forward on recycled water program

Photo by: Idaho News 6

By: Anna Azallion

Posted at 4:01 PM, Sep 13, 2021 and last updated 6:14 AM, Sep 14, 2021

climate.

They're in the research and development stage, as of September 13th, and a panel will help the city move towards pilot programs.

"We're going to take water that has been used and we are going to clean it to a really really high level and then use it again," Boise public works spokesperson Natalie Monro said.

She said this water won't be wastewater from your home, but water that was used in some sort of industrial process. After the water is cleaned, some of it will go back to the industrial buildings it came from and some will go to Boise's aquifers, adding to the city's water supply.

The Recycled Water Program is part of a larger water renewal plan that the City Council passed October 2020.

"By creating a more resilient source of water, that we're able to give this water back to industries, that's all that less water that they have to be pulling out of our potable drinking water supply," Monro said.

The panel is run by the National Water Research Institute and made up of engineers, scientists and other water experts. They're working on a report to help inform the City's approach.

"They are going to be giving us recommendations on pilot testing, on water quality, on community engagement," Monro said.

The panel is accepting questions from community members right now. You can submit a question by emailing khardy@nwri-usa.org. The panel asks that you

Monro said there will also be more opportunities to weigh in on the program as it moves forward.

She said the end goal is to be producing recycled water by 2029.

Other cities with recycled water programs include Tucson, Arizona, San Diego, California and the City of Nampa. As we've reported, the city received a permit in February 2020 to use recycled water for irrigation and industrial purposes.

Impact of COVID-19 on Agriculture

First-Ever Colorado River Water Shortage Declaration Spurs Water Cuts in the Southwest

Market Intel / September 13, 2021

The Western U.S. is no stranger to extreme drought. It's been several generations, though, since farmers' and ranchers' ability to produce food and fiber have been hampered to this degree by dry conditions. Crop acreage reductions, orchard tree removals and livestock herd liquidations have been common responses from farms and ranches facing drought. In the Colorado River Basin, which covers over 246,000 square miles and provides vital water resources to Arizona, California, Colorado, Nevada, New Mexico, Utah, Wyoming and northern Mexico, the largest reservoirs have reached their lowest water levels in history. Under the Colorado River Basin guidelines, low reservoir levels have triggered the first shortage declaration in history and with it a range of water allocation curtailments.

The Colorado River Basin is a primary source for farm and rangeland irrigation across 5.5 million acres of land and is also used for municipal and industrial purposes by the region's 40 million-plus residents. The region's hydroelectric infrastructure provides up to 42 gigawatts of electrical power annually to area customers. As a result of the Colorado River Compact of 1922, the basin was split into two separate water apportionment regions, the Upper Basin, which covers Colorado, New Mexico, Utah, Wyoming and a small section of Arizona, and the Lower Basin, which covers the majority of Arizona and provides water to populated sections of Southern California and Nevada. Under the compact, each basin is allocated 7.5 million acre-feet (maf) yearly, with an additional 1.5 maf dedicated to Mexico.

Table 1
Annual Colorado River Apportionments

Sub-basin/States	Annual Apportionment (% of sub-basin)	Annual Apportionment (acre-feet)
Upper Basin States		
Colorado	51.75%	3,855,000
Wyoming	14.00%	1,043,000
New Mexico	11.25%	838,000
Utah	23.00%	1,714,000
Arizona (Upper Basin portion)	0.60%	50,000
Lower Basin States		
Arizona (Lower Basin portion)	37.33%	2,800,000
California	58.67%	4,400,000
Nevada	4.00%	300,000

Source: Congressional Research Service

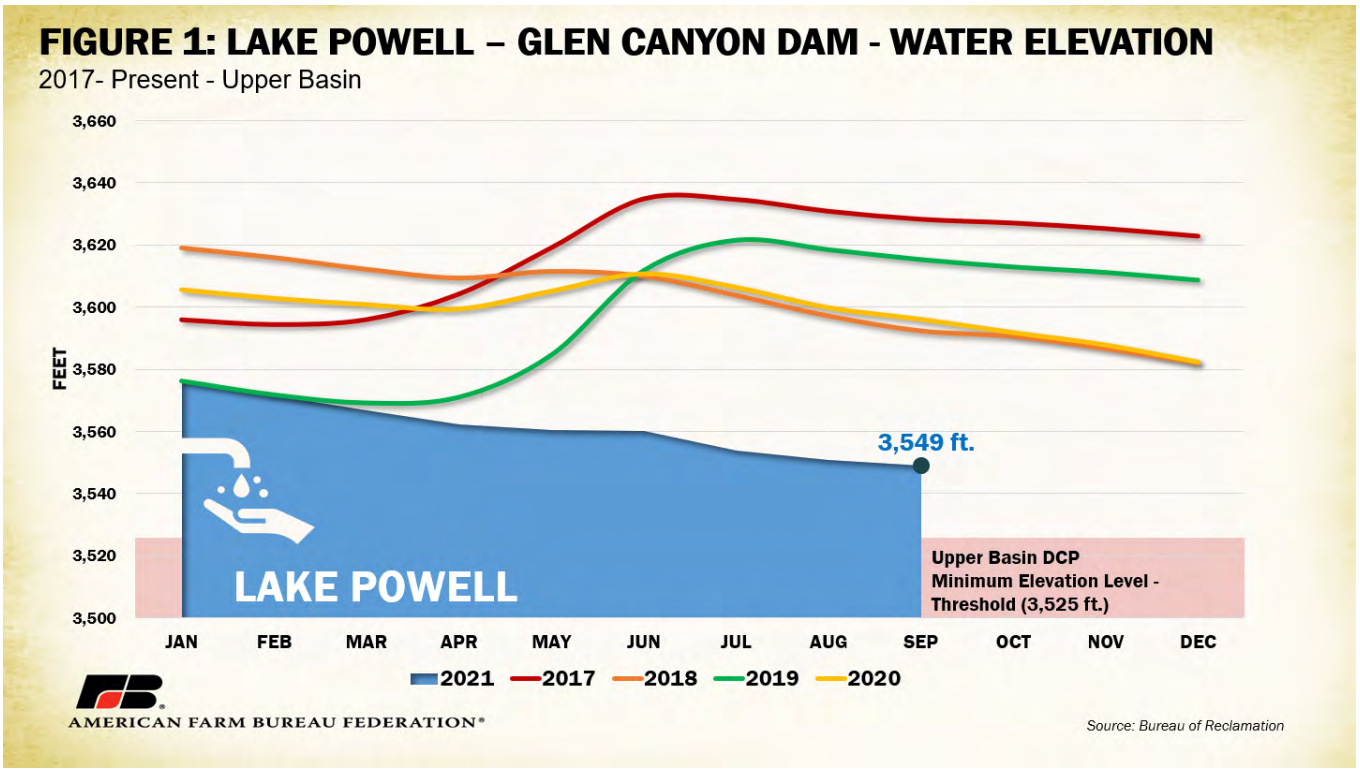
Source: Colorado River Commission of Nevada

The Bureau of Reclamation, a federal agency within the Department of the Interior, oversees water resource management including the delivery, diversion and storage of Colorado River Basin water flows. The bureau monitors conditions, such as inflow, water storage capabilities, elevation and evaporation, and manages total releases from the basin's numerous reservoirs, with a particular focus on the two largest reservoirs: Lake Powell on the southern border of Utah
(created by Glen Canyon Dam) and Lake Mead on the border of Nevada and Arizona (created by Hoover Dam). Multi-year drought has impacted the level of Rocky Mountain snowpack, which the Colorado River relies on for its flows. Reduced inflow from snowpack results in reduced reservoir levels and a reduction in the amount of water available for downstream users especially as population and associated water demand increases. A Reclamation study estimated 64-76%of consumption demand growth was expected to come from municipal and industrial use by the area's growing population, rather than from increased agricultural demand.

In an effort to avoid future water shortage disasters and improve storage decisions, the Upper and Lower Basin states worked collaboratively with Reclamation to agree to and implement a series of water shortage mitigation procedures called the Drought Contingency Plans (DCPs), which were approved by Congress in 2019. For the Upper Basin, states agreed to the operation of

regional units to keep the elevation of Lake Powell above 3,525 feet (35 feet above the minimum needed to support hydroelectric production). This goal would be achieved through drawdowns of other Upper Basin water storage

facilities and voluntary buyer agreements for paid water use reductions. Figure 1 shows the elevation of Lake Powell from 2017-present. To date, Upper Basin states have been successful at preventing Lake Powell's elevation from dropping below 3,525 feet. That said, the reservoir is still at its lowest recorded level, reaching 32%of its 24.3 maf max capacity (compare to 48% of capacity in September 2020).



In the Lower Basin, Arizona, California and Nevada reservoir usage is governed by a more complex framework, and the secretary of the Interior is the watermaster of the lower Colorado River, giving the federal government a significant role in water management. In 2007, the region adopted a series of mitigation procedures known as the Colorado River Interim Guidelines. Based on Lake Mead elevation level triggers, the 2007 guidelines called for progressively greater cuts as lake levels fall below 1,075 feet. Another feature of the guidelines is intentionally created surplus water, which is created when states invest in conservation to reduce their deliveries and increase storage at Lake Mead for future years. The Lower Basin DCPs establish additional trigger levels and curtailments for reservoirs in the area. Table 2 displays the volume reduction requirements by state and governing policy.

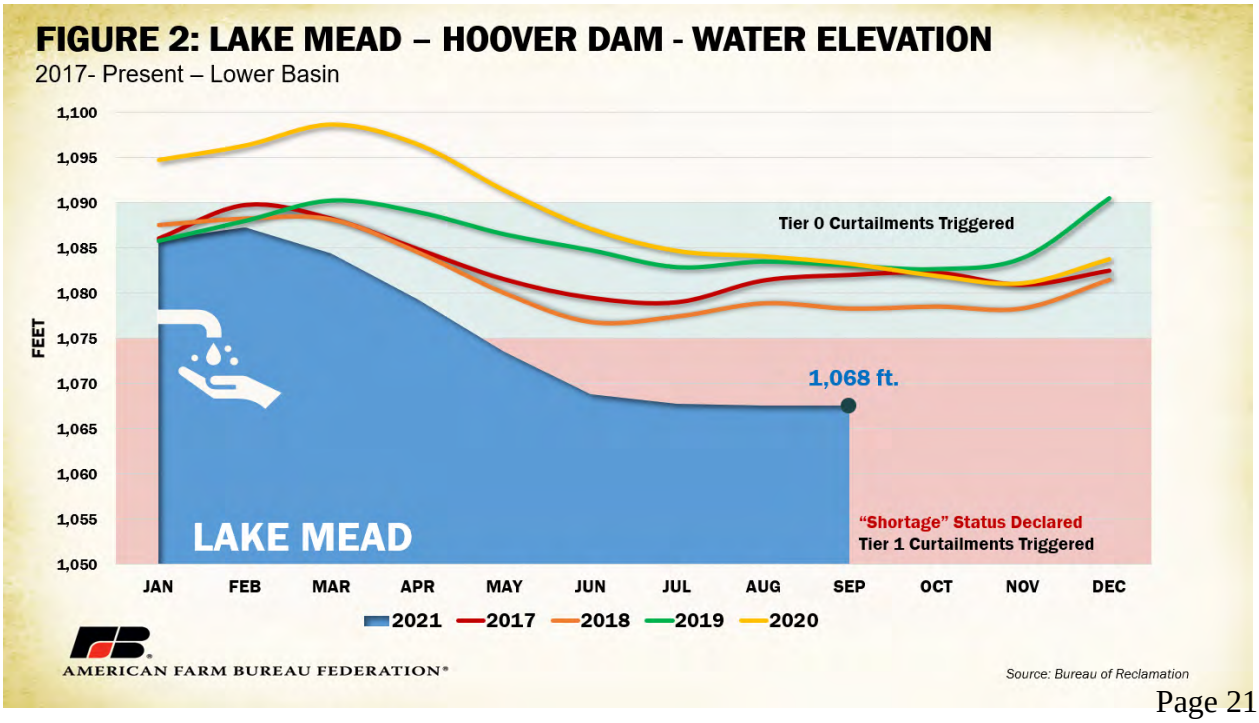
Table 2: Lower Basin Water Curtailment Volumes
(Thousands of Acre-Feet)

Tier	Lake Mead Elevation (ft)	2007 Interim Shortage Guidelines		DCP Curtailment			Total Volume of Curtailment (% of Colorado River Apportionment)				
		AZ	NV	AZ	NV	CA	AZ	NV	CA	Total U.S.	Mexico
0	>1,075 - 1,090	0	0	192	8	0	192 (6.8%)	8 (2.6%)	0 (0%)	200	41
1	>1,050 - 1,075	320	13	192	8	0	512 (18.2%)	21 (7%)	0 (0%)	533	80
2	>1,045 - 1,050	400	17	192	8	0	592 (21.1%)	25 (8.3%)	0 (0%)	617	104
3	>1,040 - 1,045	400	17	240	10	200	640 (22.8%)	27 (9.0%)	200 (4.5%)	867	146
4	>1,035 - 1,040	400	17	240	10	250	640 (22.8%)	27 (9.0%)	250 (5.6%)	917	154
5	>1,030 - 1,035	400	17	240	10	300	640 (22.8%)	27 (9.0%)	300 (6.8%)	967	162
6	>1,025 - 1,030	400	17	240	10	350	640 (22.8%)	27 (9.0%)	350 (7.9%)	1,017	171
7	<1,025	480	20	240	10	350	720 (22.8%)	30 (10.0%)	350 (7.9%)	1,100	275

Source: Congressional Research Service

Expand Image

Until recently, Arizona and Nevada were operating under the Tier 0 level of the DCP requirements, reducing their total apportionments by 6.8% and 2.6%, respectively. Lake Mead elevations between 1,090 and 1,075 feet are not categorized as a shortage, making these preliminary curtailments a protective buffer from further drops. Unfortunately, with persisting drought conditions, Lake Mead recently dropped below the 1,075-foot threshold, warranting the first declared shortage in history from the Department of the Interior. Figure 2 shows the elevation of Lake Mead from 2017-present. As of Sept. 1, Lake Mead was reported at 35% of its 26.1 maf max capacity (compare to 40% of capacity in August and September 2020).



The shortage declaration will trigger Tier 1 curtailments under DCP and Interim Guideline requirements in the 2022 water year, which begins Oct. 1, 2021. Arizona will be most impacted because of its junior water rights, losing 18% of its annual allocation, or 512,000 acre-feet of water, which translates to 8% of the state's water use. Additionally, Nevada will lose approximately 7% of its allocation, or 21,000 acre-feet of water, while California remains spared due to its water rights seniority advantage. Any cuts will likely impact agricultural use first as municipal use receives preference.

Conclusion

The Department of the Interior declared the first-ever Colorado River Basin water shortage on August 16. Arizona and Nevada, which combined generate nearly $6 billion in agricultural receipts, will be directly impacted by additional cuts to water allocation. Continued drought conditions risk additional cuts across the Colorado River Basin, jeopardizing thousands more farm and ranch operations' access to vital water resources. Moving forward, drought mitigation approaches must consider the crucial role Western agriculture plays in a secure domestic food supply.

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New Tools In The Fight Against Quagga Mussels

By AIMEE VAN TATENHOVE (/PEOPLE/AIMEE-VAN-TATENHOVE) • SEP 13, 2021

Quagga mussels are an invasive aquatic mollusk that have spread across the United States, and are one of the most economically damaging invasive species in the country.

Quagga mussels are often spread by hitching a ride in boats as microscopic larvae. When a contaminated boat enters a clean body of water, those larvae can escape. Once they've spread, they're nearly impossible to eradicate.

Nathan Owens is the aquatic invasive species coordinator for the Utah Division of Wildlife Resources. He said Utah and other arid states are particularly at risk.


(https://mediad.publicbroadcasting.net/p/upr/files/styl

Quagga mussels encrust a boat propeller.

CREDIT UTAH DIVISION OF WILDLIFE RESOURCES

"These invasive species are concerning to the West because of the lack of water out here and the importance that we place on water infrastructure…quagga mussels are really effective at clogging up water pipes, water infrastructure, severely damaging those," Owens explained.

To control the spread, Utah has set up watercraft inspection stops near boat launches, where boats are inspected and, if needed, decontaminated.

"The decontamination typically consists of a 140-degree exterior wash of your boats and then 120-degree Fahrenheit interior flushing of all these raw water systems. So the motor, ballast tanks, ballast pumps, live wells, those types of things. So we primarily just use hot water to take care of that threat," Owens said.

Decontamination is frustratingly time-consuming, but Utah is working to reduce time spent waiting.

"We built a hot water decontamination dip tank (https://www.youtube.com/watch?v=39p6TozpMKI), which is basically just a giant tank full of 110-degree Fahrenheit water. We put it down at Lake Powell, and boats can be backed down into this tank and all of their systems can be flushed with this hot water…it shrinks that decontamination time down from an hour on some of these more complex boats down to five, ten minutes maximum," Owens said.

Owens emphasized the importance of working together, and how the dedication of boaters, the state of Utah, and surrounding states have been key to keeping our waterbodies clean.

For more information about how to stop the spread of quagga mussels, visit https://wildlife.utah.gov/fishing/invasive-mussels.html (https://wildlife.utah.gov/fishing/invasive-mussels.html) and https://stdofthesea.utah.gov/ (https://stdofthesea.utah.gov/).

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RELATED CONTENT

POLICY

In response to Western drought, a flood of legislation

Record-low water levels put pressure on Capitol Hill to act even as lawmakers confront sharp partisan differences over how to respond

By **Joseph Morton**
Posted September 15, 2021 at 5:30am

The Colorado River winds through Horseshoe Bend in the Glen Canyon National Recreation Area in Page, Ariz., at sunset in late August. (Bill Clark/CQ Roll Call)

Las Vegas visitors can still snap selfies with the mermaids swimming among tropical fish in the Silverton Casino's massive aquarium and gaze at the colorful dancing water displays of the iconic Bellagio fountains — for now.

But southern Nevada and much of the American West are struggling to cope with a worsening drought that has strained municipal water supplies, agricultural operations and wildlife populations.

Tens of millions of Americans live in areas being punished by drought, from Oregon's Klamath River basin to California's Central Valley. The crisis is ramping up pressure on Capitol Hill to act even as lawmakers confront sharp partisan differences over the best ways to respond.

The bipartisan infrastructure bill approved by the Senate includes provisions aimed at mitigating drought impacts, and Democrats are looking to build on that with additional measures in their budget reconciliation package.

A Las Vegas visitor takes a selfie with a mermaid swimming among the tropical fish in the Silverton Casino's massive aquarium. (Bill Clark/CQ Roll Call)

The seriousness of the situation is particularly evident in the seven-state Colorado River Basin, where water levels at Lake Mead and Lake Powell have dropped to record lows, not just affecting the amount of water available for households and agriculture but also threatening electricity generation at the Hoover Dam, which serves areas across Nevada, California and Arizona.

The Bureau of Reclamation recently declared the first-ever federal water shortage for the Colorado River, triggering cuts in the water available to Arizona farmers. Climate change is expected to exacerbate the situation, in part by reducing the amount of snowpack that helps fill the river as it melts every year.

House Natural Resources Chair Raúl M. Grijalva, D-Ariz., said in a statement at the time that the declaration represented a "stark reminder" of how climate change is affecting the water supply for tens of millions across the West.

A personal watercraft user enjoys Lake Powell in August. Water levels there have dropped to record lows since the reservoir's creation in the 1960s (Bill Clark/CQ Roll Call)

since the reservoir s creation in the 1960s. (Bill Clark/CQ Roll Call)

“We have a plan in place to manage the Colorado River drought conditions that we’re experiencing today, but we have to prepare for a future markedly drier than even the two decades of drought that has led up to today’s announcement,” he said.

Indeed, lower water levels at Lake Mead could be ahead, John Entsminger, general manager of the Southern Nevada Water Authority, testified before Congress earlier this year.

Power production

Perry Kaye, a water waste investigator with the Las Vegas Valley Water District, investigates a faulty lawn sprinkler in Summerlin, Nev., in August. Southern Nevada residents rely on the Colorado River for nearly all of their municipal water supply and have tried to mitigate the situation through conservation. (Bill Clark/CQ Roll Call)

“Looking out just a few years, if the same hydrology levels that we've experienced recently continue, there's a high probability that Lake Mead water levels will continue to decline, potentially reaching an elevation within the next decade where we will hover just above the point where Hoover Dam can no longer deliver water downstream and power production will come to a halt,” Entsminger told lawmakers.

Southern Nevada residents rely on the Colorado River for nearly all of their municipal water supply and have tried to mitigate the situation through infrastructure projects and conservation initiatives. That includes investigators who patrol the Las Vegas Valley on the lookout for faulty sprinklers and other water waste.

Such efforts have produced results. Nevada’s consumption of Colorado River water has fallen 23 percent since 2002 even as the population has risen more than 52 percent, Entsminger said. Nevada recently adopted a ban on using Colorado River water for irrigating decorative grass in medians, parking lots and other areas that will go into effect by 2026.

The "bathtub ring" around Lake Mead at the Hoover Dam in Boulder City, Nev., shows how the water level has dropped to 35 percent capacity in the nation's largest reservoir. (Bill Clark/CQ Roll Call)

And yet the need for more action can be seen in the closed boat launches and “low water” warning signs all around Lake Mead, not to mention the “bathtub ring” that shows just how far its water levels have fallen in recent years.

Farmers from Blythe, Calif., to central Arizona wonder about the future of their operations if conditions remain dry and their share of the river water continues to be curtailed. It will be a rolling crisis due to complicated considerations over the seniority of water rights. The federal shortage declaration is first hitting the Central Arizona Project, which supplies water to farms growing crops such as alfalfa, cotton and corn.

If farmers can’t get the water to grow their crops, it would represent both a blow to those local economies and potentially a hike in food prices for consumers across the country.

Drought mitigation measures have been included in the bipartisan infrastructure bill that was approved by the Senate and is now pending in the House, as well as the proposed reconciliation package being assembled by Democrats.

A tractor kicks up dust as it works a field near Blythe, Calif., in August. Farmers from Blythe to central Arizona wonder about the future of their operations if conditions remain dry and their share of the river water continues to be curtailed. (Bill Clark/CQ Roll Call)

The bipartisan bill included provisions that would provide $400 million for the WaterSMART grant program that focuses on improving water conservation and $450 million for large-scale water reuse projects.

Democrats on the House Natural Resources Committee have proposed adding another $100 million for water reuse projects through their portion of the reconciliation bill, as well as $50 million to support water technology development such as desalination techniques. It also would provide $1 billion for near-term drought relief programs and another $150 million specifically to help Native American tribes mitigate drought impacts. And it would provide $2 billion over the next decade to help Native American tribes settle water rights issues.

It also includes funding to gather data critical to understanding and managing drought conditions, including $150 million for U.S. Geological Survey streamgages and $50 million for snow water supply forecasting.

'Reuse, recycle'

Democrats see the funding for reuse projects as particularly important with several of them in the works now, including one led by the Metropolitan Water District of Southern California.

The idea behind such a project is that it can be financed in part with money contributed by others in the basin in exchange for Southern California giving up some of its water rights.

Rep. Grace F. Napolitano, D Calif., has touted the need for those kinds of recycling projects to deal with drier conditions.

“Well, Mother Nature didn't give us any new water,” Napolitano said at a hearing earlier this year. “We have to reuse, recycle and clean it and not abuse it as much as we do right now.”

Rep. Jared Huffman, D Calif., and other lawmakers have proposed legislation that would exempt water conservation rebates from federal income taxes.

Democrats, including President Joe Biden, have cited the intense drought as further evidence of the need for sweeping measures to combat climate change. Their immediate drought solutions have focused on water conservation and recycling.

Many Republicans have historically blamed water shortages, at least in part, on mismanagement and overreaching federal protections for fish and other wildlife that they say restrict how much water is available for people.

GOP lawmakers have criticized Democratic proposals in the pending bills as overly expensive and yet still inadequate for future needs.

A traffic sign warns of low water levels at Lake Mead near Boulder City, Nev., in late August. (Bill Clark/CQ Roll Call)

"You can't fix the drought with water recycling," Rep. Bruce Westerman of Arkansas, the top Republican on the House Natural Resources Committee, told reporters recently. "Not to say that water recycling is not important, but it's much larger scale than that. They like to put Band-Aids on the problem after they're out there."

Instead, Westerman and other Republicans focus on increasing water storage capacity, which generally means building new dams and reservoirs. Specifically, Republicans have

talked about the need to go forward with the Sites Reservoir and building up the Shasta Dam in California.

But critics of that approach say projects such as the Sites Reservoir would ultimately hurt wildlife and still not solve the problem.

Huffman, chairman of the Natural Resources Subcommittee on Water, Oceans and Wildlife, said at a drought-related hearing that dealing with such dry conditions will require major infrastructure upgrades backed with increased federal spending.

"Pretending that there are simple fixes, that if we just weaken environmental laws or build another huge dam that this problem will go away, that's a form of denial that we cannot afford to indulge," Huffman said.

Who Is to Blame for California's Drought?

UC Davis experts answer 6 common questions about the drought.

Photo: Steve Payer/California Department of Water Resources

by Cody Kitaura | Sep 15, 2021 | Environment, Features, The Big Question

Social media users are playing the blame game when it comes to California's drought. Read enough comments online and you'll see many similar responses blaming the state government for its management of water:

California should have more water storage. California dumps water into the ocean. Northern California sends too much water to Southern California.

UC Davis experts said those assertions are incorrect.

"The characterization that this is just government malfeasance is wildly inaccurate and unfair, and misses the key points," said Richard Frank, professor of environmental practice and director of the California Environmental Law and Policy Center at the UC Davis School of Law.

While some criticisms that appear frequently on social media have a basis in reality, others are completely untrue, Frank and other UC Davis experts said.

They provided responses to common drought questions.

A drought primer, plus more myths

UC Davis Magazine subscribers can read more about California's drought in the fall-winter 2021-22 issue, coming to mailboxes and UC Davis Stores later this month.

Related coverage: Challenging myth and mirage in California's drought, California WaterBlog

Why don't we just build more dams?

Shouldn't the state have seen the current drought coming and planned with more storage? Of course, more storage could help, but all the obvious places to build dams were turned into reservoirs years ago, Frank said. The state has more than 1,500 reservoirs, and each remaining additional option is more expensive and less effective than the last, he said.

Jay Lund, co-director for the Center for Watershed Sciences and a distinguished professor of civil and environmental engineering, agreed.

"You can get some more water from building more reservoirs, but you don't get much and it's very expensive," Lund said.

Besides, none of that matters when the storage we do have is running dry (Lake Oroville, the state's second-largest reservoir, last month deactivated its hydroelectric power plant because of the low water levels for the first time ever), so we should work harder to conserve, Frank said.

"There's not enough water to fill the existing water infrastructure," he said. "It's not just a matter of readjusting expectations among water users — we have to redouble our efforts to conserve and use water more efficiently."

He pointed to more efficient farm irrigation and drought-resistant urban landscaping as two possible ways to save more.

Lake Oroville was reduced to a mere trickle by drought in July 2021.
Kelly M. Grow/California Department of Water Resources

Are we dumping water into the ocean?

Then-president Donald Trump made headlines in October when he said the state was wasting countless gallons of water by dumping it into the Pacific Ocean “to take care of certain little tiny fish.”

The state does release water into the Sacramento-San Joaquin Delta, an estuary where salt water from the sea mixes with fresh water from Sierra snowpack runoff. Water from the delta is used for irrigation and drinking water, and if too little freshwater is present, then seawater would fill the gaps.

“If you stopped allowing some fresh water to migrate, what you would have is salt water,” Frank said. “The water that is diverted would be salt water, and it would be unfit to drink and unfit to irrigate crops with.”

Water released into the delta also helps wildlife like endangered salmon, steelhead and others — but those animals are the first to suffer in a drought.

“This year most of the salmon stocks are going to perish and not be able to spawn,” Frank said.

Karrigan Börk, an associate director at the Center for Watershed Sciences and an acting professor at the School of Law, said droughts can do quick and lasting damage to wildlife populations.

“You can fallow a field for a year, but if fish are unsuccessful for a year, you can lose those populations pretty quickly,” he said.

Lund said fish are likely suffering more than farmers and ranchers, who tend to have other options.

The completed temporary emergency drought barrier for the West False River in the Sacramento-San Joaquin Delta in Contra Costa County, July 2021. The 750-foot-wide rock barrier will help deter the tidal push of saltwater from San Francisco Bay into the central Delta. Jonathan Wong/California Department of Water Resources

How can agriculture survive the drought?

California's farmers and ranchers sold their products for more than $50 billion in 2019, but all that output comes at a high cost to the state's water supply — 80 percent of all water use goes to ag, according to the state.

Lund said farmers and ranchers should reduce their irrigated footprint, swapping out less profitable crops like corn, cotton and wheat for more valuable ones like grapes or almonds.

"It's going to be smaller in terms of acres, but it could easily be larger in terms of gross profits," he said. "We're still seeing a shift from low value crops to high value crops."

A water marketplace could also help alleviate some of the tension between agricultural and urban water uses in the state, Börk said. Such a system would allow cities running low on water to "buy" water from farmers by paying them to leave fields fallow.

"That could go a long way to mitigating problems in drought periods," he said.

One way or another, the agriculture industry will need to cut its water use, Frank said.

"I think what the [state] water board and most government regulators are saying is everybody is going to have to bear a share of the pain and cutbacks," he said. "For those farmers and ranchers who think they have a right to the same level of water they used 20, 40, 50 years ago, they're whistling past the graveyard."

A wheel-line irrigation system running on an agricultural field in California.

Steve Payer/California Department of Water Resources

Is it Southern California's fault?

In the blame game, Southern California — and large cities in general — are popular targets.

But again, the experts urged a look at the bigger picture.

"You've got to look at all the sectors in California," Frank said. "Domestic and urban use is considered the highest and best use of water [according to the law]. Are you going to tell cities they can't provide water for their residents for cooking, cleaning and bathing? I don't think so."

Börk said the state could do a better job of setting expectations during good years, so people know where to make cuts once droughts hit.

Would desalination plants solve the drought?

Living in a coastal state beleaguered by drought might feel like "water, water everywhere, and not a drop to drink." So why don't we use existing technology to remove the salt from the Pacific Ocean's water? Some in Southern California are doing just that, seeking a desalination plant in Huntington Beach, just 60 miles from the country's largest facility.

That plant, which opened in Carlsbad in 2015, provides 10% of San Diego County's drinking water.

"Engineering-wise it's quite possible, but it's also very costly," Lund said. "That would essentially more than double most water bills in urban areas. ... There might be some potential there, but it's never going to be a big contributor, I think."

He added that desalinated water would never be used for agriculture, because it would cost more than the price anyone could likely get for their crops.

Charles E. Meyer Desalination Plant in Santa Barbara plays a key role in improving water reliability and resiliency for the city during drought years.

Florence Low/California Department of Water Resources

Will we survive the drought?

Even as worsening droughts continue to threaten the state, California's economy and people will be just fine, the experts said. Lund wrote in a 2016 California WaterBlog that this state is one of the most prosperous Mediterranean climates in the world. (Australia's gross domestic product per employed person is higher, but California produces more food.) Yet our native ecosystems haven't suffered as much as those in other areas.

"I like to tell people we do a terrible job managing water, but if you grade on a curve we do pretty well," he said, adding that the main drivers of the economy — cities — are the parts of California best prepared to deal with droughts. He added that people in most other Mediterranean climates use much less water than Californians, so more lawns will likely have to turn brown here.

Börk said he is optimistic about the state's water policy.

"California has this long history of consistently, over time changing its water rights system to match the physical reality that's facing the state," he said. "California has a remarkable ability to adapt, and I think we can find a way through this together."

USA TODAY

EXPERIENCE

'It may look worse than it is': Future of Lake Tahoe clarity in question as wildfires worsen

Sam Metz Associated Press / Report for America
Published 6:33 p.m. ET Sept. 16, 2021 | **Updated 8:32 a.m. ET Sept. 17, 2021**

CARSON CITY, Nev. — When a wildfire crested the mountains near North America's largest alpine lake, embers and ash that zipped across a smoky sky pierced Lake Tahoe's clear blue waters.

The evacuation order for thousands to flee their homes has been lifted, but those who returned have found black stripes of ash building up on the shoreline – a reminder that success fighting the Caldor Fire won't insulate the resort region on the California-Nevada line from effects that outlast wildfire season.

Scientists say it's too soon to draw conclusions about the lasting damage that record-setting wildfires will have on Lake Tahoe. But they're not wasting time. Many expect to bring their research plans to the Tahoe Science Advisory Council at a meeting Thursday.

►**The cave gets bigger:** Mammoth Cave National Park excitedly reveals 'longest cave in the world is now even longer'

►**Hotel rewards:** Hilton, Hyatt and Marriott get flexible with rewards programs: Here are the updates in loyalty memberships

Scientists funded by California, Nevada and the League to Save Lake Tahoe are researching lake clarity and biodiversity during and after wildfires. They're using collection buckets – some loaded with glass marbles – to capture and measure the size and quantity of particles and pollutants from wildfires that have sullied the normally crystal-clear waters. They're studying how particles enter the lake, how they move around it and the effect on algae production.

The clarity of the iconic alpine lake can vary even without catastrophic wildfires. On average, Lake Tahoe is clear 65 feet (20 meters) below the water's surface. Through wildfire season, scientists stationed near the lake's center have only been able to see 50 feet (15 meters) below the surface — a reduction they aren't sure is due to particles, algae or simply lack of sunlight, said Geoff Schladow, professor of civil and environmental engineering and director of the University of California, Davis' Tahoe Environmental Research Center.

"My feeling is, in some ways, it may look worse than it is," Schladow said. "What smoke in the basin actually does, particularly when it lasts for months, is something we don't really know. We're finding that out as we speak."

Smoke from Northern California wildfires has cloaked the Lake Tahoe basin in some past years. But as blazes have grown in size and intensity — partially due to climate change, scientists say — smoke from wildfires inside and outside the basin that has sat atop the lake for two to three months in the past two wildfire seasons has exceeded the expectations of many residents and tourists who flock to the deep blue lake for its clean alpine air and fragrant pine trees.

It's also concerned scientists, who have spent years studying how algae, erosion and air pollution from vehicles that 15 million tourists drive in each year affect clarity. They say the sheer amount of wildfire smoke that has lingered could harm lake clarity in ways that weren't previously considered.

"Our bread-and-butter sources of declining lake clarity are pretty well understood," said Allison Oliver, an ecologist at the Skeena Fisheries Commission in western Canada who studied how rivers and creeks delivered murky sediment to Lake Tahoe after the 2007 Angora Fire.

"This new phenomenon where we're getting these big shifts in climate regimes and this pattern of big summer fires," she said of the Sierra Nevada mountains, "that's not something that was on people's radar as much 15 or 20 years ago. Now, it's routine."

On many days, smoke has blotted out views of the mountains that wrap the lake's pristine waters and left an inescapable campfire stench on clothes, in cars and beneath fingernails.

"It's really apparent that we need to be concerned about not only fires burning in the basin that cause erosion and burn scars, but the smoke generated from massive fires outside the basin," said Jesse Patterson, the League to Save Lake Tahoe's chief strategy officer. "We need to think bigger, if we want to keep Tahoe blue decades to come."

The league, best known for its "Keep Tahoe Blue" bumper stickers, has aggressively pursued environmental restoration projects to maintain the lake's clarity, prevent erosion and replant burn scars. But amid accelerating climate change, Patterson fears local land management efforts may no longer be enough to protect the lake.

Scientists fear alpine lakes can act as "sponges," soaking up the microscopic particles in wildfire smoke, said Sudeep Chandra, a biology professor and director of the Global Water Center at the University of Nevada, Reno. Regardless of whether studies end up showing smoke obscures algae-fighting sunlight or increases the flow of pollutants into the lake, he believes the challenge for scientists will be expanding the scope of research into factors affecting Lake Tahoe.

Chandra applauded efforts to maintain lake clarity through restoring rivers, preventing erosion and encouraging responsible development. But after he saw how much smoke from California's Dixie Fire further north in the Sierra Nevada ended up in the basin, he said questions about the lake's future need to reckon with broader climate change trends.

"We're clearly regionally connected. That's going to be a new way of thinking about managing the Lake Tahoe basin," he said.

NEWS > ENVIRONMENT • News

The West's historic drought in 3 maps

By CNN.COM WIRE SERVICE
September 16, 2021 at 7:06 a.m.

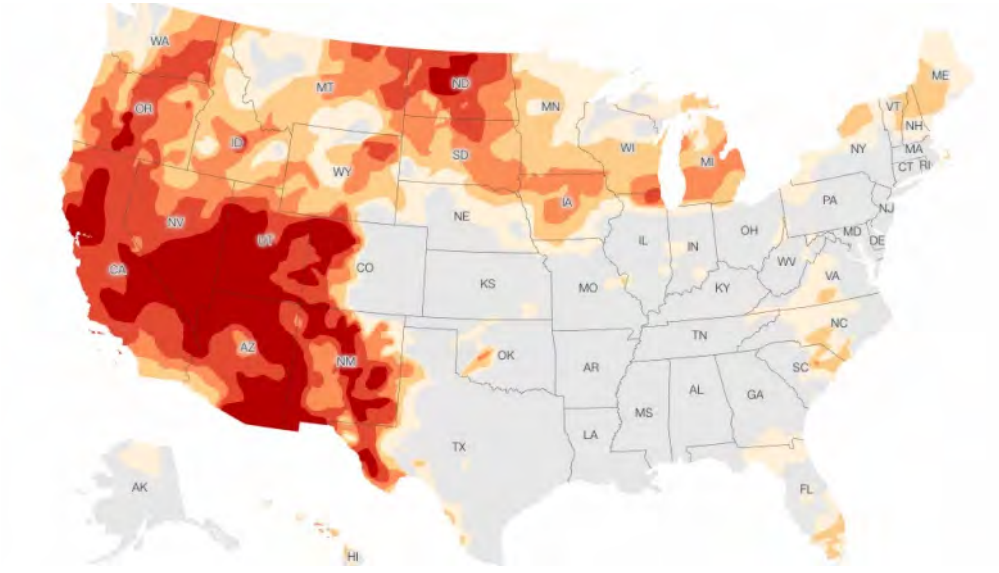
By John Keefe, Rachel Ramirez and Angela Fritz | CNN

More than 94 percent of the West drought this week, according to the US Drought Monitor, with six states entirely in drought status: California, Nevada, Oregon, Idaho, Utah, and Montana.

Parts of the West saw record-setting rainfall that brought some slight relief to the region, but most areas remain dry.

Against the backdrop of climate change-fueled drought, wildfires have charred nearly 6 million acres of vegetation across the region. Fire experts say that dry and windy conditions create a prime environment for wildfires to spark and spread.

Scientists say the multi-year drought is a clear sign of how the climate crisis is affecting not only the weather, but water supply, food production and electricity



More than 25 percent of the West is in an exceptional drought, which is the most severe category used by the US Drought Monitor.(US Drought Monitor/CNN)

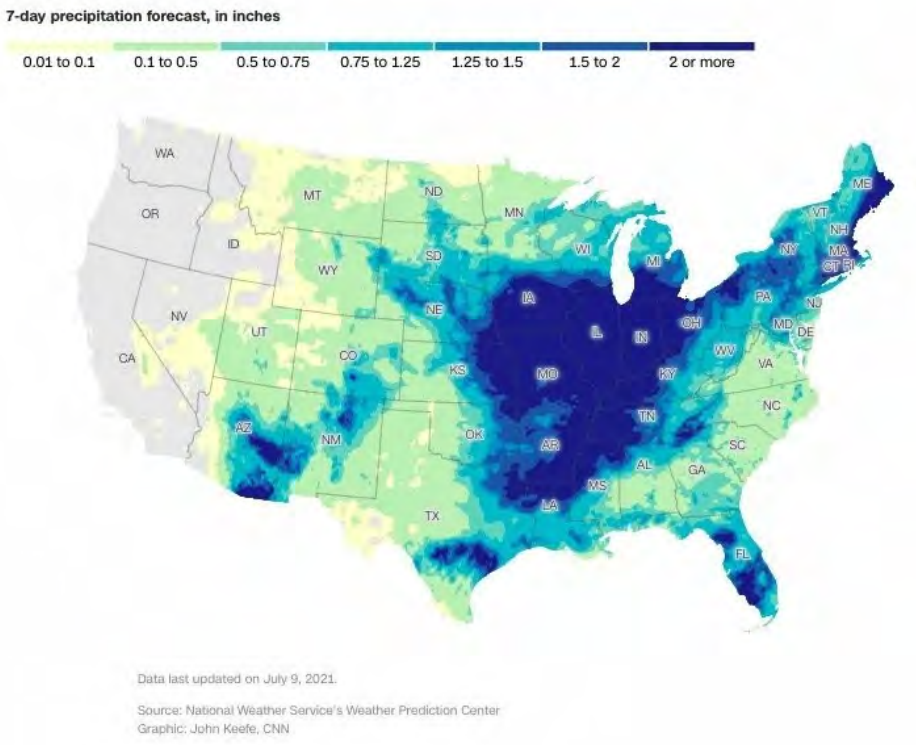
A vast majority of California is currently in extreme or exceptional drought, the two most severe categories. Across the West, drought has strained water resources.

“At the end of August, California’s 154 intrastate reservoirs contained 13.8 million acre-feet of water, just 60% of average for the date,” the Drought Monitor reported. Reservoir levels were less than half of average in Nevada, New Mexico and Oregon, as well.

In the Southwest, climate change-fueled drought has pushed the level in Lake Mead, the country’s largest reservoir, to unprecedented lows. The US Bureau of Reclamation in August declared a water shortage on the Colorado River for the first time, triggering mandatory water consumption cuts for states in the Southwest beginning in 2022.

According to the US Department of Agriculture, at least half of the acreage allotted to rangeland and pastures was rated in “very poor” to “poor” conditions across eight of the 11 Western states, with Washington (96%), Montana (88%), and Oregon (87%) experiencing the worst conditions.

As the planet warms, drought and extreme heat will also fuel deadly wildfires. Multiple studies have linked rising carbon dioxide emissions and high temperatures to increased acreage of burning across the West, particularly in



The West experienced extremely low rain and snowfall over the past year, compounded by drastically high temperatures. Less rain and increasing heat waves have led directly to drought conditions and water shortages.(CNN)

The West experienced extremely low rain and snowfall over the past year, compounded by drastically high temperatures. Less rain and increasing heat waves have led directly to drought conditions and water shortages.

But recent rainfall alleviated drought across California and the Pacific Northwest. Overall, this summer has seen well above-average monsoon rainfall in the Southwest region, with many locations receiving some of their highest summer rainfall totals on record.

“Any benefit from patchy rainfall across northern California and the interior Northwest was largely offset by above-normal temperatures,” the Drought Monitor reported.

As climate change accelerates and winter temperatures increase, snowfall will decrease. High-elevation snowpack serves as a natural reservoir that eases drought, storing water through the winter months and slowly releasing it through the spring melting season.

Preliminary 7-day average streamflows are shown as of July 8 compared to historical data for each site on the same day. Sites with no data or fewer than 30 years of comparison data omitted.(CNN)

Streamflow, a measure of how much water is carried by rivers and streams, is another significant indicator of drought and its impact.

As drought conditions have worsened in 2021, hundreds of stream and river locations are experiencing below-average flow. Fishing restrictions have also been put in place on many rivers in Montana due to low flows and warm waters.

Changes in streamflow affect the water supply for municipal use such as drinking

View this email in your browser

Caldor Fire: What Now?

It has been an intense few weeks. Since canceling our annual Founders Circle Dinner on August 18th, we've seen wildfire come into the Basin and the complete evacuation of South Lake Tahoe. We can not express our gratitude enough for the amazing firefighters who helped keep the Lake Tahoe community safe.

First and foremost on our minds is the welfare of the people most impacted by the fire. As we have shared out in the past, we recommend supporting

organizations that are working to help in this area. The Barton Foundation's Emergency Response Fund is assisting local families and individuals facing food insecurity challenges brought on by the fire.

Our board has been discussing how we can help and what happens now. We wanted to share a quick update with you on our thoughts on the post-fire work ahead:

FOREST RESTORATION

The Caldor Fire is still not out, but we have already learned a great deal from the intensive firefight that took place as the fire crested Echo Summit and entered the Tahoe Basin. The fire was unstoppable in its march to the Basin due to areas with unnaturally dense forests and dried-out vegetation. Simply put, we have too much fuel in our forests and we need to find solutions to get it out.

A key learning is how important the forest thinning and fuels treatments around South Lake Tahoe were in helping improve the odds for the firefighters. The treated areas gave the firefighters room to maneuver, dropping 100+ foot flames down to 15 feet. The great defensible space work of individual homeowners is also another important piece of the story.

Through our Smartest Forest Fund, we are already investing in state-of-the-art technology to help decrease the threat of catastrophic wildfire around the Tahoe Basin. We recently granted funds to Vibrant Planet for Tahoe Basin stakeholders to use a first-of-its-kind land management tool, Land Tender, to help increase the pace and scale of forest restoration work. We are more determined than ever to expand upon this work in partnership with the public

agencies. We hope you will support these efforts.

TRAILS

While the fire was held outside of the community of homes in Tahoe, it scorched many favorite trails in Tahoe. In addition, the dozer lines used to help suppress the fire unfortunately also destroyed many trails. The Tahoe Rim Trail around Echo Summit and many trails built and loved by the Tahoe Area Mountain Bike Association (TAMBA) were heavily damaged. There is going to be a lot of trail restoration work in our future. We have pledged to our trail building partners that we will be ready to help fund this important work when the time is right. We hope we can call on you for your support of this effort.

Given the fire is still burning and the Forest Service has closed access to the fire area until January, this trail work is not going to happen until the spring at the earliest. We hope a big winter will bring much needed moisture (Please get those snow dances going now!). In the meantime, the US Forest Service Burn Area Emergency Response (BAER) team is on the ground assessing the damage from the fire and associated suppression efforts so they can quickly move into restoration work before that massive snow starts flying.

LAKE CLARITY

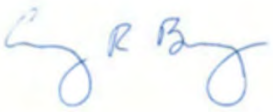
With weeks on end of heavy smoke and ash falling, we can’t help but wonder what the impact is on the Lake’s famed clarity. We recently pledged funding support in partnership with other Tahoe agencies for a RAPID response science proposal from the Tahoe Science Advisory Council to investigate the influence of the wildfire smoke on the Lake. This will provide important insights into the impacts and help drive future clarity improvement efforts.

As we await these results, the Clean Up The Lake team is back in the water and continues to make progress in their scuba clean up of the Lake after a delay due to the fire.

We hope this finds you all safe and breathing a little easier now that blue skies have returned to Tahoe. We are working on a series of post-fire events for our supporters to help better understand what happened and how we can help. We will be in touch shortly with details.

In the meantime, please don't hesitate to reach out with any questions or observations.

In gratitude,



Amy Berry, CEO

Allen Biaggi, Board Chair

NEWS > ENVIRONMENT • News

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

As severe drought grips parts of the Western United States, a below-average flow of water is expected to flow through the Colorado River Basin into two of its biggest reservoirs, Lake Powell and Lake Mead. (CNN)

By CNN.COM WIRE SERVICE

PUBLISHED: September 24, 2021 at 5:21 a.m. | UPDATED: September 24, 2021 at 8:34 a.m.

By Rachel Ramirez | CNN

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

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

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

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

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

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

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

"More widely, my guess is that for much of the West, the current extent and magnitude of this drought is locked in until at least mid-2022," Justin Mankin, assistant professor of geography at Dartmouth College and co-lead of NOAA's Drought Task Force, told CNN.

The NOAA report concluded that climate change-fueled drought will continue to worsen and impose greater risks on the livelihoods and well-being of over 60 million people living in the Southwest, as well as the larger communities that rely on their goods and services.

"This has big implications for drought mitigation measures for different water districts, many of which are working hard not only to manage the impacts of this drought, but to invest in longer-term adaptive measures to be resilient to more droughts like this in the future," Mankin said. "Given scant resources to do both, these water districts need our support."

The nation's largest reservoirs, Lake Powell and Lake Mead, are at record-low levels. Both are fed by the drought-ravaged Colorado River watershed, and supply drinking water to 40 million people and irrigation to rural farms, ranches and native communities.

The Bureau of Reclamation in August declared a water shortage on the Colorado River for the first time, triggering mandatory water consumption cuts for states in the Southwest beginning in 2022.

Projections released Wednesday show a 66% chance that water levels at Lake Mead could drop to a level that would trigger even deeper cuts, potentially affecting millions of people in California, Arizona, Nevada and Mexico.

The agency also projected a 3% chance that Lake Powell next year could drop below the minimum level needed for the lake's Glen Canyon Dam to generate hydroelectricity. In 2023, the chance of a shutdown grows to 34%.

Drought and blistering heat has fueled major wildfires in the West this summer. According to Philip Higuera, fire ecology professor at the University of Montana, warming temperatures caused the record-low level of rain and humidity that dried out trees and vegetation, which in turn ignited more wildfires.

"You can have the same amount of vegetation in a forest, but if it's wet, it's not available to burn," Higuera previously told CNN. "These regions across the West that have record dry fuels, that makes more vegetation available to burn — so

Oregon's Bootleg Fire, which started in July, became the second largest wildfire in the country this year; meanwhile, California battled the Dixie Fire — the largest in the US this year and second-largest in state history. Currently, firefighters are battling the lightning-sparked KNP Complex and Windy fires, which are threatening Sequoia National Park and national forest.

According to Mankin, the longer-term fate of the Western drought remains bleak. What's needed now, he said, is several years of rain and mountain snow to replenish the draining reservoirs and rivers.

That becomes more unlikely as the climate crisis worsens. Experts say the West will only continue to see more droughts like the present one in the years to come — and only rapid, immediate cuts to fossil fuels can halt this harsh trend.

"Global warming is making the atmosphere over the West warmer and thirstier, such that even the rain and snow that was once normal may be too little to quench it," Mankin said. "The only way to stop the kind of atmospheric demand increases that have made this drought so impactful, is to stop combusting fossil fuels."

Tags: **California Drought**, **California Fires**, **Climate Change**, **Morning Wire**, **Water**, **Wildfires**

CNN.com Wire Service

NEWS

632 Volunteers Participate In KTMB's Truckee River Cleanup

Volunteers worked at 22 sites spread along the river and throughout the watershed, removing invasive weeds, cleaning up illegal dumping, stenciling storm drains, and many other park beautification and cleanup projects.

Saturday, September 25th 2021, 3:17 PM PDT
Updated: Saturday, September 25th 2021, 3:25 PM PDT

This morning, 632 volunteers came out to help make the Truckee Meadows community a cleaner and healthier place by participating in KTMB's Truckee River Cleanup.

Volunteers worked at 22 sites spread along the river and throughout the watershed, removing invasive weeds, cleaning up illegal dumping, stenciling storm drains, and many other park beautification and cleanup projects.

This effort helps protect the water quality by removing trash and hazardous waste from the river and surrounding tributaries while also mitigating fire risk.

Preliminary results from today's cleanup show that volunteers removed 17 tons of trash, including 2 shopping carts, 5+ TVs and monitors taken to e-waste recycling, as well as 25 tons of invasive weeds and green waste during today's cleanup event.

Volunteers stenciled 100 storm drains, wrapped 16 trees, and spread over 30 cubic yards of mulch for weed abatement projects.

"Year after year we are so pleased with the results of the Truckee River Cleanup and this year was no exception. Many thanks go out to the residents in our community who, with a shared love of the Truckee River, turned their love of the river into action. Not only did we reach our volunteer capacity once again, we were able to complete a tremendous amount of work!" said Mark Cameron, KTMB's Executive Director. "We are so grateful to our many funders and municipal partners who made this cleanup possible and especially grateful to the hundreds of volunteers who gave up a little bit of their Saturday to make today's event a huge success."

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Reno Police Seek Missing Woman Who Has Not Returned From Hot Spring Trip
(https://www.ktvn.com/story/44950055/reno-police-seek-missing-woman-who-has-not-returned-from-hot-spring-trip)
23 hrs 26 mins ago

13 INVESTIGATES

Draining Las Vegas: Here is who's using the most water in valley

Top commercial, residential water users listed

Top commercial and residential water users in Las Vegas metro area listed as Feds declare water shortage and continue predictions of lower levels at Lake Mead.





KTNV LAS VEGAS

Posted at 6:33 AM, Sep 27, 2021 and last updated 1:16 PM, Sep 28, 2021

LAS VEGAS (KTNV) — Nevada is in the throes of an epic water crisis, so much so that the Feds have issued a water shortage declaration.

U.S. Bureau of Reclamation most recent predictions show there's a 22% chance Lake Mead's level could drop below 1,025 feet in 2023. And a 12% chance it could drop to less than 1000 feet in 2024, putting power generation at risk. Lake Mead is currently at 1,067 feet.

Many people are cutting back, but there is still a lot of water being used for a lot of different reasons.

13 Investigators shows us the top water users from 2020 through the first half of 2021 and asks them what they're doing to help reduce that. (See lists for 2021 following this article)

We wanted to question the top users. None would go on camera and some didn't even respond. But they're just part of the water puzzle.

We collected data from the Las Vegas Valley Water District, North Las Vegas and Henderson, looking at commercial and residential water use to see if the highest users continued their record consumption.

Nearly all of our indoor water is treated and returned to Lake Mead.

"The water that we use outdoors is the water that we only use once," says Bronson Mack with the Southern Nevada Water Authority. "That's really the water that we consume as a community."

The bathtub ring around Lake Mead is perhaps the starkest reminder of how much water our community has lost.

But there's another lake that has no ring. And it's the biggest commercial water user of all. Lake Las Vegas in Henderson used 1,216,092,000 (1.2 billion) gallons in 2020. And through June this year, they've already used 417,334,000 gallons.

For perspective, it takes 1,320,000 gallons to fill two Olympic-sized swimming pools.

Henderson officials tell us raw water is taken directly from Lake Mead to replenish Lake Las Vegas.

Using less than half the water of Lake Las Vegas, but still in the top tier, "You do have golf courses on that list," says Mack.

To keep courses green in 2020, Angel Park used 436,789,999 gallons, Red Rock: 422,565,000 gallons, Southern Highlands: 407,297,000 gallons.

But golf courses used to use much more.

"Golf courses in Southern Nevada have removed the equivalent of nine professional golf courses just by taking grass out of the non-playing areas," says Mack.

Big properties on the Strip are next on the list; the Venetian, famously surrounded by water like its Italian city namesake, used 403,397,000 gallons in 2020.

Wynn: 383,808,000 gallons. Caesars: 369,604,000. Mandalay Bay: 360,539,000.

Rounding out the top commercial users is the Summerlin Council with 342,420,000.

"Part of this revolves around the fact that this is a huge master plan: 22,500 acres, we've got 115,000 residents so far," says Tom Warden, senior vice president of community & government relations at Summerlin.

That's the size of a small city.

"So, if you think of Summerlin as a city," Warden explains. "Then of course you're going to have parks--which we have over 250 parks--and that's about 465 acres of park setting like this we're standing in here and that's going to use a lot of water."

Before we tap into the top residential water users, we did not include data about Clark County School District's water use or cities that maintain many municipal parks. From the massive Sunset Park, which includes a lake, to tiny neighborhood parks, multi-purpose athletic fields, dog parks and splash pads, those are all considered public use and are for the greater good of the community.

Drilling down to water use where you live, we found many homeowner associations on topwater user lists.

Apartment complexes are naturally also big water users as that often includes tenant indoor use, which can be lumped into one big account.

When it comes to single-family residences, the average home uses about 125,000 gallons in a year, but it's the multi-million-dollar mansions soaking up millions of gallons of water.

"Anybody that is using more than a million gallons of water a year, I would consider that to be excessive," says Mack.

A property in Spanish Trails used over 12,327,000 gallons in 2020. It's at the same pace this year, using 6,380,000 by the end of June. The mansion sits on 15.9 acres and federal court records tie the estate to a Prince of Brunei. Common lot sizes in Las Vegas run between 1/10th to 1/6th of an acre, meaning up to 160 typical houses could fit here.

The property management company declined to comment on water use, citing a non-disclosure agreement.

But the Las Vegas Valley Water District says, thanks to past participation in the water-smart program, "That property has removed more than 70,000 square feet of grass," says Mack. That cut water use by five million gallons.

A mansion belonging to the late Sheldon Adelson in Summerlin's exclusive TPC golf course community used 11,268,000 gallons in 2020 - 5,321,000 in the first half of this year. The Adelson family declined to comment through a spokesperson.

Using just over 10,019,000 gallons is a Henderson water customer at the Rio Secco Golf Club on 11.45 acres. The homeowner is listed as Via Tivoli LLC. So far this year, the home has used 3,876,000 so they may have made water-saving changes.

Sources tell us the home belongs to eBay founder Pierre Omidyar. We left multiple messages with his foundation's media team but never got a response.

Station Casinos owner Lorenzo Fertitta's house at TPC used over 9,659,000 gallons on a 2.14-acre lot last year - 4.3 million so far this year. No one would talk to us on camera, but a spokesperson for the Fertitta family says the property is in the process of making changes to conserve water.

Back in Henderson, the fifth-highest water user of single-family homes belongs to the Koroghli family which owns the Oasis Windmill RV Park, the New Pioneer in Laughlin and various other companies. They used 8,804,000 gallons

in 2020 on a 2.57-acre property. And they're on pace this year with 4,121,000 gallons used in the first six months.

But the officials say they've already made water-saving changes. "They have removed about 9,000 square feet of grass," says Mack.

Looking at the bigger picture, the water used by all 100 top residential users in the Las Vegas Valley Water District adds up to about 270-million gallons.

For perspective, "Their water use in comparison with all of the water use throughout the valley is equal to less than one percent," says Mack. "So that is why conservation is important for everybody to be involved in."

Some of the valley's biggest HOAs are already making big changes that will translate into big savings in water use. That story will be available Tuesday on Good Morning Las Vegas.

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13 Investigates - Send us a tip

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First Name

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CLIMATE CHANGE

How Climate Change Helped Fires Cross the Sierra Nevada for the First Time

High, rocky peaks are no longer an insurmountable hurdle for ever fiercer flames fueled by heat and drought

By Andrea Thompson on September 28, 2021

Echo Summit in California glows ominously as a firefighting dozer is hauled up Highway 50 to fight the approaching Caldor Fire on August 29, 2021. Credit: Karl Mondon *Getty Images*

Californians have long thought of the Sierra Nevada mountains as a "granite wall" that

exacerbated by climate change, finally let two blazes scale and cross the jagged, rocky peaks for the first time in the state's recorded history.

This grim milestone under s shifted over the past century as humans have extracted and burned fossil fuels—and how wildfires will pose new challenges to firefighters and communities struggling to adapt. "In many ways, it becomes yet another sign of how climate change is fundamentally altering our ecosystems and wildfire activity," says Crystal Kolden, a pyrogeographer at the University of California, Merced.

The Sierra Nevada's highest slopes have historically been less hospitable to conflagrations than the lower parts of the mountain range, which runs down the length of California. The sparseness of trees and other vegetation near the peaks means that when fires do start in, or move to, those elevations, "they don't get very big, and they run out of fuel," Kolden says. For example, in the Tahoe area on the east side of the range, she adds, "people … tend to think of [the Sierra Nevada] as 'the granite wall'" and assume fire cannot cross over from the west. Kolden says she thought that as well until the Caldor Fire raged across the peaks and threatened South Lake Tahoe, Calif., at the end of August. (The Dixie Fire burned over the summits of the northern Sierra Nevada to the northeast of the city of Chico, Calif., earlier that month.)

In contrast with other trees found in the West, those growing high up in the Sierra Nevada lack traits that suggest they evolved in a place prone to severe fires. Ponderosa pines and other lower-elevation trees tend to have thick bark that helps them withstand such blazes. Trees closer to the peaks have thinner bark, says Craig Clements, director of the Wildfire Interdisciplinary Research Center at San José State University. He notes that some higher-elevation trees in the Sierra Nevada lack the kind of cones that need fire to open and release their seeds. These trees can, however, be found in trees growing higher up in the Rocky Mountains.

Conditions at high elevations also tend to be generally cooler and wetter than in lower areas. In past decades, it was not uncommon for the Sierra Nevada's winter snowpack to hang around well into July and keep soils moist as late as August, Kolden says.

But climate change is altering that background and making high areas more vulnerable to encroaching flames. Warmer winters mean more precipitation falls as rain, which does not keep things damp as long as snow does. Warmer springs and summers can cause what snowpack there is to melt earlier, leaving vegetation parched and primed to ignite. "This year [the snowpack] was all gone in May," Clements says. California's hottest summer in 127 years supercharged the dry conditions, making them even worse than they were during last year's record-breaking fire season.

Rising temperatures are changing the ecology of the higher elevations in other ways as well, with the tree line gradually moving upward wherever there is enough soil to take root. This brings more and denser potential fuel for fires, Kolden says.

A 2015 *Ecosphere* study found that fires have been happening more frequently in the Sierra Nevada since the late 20th century and that they have been steadily creeping upward. The authors proposed that both climate change and a shift away from fire suppression by firefighting agencies could be behind these trends.

Much of the concern over rising fire risks in these areas is for the homes and businesses of people living there. "There is really a risk to these communities that have not seen a lot of fire at these elevations," Kolden says. "Now it's something that they have to worry about."

ABOUT THE AUTHOR(S)

Andrea Thompson, an associate editor at *Scientific American*, covers sustainability.

Follow Andrea Thompson on Twitter

Credit: Nick Higgins

Recent Articles by Andrea Thompson

Here's How Much Food Contributes to Climate Change

Sparks Blvd. to close Friday evening for water main project

Sparks Blvd. will close Friday evening for a water main project. (AP (custom credit) | AP)

By Audrey Owsley

Published: Sep. 30, 2021 at 10:51 AM PDT

SPARKS, Nev. (KOLO) - Drivers are urged to avoid Sparks Boulevard starting Friday evening as it will be closed while Truckee Meadows Water Authority completes a new water main project.

Both directions will be closed from Disc Drive to Los Altos Boulevard starting at 8 p.m. on Oct. 1.

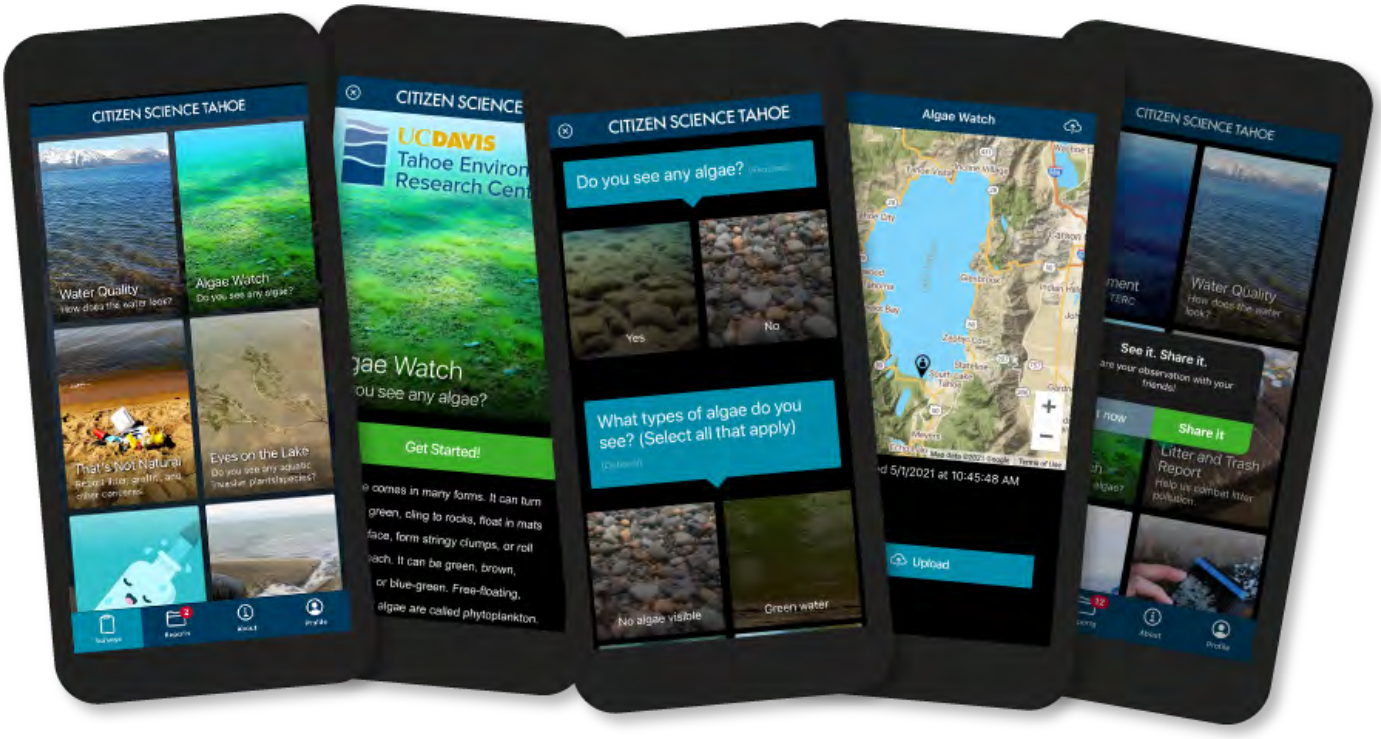
The closure is needed to install and connect a new water main to a recently installed booster pump station.

Additionally, the Disc Drive westbound lanes between Vista Boulevard and Sparks Boulevard will be closed to thru traffic on Saturday, Oct. 2 thru Oct. 3.

Detours will be in place during the entire project. Those needing to access to the area are asked to allow for extra travel time. The new water main project is expected to be completed on or before October 10 and will ensure drinking water reliability in the area.

Most Read

Washoe Co. approves grant to buy land, demolish homes in Lemmon Valley



Launch Citizen Science Tahoe

Help Protect Lake Tahoe – Become a Citizen Scientist

In less than five minutes, you can help protect Tahoe's beauty and health.

While you enjoy Tahoe's beaches, deep blue waters, or soaring mountains, share your observations through the Citizen Science Tahoe app to help scientists better understand and protect the Lake.

What you can report with the app

- **Water Quality**: How does the water look? When the water is not clear, it can point to localized erosion or other problems that may require more investigation.
- **Algae Watch**: Do you see any algae? Understanding the location and timing of algae growth can help us better control it

growth can help us better control it.

- **That's Not Natural**: Do you see litter, graffiti, or other human impacts where they shouldn't be? Did you pick up litter? Your reports will drive solutions for these "hot spots," including community cleanup events.
- **Eyes on the Lake**: Have you spotted aquatic invasive weeds? Report your sightings of these aquatic invaders to help prevent Tahoe's blue waters from turning a murky green.
- **Pipe Keepers**: Lake Tahoe is losing water clarity to stormwater pollution that runs off roads and urban areas. Protect Lake Tahoe by reporting polluted runoff.
- **Tahoe. Rain or Snow?**: Send us updates in real-time to share whether it is raining, snowing, or a wintry-mix.
- **Stories in the Snow**: Share your snow crystal images.
- **Drink Tahoe Tap Where?**: Find or report a water fill station.

See it – share it – make a difference

With online platforms, citizen scientist volunteers can collect and share important data about their surrounding environment. You can help researchers by taking a few minutes to report what you see around the lake – whether it's an algal bloom, cloudy water, invasive species, or litter on the beach. Science needs both sides of the story, so users are encouraged to report both the positive and negative things they see.

How it works

Using the Citizen Science Tahoe app, you can submit observations along with your photos and comments. Each report automatically captures where and when the observation was submitted, with options to submit anonymously.

The Citizen Science Tahoe App is available for Apple and Android phones. Users do not need to utilize their cellular data and can wait to upload images when connected to Wi-Fi. This makes the app easy to use in even the most remote locations!

Instructions available here.

Support available here.

Why it helps

Data from various locations around the lake (spatial data) and from multiple dates throughout the year (temporal data) helps scientists to better understand the nearshore environment – the location where most visitors see the lake. The observational data collected by citizen scientists

will be used by researchers to better understand conditions around the lake and to compare observations with sensor readings.

Core partners

UC Davis Tahoe Environmental Research Center (TERC) developed the first version of the Citizen Science Tahoe app in 2015 to compare the results of citizen science observations of the Lake's nearshore with the real-time nearshore monitoring network. This early version of the app was developed using grant funding from the Institute of Museum and Library Services. The League to Save Lake Tahoe (Keep Tahoe Blue) joined UC Davis TERC shortly after, and Desert Research Institute (DRI) joined in 2017 to expand the project and provide a fun and easy way for Tahoe-lovers to share observations about the natural environment at Tahoe to inform research and advocacy. These core partners create engaging surveys on important environmental issues facing Lake Tahoe and collaborate regularly to update and improve features on the app, compare data, and share interesting outcomes from the observations.

Participating members

Citizen Science Tahoe participating members bring a unique set of skills and perspectives to the team that improve the app for everyone. They contribute their expertise and passion for the Tahoe environment as well as expanded outreach to get more people involved and more data and observations in the hands of researchers and environmental advocates. Learn more about our participating members below. Together our community grows. The latest participating members to join in the Citizen Science Tahoe project include Clean Up the Lake , Tahoe Fund, and Tahoe Water Suppliers Association.

reno gazette journal

VOICES | Opinion *This piece expresses the views of its author(s), separate from those of this publication.*

City needs to involve community in stormwater utility fee proposal | Jerry Wager

Jerry Wager

Published 5:00 p.m. PT Oct. 1, 2021 | **Updated 9:27 a.m. PT Oct. 13, 2021**

This opinion column was submitted by Jerry Wager, a resident of South Reno who lives on Steamboat Ditch.

Reno's proposed stormwater utility fee raises so many issues, it's amazing that it has received so little public attention. Since it will cost homeowners between $60 and $100 a year, and larger land uses potentially thousands per year. I wondered how much public participation went into developing the proposal — apparently very little. In the city's recent presentations, the public is given a few minutes to provide comments with no real indication they will be taken seriously. Were homeowners, HOAs, industries, nonprofits, shopping centers, etc., involved in developing the proposal? If so, the city's spokespersons certainly didn't indicate that. That issue alone should disqualify the fee from adoption.

As presented, the program is filled with gimmicks to reduce the costs to pretty much every entity except homeowners. Several classes of land use that contribute large amounts of stormwater because of the size of buildings and parking areas are being offered a 30-50% discount on their bills if they install "stormwater quality treatment and flood control features." In response to questions as to whether the city would even have the staff to review the thousands of anticipated requests for fee reductions, Reno spokespersons indicated it wouldn't be a problem. If you believe that, there's a bridge downtown I'll sell you. As these "discounts" are handed out, the program's financial burden will fall increasingly on residential homeowners. Such discounts aren't necessarily bad since they encourage private businesses and large land uses to install stormwater detention and other practices. Nevertheless, it would be good to set a three- to five-year time limit; thereafter, fees should increase to their maximum unless the entity submitted a renewal application, ensuring new site inspections to ensure practices have been installed and maintained.

Another issue with the city's program is that it almost ignores management practices outside of concrete and pipes whose only purpose is to move stormwater as fast as possible. I'm talking about "green infrastructure" practices to detain stormwater in swales, detention basins and permeable pavements to reduce flood levels, recharge ground water, enhance wildlife and trap pollutants, keeping them out of the river and Pyramid Lake. With the exception of increased street sweeping and drain maintenance, the city's proposal neglects these critical win-win options.

Reno's spokespersons were also a little shy about addressing what happens down the road in terms of "environmental compliance." Reno, Sparks and Washoe County stormwater outfalls (including ditches) to the Truckee River are required to have permits limiting the amounts of pollutants discharged to the river. We are very fortunate to have a river flowing through our area that is relatively free of serious pollution sources. That said, the primary source of pollution is, of course, stormwater. It carries sediment, nutrients, pesticides, lead, disease-causing bacteria and a variety of other nasties. The 2020 Truckee Meadows Stormwater Monitoring Report indicates numerous violations associated with nitrogen, phosphorus, dissolved solids and E. coli (bacteria) associated with many of the ditches and other outfalls to the river. Although death and taxes are a certainty, another is that environmental regulations and pollutant criteria will stiffen in the future. The Truckee River's high quality designation by state and federal authorities requires very high levels of treatment for discharges. Homeowners and every other entity paying the new fee can expect to see substantial increases in the years ahead.

Let's not neglect the potential impact of climate change on the cost of this program. When our surrounding watersheds are blackened by fire, destroying soil structure and the water-holding ability of vegetation; and the snowpack shrinks, runoff rates and flood potential will increase. In response to California wildfires, Rep. Mark Amoedi recently stated, "That's what happens (huge fires) if you don't starting looking at your resource like it's infrastructure and maintain it." Any new stormwater program, or tax, needs to look at the whole system, not just flood management in urbanized areas.

Lastly, this program needs oversight. The city's actions to past flooding haven't exactly been stellar, as several residents of Ward 1 and Lemmon Valley might attest. Reno's shortsighted effort to increase funding for stormwater desperately needs to go back to the drawing board, hopefully including the community in its formulation.

Jerry Wager is a resident of South Reno who lives on Steamboat Ditch.

Have your say: How to submit an opinion column or letter to the editor

Ask Joe: who approved water tank in Washoe Valley and who uses the water?

by Joe Hart
Tuesday, October 5th 2021

water tank.jpg

Reno, NEV — From the Ask Joe file we're tackling a question about water use and storage.

One of our viewers, Jean, wrote in pointing out there's a large water tank on the hill to the west of Little Washoe Lake. She wants to know who approved that storage tank and who is using it? She also wants to know, could that tank have anything to do with Little Washoe Lake drying up?

57° 60° 67°

That tank is located on the hillside above Little Washoe Lake and it's locked up behind a chain link and barbed wire fence off of Joy Lake Road. It's a pretty decent size, 350-thousand gallons according to Truckee Meadows Water Authority. So who approved it and and who is using the water?

I checked with Andy Gephardt over at TMWA. That water tank is called the Old Washoe Estates "1" Tank. It was built back in the 1990's and it provides storage and water for the Old Washoe Estates community down below. The tank is fed by a couple of groundwater wells and serves about 50 to 60 homes in that neighborhood.

The tank became part of TMWA when the agency merged with Washoe County Water Systems in 2015. Again that tank holds 350-thousand gallons which is small by TMWA's standards.

Finally, Gephardt says the tank has nothing to do with Little Washoe Lake.

We're still looking into what caused Little Washoe Lake to dry up by the way. NDOW, the Nevada Department of Wildlife, still won't say what the plan is moving forward after the lake dried up in July. But at least you now know what it is used for and that it's not connected to Little Washoe in any way.

Thanks to our viewer Jean for sending in that question and to Andy Gephardt over at TMWA for getting back to us with some answers about the situation. Remember, if you have questions you'd like to ask, send me an email at jhart@mynews4.com or reach out on Facebook at Joe Hart KRNV and I'll do my best to track down the answers you are looking for.

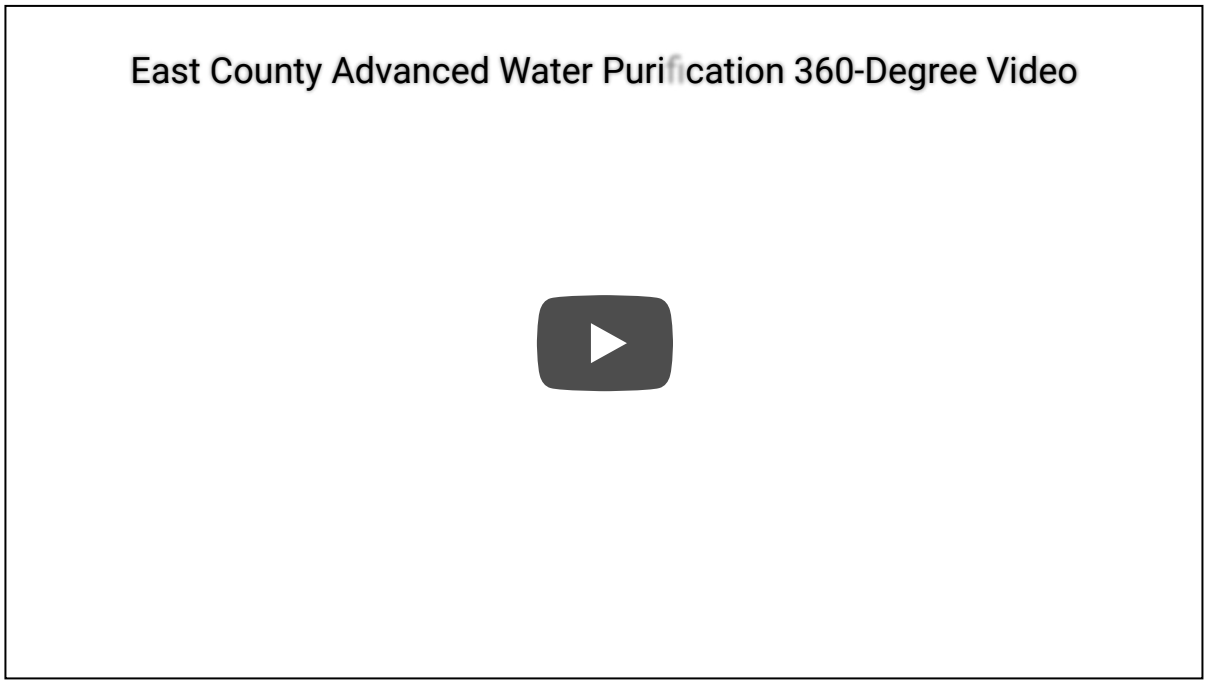
Loading ...

TIMES of SAN DIEGO

TECH

East County Advanced Water Purification Program Releases Virtual Reality Video

by **Elizabeth Ireland**
1 week ago



The East County Advanced Water Purification program unveiled a 360-degree virtual reality tour video Monday, allowing viewers to virtually view the program's facilities

Locations include the Ray Stoyer Water Recycling Facility, the East County AWP Demonstration Facility and Lake Jennings.

Viewers with a virtual reality headset for cell phones can take the engagement one step further by "stepping into" the video. Program representatives will also begin scheduling opportunities for community groups, schools and scouts to view the video using program-provided virtual reality goggles starting this month.

"Bringing this fun, easy to understand and immersive tour to East County's water and wastewater customers is an important and unique educational resource," said Kyle Swanson, director of the East County AWP. "Prior to the COVID-19 pandemic, we averaged more than 1,000 people annually touring our facility, many of whom were eager students wanting to learn about this important water resource."

"This virtual tour helps to re ll the learning need and will also be helpful while the East County AWP progresses towards the construction phase," Swanson said.

Scheduled to be complete in 2025, the program is a partnership between four agencies: Padre Dam Municipal Water District, county of San Diego, city of El Cajon and the Helix Water District.

The program is intended to use four advanced water puri cation steps to produce water that is near-distilled in quality. After the advanced water puri cation process, the puri ed water will be blended with water in Lake Jennings and treated again at the R.M. Levy water treatment plant before being distributed as drinking water.

To watch the 360-degree virtual reality video and learn more about the program, go to **www.eastcountyawp.com/177/Videos**.

City News Service contributed to this article.

Great Basin Water Network Showcase of a Drought Year Water Tour Via Photos, Maps and Graphs

By **Kyle Roerink** - October 5, 2021

Little Washoe Lake - image: courtesy of Kyle Roerink.

Opinion

With Hoover Dam and Southern Nevada in the backdrop, the water-related headlines this summer are largely focusing on the Colorado River and cities like Las Vegas. However, the declines in flows and reservoir elevations are not just a trend in the southern regions of the Silver State. Western Nevada is in extreme drought conditions.

The diminishing flows on river systems and crashing levels at reservoirs are not endemic to the southwest. The waterways that serve the region –– The Truckee, Carson, and Walker Rivers –– are essential for urban and rural communities alike. And they are not in good shape this year.

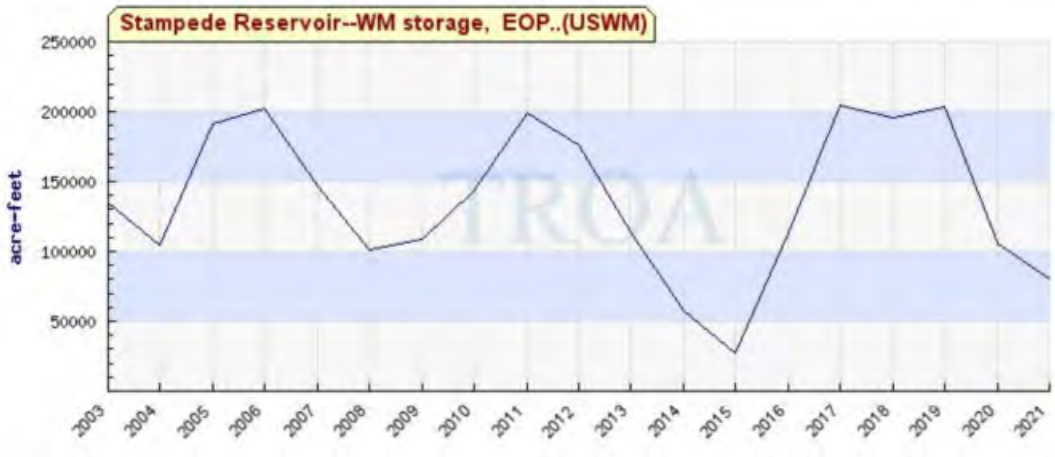
Recently I hopped in a car with some friends and took a drive to document what's happening on the ground. As the following photos and government data demonstrate, the impacts are salient. The juxtaposition of satellite imagery, flow data and photos help paint the picture that this year's drought is not one that will be fixed with one big winter. Instead, we have to consider how we can conservatively move forward. If we think that we can continue to do business as usual, we are only fooling ourselves.

Stampede Reservoir

In the past three years, stored water at Stampede has dropped by more than 39 billion gallons. The Stampede Dam captures the Little Truckee River and purportedly serves as an important water supply necessary for threatened and endangered fish species like the cui-ui, an important fish for Indigenous communities downstream at Pyramid Lake and a barometer of the Tahoe-Truckee-Pyramid system's overall health.

The construction of Derby Dam nearly drove the fish to extinction, and, despite water augmentation infrastructure like the reservoir, the federal government still lists the fish as endangered. As the graph below suggests, the driest period in the last two decades at Stampede Reservoir was in 2015. But this year doesn't have us too far off with a few likely dry months to go until 2022.

Stampede Reservoir – image: courtesy of Kyle Roerink



Stampede Reservoir storage – image: courtesy of Kyle Roerink

Derby Dam

Derby Dam diverts Truckee River water to Lahontan Reservoir. More than 70 percent of Lahontan's water this year came from the Truckee River. The dam is essential for agricultural communities in Western Nevada. It has also caused longstanding harm to water levels at Pyramid Lake along with the wildlife and people who live there (Cui-ui and Lahontan Cutthroat Trout).

As a spate of proposals upstream in Reno to build more sprawling communities that will be dependent on the Truckee, this visual is one to keep in mind. This photo is of a channel off the main stem of the river. Right now, no water flows through it.

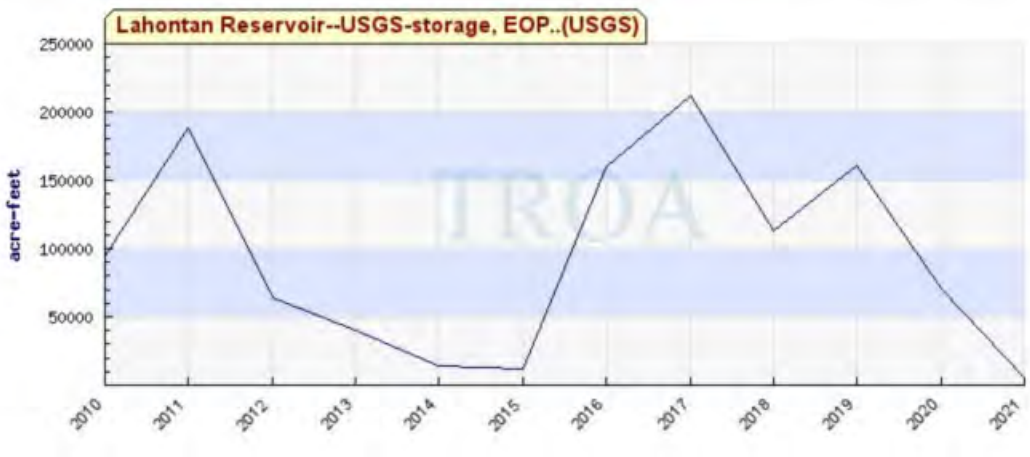
Derby Dam – image: courtesy of Kyle Roerink

Image: courtesy of Kyle Roerink

Lahontan Reservoir

It is the lifeblood of the ag community in places like Fallon and a popular recreation area for many in the Western Nevada region. The Truckee amounted for about 70 percent of the reservoir this year. For all intents and purposes, it is now empty. A very small amount of water remains.

When visiting the reservoir, we stood on sand where a Google map depicts water. In early 2019, the reservoir held more than 239,000 acre-feet. As of mid-September 2021, it held less than 5,700 acre-feet. Saying there's water in Lahontan right now is like saying there's money in a savings account with $1 in it.

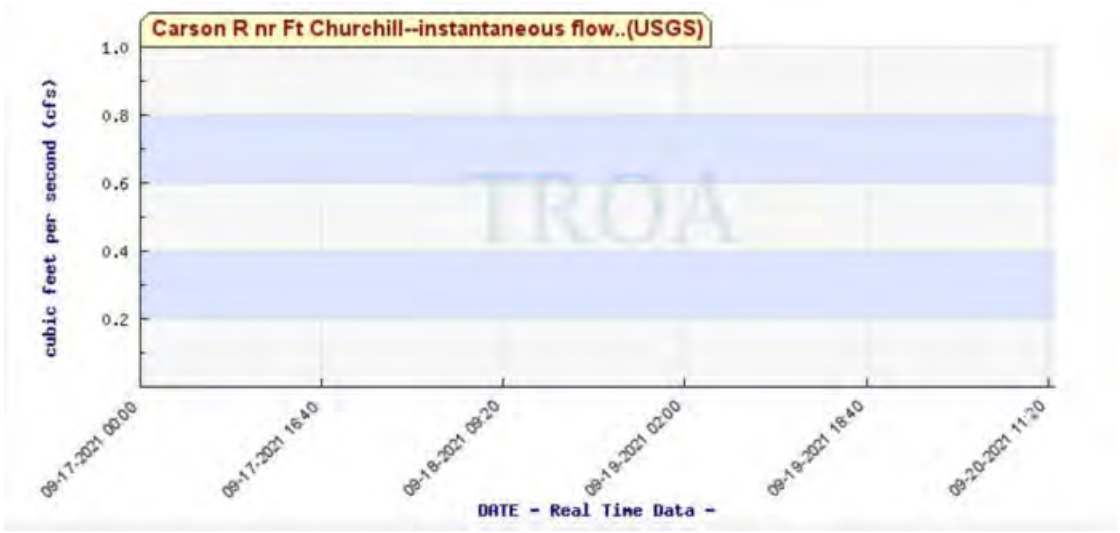


Lahontan Reservoir – USGS storage – image: courtesy of Kyle Roerink

Lahontan Reservoir – Image: courtesy of Kyle Roerink

Carson River at Fort Churchill

The Carson River's downstream flows are non-existent. The river is an important feeder to Lahontan Reservoir and a significant water source for rural communities, wildlife and plant life. The graph below isn't missing data. It is a graph of instantaneous flow. As the photo demonstrates, there is no flow.



Carson River near Churchill, instantaneous flow – image: courtesy of Kyle Roerink.

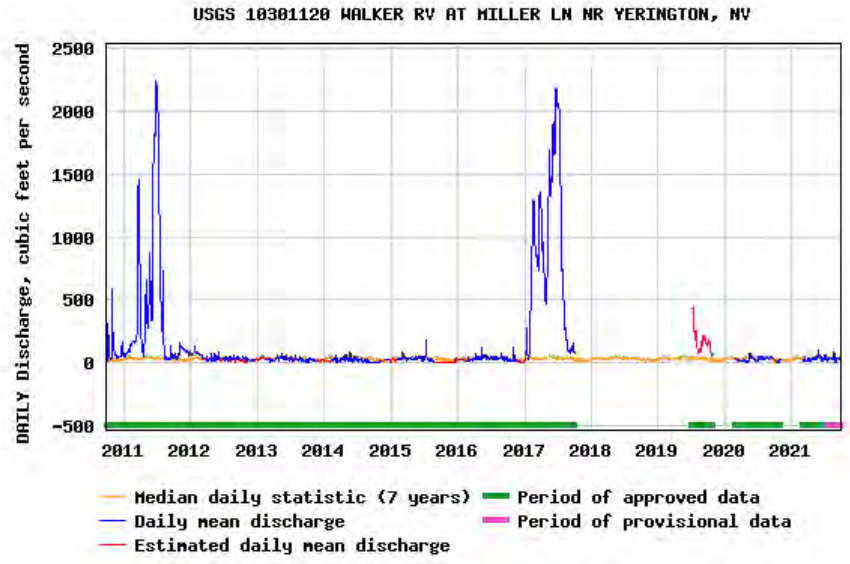
Carson River at Ft. Churchill – image: courtesy of Kyle Roerink.

Walker River at Mason Valley Wildlife Management Area (Upstream of Yerington)

There was some water in the Walker River, another waterway with significant ties to Indigenous Communities and agricultural producers in Western Nevada. But it is a far cry from the big water years of 2011 and 2012.

As the USGS graph shows, we are not terribly far away from the low in 2014 when flows on the river above Yerington were at 0 cfs. The USGS estimates the river is flowing around 30 cfs per day (13,464 gallons per minute) – a far cry from the 159 cfs in 2017.

Walker River at Mason Valley Wildlife Mgmt. Area, upstream of Yerington NV – image: courtesy of Kyle Roerink.



Create presentation-quality graph.

Daily discharge, cubic feet per second -- statistics for Sep 26 based on 9 water years of record more

Min (2014)	25th percen-tile	Median	Mean	75th percen-tile	Max (2017)
0.00	12	28	54	97	159

Image: courtesy of Kyle Roerink.

Little Washoe Lake

We ended our tour at Little Washoe Lake, a manmade reservoir that was known for its fishing (imported carp, largemouth bass, and catfish). Today it is empty. There is no need to showcase any data. The system is dead this year – like the remains of the carp.

A man-made diversion is delivering less water to the lake, which is a result of drought and infrastructure-related issues with the diversion itself.

With that said, Little Washoe Lake is a reminder that the man-made and natural water systems we once relied on are not indestructible.

Little Washoe Lake – image: courtesy of Kyle Roerink.

Kyle Roerink writes columns on natural resource issues throughout Nevada and the West. Kyle is the executive director of the Great Basin Water Network. He lives in Reno. Support his writing.

The opinions expressed above are not necessarily those of the Sierra Nevada Ally. Our newsroom remains entirely independent of our opinion page. Published opinions further public conversation to fulfill our civic responsibility to challenge authority, act independently of corporate or political influence, and invite dissent.

Reno seeks $440 million for ageing storm water system

By Noah Bond
Published: Oct. 5, 2021 at 9:44 PM PDT

RENO, Nev. (KOLO) - City of Reno Engineers say they want to prevent a disaster before one can happen.

Director of Utility Services Trina Magoon says the City has hundreds of overdue projects and if they're left unchecked could lead to water flooding in streets, neighborhoods, and homes.

A KOLO 8 News Now investigation reveals three main areas of concern and this report will highlight them.

We started our search in south Reno at Dry Creek on West Huffaker Lane where an undersized box culvert directs water under the road. Its small size forced water to backwash under the concrete structure and erode the soil below.

In 2006, a hollow space about three feet deep and seven feet back from the culvert's front face was discovered.

In 2013, cracks in the culvert walls were discovered and in July 2021 the problem could no longer be ignored as the hollow space beneath the culvert stretched back 15 feet from the culvert's face.

"Potentially it could collapse the sidewalk and road above it," said Director of Utility Services for the City of Reno, Trina Magoon.
City leaders took action and had the open space filled with an injectable foundation foam to provide support until a larger culvert is put in place. Our investigation led us to a second problem at Virginia Lake where periodic water flow is leading to algae blooms.
"The cause of the algea blooms really has to do with the lack of movement through the lake," Magoon said.

The proposed fix is to install an underwater diffuser to protect the fish and control the odor and a shoreline wetland filter system to reduce high nutrient levels from entering the lake and feeding the algae in the water.

A third problem was discovered at 4th Street and Stoker Avenue during a July 26, 2021 microburst when water flooded the area, but a project to correct this problem was recently completed.

The City needs to improve the water from this area to a proper drainage site.

These are just a few of hundreds of projects that need to be repaired or constructed to control storm water flow across the City of Reno. A 2019 study reveals Reno needs $440 million in stormwater upgrades and repairs over the next 20 years, but there is no stormwater utility fee.

City leaders take $3.50 from the sewer water fee Reno citizens pay each month for these projects.

Added up, that totals $105 million leaving City leaders looking for the other $335 million.

The proposal is to create a new line item on the sewer bill called the "Stormwater User Fee".

It would be between $8.50 and $10.50.

This would pay for all the projects. KOLO 8 Evening Anchor Noah Bond asked Magoon why she can't find the money somewhere else in the budget.

"Much of this infrastructure already exists. It's aging. We need to maintain it and we do not have enough funding sources to maintain what we do have," she responded.

Reno's City Council will make the final decision on this fee increase.

The City of Reno is currently seeking public input on the potential creation of a new stormwater utility. A stormwater utility collects a fee from property owners to maintain or improve stormwater and flood reduction infrastructure. Residents will have another opportunity to get information and provide feedback during a public virtual meeting on Tuesday, October 12, 2021 from noon to 1:30 p.m. Registration details will be available at Reno.gov/StormwaterUtility.

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Travel // Tahoe

Snow in Tahoe, Yosemite forecasts as 'significant changes' coming to weather in the Sierra

Amy Graff, SFGATE

Updated: Oct. 6, 2021 2:53 p.m.

FILE - Palisades Tahoe covered in snow last winter. The ski resort could see a dusting at higher elevations in coming days.
Ben Arnst / Alpine Meadows Scenics

"Significant changes" are coming to the weather in the Sierra Nevada mountain range straddling California and Nevada Thursday and Friday, the National Weather Service said Wednesday. The Tahoe Basin and Yosemite are likely to get snow at higher elevations.

A cold front approaching the region is expected to push down temperatures and deliver snow. While it's likely to be only a dusting, this will be the first significant snow of the season.

"If you're in Tahoe you may see some snow flakes dusting those granite peaks," said Scott Rowe, a meteorologist with the weather service's Sacramento office. "Snow will be at 7,500 to 8,000 feet. For folks at lake level, it will be hard to get much of anything."

Rowe said there will likely be more snow in the Yosemite area than in the Tahoe area. The snow will accumulate at peaks of 10,000 to 13,000 feet.

Yosemite National Park said it's temporarily closing Tioga Road, the continuation of Highway 120 through the park, ahead of the storm on Thursday at 5 p.m.

"We will evaluate conditions over the weekend and open the road as soon as it's safe," the park said.

Caltrans said Sonora Pass (Highway 108) will close at noon on Thursday and Monitor Pass (Highway 89) will close at 2 p.m. Thursday.

Rowe said roadways in the Tahoe area are unlikely to be impacted by snow.

Chilly temperatures are in the forecast with afternoon highs on Friday expected to hit the mid-to-high 40s in Truckee, South Lake Tahoe and Yosemite; overnight lows will drop into the 20s.

Afternoon highs will increase into the 60s over the weekend, but overnight lows across the Sierra will remain in the 20s through the weekend.

7. **After celebrating too early, Dodgers' Gavin Lux flies out off Giants' Camilo Doval to end Game 3**

A second colder system is expected to sweep the mountains Monday and Tuesday and overnight lows in Sierra towns could dip in the teens. More snow is possible Monday.

"Widespread hard freezes are looking highly probable (80-90% chance) by the morning of Tuesday, October 12," the weather service's Reno office said in its forecast. "It may be time to say our final goodbyes to what is left of our gardens."

Written By
Amy Graff

Reach Amy on

Amy Graff is the news editor for SFGATE. She's a Bay Area native and got her start in news at the Daily Californian newspaper at UC Berkeley where she majored in English literature. She has been with SFGATE for 12 years. You can email her at agraff@sfgate.com.

Water: More precious than gold

Reclamation Act makes the desert bloom for ag producers

() The Lahontan Reservoir is slightly above 6,000 acre-feet of water.
Photo by Steve Ranson (/staff/steve-ranson/).

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

Wednesday, October 6, 2021 (/news/2021/oct/06/water-more-precious-gold/)

To ranchers and farmers in the Lahontan Valley, water is more precious than gold in providing an agricultural lifeline to the thousands of people who call this area home.

Rusty Jardine, general manager and legal counsel for the Truckee-Carson Irrigation District in Fallon, presented an overview of the Newlands Project and how reclamation and the laws that govern its operation have made Fallon the Oasis of Nevada. Jardine presented the third lecture last week from the Churchill County Museum's seven-part series on water.

The fourth lecture held Tuesday focused on the Derby Dam fish screens, and the fifth lecture on Oct. 12 features two speakers. Darcy Phillips, executive director of the River Wranglers, will discuss "In and Out of the Classroom: Learning About the Carson River Watershed" with

Blockchains withdraws plan for Innovation Zone legislation, citing lack of support from state, governor

Daniel Rothberg October 7th, 2021 at 4:16 PM Economy State Government

A conference room at an office for Blockchains LLC in the Tahoe Reno Industrial Center. (David Calvert/The Nevada Independent).

To The Article

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Blockchains, Inc. is withdrawing its controversial request to effectively create a new county in Northern Nevada, part of its plan to create a self-governing "Innovation Zone," according to a letter the company sent to Gov. Steve Sisolak last week.

The company, which hoped to build a "smart city" to serve as an incubator for how blockchain technology could be used in a physical setting, stated in the letter that it received little support from most groups and policymakers, with the exception of labor unions. The letter, obtained by *The Nevada Independent*, was critical of Sisolak for not doing more to support the project after previously championing the proposal.

Blockchains owns about 67,000 acres of land in and around the Tahoe Reno Industrial Center in Storey County east of Reno. Its proposal, pending approval by lawmakers, would have allowed the company to break away from the existing Storey County government and form a new type of government that would be known as an "Innovation Zone."

"Despite our best efforts, this concept has not gained enough traction from the State to warrant further debate," Blockchains CEO Jeff Berns wrote in the letter. "One of the biggest problems the proposed legislation encountered was it appeared to have no champion."

Soon after the proposal was unveiled, critics raised numerous questions and argued the proposal would allow for the creation of company towns. Storey County raised a number of logistical and fiscal concerns. Its current population is about 4,000 people, and plans for the smart city envisioned a community of about 36,000 residents over time. Blockchains also faced a number of concerns related to how it **would supply water to new construction.**

In the letter, Berns directed his disappointment toward Sisolak, who touted the proposal in his State of the State address before the legislative session earlier this year. The company gave $10,000 to Sisolak's 2018 campaign and $50,000 to a political action committee affiliated with the governor.

"Given the personal and public assurances you made regarding your commitment to this project, you can imagine how greatly disappointed we are in the effort put forth," Berns wrote.

Although Sisolak had **debuted** the "Innovation Zone" concept during his biennial State of the State address and asked the Legislature to consider it, he **backed away** from the proposal this spring after failing to convince skeptical lawmakers to support the idea. At the time, Sisolak said he wanted to make

sure the proposal had enough time to be vetted outside of the "limitations" of the 120-day legislative session.

As a result, lawmakers passed legislation to instead study the concept, forming a special committee that has met twice to discuss the creation of Innovation Zones since August.

Sisolak, during a Thursday press conference, said he was "disappointed" that Berns and Blockchains decided to "go in a different direction."

"It was a proposal that was being vetted through the committee that was formed, but Blockchains is going to make their decision and the state — we talked about it during the last session and we're going to keep moving forward," Sisolak said. "We're continuing our quest for economic diversification."

According to the letter, Berns said the company will no longer pursue the construction of a mixed-use city in Painted Rock, the area it originally planned to develop. The company, Berns said, still plans to build a technology park "where like-minded companies can come together in a sandbox environment." To date, Berns said the company has spent more than $300 million in Nevada. The company has purchased land and water rights. It also maintains its headquarters in the state.

"Blockchains was fully prepared to double down on this commitment through its smart city project in an Innovation Zone, but the State has not put its full support behind the project," he wrote. "As we have always maintained, we cannot make the massive investment on our part, bring in other investors, or bring in the necessary partners to develop the project without that."

Jacob Solis and Megan Messerly contributed to this report.

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- Jeff Berns - $375,240
- Blockchains - $35,000
- Steve Sisolak - $3,200

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EPA Publishes its 2021 Climate Adaptation Action Plan

A new climate adaptation web page will also serve as a hub for climate resources

October 7, 2021

Contact Information
EPA Press Office (press@epa.gov)

WASHINGTON (Oct. 7, 2021) – Today, the U.S. Environmental Protection Agency (EPA) released its Climate Adaptation Action Plan <https://epa.gov/climate-adaptation/climate-adaptation-plan>, which describes steps EPA will take to address the impacts of climate change on communities across the Nation, as part of President Joe Biden's whole-of-government approach to confronting the climate crisis. EPA also launched a new Climate Adaptation web page <https://epa.gov/climate-adaptation/> that will act as a hub for climate adaptation resources from across EPA.

"This plan is an integral part of EPA's commitment to bold and decisive action to help the country anticipate, prepare for, adapt to, and recover from the devastating impacts of climate change," said **EPA Administrator Michael S. Regan.** "From fires in the West,

to widespread drought, and the wide path of destruction left by Hurricane Ida from Louisiana to New York, recent and current events show the impact our changing climate is having on our lives and livelihoods."

Pursuant to President Biden's Executive Order 14008 <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/>, EPA's approach to tackling the climate crisis is an important step in mitigating the effects of climate change. The 2021 Climate Adaptation Action Plan lays out several priorities for the agency to implement in the coming months and years, including:

- Integrating climate adaptation and consideration of climate impacts into EPA programs, policies, rulemaking processes, and enforcement activities;
- Consulting and partnering with Tribes; state, local, and territorial governments, and other federal agencies; community groups; scientists and adaptation experts; businesses; and other stakeholders to increase the resilience of the nation, with a particular focus on advancing environmental justice; and
- Implementing measures to protect the agency's workforce, facilities, critical infrastructure, supply chains, and procurement processes from the risks posed by climate change.

The Biden-Harris Administration has set the most ambitious climate change mitigation and adaptation goals in U.S. history, and EPA will play a central role in delivering on those commitments. EPA has already taken action to reduce climate pollution and will continue to implement the agenda in the months to come. At the same time, EPA will use its authorities and resources to help communities prepare for the serious climate impacts that are already underway.

Climate disruption often hits overburdened communities and people the hardest. As EPA implements this action plan, it will consider the disproportionate impacts of climate change on those who are already vulnerable, including low-income communities and communities of color, children, the elderly, Tribes, and Indigenous people. EPA will engage with underserved and vulnerable communities to ensure that our adaptation plans follow the principles of environmental justice and equity.

Anticipating and recovering from the impacts of climate change will require all levels of government to work together. EPA's climate adaptation strategies will be informed by the best available science and will deliver co-benefits for mitigation of GHG and other

pollution, public health, economic growth and job creation, national security, and environmental justice—all of which will be central to building a more resilient future.

In addition to these plans, President Biden's Build Back Better Agenda and the Bipartisan Infrastructure Deal <https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/02/updated-fact-sheet-bipartisan-infrastructure-investment-and-jobs-act/> include bold, historic, and transformational investments to strengthen our nation's resilience to climate change and extreme weather events, including upgrading power infrastructure, rebuilding America's roads and bridges, and more.

The White House Council on Environmental Quality (CEQ) and Office of Management and Budget seek public input on all agency climate adaptation plans. Members of the public may submit comments via the docket at https://www.regulations.gov/ <https://www.regulations.gov/> (Docket ID: CEQ–2021–0003) until Nov. 6, 2021. CEQ also will hold a virtual convening this fall with national organizations who have expertise in climate adaptation and resilience or have expressed interest in agency plans.

For more information on the Climate Adaptation Action Plan, visit: https://www.epa.gov/climate-adaptation/climate-adaptation-plan <https://epa.gov/climate-adaptation/climate-adaptation-plan>

For more information on Executive Order 14008, visit: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/ <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/>

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Press Releases

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Interior Department Announces $348 Million for Conservation Projects in Nevada and California

Funding for 62 projects is made available through the sale of public lands

10/7/2021
Last edited 10/7/2021

Date: Thusday, October 7, 2021
Contact: Interior_Press@ios.doi.gov

WASHINGTON — The Department of the Interior announced today it will commit more than $348 million for 62 projects throughout Nevada and the California side of the Lake Tahoe Basin dedicated to recreation improvement, wildlife habitat conservation, hazardous fuels reduction, wildfire prevention, and other purposes. Funding for the projects was generated through the sale of public lands under the Southern Nevada Public Land Management Act (SNPLMA).

As Nevada and California battle historic wildfires, including around the Lake Tahoe Basin, this funding includes over $50 million in investments for 15 projects that will address hazardous fuels reduction and wildfire prevention.

“Since 1998, sales of public land within the Las Vegas Valley have been funding projects that benefit communities and improve the overall quality of life for residents and visitors. This program makes a significant investment in supporting jobs and local economies throughout Nevada and the Lake Tahoe Basin,” said **Secretary Deb Haaland**. “These funds will improve recreation opportunities in rural and low-income communities, and contribute to the Biden-Harris administration’s *America the Beautiful* initiative’s goal to conserve at least 30 percent each of our lands and waters by the year 2030.”

Since enactment, SNPLMA has generated almost $4 billion through 18 rounds for projects that benefit public places in Nevada, the California side of the Lake Tahoe Basin, and the portion of Lake Mead National Recreation Area in Arizona. Expenditures include development of parks, trails, and natural areas; capital improvements; conservation initiatives; multi-species habitat conservation plans; acquisition of environmentally sensitive land; hazardous fuels reduction projects in the Spring Mountains, Carson Range and at Lake Tahoe; landscape restoration projects in eastern Nevada; and environmental restoration at Lake Tahoe. Additionally, five percent of the revenue generated under SNPLMA goes to the State of Nevada General Education Fund and 10 percent goes to the Southern Nevada Water Authority.

The following is a list of funding approval by category for Round 18:

Expenditure Category	Parks, Trails and Natural Areas
Total Funding	$128,851,488
Expenditure Category	Capital Improvements
Total Funding	$117,442,106
Expenditure Category	Conservation Initiatives

Total Funding	$17,207,549

Expenditure Category	Environmentally Sensitive Land Acquisitions
Total Funding	$323,385

Expenditure Category	Hazardous Fuels Reduction and Wildfire Prevention
Total Funding	$50,686,549

Expenditure Category	Eastern Nevada Landscape Restoration Project
Total Funding	$15,986,773

Expenditure Category	Multi-species Habitat Conservation Plan
Total Funding	$7,641,000

Expenditure Category	Category Totals
Total Funding	$338,138,850

Expenditure Category	Special Account Reserve

Total Funding	$10,000,000

Expenditure Category	Total Round 17 Recommendation
Total Funding	$348,138,850

For more information about SNPLMA, including individual projects, please visit BLM's SNPLMA website.

NEWS

Litter, Homelessness Remain Issues Along The Truckee River

Trash is littering the Truckee River and its banks throughout the downtown Reno area.

Thursday, October 7th 2021, 4:26 PM PDT
Updated: Thursday, October 7th 2021, 6:29 PM PDT

By **Paul Nelson**

Kathleen Kirkland lives in Carson City. When two of her friends from California came to visit, she decided to show them downtown Reno. The Riverwalk was not what she expected.

"There were people just hanging out and garbage laying all over," Kirkland said. "It was smelly. It was dirty."

She says the downtown area around the river is filled with litter, and some of the people were intimidating. Needless to say, her friends were not impressed with their visit.

"It's kind of threatening for people," Kirkland said. "It can be, and what they walked away with was that Reno was dirty."

That is not the type of image Reno residents want visitors to have of the Biggest Little City.

"To hear that people are having such disappointing experiences coming to our river is honestly heart-breaking," Sophie Butler, Community Programs Manager for Keep Truckee Meadows Beautiful said. "A lot of times, they're coming to downtown and they're going to be walking along our river and we want to make sure that they're walking away with a positive view of our city and that they want to come back, they want to bring their friends here."

KTMB holds clean-up events to prevent the build-up of litter along the banks. It partners with the City of Reno to sites for those events. Kirkland's experience happened just two weeks after KTMB held a clean-up event in that same location. It removed 17 tons of trash but it had already started piling up again.

Just a few blocks downstream, the river is polluted with bicycle wheels, mattresses, frying pans and construction cones. Butler says she has seen it all.

"We joke a lot about how many shopping carts we find when we're out cleaning up," Butler said. "That's one of the largest and most frustrating things we find. We find tons of plastic, plastic everything in our river. We're finding shoes, we're finding clothing, we're finding sometimes in the bigger, open space areas, TVs and microwaves."

Some residents say the garbage is a result of the homeless encampments along the river. Some have tents set up on the banks and even in Wingfield Park. John and Robert Auers say despite the litter, the city is doing a better job of improving the homeless situation from downtown to Wells Avenue.

"This used to be solid homeless camp," Robert Auers said. "Everything east of downtown was just solid encampments and now there's still some but it's far, far fewer. You can tell that they're working hard."

The Auers say the amount of litter is still bad. It is visible from the walking path.

"It's certainly disappointing because it could be a very nice asset for the city of Reno," John Auers said. "It could be a nice connector between Reno and Sparks."

John Auers says homelessness is affecting downtown parks. His grandkids even came across a homeless man sleeping in a tube slide. He has seen them sleeping in the park restrooms.

"A lot of times on my walks, I'll have to use the restroom over at Barbara Bennett Park, which is a beautiful park but it's unusable at this point," John Auers said.

The Auers say they are sympathetic to the homeless population that camps along the river. They say better services and enforcement of ordinances could help the situation. Many homeless have mental illness or substance abuse.

"They need help," Robert Auers said. "It's a disease and we need to get them into shelters and places where they can get that help. Being out here, camping along the river or on the streets, they're not going to get that."

People can get groups together and volunteer to pick up trash any time they want, and not just during big events.

"You just let us know when and where and we'll provide all of the supplies and give you all of the information you need to make a really great impact on our river and on the Truckee Meadows," Butler said.

For more information on ways to help, head to https://www.ktmb.org/

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Reclamation develops big river system

Building of dams, recent fish screens enhance the Truckee River

() A view looking north shows a flowing Truckee River, the Derby Dam and newly completed fish screens in this 2020 photo.

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

Wednesday, October 13, 2021 (/news/2021/oct/13/reclamation-develops-big-river-system/)

During the past 120 years, the development of dams and other systems have enhanced the delivery of water to farmers as well as providing additional water to Pyramid Lake and its fisheries. Scott Schoenfeld, manager of the Operations and Maintenance Division for the Bureau of Reclamation in Reno, and Daniel Kaler of Farmers Conservation Alliance discussed the water system originating from Lake Tahoe to new fish screens at Derby Dam.

Darcy Phillips, executive director of the River Wranglers, presented information last Tuesday on the Carson River watershed, and Brenda Hunt, manager of the Watershed Program for the Carson Water Subconservancy District, also spoke on the watershed. The final presenter on Oct. 19 is Carl Lunderstadt, project leader of the Stillwater National Wildlife Refuge, U.S. Fish and

Policy could be key in dealing with the West's historic drought

Wyoming Public Radio | By Ivy Engel

Published October 8, 2021 at 3:55 PM MDT

Abbie Rowe National Park Service / Harry S. Truman Library & Museum

President Harry S. Truman at his desk in the Oval Office signing S. 790, an act granting the consent of the United States to the Upper Colorado River Basin Compact, as Interior Secretary Julius Krug and members of the Congressional delegations of Wyoming, Utah, Colorado, New Mexico, and Arizona look on. Secretary Krug is the man in the striped tie standing in front of the flag, behind President Truman. Arizona Senator and former Secretary of Agriculture Clinton Anderson is the man in the background directly behind President Truman, wearing glasses. The two men leaning on the back of Truman's chair are Senator Lester Hunt (left) and Senator Dennis Chavez (right). All others are unidentified.

The historic drought that the West is currently experiencing is changing how people think about water. There have been labor-intensive ideas to help solve or at least ease the drought. But what about potential water policy changes? Of the potential policy changes, there's one favored by economists: water markets.

"Economists love markets, of course, because it allows us to create value," said Jason Shogren, an economist and professor at the University of Wyoming (UW).

"It's just that water is so essential to everything, there's no substitute [for] it. That makes it almost a very inelastic demand," he said. "So, if you need water, you need water. We all need water. Right?"

According to Shogren, in a water market, people who own rights to water, like farmers, can buy more as needed, say, for example, if they're growing a really thirsty crop. Or, they can sell their right to the water to others who need it, like cities. But, Shogren added, it can be difficult to convince people that creating a water market is the right move because a lot of people view water as a basic right.

"We'll [economists] make the case for a water market saying it's just a commodity like anything else. It's not a fundamental sacred right to you," he said.

He said a market would create a fair "going rate" for an acre-foot of water without having to create restrictions on the people using it.

"What markets do well is ration things to people who value them more. But if you don't want to use markets to do the rationing, then you've got to put in quantity constraints," said Shogren.

The challenge is finding the right price.

"It becomes more difficult to think about prices for natural resources, like, what is the right price for a gallon of water?" he asked. "What is the right price for an ecosystem service? What's the right price to protect an endangered species that live in that water?"

Even if you could figure out a fair rate, you have to make sure you can get water to everyone who needs it, not just those who have a lot of money.

"So there's the classic trade-off between efficiency, which is making the economic pie as big as possible, and equity, who shares and what share do you get of that economic pie," Shogren said. "So markets themselves shouldn't be considered the king."

He said you have to take specic Èaction to make the market more equitable, maybe by creating something like subsidized low-income water. But then you have to make sure that's not abused.

"As long as you can prevent that, then you can be both equitable and you can allocate resources more efficiently," he added.

Shogren admits a market between states would be difficult to set up because laws and regulations over water ownership are different from state to state. But, water markets are already in small scale use in a couple of places and have been shown to be effective at distributing water.

But you can't have a water market if you don't have access to water to distribute. Especially in the west, where a majority of the precipitation falls during the winter as snow, capturing that moisture and saving it for later is really important. That's where reservoirs and dams come in. According to Dr. Tom Minckley, a professor at UW who studies water in the West, dams and reservoirs are basically water bank accounts.

"And they're put in for one of two reasons. Mainly for irrigation and flood control," he said. "Let's say you have a two or three-year-long drought, you can store water, distribute it, and still have production on the landscape when you want it."

According to him, dams and reservoirs are especially important during droughts. But, just like a bank account, you can't just keep making water withdrawals and not adding more to it.

"The problem that we've encountered is since around the year 2000, we've mostly been in water decit Èconditions," said Minckley. "Commonly we've called that a drought. And so we haven't been adding to that bank account of water."

And not only are these reservoirs being used for irrigation and drinking water, but the dams holding some of them in are producing hydropower. That means those reservoirs have to stay at a certain level to keep producing electricity, which leads to other reservoirs upstream having to be drained.

And to make it even more complicated, according to the Colorado River Compact, not all of a state's water stays in that state. The states in the upper river basin are contractually obligated to share a certain amount of their water between each other and with those in the lower basin. They use Lake Powell and Lake Mead to do that.

"And so at Lake Mead, that's kind of where the distribution of a lot of water happens [to] Arizona, [a] little bit to Nevada, and California," Minckley said. "So Lake Powell's our bank

account, and we're trying to, you know, put a couple coins in there, keep it up high enough, so that we can maintain our obligations downstream."

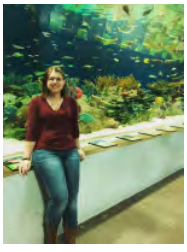
And according to Minckley, that compact was created in 1922, when the west was in an unusually wet period, with no thought to the droughts the west was known for, even at that time.

"We knew we were negotiating off of a false positive water flow. Yet, we still did it. And we've known for a long period of time that we were going to have a drought because we knew that they existed," he said. "Once we created the infrastructure of managing the river through the dam-building projects, from the 1930s up until about 1970, we started a clock that said that we need to come up with a new management strategy. But we've never acted on that yet. "

Minckley said that time is coming fast because the current version of the compact expires in a few years.

"And so now we're coming up on the new negotiation in 2026. But the conditions are changing faster than the people who are going to negotiate for those new conditions want to deal with," said Minckley. "That's my citizen's opinion."

Both Shogren and Minckley agree that as climate change makes droughts longer and more intense, there needs to be change. Whether that's in the form of a new treaty, water use restrictions, a water market, or even an infrastructure plan. But for the most part, they agree that the change will have to come as we just learn to live with and adapt to climate change and long, intense droughts.



University of Wyoming with a B.S. in biology with minors of journalism and business. She continues to spread her love of science, wildlife, and the outdoors with her stories. When she’s not writing for WPR, she enjoys baking, reading, playing with her dog, and caring for her many plants.

See stories by Ivy Engel

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GOVERNMENT

County commission to vote on grant funding for

By Jeri Chadwell | October 9, 2021

A report from Washoe County staff cites trash from people living unsheltered by the Truckee River as having an impact on the health of the region's primary water source. This camp was part of a cleanup in October 2020. Image: Lucia Starbuck / This Is Reno

The Washoe County Commission on Tuesday will consider approving grant money to continue funding the now one-year-old River Stewards Project, led by the local non-profit Karma Box Project.

According to a staff report from Dana Searcy, housing and homeless services manager for the count "Controlling the flow of human created trash/waste is critical to protect the health of the Truckee R especially in the urban Truckee River corridor."

The report cites trash "generated by unsheltered individuals living along the Truckee River" as havi "large impact on the health of the region's water source."

A Truckee River Fund grant in the amount of $219,164 has been awarded to Washoe County to help address the issue, according to the report. The county would provide an in-kind match of $77,874.2

The Truckee River Fund was established in 2004 by the Truckee Meadows Water Authority and is managed by the Community Foundation of Western Nevada (CFWN). Its purpose is " exclusively for projects that protect and enhance water quality or water resources of the Truckee River, or its watershed.

The River Stewards Project was launched in October 2020 with an initial CFWN grant, supporting government funds and the partnership the Karma Box Project.

According to Searcy's report, if the proposed grant funding is approved, Karma Box Project will continue to head up the project with up to $189,134 in funds over the course of the next year.

The remaining $30,030 will be used to pay for weekly pickup of sharps by local medical waste dispo contractor Rynocare. (Sharps, according to the Federal Drug Administration, include needles and syringes, lancets and "fingerstick" devices used for blood testing by those with diseases like diabetes and auto injectors like epinephrine and insulin pens.)

River cleanups will take place five days a week, and sharps will be collected from disposal units onc week. Karma Box Project will retain the responsibility for the cleaning, locking and unlocking of Portland Loo bathroom facilities daily.

In January, Karma Box Project Executive Director Grant Denton, who started the organization in 2 told This Is Reno that as much as 20 yards of waste was being removed from the Wells Avenue area along the river each week.

"When you prove they're the ones out there cleaning up our river, it changes perceptions."

According to the county report, between October 2020 and June 2021, nearly 8,000 bags of trash a

250 pounds of waste from sharps disposal units were collected from the river during 628 volunteer shifts.

The project also includes the building of a database of unsheltered individuals meant to help conne them to housing resources and, ultimately, reduce the number of people camping along the river.

According to the staff report, as of June 30, 2021, the River Stewards Project had added 247 individ into the database and helped 28 individuals leave camps on the river and enter into transitional housing.

Unsheltered individuals are incentivized to participate in the River Steward Project's efforts throug card giveaways, but they can also become a part of the project themselves.

Denton said he is excited to continue with the project for that reason.

"A lot of the folks that I've met down there actually work for me now," he said. "They started workin the gift cards and then ended up transitioning to actually being an employee of mine."

Denton said transitioning from volunteering with the project to working for it often has its benefits

"You have to look at what work does for people—being able to do something, you know, being able t have a platform to earn your way," he said. "You can also look at it as a stigma reduction program, t A lot of people have ideas about how our unsheltered population is. Then, when you prove they're th ones out there cleaning up our river, it changes perceptions."

If the new grant funding is approved, the project will continue to receive oversight through the Was County Housing and Homeless Services Division, which will also provide administrative support an ensure grant compliance.

Jeri Chadwell City Editor & Lead Reporter

Jeri Chadwell came to Reno from rural Nevada in 2004 to study anthropology at the University of Nevada, Reno. In 2012, she returned to the university for a master's degree in journalism. She is t former associate and news editor of the Reno News & Review and is a recipient of first-place Neva Press Association awards for investigative and business reporting. Jeri is passionate about Nevada history, politics and communities.

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reno gazette journal

NEWS

Proposed new fee would address backlog of stormwater projects in Reno

Amy Alonzo Reno Gazette Journal

Published 7:00 a.m. PT Oct. 9, 2021 | **Updated 10:23 a.m. PT Oct. 12, 2021**

This story has been updated to clarify the impact on sewer fees

The city of Reno needs roughly $440 million over the next 20 years to pay for a backlog of stormwater conveyance projects, and city residents and businesses could find themselves paying to fund that work.

The city is proposing a new utility fee to fund stormwater projects and repairs. Current stormwater operations are funded through sewer fees, but only a small portion of the sewer fund is directed to stormwater management.

A stormwater utility is long overdue, according to city officials. The city is dealing with repetitive stormwater problems and flooding city-wide, said Kerri Lanza, engineering manager for utility services.

Stormwater differs from residential wastewater in that it is not treated at wastewater plants. Rain that falls and runs off impervious surfaces such as parking lots and driveways flows into storm drains and is carried to outlets such as the Truckee River.

During heavy storms, rain and snowmelt can cause flooding and impact downstream water quality.

If the new fee is implemented, residents would pay an additional $5 to $7 per month to cover costs associated with improving stormwater and flood-reduction infrastructure within the city, while businesses would pay on a sliding scale depending on the amount of impervious surface on the business premises.

The portion of the sewer fee currently used for stormwater that businesses and residents pay on their sewer bills would be eliminated.

The city collects about $5.25 million is annually for stormwater projects. The new fees will generate about $15 million per year, according to Trina Magoon, director of utility services.

The city's fees would be comparable to others in the region.

Locally, Carson City, Sparks and Washoe County have stormwater utility departments, with fees of $8.79, $14.59 and $9.31 per month.

If adopted, Reno's new fee would go into effect July 1, 2022.

More: After public complaints, planning for Steamboat Ditch project on hold

Concurrently, the city is reassessing stormwater priority areas in the city as well as possible ditch improvements, Magoon said.

For decades, the city has relied on antiquated ditch systems such as the Steamboat Ditch to capture stormwater runoff. But the historic ditches — some built more than 150 years ago — were designed to carry river water to agricultural land, not to serve as storm drains for a major metropolitan area.

About 20 years ago, the city of Reno entered into agreements with three of the 11 active ditch companies that cemented the ditches as part of the area's storm water conveyance system.

The city is soliciting public input on the fee and is hosting a virtual meeting on the matter at noon Tuesday.

Amy Alonzo covers the outdoors, recreation and environment for Nevada and Lake Tahoe. Reach her at aalonzo@gannett.com. Here's how you can support ongoing coverage and local journalism.

Half-empty upstream reservoirs no immediate worry to TMWA customers

By Ed Pearce
Published: Oct. 11, 2021 at 6:23 PM PDT

BOCA RESERVOIR, Ca. (KOLO) -Years of drought have left local reservoirs low and the Truckee River, a mere trickle. So, facing another winter with fingers crossed, how concerned should we be?

Up here at Boca Reservoir it certainly looks concerning. Others in the system look much the same. But these half empty lakes with broad shorelines don't tell the whole story. Most of what you see belongs to those of us living in the Reno Sparks area or to be more precise to the Truckee Meadows Water Authority. It's what will be coming out of the sprinkler systems we just turned off, next spring.

"It's the community's upstream drought reserve," says TMWA's Andy Gephardt. "Right now we have about 50-thousand acre feet of storage. Bu comparison in 2015, the driest year on record we had 28-thousand acre feet of storage."

Looking at it that way, Gephardt says, we're not in bad shape, at least not as bad as we might imagine. But this is--as he said our drought reserves that we're drawing on. It's there to keep the community covered in times like these, but of course none of this is where we want to be.

None of the water flowing in the Truckee today is coming from the system's biggest reservoir. Lake Tahoe has fallen to its rim. And at Flouriston where the Truckee's flow is measured it's a mere fraction of what it should be. The measurement here determines much of what else happens, who gets what, when and how much throughout the Truckee River system.

When the flow falls below a determined rate, water is released from upstream storage to maintain it, as long as it can. Storage upstream stops and while our community can draw on those reserves, other users--agriculture, recreation--are left short. It's a complicated system governed by law.

So, while there's little worry your faucet or sprinklers may run dry next year, there's still every reason to hope for a big winter.

"If we don't then we'll rely on more drought reserves than this year and sooner or later we really need a winter."

reno gazette journal

VOICES | Opinion *This piece expresses the views of its author(s), separate from those of this publication.*

Herbicides in Lake Tahoe: a dangerous proposition | Tobi Tyler

Tobi Tyler

Published 7:00 a.m. PT Oct. 12, 2021

This opinion column was submitted by Tobi Tyler, vice chair of the Tahoe Area Group of the Sierra Club.

In mid-September, the Lahontan Regional Water Quality Control Board released a draft permit that would allow the Tahoe Keys Property Owners Association to apply aquatic herbicides for the very first time in the Tahoe Keys lagoons, which are connected to Lake Tahoe.

For decades, invasive aquatic weeds in the Tahoe Keys have been growing in the stagnant Tahoe Keys lagoons, which are fertilized by nutrients in stormwater pouring in from Keys residences and the nearby community. In addition, decades of attempts by TKPOA to reduce the weeds by mowing them have made the problem worse. Boats from the Keys have spread weed fragments (which can sprout into new plants) around the lake, creating new infestations. Now the weeds are out of control and threatening the health of Lake Tahoe, our national treasure. TKPOA is proposing to poison the lagoons without having first addressed the conditions in the Keys lagoons that promote weed growth and without having exhaustively tested non-chemical control methods.

TKPOA has made many claims about the need for their proposed one-time use of herbicides in the Tahoe Keys lagoons. However, numerous questions remain unanswered:

Why are the permitting agencies (Lahontan Water Board and Tahoe Regional Planning Agency) insisting on using herbicides when the draft environmental document clearly stated that testing non-chemical methods was the environmentally superior alternative?

Everywhere else, single applications of aquatic herbicides don't successfully control weeds; repeated herbicide applications are required every year. In fact, TKPOA has previously applied for permits for control projects with up to 12 years of herbicide use. Why do TKPOA and the permitting agencies think that herbicide use in the Tahoe Keys would be an exception to the

universal need for repeated annual applications? To be clear, herbicides have never been allowed in Lake Tahoe, because the EPA and the State of California classify Tahoe as a Tier III Outstanding National Resource Water that must not be degraded.

Why use herbicides in this "test" project when the repeated use of herbicides going forward would cause degradation that is prohibited by federal regulations that apply to Lake Tahoe?

The answer to these questions is crystal clear: this "test" is TKPOA's foot-in-the-door to permitting future, ongoing, perpetual herbicide treatments, not just at the Keys but potentially elsewhere around the lake. In proposing to allow this, the permitting agencies are attempting to bypass state and federal regulations with wholly inadequate justifications and analyses. The Lahontan Water Board's Basin Plan regulations require proof that non-chemical methods don't work before authorizing chemical methods. This has not been shown, and the draft LWB permit ignores this.

Nutrients from Tahoe Keys lawns and South Lake Tahoe stormwater have been accumulating in the unnatural lagoon waters and bottom sediments, fueling weed growth for 60 years. Herbicides don't kill the weed turions and seeds (this has been proven elsewhere in the country). The only thing this one-time herbicide test will do is offer Tahoe Keys homeowners false hope for a convenient solution that will allow them to continue boating from their backyards to the lake, which endangers the lake's clarity and ecosystems by spreading weed infestations.

Everyone's primary concern should be the health of the lake, which provides us all with clean water and fabled beauty, and supports a multibillion-dollar tourist economy. LWB and TRPA need to find a longer-term solution to the Keys' weeds nightmare that actually solves the weed problem, instead of managing it forever by using herbicides, and which preserves Lake Tahoe's nationally treasured beauty and clarity.

The TKPOA project applying herbicides is a dangerous proposal that will not benefit Lake Tahoe's water quality or the public interest. We must demand better solutions. The comment period ends Nov. 1. You can provide comments to lahontan@waterboards.ca.gov.

Tobi Tyler is vice chair of the Tahoe Area Group of the Sierra Club.

Have your say: How to submit an opinion column or letter to the editor

Washoe Co. approves grant to buy land, demolish homes in Lemmon Valley

Swan Lake in north Reno (Terri Russell)

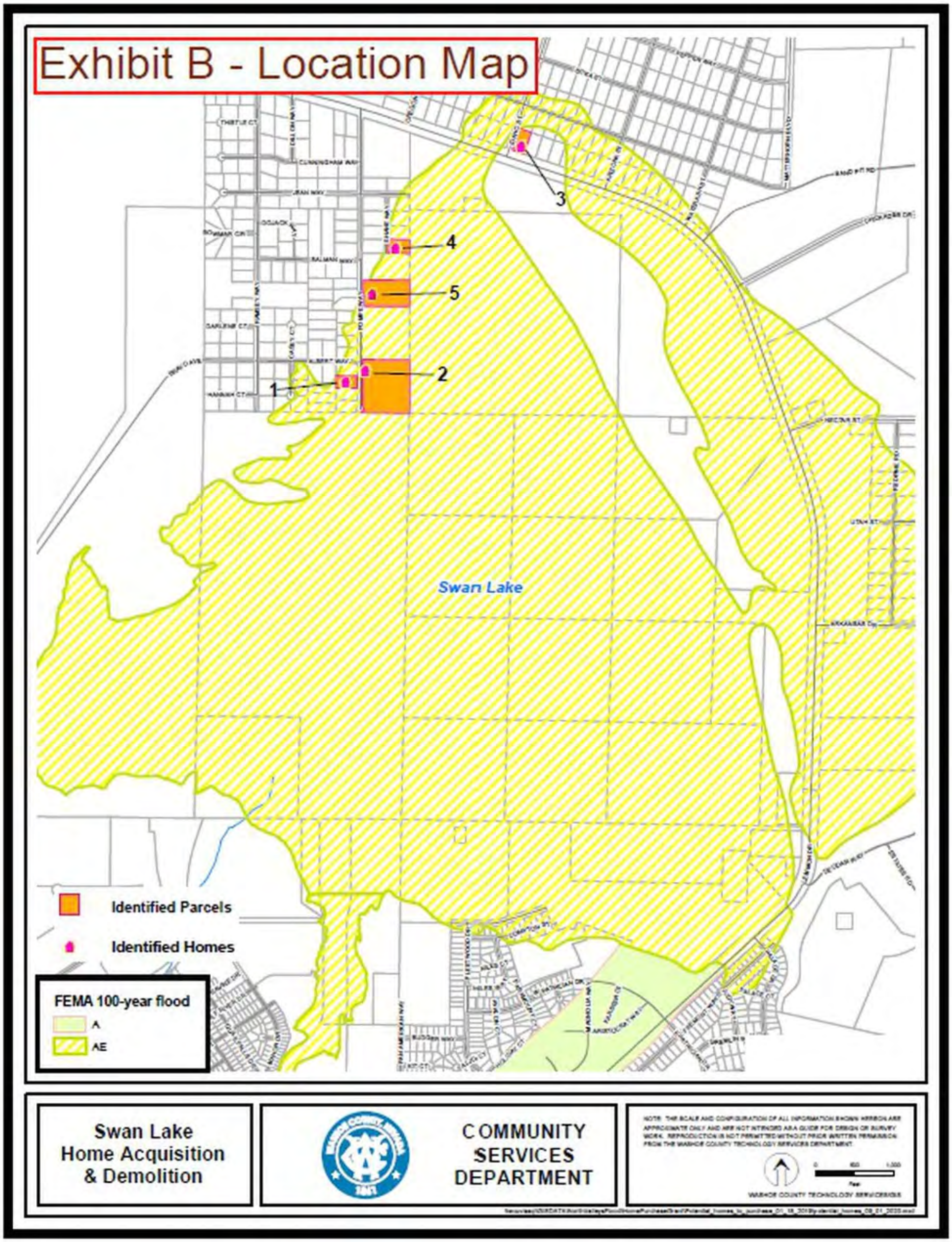
By Stanton Tang

Published: Oct. 12, 2021 at 1:44 PM PDT

RENO, Nev. (KOLO) - The Washoe County Board of County Commissioners voted Tuesday to accept a more than one million dollar grant to buy property around Swan Lake and to demolish the buildings on that land.

The NV Dept. of Public Safety, Division of Emergency Management and Homeland Security grant for $1,034,981.25 will be matched by a $344,993.75 contribution from the County. The money will be used to return the land to open space. New deed restrictions will ensure the properties cannot be developed in the future.

Three of the targeted properties are on Pompe Way, one is on Shane Way and one on Idaho Street. All five properties are in the flood plain.



Washoe Co. plans to purchase five homes in the flood plain at Swan Lake and to return the properties to open land. (Washoe Co. Commission)

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Reno Police looking for answers on a missing woman