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Gov. Newsom Outlines Billion-Dollar Plan to Recycle Water

TUE OCTOBER 18, 2022 - WEST EDITION #22
ASSOCIATED PRESS

SACRAMENTO, Calif. (AP) — California should invest tens of billions of dollars in water recycling, storage and desalination over the next two decades to shore up its supply as the state gets drier and hotter, Gov. Gavin Newsom said in a recently released proposal.

It comes as drought continues to grip the U.S. West and the state prepares to lose 10 percent of its water supply by 2040, according to projections by the Department of Water Resources. The Democratic governor discussed the proposal at the construction site of a plant to remove salts from river water that should be fresh, the type of project he said the

His proposed water recycling targets, which would make treated waste water safe for drinking, would cost $27 billion by 2040, his proposal said. That was the biggest price tag associated with the plan, which also relies on billions in money already approved in past state budgets. The plan envisions that money coming from both state and federal sources.

In total, he wants to boost annual water supply by nearly 3 million acre ft. each year; one acre ft. can supply about two households.

His plan also calls to expand water storage, in above-ground reservoirs and underground aquifers, by about 4 million acre ft. — nearly enough water to fill Shasta Lake, the state's largest reservoir. New storage infrastructure would help the state capture more water during times of heavy rain, like the two large storms California saw last October and December.

The proposal comes amid the third year of a drought, the state's second in the past decade. Most of the state's major reservoirs are far below normal levels after the state saw its driest January through March in at least a century. That's typically when most of the state's rain and snow falls.

Meanwhile the Colorado River, a key source of water for Southern California, has reached critically low levels. The Newsom administration hopes to reduce dependence on the river and other water exports.

"We're focused on creating more water," he said.

Interest in water recycling is expanding across the West as states and cities see their water supplies threatened by extended droughts. About two dozen communities, including those in Nevada and Colorado, rely on some recycled water for drinking, but that number is expected to grow.

The Metropolitan Water District of Southern California, which provides water for nearly half the state's residents, is building a massive water recycling project. Congress included $1 billion for water reuse projects in the West in the infrastructure bill passed last year.

The plan doesn't have any revolutionary ideas for water management, but includes key details about how the state can "move faster on some of the good ideas," said Ellen Hanak,

vice president and director of the Water Policy Center at the Public Policy Institute of California.

"For water recycling, its important to not just have the technology but to ensure there is a place to put the water after its treated or appropriate regulations to make sure it can safely be put directly back into the water supply," she said. Newsom's plan calls on the State Water Resources Control Board to create regulations for that direct reuse by the end of next year.

The new proposal doesn't call for any immediate, mandatory cuts to water use in cities or on farms. Instead, he wants the water board to develop efficiency targets for every district, but they would only take effect next spring if there's another dry winter. He's also proposing spending $1 billion to get rid of 500,000 sq. ft. of turf.

He previously directed the state's more than 400 local water districts to implement their own plans to reduce water use and has set a few statewide policies, like a ban on watering decorative grass. He has not set a statewide water reduction mandate.

Newsom also said he wants the Legislature to consider a law that would let the state curtail people's water rights even when its not a drought. The state operates an archaic system of water rights to govern how much water cities, farms and others are entitled to take and from where. An effort is underway to digitize records that spell out those terms, some more than a century old.

Desalination would make up only approximately 3 percent of the added water supply Newsom is calling for, most of it coming from brackish water, which isn't as salty as water that comes from the ocean.

His plan doesn't spell out how much water would come from removing salt from ocean water, a more controversial practice, but he's calling on various state agencies to create a process for citing such projects by 2023.

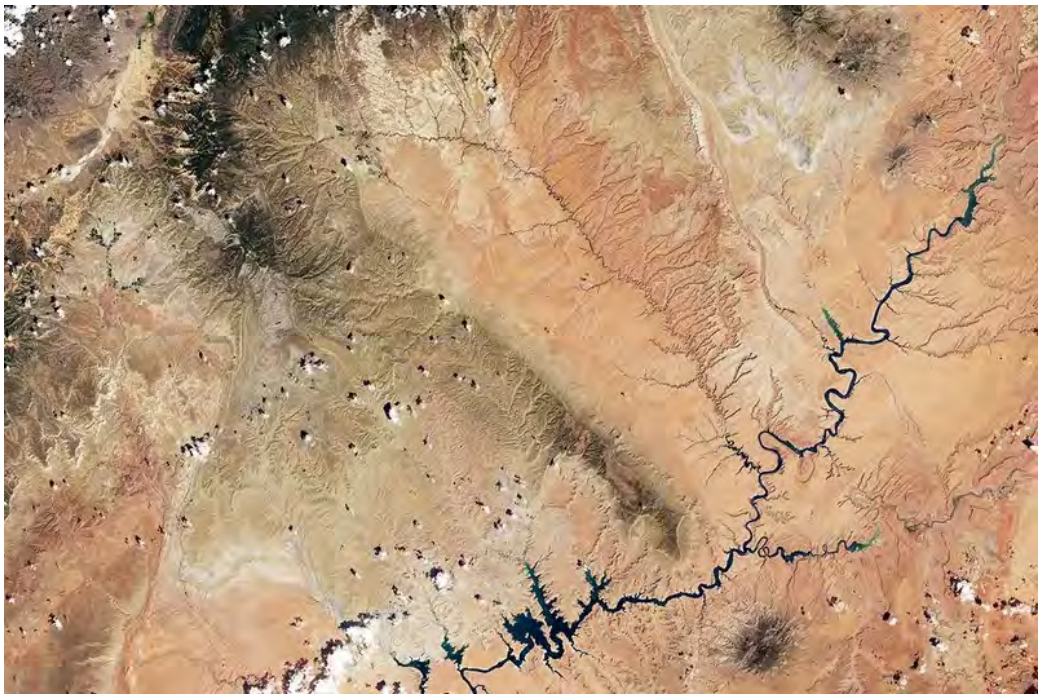
"As California becomes hotter and drier, we must become more resourceful with the strategic opportunity that 840 miles of ocean coastline offer to build water resilience," the plan said.

Shocking images show scale of megadrought devastation in North America

The megadrought in south-western North America is the worst in more than 1000 years. These images from space reveal how much the severe dry spell is changing the landscape

ENVIRONMENT 19 October 2022

By **Leah Crane**



South-western North America is experiencing a megadrought
NASA Earth Observatory

South-western North America is deep in a drought, the likes of which hasn't been seen there for more than 1000 years. While this is visible – and devastating – on the ground, images from space put the effects of the megadrought into stark relief, showing lakes receding into their beds, rivers drying up and mountains with unprecedentedly scant snowcaps.

The images displayed here were mostly taken from satellites launched specifically to provide data on how Earth's surface changes over time. Many are from the Landsat programme, a joint endeavour between NASA and the US Geological Survey that has provided nearly 50 years of continuous imaging of the planet's surface and helped researchers place this monumental drought in context.

Megadrought in North America
This story is part of our *Parched Earth* series about the ongoing megadrought in south-western North America, the worst such drought in more than 1200 years

The Colorado river

The Colorado river delta
NASA/GSFC/MITI/ERSDAC/JAROS, and U.S./Japan ASTER Science Team

The image above is the Colorado river, which runs from northern Colorado to the Gulf of California – or at least, it once did. About 80 years ago, the river would have struck a blue line through this entire image, flowing from the top left to the mouth of the gulf at the bottom right. Now, though, the river comes to an end just south of the green farmlands towards the top of the image. The bluish-purple line that appears to continue on to the gulf is actually an inlet formed by water lapping inland from the gulf itself. The entire river basin spans about 8 per cent of the continental US and provides water for about 40 million people. Its slow drying is alarming for the American West and northern Mexico alike.

Colorado reconnected to the ocean

April 2013 – April 2014. For a few short weeks the Colorado river connected once again to the ocean
NASA Earth Observatory

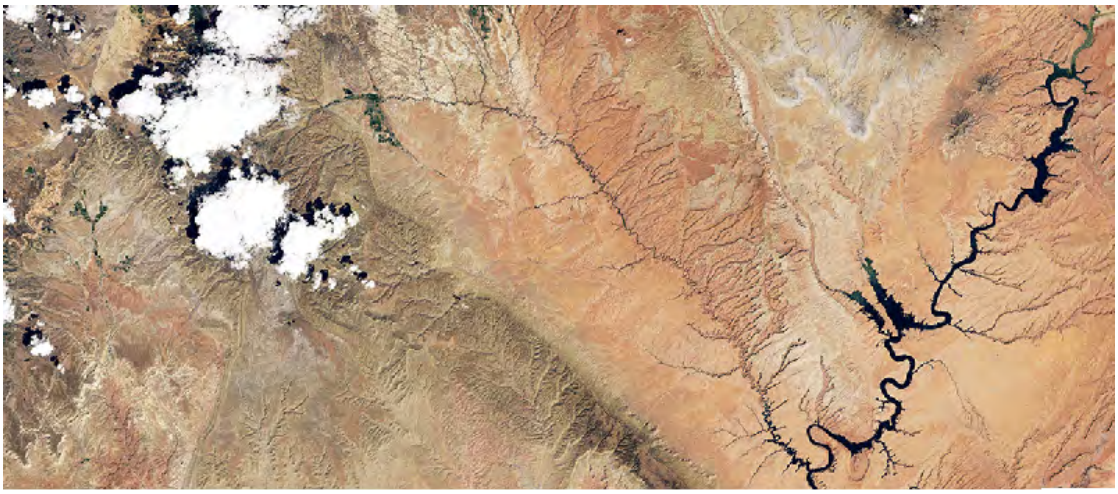
Very little of the water that remains in the Colorado river makes it to Mexico. But in 2014, for about two months, the city of San Luis Río Colorado in Mexico saw more than a trickle flowing through the riverbed. Mexican and US water and land-management agencies agreed to release 130 million cubic metres of water from the Morelos Dam at the US-Mexico border. This revived the river long enough for plants and animals to start returning to the areas that they had abandoned when the river dried up. For a few short weeks, the river even connected to the ocean before it began to dry and retreat once more.

Lake Mead

July 2000 – July 2022. Lake Mead in the US is at its lowest level since it was first filled
NASA Earth Observatory

Conditions aren't much better for the lakes fed by the Colorado river. Lake Mead, which is the largest reservoir in the US, is currently at its lowest water level since it was first filled in 1937. As of July 2022, it was full to just 27 per cent of its capacity. It hasn't been anywhere near 100 per cent since 1999. The lake itself provides water for a huge swathe of the southern US and northern Mexico, and its water also provides power via the famous Hoover Dam – if water levels sink much more, the hydropower turbines there could stop working.

Lake Powell



August 2017 – August 2022. Lake Powell in the US is also at its lowest level since it was first filled
NASA Earth Observatory

The second largest reservoir in the US, Lake Powell, is also fed by the Colorado river and is also at its lowest water level since it was initially filled. It is predicted to drop even more by the end of 2022. There are plans to send more water into Lake Powell from upstream and release less downstream into Lake Mead through April 2023, but it remains to be seen whether these plans will protect the water and power supply that comes from these two crucial reservoirs.

Cerro Prieto reservoir

July 2015 – July 2022. The Cerro Prieto reservoir in northern Mexico is nearly completely empty
NASA Earth Observatory

It may sound like a broken record, but things are even more dire for smaller reservoirs like the Cerro Prieto reservoir, near Guadalupe in northern Mexico. As of July 2022, this reservoir contained only 0.5 per cent of its maximum water capacity – so little water that none could be extracted. Government organisations ended up having to redirect water away from industrial and agricultural applications just to make sure that people living in the surrounding areas had enough to get by.

Mount Baker

July 2013 – July 2015. The amount of snow on Mount Baker is decreasing
NASA Earth Observatory

It's not just the water that disappears in a drought; snow is a problem too. Much of the water that fills these lakes and rivers comes from melting snow in the mountains. Mount Baker, in Washington, is the highest peak in the North Cascades and has a permanent patch of snow and ice at its top that remains through all seasons. That patch is shrinking. The same is happening across all the mountains in the American West. There is less snow, the glaciers are retreating and less water is running downhill into the rivers and streams that keep people and wildlife hydrated all year round. It's all connected, and it's all drying up.

The Great Salt Lake

June 1985 – July 2022. The Great Salt Lake in Utah has also been affected by the megadrought
NASA Earth Observatory

Even the Great Salt Lake in Utah, the biggest saline lake in the US, hasn't escaped the effects of the astonishing drought. Nearly half of the lakebed is now exposed after huge and long-lasting drops in water levels. Because the Great Salt Lake is a closed basin – it sits at the end of three rivers and no water flows outwards from it – some of this decline in water level can be attributed to the water that once flowed into it being extracted and used, but the less snowmelt flows in through the rivers, the less water there is to extract or to fill the lake.

The lake is key to industry in the area, from tourism to mining and beyond. It is also a crucial ecosystem for migrating birds, and the dust in the lakebed can cause huge dust storms when exposed, so losing the Great Salt Lake could mark disaster for the surrounding area. There are potential plans to save it, but many are expensive and all require significant legislative backing, so it remains to be seen whether they will be put into place.

More on these topics: CLIMATE SPACE DROUGHT MEGADROUGHT

Photo courtesy of Water Environment Federation

EPA Set to Propose Drinking Water Standard for PFAS Chemicals

WEFTEC conference included focus on water equity, resilient infrastructure

Pam McFarland
October 20, 2022

The U.S. Environmental Protection Agency plans to propose, by the end of the year, a primary drinking water standard for two types of "forever" chemicals that seem to be found in everything, everywhere, including human tissue—agency officials said Oct. 10 at the Water Environment Federation (WEF) annual conference.

The standard would set enforceable limits for PFOA and PFOS, the two most used and studied of the broad category of per- and polyfluoroalkyl substances, collectively known as PFAS. The standard would also require monitoring of public water supplies as part of EPA's overall strategy for addressing the prevalence of PFAS in drinking water sources, wastewater and biosolids.

Yu-Ting Guilaran, deputy director of EPA's office of groundwater and drinking water, said the agency hopes to finalize the standard sometime in 2023.

Additionally, EPA plans to significantly expand monitoring for PFAS in drinking water systems between 2023 and 2025, including for the first time small water utilities that previously were exempt. "We're looking forward to initiating that effort and getting more information on PFAS in drinking water," Guilaran said.

Matt Klasen, manager of EPA's PFAS Council, comprised of senior career officials across the U.S., noted that the agency's Sept. 6 proposal to designate PFOA and PFOS as hazardous substances under the federal Superfund law would be a "significant step in improving information about PFAS releases and getting us the tools for holding those responsible for PFAS contamination accountable."

EPA is currently accepting comment on the proposed rule.

The topic of PFAS was of primary interest and the focus of numerous sessions at the conference, held Oct. 8 to 12 in New Orleans. Many firms and speakers emphasized not just the removal of PFAS from water supplies, wastewater and biosolids, but also identifying scalable methods to destroy it, or increasing sampling to reduce PFAS contamination at the source.

Nick Giannetti, state pretreatment program coordinator for the Vermont Dept. of Environmental Conservation, outlined a program designed to reduce PFAS levels before they reach wastewater treatment plants through sampling techniques at potential sites of pollution and just outside wastewater treatment facilities.

In the program, state officials work with industrial facilities, manufacturers or businesses where PFAS levels were higher.

"Eliminating or preventing pollution at the source, is reducing the amount of pollution to control, treat, and dispose of … and less pollution posed to the environment and public health," Giannetti said. He added that the model developed in Vermont "is really well suited for those smaller- to medium-size POTWs (publicly owned treatment works)."

Several research studies are underway to evaluate different technologies to destroy PFAS. One project, a partnership between WEF and a multi-disciplinary team led by Brown and Caldwell, will evaluate the effectiveness of using extremely high temperatures in a process called pyrolysis followed by thermal oxidation to destroy PFAS to enable beneficial reuse of biosolids.

Resilience and Social Justice

Conference panels and exhibitors also focused on resilience. A new study by engineering firm GHD found that failing to adequately prepare for storms, droughts and floods through designing and building more resilient infrastructure could result in a total loss of $3.7 trillion to the U.S. GDP between 2022 and 2050, and upwards of $5.6 trillion across the globe.

Jonathan Pressdee, GHD's U.S. water market lead, told ENR that being reactive to problems as they arise will be less effective over the long haul than taking a more proactive, strategic approach. "When you take a more holistic view, the failure to have resilient, hardened infrastructure impacts broader swaths of the community and the economy" such as manufacturing, banking, insurance and energy utilities, he said.

Teams at Carollo Engineers have helped about 30 U.S. drinking water utilities develop risk assessment and emergency response plans required under the 2018 American Water Infrastructure Act. These plans evaluate risks associated with everything from hurricanes and other natural hazards to pathogens and cyberterrorism. "There's a growing interest [among municipalities and utilities] in resilience plans and the benefits of considering the sustainability and resilience of your infrastructure," Shawn Corrigan, a Carollo risk and resilience principal, told ENR.

Some panels focused on ensuring that projects are designed with equity in mind. Karyn Riley, Arcadis vice president of water equity and social impact, a newly created position at the firm, said that although some cities, counties, and even a handful of states have incorporated social equity mandates into their engineering and building programs, "consultants have to have a mindset shift."

Social justice initiatives that are a key component of the Infrastructure Investment and Jobs Act, and consequently, equity issues are going to be a significant consideration that needs to be incorporated early on in the design process, Riley said.

"This is a shift, a moment, and I think we're going to see everybody in the sector come together and really collaborate on this because it's so important, not only for our business lines, but for our communities."

Pam is ENR's senior editor for government coverage, focusing on federal environmental and labor issues as they relate to the construction industry. She has a degree in journalism and an M.A. in writing fiction, and has worked previously as both an editor at ENR (2007-2016) and as a freelancer for a variety of publications and clients. One of her favorite gigs involved writing about stars, black holes and the mysteries of the universe for NASA.

It’s that time again. Winterize your outdoor watering system

The Truckee Meadows Water Authority says its time to turn off outside water and offers instructions on how to do it.

(Video Link to story)

By Ed Pearce
Published: Oct. 20, 2022 at 6:45 PM PDT| Updated: 16 hours ago

RENO, Nev. (KOLO) -Clear skies, pleasant temperatures and the valley is still mostly green. But over the horizon a change is lurking, one which twice a year, prompts us to get reacquainted with the somewhat confusing and complicated watering system that’s been keeping our yards green.

It’s time to shut it down or at least it will be by this weekend when temperatures are expected to dip down to the freezing mark.

It’s a multi-step process but should begin with turning the timer to off. Then....the system itself.

“Go to your on and off valve which is usually in the ground, it can be two, three, four feet deep,” says Chuck Swegles, the Water Conservation Coordinator at the Truckee Meadows Water Authority.. “You should have a key or a device that will turn that valve. turn it to the right or clockwise. Open up drain valves, if you have them. get the water out of anything above or close to the ground.”

Failure to do this could lead to expensive damage..

It’s been months since you turned on the system doing all these steps in reverse, so you may need a refresher.. You’ll find some helpful videos on TMWA’s website -https://www.tmwa.com. If you still have questions they’re holding the last of their outdoor watering workshops next Tuesday at 5:30.

A final note, and if you’ve been here any length of time this will be no surprise, it will undoubtedly warm up again and you’ll be wondering if you should turn it back on.

“Plants, trees will pretty much tell you if they are struggling by looking at them,” advises Swegles, “but look at the ground If the ground is fairly moist at the surface or even a few inches down you’re probably going to be okay. but don’t be afraid of doing a little hand watering.”

That’s why they still make and you still have a garden hose.

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NOAA sees no winter drought relief across parched West

By **Jennifer Yachnin** | 10/20/2022 04:19 PM EDT

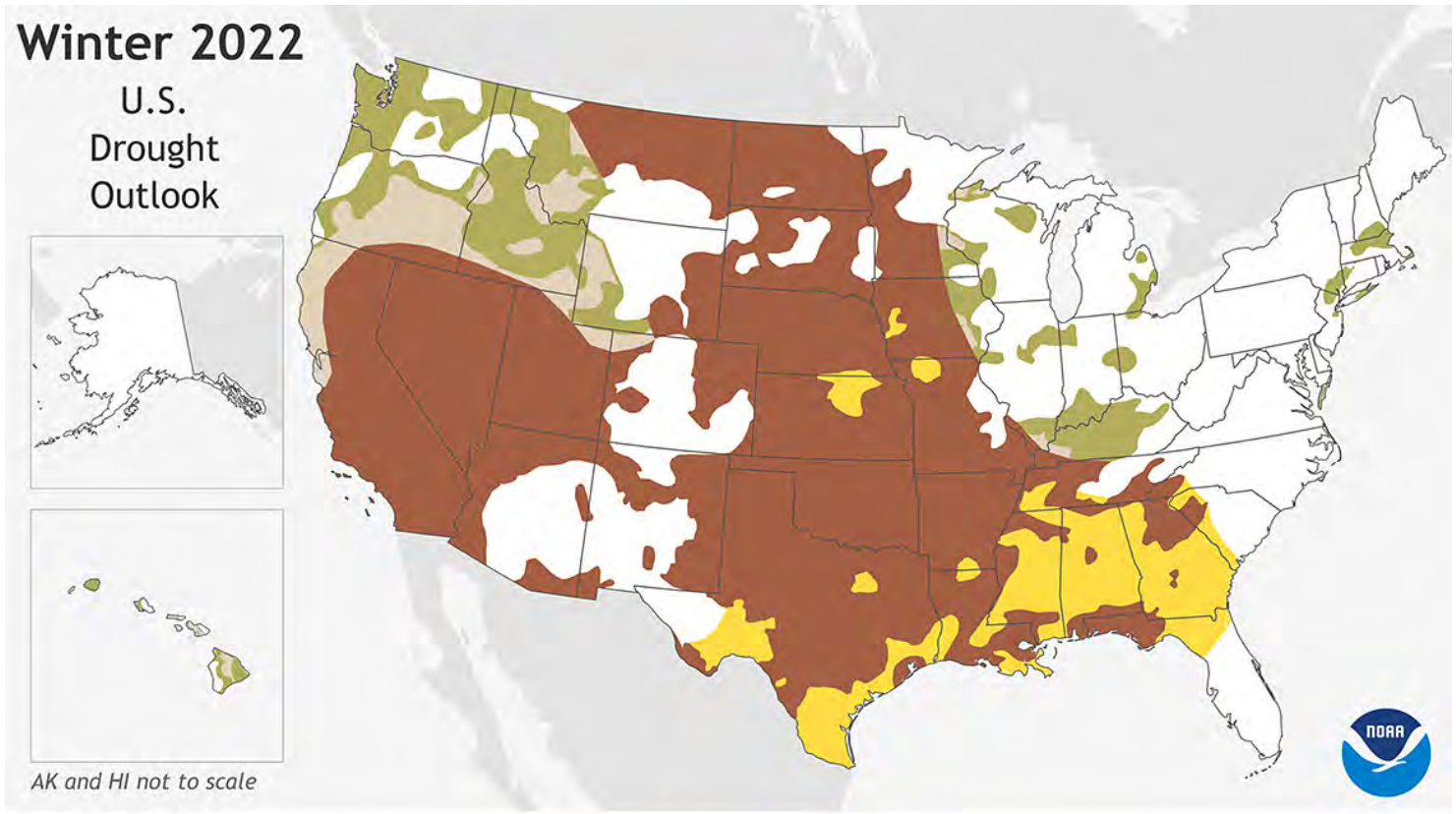
Water levels are low this fall at San Luis Reservoir, which stores irrigation water for San Joaquin Valley farms, in Gustine, Calif. Terry Chea/AP Photo

Western states gripped by persistent drought are unlikely to see any relief in the coming months, as a third year of La Niña weather patterns reduces precipitation in that region, NOAA scientists predicted Thursday.

According to the agency's 2022-23 Winter Outlook, below-average rainfall and snowpack are expected in a wide stretch of the United States including Southern California, the Southwest, the southern Rockies, the southern Plains, the Gulf Coast and much of the South.

"We're going on our third year of this extreme drought for much of the western U.S., with the extreme drought currently focused over much of California, the Great Basin and also extending northward into parts of Oregon," said Brad Pugh with NOAA's Climate Prediction Center.

Below-normal precipitation could also continue to be a problem for the Mississippi River, as low water levels have slowed barge traffic and threatened municipal water supplies (*Greenwire* (https://subscriber.politicopro.com/article/eenews/2022/10/05/mississippi-river-falls-stranding-barges-and-forcing-fixes-00060457), Oct. 5).



“The middle and lower Mississippi Valley is currently experiencing historic low-water conditions, and we expect drought to continue to impact this area as well,” said NOAA Climate Prediction Center Operational Prediction Branch Chief Jon Gottschalck.

While drought conditions are expected to improve in the Pacific Northwest, the persistent La Niña weather pattern is likely to otherwise curb precipitation across the West.

The La Niña weather pattern — in which strong trade winds churn colder water to the surface of the Pacific Ocean and push the jet stream north — will mark its third “triple-dip” in modern history.

NOAA officials noted only two other instances in which the weather pattern known for its warm weather and low precipitation lasted for three years, first in the early 1970s and then in the late 1990s.

Pugh warned that dry conditions could contribute to a greater likelihood of wildfires.

“One of the areas over the next couple of months that are likely to have enhanced wildfire danger will be the south-central U.S.: Oklahoma, Texas and Arkansas,” Pugh said.

State puts $100M toward water conservation

Bait sh are caught about the boat still pointing skyward surrounded now by greenery and water about Government Wash at the Lake Mead National Recreational Area on Tuesday, Oct. 18, 2022, near Boulder City. (L.E. Baskow/Las Vegas Review-Journal) @Left_Eye_Images

By Colton Lochhead Las Vegas Review-Journal

October 20, 2022 - 5:06 pm

More money is coming down the pipeline for Nevada's efforts to conserve water amid a historic megadrought that has put the pinch on supplies in the Southwest.

The Legislature's Interim Finance Committee on Thursday approved $100 million in funding for water conservation projects across the state and another $6.4 million to modernize the state's data on groundwater basins.

Nelson Araujo, Gov. Steve Sisolak's infrastructure adviser, told lawmakers the money will go toward investments aimed at reducing water demands across the board, including in residential and commercial developments. The money is coming from funding the state received through the American Rescue Plan.

"Nevada is the driest state in the nation while simultaneously experiencing some of the fastest population and economic growth in the country," Araujo said. "The demand for water into the future must be balanced with the actual water availability."

The funding comes as Nevada and other Western states that rely on the Colorado River for water are working to develop drastic cuts to water use from the river as decades of drought, climate change and chronic overuse have dwindled its supplies and sent the nation's two largest reservoirs at Lake Mead and Lake Powell to historically low levels.

In Southern Nevada, 90 percent of the region's water comes from the Colorado River. Based on water levels that are projected to continue falling into the future, the Bureau of Reclamation in August declared a water shortage for Lake Mead for the second straight year, which will further cut Nevada's and Arizona's share of Colorado River water.

Progresonconservation

The Southern Nevada Water Authority has said the funds will help amplify conservation programs it has in place that seek to reduce water use, specifically programs to convert commercial buildings away from thirsty evaporative coolers and to shift thousands of homes in the valley from water-wasting septic systems to the municipal sewer system, which recycles water back into Lake Mead that can be treated and reused.

Outdoor water use, such as turf irrigation and pools, make up the largest share of water consumed in Southern Nevada, and for more than two decades the water authority has paid homeowners to convert their turf lawns to drought-friendly landscaping. Last year, the state Legislature passed a measure that bans "nonfunctional" turf, such as grass in roadway medians, and requires it to be removed by the end of 2026.

Evaporative cooling units, which are often used in large commercial buildings, make up the second-largest water using group in Southern Nevada, and the roughly 15,000 residential homes on septic systems make up the third, according to the water authority.

"We've done a lot of things in our community to help the community weather the changing circumstances along the river, and we need this funding to do more," said Andy Belanger, public service director for the water agency.

Movingfast

The Nevada Department of Conservation and Natural Resources will be tasked with allocating those funds for individual projects, and the department's director, Jim Lawrence, said he plans to move fast to get things moving to meet the urgent water needs across the state. The department will set up a technical advisory committee immediately to create the criteria that will be used to award funding to those projects, he added.

"We are looking to be obligated within months, not years," Lawrence said.

State Engineer Adam Sullivan said that the other $6.4 million approved by lawmakers will help the state better understand its groundwater resources using modern science and methods.

But state Sen. Pete Goicoechea, R-Eureka, said that won't money be nearly enough to fully understand the state's 256 groundwater basins, of which he said some 40 percent are over-appropriated, meaning more water has been allocated than actually exists. The state's current data on some of those basins, he said, dates to the 1950s.

Goicoechea said his worry is that the state will apply new science and technology to 70-year-old data that "probably isn't accurate," and will have made no progress on addressing those groundwater concerns.

"We could easily spend $50 million putting this database together," he said.

Contact Colton Lochhead at clochhead@reviewjournal.com. Follow @ColtonLochhead on Twitter.

Biden-Harris Administration Announces $28 Million To Advance And Deploy Hydropower Technology

OCTOBER 21, 2022

Energy.gov »

Biden-Harris Administration Announces $28 Million To Advance And Deploy Hydropower Technology

Bipartisan Infrastructure Law Funding Will Grow the Hydropower Industry, Create Jobs, and Engage Key Stakeholder Voices

WASHINGTON, D.C. — The U.S. Department of Energy (DOE) today announced more than $28 million across three funding opportunities to support research and development projects that will advance and preserve hydropower as a critical source of clean energy. Funded through

President Biden's Bipartisan Infrastructure Law, this funding will support the expansion of low-impact hydropower (such as retrofits for dams that do not produce power) and pumped storage hydropower, the development of new pumped storage hydropower facilities, and engagement

with key voices on issues like hydropower fleet modernization, sustainability, and environmental impacts. President Biden's Inflation Reduction Act also includes a standalone

tax credit for energy storage, which will further enhance the economic attractiveness of pumped storage hydropower. Hydropower will be a key clean energy source in transitioning away from fossil fuels and meeting President Biden's goals of 100%carbon pollution free electricity by 2035 and a net-zero carbon economy by 2050.

"Hydropower has long provided Americans with significant, reliable energy, which will now play a crucial role in achieving energy independence and protecting the climate," said **U.S. Secretary of Energy Jennifer M. Granholm**. "President Biden's Agenda is funding critical innovations to capitalize on the promise of hydropower and ensure communities have a say in building America's clean energy future."

Hydropower **accounts for** 31.5% of U.S. renewable electricity generation and about 6.3% of total U.S. electricity generation, while pumped storage hydropower accounts for **93% of U.S. utility-scale energy storage**, ensuring power is available when homes and businesses need it.

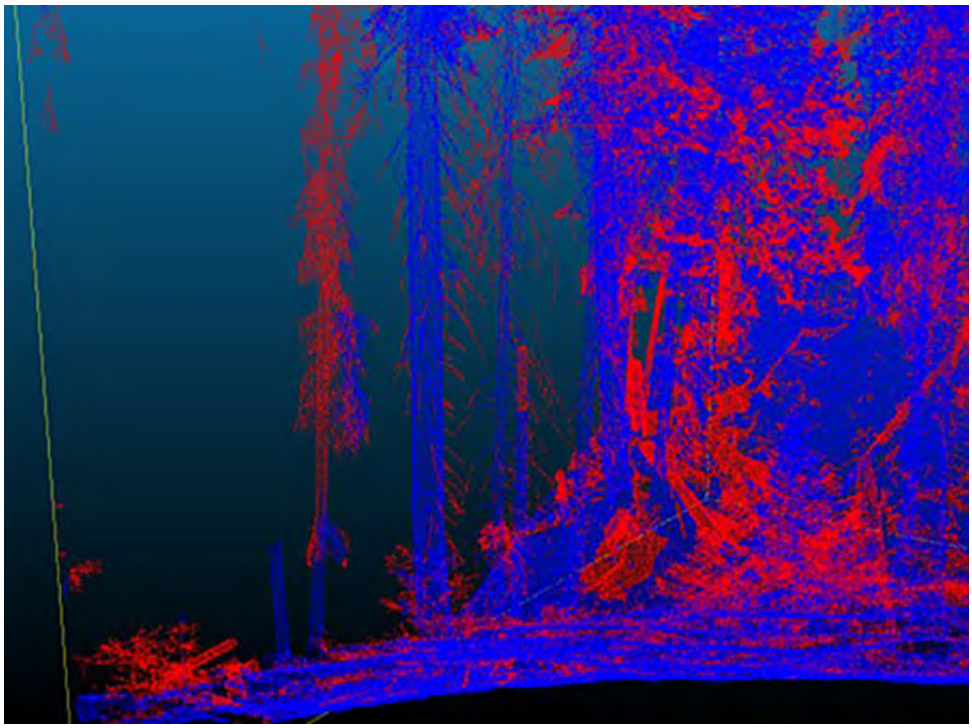
The funding opportunities include:

- Advancing the sustainable development of hydropower and pumped storage hydropower by encouraging innovative solutions to retrofit non-powered dams, the development and testing of technologies that mitigate challenges to pumped storage hydropower deployment, as well as opportunities for organizations not extensively engaged with DOE's Water Power Technologies Office to support hydropower research and development. (Funding amount:$14.5 million)
- Supporting studies that facilitate the licensing and eventual construction and commissioning of new pumped storage hydropower facilities to facilitate the long-duration storage of intermittent renewable electricity. **(Funding amount:$10 million)**
- Uplifting the efforts of diverse hydropower stakeholders to discuss and find paths forward on topics that include U.S. hydropower fleet modernization, hydropower system sustainability, and hydropower facilities' environmental impact. **(Funding amount: $4 million)**

The three funding opportunity announcements are available on **EERE Exchange**.

Learn more about the **Water Power Technologies Office** in DOE's **Office of Energy Efficiency and Renewable Energy**.

NevadaToday



Ladder fuel loss from the 96,000-acre Ferguson Fire in the Sierra Nevada in 2018 is captured with LiDAR. Red indicates biomass that was consumed in the fire, blue indicates biomass that survived the fire.

Big data modeling, forest fuels mapping aids in mitigating catastrophic wild re risk

University of Nevada, Reno researchers team with CAL FIRE and California Air Resources Board

Science & Technology (https://www.unr.edu/nevada-today/news/science-technology) | **October 21, 2022**

Modeling and mapping fire-vulnerable forest vegetation across millions of acres in California, scientists at the University of Nevada, Reno are using a variety of new technologies with massive amounts of data and computational power. This research will help optimize fuel management to reduce fire risk, support carbon sequestration and improve water quality.

The research team, led by Jonathan Greenberg and Erin Hanan in the University's College of Agriculture, Biotechnology & Natural Resources, is working on a set of interrelated initiatives that are collectively called the "GigaFire Project." Their overarching goal is to understand, using remote sensing technology and process-based models, how vegetation and fuels are changing over large landscapes.

Greenberg and Hanan are researchers with the College's **Experiment Station (https://naes.unr.edu/default.aspx)** and **Department of Natural Resources & Environmental Science (https://www.unr.edu/nres)**. Their research will produce statewide and localized fuel maps that will help identify where fire risk is the greatest. They will also inform modeling scenarios designed to predict how management can mitigate fire risk while also promoting carbon retention and water security.

With $570,000 from the California Air Resources Board and nearly $1.8 million from CAL FIRE, the researchers are mapping surface and canopy fuels across the state using:

- multi-sensor remote sensing data with Landsat and Airborne LiDAR (LiDAR stands for Light Detecting And Ranging, and is a remote sensing method used to examine the three dimensional structure of vegetation);
- field-based sampling with terrestrial laser scanning and ground based photogrammetry (the use of photography in surveying and mapping to measure distances between objects) to calibrate and validate changes over time;
- machine learning; and
- cloud and high-performance computing to map surface fuel model types, canopy base height, and canopy bulk density across the state.

Lessening the severity of wildfires through enhanced ground and resource management is important. That's where the GigaFire team is making a difference with their recently funded research and collaboration with CAL FIRE and the California Air Resources Board. Part of the work is focusing on quantifying the first 2 meters of the forest's understory, as that is the most crucial for predicting fire behavior. Looking toward the future, the team is working to project carbon gains and losses under varying forest treatment scenarios.

These data will be used by the California Air Resources Board to develop new standardized inputs for their program. The GigaFire team aims to prototype an open, transparent and automated scientific modeling framework that can be updated as new data and algorithms become available for improved fuels mapping throughout California.

"We're using remote sensing and modeling to find all the fuels, especially ladder fuels," Associate Professor Greenberg said. "It will be a system that is updated regularly and automatically. It will be for the entire state of California, and a few parts of Nevada.

Other attempts at this modeling have been made. Greenberg and Hanan are improving upon that using big data and cloud computing with present and hindcast data since the 1980s for fuels management.

"Analyzing the amount and location of fuel accumulation allows us to understand the situations where you go from low-intensity ground fires, to high-intensity crown fires," he said. "Crown fires are the real danger – those are the wildfires where things blow up. Our department contributes to the science behind fuels management. When a fire does break out, and they will break out, you want to have already managed the fuels to minimize the risk of catastrophic wildfires."

Through their research, Greenberg and Hanan also work with land and resource managers who can target specific areas that need treatment, such as forest thinning, collection of material for pulp and controlled burns. Fuel treatments are often used to mitigate fire risk in forests where decades of suppression have increased fuel loading. However, forest density reductions can sometimes have unintended consequences for water quantity and quality, and such effects can be difficult to predict. Modeling work is aimed at understanding how fuels influence fire behavior and the effects of fire behavior on vegetation, soil and hydrological processes.

“We are using simulation models to determine when, where and under what circumstances fuel treatments can mitigate the risk of severe crown fire, maintain stable forest carbon, and promote water security for millions of residents across the West,” said Assistant Professor Hanan, who leads the **Fire & Dryland Ecosystems Lab (https://erinhanan.com/)** and also leads the modeling portion of the GigaFire project.

“Models enable us to make predictions about complex responses to future climate and management scenarios that would not otherwise be possible with measurements alone,” she said. “However, to be valid and to advance our scientific understanding, models need to be continually confronted with field data. This is where Greenberg’s big data research is crucial.”

Greenberg runs the University’s Global Environmental Analysis and Remote Sensing Lab, known as **GEARS (https://www.gearslab.org/)**, that is helping to transform the understanding of forest ground coverage with their research using LiDAR technology. LiDAR to examine the three dimensional structure of vegetation.

Before implementing LiDAR technology to map forests before and after fires, the only way to figure out how much ground cover was in a certain area was to deploy teams into the field – an expensive and time-consuming endeavor. However, with LiDAR the researchers can figure out down to the branch what burned and what didn’t during a fire, helping them to better understand the ways in which fires move, and the best ways in which to reduce the chances of extremely severe forest fires.

All of this research requires gathering, moving and storing massive amounts of data. Some of the technology that helps to enable this research is done with Pronghorn, the University’s high-performance computing system housed at Switch, the data storage center in northern Nevada. While the hardware is necessary for the success of the research, the critical technological piece that makes the difference is the human capital, the research-computing professionals who help the researchers scale their science by leveraging these technologies.

“Dr. Greenberg’s wildfire project is a great example of how the University’s research efforts are evolving with modern technologies in a very data-centric way," Scotty Strachen, director of cyberinfrastructure in the University's Office of Information Technology, said. "Being able to capture key data at scale, rapidly process and analyze it, and then distribute science-based information to decision-makers and the public requires a new way of thinking about networking, computing and data at the University.

"Our emerging research cyberinfrastructure team is facing this challenge head-on, and working with our scientists and campus leadership to evolve Nevada’s capabilities to bring real solutions to real problems in real time.”

Science & Technology (https://www.unr.edu/nevada-today/news/science-technology) | October 21, 2022

Sisolak announces $100 million for water infrastructure investments

Back in August, he stated his intention to use American Rescue Plan Act funds on water infrastructure

FILE - A formerly sunken boat sits upright into the air with its stern stuck in the mud along the shoreline of Lake Mead at the Lake Mead National Recreation Area, June 10, 2022, near Boulder City, Nev. Back in August, during a visit to Lake Mead, Sisolak pledged to use ARPA funds for water infrastructure in Nevada. (AP Photo/John Locher, File) (John Locher | AP)

By Kevin Sheridan

Published: Oct. 21, 2022 at 9:41 AM PDT

CARSON CITY, Nev. (KOLO) - Nevada Governor Steve Sisolak announced $100 million in funding for a slew of programs for the state's water infrastructure, as well as other things.

The goal, according to the Governor's office, is to partially modernize the state's systems to improve service for residents.

The programs the funding will go towards hope to reduce water demand by residential, commercial, and agricultural sectors.

Money from the investments will also go towards repairing and replacing aging and leaking infrastructure while also investing in water-related workforce.

Back in August, Sisolak stated his intention to use American Rescue Plan Act funds on water infrastructure. The money in this grant represents a fulfillment of that vision.

"We promised Nevadans that we wouldn't simply spend the federal dollars coming into the State – we would invest them to make lasting, generational change for our residents. I am proud of all the work we have done to accomplish that," said Governor Sisolak.

"Today (Thursday), we made good on my promise to shore up Nevada's water infrastructure, invest in improving the health of Nevadans, and modernizing State systems so we can focus on service," he continued.

Those programs, passed aside from the water infrastructure funding, are dedicated to health, housing, and efforts towards modernizing state governments.

$250 million to complete funding for affordable housing programs were also approved, as well as more than $20 million in funding for Nevada seniors and $75 million to expand access to mental and behavioral health resources.

Nevada's funding for seniors includes:

- $15 million to fund a nursing and assisted living facility workforce initiative,
- $2.9 million to provide home delivered meal services to homebound adults age 60 and older, and
- $2 million for critical in-home services such as assistive technology, home modifications and repairs to support independent living for targeted populations.

Investments into health programs are as follows:

- $55 million to increase forensic psychiatric beds in Las Vegas,
- $15 million to support the creation of the Nevada Transplant Institute (NTI), which will collaborate with Nevada Donor Network and other related organizations to create a singular, dedicated network to expand transplantation programs and services throughout Nevada.
- $14.5 million to develop services for individuals with dual diagnoses of intellectual development disabilities and behavioral health disorders,
- $10 million to help fund the expansion of the Recuperative Care Center in Las Vegas,
- $6 million to support comprehensive and accessible reproductive health programs,
- $3.9 million to fund expanded access to prenatal services in rural communities, and
- $2.6 million to provide access to community based, youth-focused behavioral health care services statewide.

Funding for modernizing state governments is broken down as follows:

- $48.5 million to update the Division of Welfare and Supportive Services system,
- $42 million to implement and replace the Unified Tax System,
- $18 million to replace the Unified Nevada Information Technology for Youth (UNITY) child welfare case management system at the Division of Child and Family Services, and
- $425,000 to support an e-filing system for worker's compensation appeals, among other programs

Most Read

Prostitution crackdown near UNR leads to 27 arrests

One dead in self-defense shooting, Reno police say

Man killed in Sparks Police Department shooting identified

Industrial park under development at TRIC

An industrial park under development within Tahoe Reno Industrial Center could add as much as 9 million square feet of new Class A inventory

By Rob Sabo
Monday, October 24, 2022

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An industrial park under development within Tahoe Reno Industrial Center could add as much as 9 million square feet of new Class A inventory in a part of TRIC already preferred by several of the world's leading technology companies.

Comstock Tric Associates LLC purchased the land for Comstock Commerce Center back in 2014, said Joel Grace, chief executive officer of Locus Development Group, which is working on behalf of the ownership to execute the development plan for C3. The company has spent the past few years working on civil engineering and site plans for the industrial buildings to be constructed at the more than 600-acre site.

"When we first bought property, it was in the path of progress but very much a greenfield site," Grace told NNBW in a recent interview. "But we had Google just to our south, Tesla just to the northeast, and we are surrounded by Blockchains' land holdings. Those are great neighbors to have."

Redwood Materials joined the neighborhood when it constructed its battery materials recycling facility on 100 acres at TRIC, and the Carson City-based company purchased another 73 acres from Locus to expand its battery recycling operations. Construction on the first building at C3 is underway – it's a 676,000-square-foot building that Redwood has already leased for its storage and distribution operations.

Grace said Locus Development's initial plan is to construct one spec industrial building to jump-start Comstock Commerce Center. Construction is ongoing on the second building, a massive 815,000-

square-foot industrial warehouse. Alston Construction is the general contractor, while Sierra Nevada Construction is doing the mass grading and site work for future buildings.

“The grading work out there, and the topography of all the land is different from what you find in most areas,” Grace said. “We went through some feasibility studies to figure out how to grade it effectively and still meet the demand of current users in the market with the size ranges, depths, column spacing, and clear heights that work best – all the things you do for a normal industrial development.

“There is a lot of flexibility, but ultimately we will be delivering about nine million square feet of leasable space at full buildout,” he added.

Grace said the challenging topography at C3 requires a delicate balancing act between building size and grading costs – flat terrain is limited at the site and must be constructed by cut and fill operations. Moving more dirt means higher costs and could impact potential rental rates, he said.

“We are trying to keep costs reasonable so we can offer reasonable market rental rates to these distribution and manufacturing facilities,” Grace said. “When you are dealing with a property of this size, the dirt quantities get large, and the dollars get larger. You have to understand how that is going to affect the overall development.

“It is a constant civil engineering iteration to get to the ultimate site plan,” he added. “We are still working to understand which building sizes work best for the site and also meet user demand.”

Kimley-Horn: Planning and Design Engineering Consultants is the civil engineer, and Tectonics is the architect at C3. The industrial team at Kidder Matthews is the broker of record and already has fielded a number of requests for proposals for the 815,000-square-foot speculative building even though the warehouse is still coming out of the ground.

With the majority of new Class A industrial buildings being leased before they are finished, Grace said Locus’ goal is to stay slightly ahead of user demand.

“Right now, activity is extreme,” he said. “Companies that need larger building formats are looking 12 to 18 months out because moving a business of that size takes a lot of coordination and time. Our goal is to continue building as long as the demand is there, and we are going to continue to try to stay one building ahead of demand.

“Our investment group is very hands-on and is very invested in Northern Nevada as a whole,” Grace added. “They love the area, they believe in it, and it is where they chose to spend their investment capital.”

In other industrial commercial real estate news, high inflation, rising interest rates and the threat of a national recession haven’t cooled the white-hot industrial market in Northern Nevada.

Overall industrial vacancy ticked upward ever so slightly in the third quarter to crack 1 percent after two extremely heated quarters and sub-1 percent vacancy to start the year, the industrial team at Colliers reports. However, rents continued to rise, and in some Northern Nevada submarkets annual rental escalations are among the highest in the nation.

Overall asking rates in the third quarter were at $.82 cents, up from $.64 cents in the same quarter a year earlier. In all, more than 5.3 million square feet of new Class A industrial has been added to the market in 2022, Colliers reports. An additional 2.1 million square feet of industrial space is under construction, with another 11 million square feet planned for Northern Nevada.

2022 Elections: Candidate Surveys on the Environment

Learn more about what the candidates running for nine races in Reno, Sparks and Washoe County have to say about environmental issues.

Breaking down responses to KUNR's candidate surveys on the environment

KUNR Public Radio | By Natalie Van Hoozer, Shelby Herbert, Lucia Starbuck

Published October 25, 2022 at 6:07 PM PDT

Lucia Starbuck / KUNR Public Radio

KUNR put together an environmental survey for candidates running for city council or mayor in Reno or Sparks and commissioner in Washoe County based on questions submitted by the community.

KUNR's Natalie Van Hoozer and Shelby Herbert sat down with Lucia Starbuck to discuss what people running for office had to say.

Lucia Starbuck: So Natalie, how and why did you put this candidate survey together?

Natalie Van Hoozer: We asked people to submit questions for local candidates in an online form at KUNR.org. The form was open-ended, but we noticed that people wanted to know about the environment. I also visited a class at UNR, which had a good mix of students with different majors, to gather additional questions.

I then compiled all those questions into a survey and sent it to candidates for mayor and city council for both Reno and Sparks, as well as Washoe County Commission. In our two main questions, we asked candidates how they would protect people from poor air quality and heat, as well as their ideas for water conservation.

Starbuck: Let's start with the races for Reno and Sparks mayor. Shelby, what did those running have to say?

Shelby Herbert: So we ask the candidates how they would provide relief to vulnerable members of the community during hazardous smoke days. For the mayoral races, only the incumbents responded.

Mayor Hillary Schieve pointed to Washoe County's Nevada CARES Campus, which provides shelter for people who are unhoused. The county spokesperson said the facility functions as a cooling center in the summer with air filters, and anyone is welcome there. I should note, though, that bed space at the facility is often at or near capacity. Schieve's opponent, Eddie Lorton, is a vocal critic of the city council, and he didn't respond.

Moving over to the Sparks race, Mayor Ed Lawson suggested using senior centers and public libraries for respite from the elements, and that was a pretty common response. Washoe County confirmed that these spaces can be used for that purpose. Lawson's challenger, Chris Garvey, didn't respond.

Starbuck: For the Sparks City Council races, what issues were important to the candidates, Natalie?

Van Hoozer: All Sparks City Council candidates responded, and many of them pointed to the Truckee Meadows Water Authority, known as TMWA, which manages the region's water supply. Members of the Reno and Sparks city councils and Washoe County Commissioners are on the board for TMWA.

Looking specifically at Ward 2, which is Northwest Sparks, incumbent Dian VanderWell spoke about the city's current use of treated wastewater for parks and golf courses as being important. She's running against Johnny Eastwick, who mentioned the need for alternative landscaping that uses less water.

Over in Ward 4, which is Northeast Sparks, incumbent Charlene Bybee is running against Damon Harrell. Both of them touched on the importance of protecting our area's water supply from contamination, and that includes lakes, rivers and groundwater.

Starbuck: Now over to Reno City Council. Shelby, what did you learn there?

Herbert: Incumbent Naomi Duerr is on the ticket for Ward 2; that's in South Reno. She talked up the program she launched, called ReLEAF Reno, to plant more trees in an effort to combat urban heat. Her opponent, Jay Kenny, didn't respond.

Incumbent Bonnie Weber is in the race for Ward 4; that's in North Valleys. She spoke in support of OneWater Nevada, a regional collaborative working toward a sustainable water supply. Weber said that she does not believe that there is scientific consensus about human-caused climate change. She was the only candidate who responded this way. Research by Cornell [University] shows that more than 99.9% of scientific papers sampled in their expansive survey agree that climate change is real and human-derived.

Megan Ebert is Weber's opponent. She wants to further efforts to clear flammable debris and vegetation in order to reduce the risk of wildfires in North Valleys.

Starbuck: And finally, Natalie, let's talk about what you heard from Washoe County Commissioner candidates.

Van Hoozer: So only the Democratic candidates responded. Let's start talking about District 2, which represents the southern part of the county. Keith Lockard wants to see more indoor air purifiers for low-income residents or face masks to protect unsheltered people and outdoor workers. The other candidates in this race, Mike Clark and David Banuelos didn't respond.

Let's move to District 3, which covers the Reno area from Sun Valley down to the airport. Mariluz Garcia wants to reduce pollutants and make sure that underserved communities have a seat at the table about environmental discussions. Garcia's opponent, Denise Meyer, didn't reply to the survey.

And finally, District 5 represents the largest geographic region, including Somersett, North Valleys and Cold Springs. Edwin Lyngar encouraged planting more drought-resistant native vegetation in lieu of plants that consume a lot of water. District 5 incumbent Jeanne Herman didn't respond.

Read the full responses from candidates for KUNR's survey on the environment.

Shelby Herbert is a reporter for the Hitchcock Project for Visualizing Science, which is an initiative from the University of Nevada, Reno's Reynolds School of Journalism.

KUNR's work on this reporting is supported by Democracy SOS, a newsroom fellowship by Hearken and the Solutions Journalism Network. Additional support comes from America Amplified.

Natalie Van Hoozer

Natalie is a freelance journalist and translator based in Reno, Nevada, who reports in English and Spanish. She also works for the nonprofit SembraMedia, supporting independent, digital Spanish-language media in the United States.

See stories by Natalie Van Hoozer

Shelby Herbert

Shelby Herbert is a graduate student of the Reynolds School of Journalism at the University of Nevada, Reno. She's a reporter for the Mick Hitchcock, Ph.D., Project for Visualizing Science and covers regional science news.

See stories by Shelby Herbert

Lucia Starbuck

Lucia Starbuck is a corps member with Report for America focusing on community reporting and the impacts of the COVID-19 pandemic. Local community issues are her passion, including the affordable housing crisis, homelessness, a lack of access to healthcare, protests and challenges facing vulnerable communities in northern Nevada.

See stories by Lucia Starbuck

WATERNEWSNETWORK
SAN DIEGO COUNTY WATER AUTHORITY

Once complete, the Manchester Avenue Recycled Water Project will reduce demand for imported potable water by more than 10 million gallons every year. Photo: Joe Jensen/ Olivenhain Municipal Water District

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October 25, 2022

A proactive approach to developing diversified water sources, including water recycling projects and conservation efforts, are helping the San Diego region weather the current drought.

The Olivenhain Municipal Water District is working on multiple projects to expand the use of recycled water. The U.S. Bureau of Reclamation awarded the North San Diego Water Reuse Coalition, led by OMWD, $17.8 million in August for the development of recycled water infrastructure in North County.

Combined with the $6.1 million the federal agency granted to the coalition in 2021, up to $23.9 million will help cover costs for work performed on water reclamation and reuse projects through 2025. The coalition consists of nine water and wastewater agencies coordinating recycled water efforts across jurisdictional boundaries.

“Our board is proud to be a water district that consistently innovates to reduce project costs,” said OMWD Board Director Neal Meyers. “We constantly develop new funding partnerships, and we aggressively pursue grant funds to help build our vital infrastructure projects at the lowest possible cost to our ratepayers.”

Regional Recycled Water Project

The Regional Recycled Water Project will increase the capacity and connectivity of the recycled water storage and distribution systems of the coalition members and maximize reuse of available wastewater supplies.

To do this, the project will replace potable water uses with recycled water components, convert facilities to recycled water service, connect discrete recycled water systems to one another, increase recycled water storage capacity, and distribute recycled water to effectively meet recycled water demands.

Recent construction of advanced water treatment facilities at the San Elijo Water Reclamation Facility allows for increased recycled water production. Photo: Courtesy SEJPA

Maximizing water reuse, increasing local supply

Project objectives include optimizing available wastewater resources to help offset demands for imported potable water; proactively planning for facilities to meet demands for existing and planned growth in member service areas; combining resources and working together to maximize water reuse; and increasing water supply availability, reliability, and sustainability.

When all long-term project elements are completed, North San Diego County will gain approximately 41 million gallons per day of recycled water and potable reuse water.

Manchester Avenue project underway in Encinitas

Once complete, the Manchester Avenue Recycled Water Project will reduce demand for imported potable water by more than 10 million gallons every year. Photo: Olivenhain Municipal Water District

Work began on OMWD's Manchester Avenue Recycled Water Project in summer of 2022. As of October 1, more than half of the total 6,884 feet of recycled water pipeline has been installed. Once complete, irrigation customers connecting to the pipeline will reduce demand for imported potable water by more than 10 million gallons every year.

(Editor's note: The Olivenhain Municipal Water District is one of the San Diego County Water Authority's 24 member agencies that deliver water across the metropolitan San Diego region.)

SCIENCE & TECHNOLOGY

Colorado Could Become First US State to Reuse Water

October 26, 2022

Colorado's water quality agency recently gave early approval to rules about direct potable reuse. It is a process of treating **sewage** and sending it directly for use without first putting it in a large water body.

Should the move be approved in a final vote in November, the western state would become the first in the United States to adopt direct potable reuse rules, state and federal officials say.

Kevin Reidy of the Colorado Water Conservation Board said that as Colorado's population increases, drinking water reuse is an important way to deal with reduced water supplies.

The water reuse treatment process usually involves disinfecting **wastewater** with ozone gas or ultraviolet light to remove viruses and bacteria. Then the water is put through barriers with very small openings, or pores, that remove solids and dangerous materials known as contaminants.

The process is gaining interest as communities deal with long periods without enough rain. While many U.S. states do not directly forbid this kind of water reuse, statewide rules could bring quicker adoption, said Reidy.

There are no exact federal rules for direct potable reuse. However, reuse projects must meet federal health rules for drinking water.

Florida, California and Arizona are now working on rules for direct potable water reuse. And several other states are beginning the process or have existing projects. As the water level of the Colorado River continues to drop, Arizona faces deep water cuts, while pressure grows for California to give up more of its share.

Denver and Colorado Springs — Colorado's most populous cities — already recycle most of their water through exchanges with other cities and for non-drinking uses, such as watering parks. Both cities expect to someday reuse water for drinking purposes, but officials are concerned their reusable supplies from the stressed Colorado River soon could face cuts.

Greg Fisher of Denver Water was concerned about the time it takes to build a large direct potable reuse system.

“If you’ve built a big direct potable reuse system and you don’t have it even for a few years, that causes some problems,” he said.

“If we are relying on those reusable (drinking water) supplies to meet our customers’ needs, our ability to meet their needs is put at risk,” Fisher added.

Creative uses of recycled water

Still, some people in Colorado are already making creative use of recycled water.

When Eric Seufert brewed a test batch of beer in 2017 with water from recycled sewage, he was not too concerned about the outcome. The engineering company that contacted him about the test explained the process, and together they drank samples of recycled water. Seufert quickly understood the process was not too different from how water is normally treated.

“Every … river in this country has someone putting in their wastewater after they’ve treated it,” he said.

After opening the beer and having a taste, the owner of 105 West Brewing Co. in Castle Rock, Colorado now served it to others.

Seufert already knows he can make good beer from recycled water. He is more worried about keeping the cost of business down.

“I’m concerned that the resources will be there for the planned growth in an affordable way for this region,” Seufert said. “But, as of now, I trust that” state officials “are working on it.”

I’m John Russell.

Brittany Peterson reported on this story for the Associated Press. John Russell adapted it for VOA Learning English.

Words in This Story

sewage – *n.* waste material (such as human urine and feces) that is carried away from homes and other buildings in a system of pipes

wastewater – *n.* water that has been used in a home or business

recycle – *v.* to use (something) again; to make something new from (something that has been used before)

batch – *n.* an amount of something that is made at one time

sample – *n.* a small amount of something that gives you information about the thing it was taken from

affordable – *adj.* not costly, inexpensive

region – *n.* a part of a country, of the world, etc., that is different or separate from other parts in some way

Study finds elevated levels of arsenic and other metals in Nevada private wells

by Katherine Nowicki
Wednesday, October 26th 2022

DRI's Monica Arienzo, Ph.D., and Erika Robtoy, undergraduate student at the University of Nevada, Reno collect well water samples in Palomino Valley, Nevada. (DRI)

RENO, Nev. (News 4 & Fox 11) — A recent study shows that some drinking water sources in Nevada are contaminated with arsenic and other heavy metals.

Private wells are the primary source of drinking water in rural Nevada, serving 182,000 people and some of the tested private wells in Nevada are contaminated with levels of heavy metals that exceed federal, state or health-based guidelines, a new study published in "Science of The

recruited households with private wells through the Healthy Nevada Project. Households were sent free water testing kits, and participants were notified of their water quality results and recommended actions they could take.

More than 170 households participated in the research, with the majority from northern Nevada around Reno, Carson City and Fallon.

“The goals of the Healthy Nevada project are to understand how genetics, environment, social factors, and healthcare interact. We directly engaged our participants to better understand environmental contaminants that may cause adverse health outcomes,” said co-author Joseph Grzymski, Ph.D., research professor at DRI, principal investigator of the Healthy Nevada Project, and Chief Scientific Officer for Renown Health.

Nearly one-quarter (22%) of the private wells sampled had arsenic that exceeded safe levels determined by the Environmental Protection Agency (EPA) — with levels 80 times higher than the limit in some cases. Researchers also found elevated levels of uranium, lead, cadmium and iron.

“We know from previous research that Nevada’s arid climate and geologic landscape produce these heavy metals in our groundwater,” said Monica Arienzo, Ph.D., an associate research professor at DRI who led the study. “It was important for us to reach out to community members with private wells to see how this is impacting the safety of their drinking water.”

Fewer than half (41%) of the wells sampled used water treatment systems, and some treated water samples still contained arsenic levels over EPA guidelines. Although average levels of heavy metal contaminants were lower in treated water, many homes were unable to reduce contaminants to levels considered safe.

The state leaves private well owners responsible for monitoring their own water quality, and well water testing helps ensure water is safe to drink.

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Search Site

available from Science of The Total Environment here.

Residents near Swan Lake urged to apply for property value reduction due to odor

Swan Lake in Lemmon Valley just north of Reno. (Terri Russell)

By Kevin Sheridan

Published: Oct. 27, 2022 at 11:26 AM PDT

RENO, Nev. (KOLO) - Washoe County Commissioners will be hosting a meeting for Swan Lake residents on Nov. 2.

The meeting, which will take place at 1001 E. Ninth Street at 6:00 p.m., will be to discuss public concern over noxious odors coming from Swan Lake.

Following an Oct. 19 meeting, Washoe County officials met to discuss the impact the odor may have on property values for homes in the area.

The County determined the odor may in fact be cause for residents with real property surrounding the lake to explore having their properties devalued by the county.

Swan Lake residents, as well as residents from surrounding areas, are now encouraged to have the county evaluate whether they qualify for a property value reduction.

Homeowners who would like to review whether their properties have been devalued should contact the Assessor's office. For more information contact Mike Clark at 775-720-2277 and Jeanne Herman at 775-358-0555.

reno gazette journal

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

Experiential education with frontline defenders is the path to saving Lake Tahoe

Cara Hollis

Published 12:00 p.m. PT Oct. 31, 2022

This opinion column was submitted by Cara Hollis, a geoscientist and a returning student to University of Nevada, Reno, studying sustainability and journalism.

There is no way to describe Lake Tahoe to someone who has never seen it. Its sheer size, color, clarity, and its setting nestled in beautiful mountains defy words.

Its beauty is easy to take for granted, but there is trouble beneath the surface. The lake is facing threats from all sides. Climate change, microplastics, algae and invasive species are just a few of the concerns.

The only way to save Lake Tahoe is for people who live and play here to understand the issues that Lake Tahoe is facing and what actions they can take to mitigate the worst outcomes.

This is what makes experiential education at every level of schooling and beyond so important for creating an engaged citizenry.

According to the Association for Experiential Education, experiential education is a teaching philosophy in which educators purposefully engage learners with direct experience in the field and focused reflection to increase knowledge, develop skills, clarify values and develop people's capacity to contribute to their communities.

While all the outcomes of experiential education are valuable, it is the capacity to connect with and contribute to communities that is particularly beneficial to understanding the stress the environment is under and spurring people to act.

More: Declines in Lake Tahoe's clarity have been halted; scientists ponder what's next

Fortunately, the professionals at the UC Davis Tahoe Environmental Research Center (TERC) are frontline defenders of the lake that make experiential education easy to access.

UC Davis TERC is research facility monitors Lake Tahoe’s ecosystems and charts how natural variability, long-term change and human activities are affecting the lake’s physics,
chemistry and biology.

The work that UC Davis TERC researchers do is detailed and complex, but they have made the results of that work easy for the public to access through their Tahoe Science Center located in Incline Village.

For a fee of $10 per person or less, families, school groups and other interested parties can reserve a time to experience docents describe how this amazing lake came to be, what makes it so unique, the challenges it is facing and things that everyone can do to help keep the lake healthy.

It is experiential education that doesn’t even require you to go outside.

I experienced the Tahoe Science Center through an opportunity with my school and it was eye-opening.

The data that I saw at the Tahoe Science Center really connected me to the struggles that the lake is facing and helped me understand the fight that is going on to save it. Without that experience, I would be blissfully unaware.

This is the reason that experiential education matters. From elementary school to post-graduate work, everyone needs to see the natural world with their own eyes to develop the connections that are needed to save it.

It doesn't have to be difficult.

Parents should encourage schools to find ways to engage their children with nature. If schools can't lead the way, then parents should make sure their children get time outside in beautiful places like Lake Tahoe and the surrounding forest.

When kids are old enough, schedule a session at the Tahoe Science Center for the family. Or set aside some time to volunteer with organizations like The League to Save Lake Tahoe or the Truckee River Watershed Council. Just a few hours out of a week or a month can be enough to instill awe and wonder, and build a commitment to protect.

Emphasis on experiential education is the way to create lasting change that can give future generations a fighting chance at having a livable, beautiful world and saving Lake Tahoe.

Cara Hollis is a geoscientist and a returning student to University of Nevada, Reno, studying sustainability and journalism.

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

More: South Lake Tahoe may outlaw single-use plastic water bottles as microplastic contamination grows

reno gazette journal

NEWS

Fishy smell in Lemmon Valley may lead to lower property taxes for some residents

Mark Robison
Reno Gazette Journal

Published 11:29 a.m. PT Oct. 31, 2022 | **Updated 12:04 p.m. PT Oct. 31, 2022**

A meeting Wednesday could lead to property taxes being lowered for some Lemmon Valley residents whose lives have been disrupted by a strong fish smell and by the light, noise and traffic issues caused by new warehouses.

The original meeting for residents near Swan Lake had been planned for the Washoe County commission chambers.

That location was nixed over concerns about the appearance of political favoritism, but those concerns have been resolved because the officials involved — both running for political office in the general election — have said the events are not campaign related.

The meeting now will take place at 6 p.m. Wednesday inside the Washoe County assessor's office, 1001 E. Ninth St., Building D in Reno.

"I've got enough space in the assessor's office to hold 60 to 70 people," said assessor Mike Clark on Monday. He is also a candidate for county commission District 2 covering south Reno and Washoe Valley.

Commissioner Jeanne Herman, whose district includes Lemmon Valley, will also attend.

“The important thing is that we take care of this issue,” Herman said about quality-of-life concerns of Swan Lake area residents. “It should've been taken care of by the commissioners a long time ago and was not, and we will take care of it one way or another.”

Campaign controversy

Herman and Clark are both Republicans running in the general election. Clark faces Democrat Keith Lockard, and Herman faces Democrat Edwin Lyngar.

In a statement sent Friday to the RGJ, Washoe County spokesperson Bethany Drysdale said, “As a policy, Washoe County does not allow its property to be in any way involved in campaign-related events. Concerned residents brought it to our attention that a community meeting regarding Swan Lake was planned by two candidates through their campaigns. Therefore, in an abundance of caution, Washoe County cannot allow it to be held on county-owned property.”

Related:

3 takeaways from Mike Clark-Keith Lockard debate for Washoe County Commission District 2
Herman, Lyngar disagree over election concerns in Washoe County District 5 debate

Drysdale added during a phone call that the county is very sensitive to not seeming to promote officials during election season, going so far as to take commissioner portraits off the walls and not including county clerk Jan Galassini in recent balloon race photos even though she's unopposed on November's ballot.

On Monday, Clark said county manager Eric Brown agreed to allow the meeting to be in Clark's office as long as it was not a campaign event. Drysdale confirmed this.

Herman and Clark insist that the meeting invitation was not sent out by them as candidates but in their capacity as county officials.

The meeting was posted on Clark's campaign Facebook page twice.

Clark included a screenshot of an email from Brown to Herman saying, "Election campaign events are not allowed in County facilities."

In the screenshot post, Clark wrote that the meeting announcement was a "press release" and "The people that we are elected to serve are having difficulties and I'm trying to help them find solutions."

Swan Lake problems

After a meeting of Swan Lake residents earlier this month, Clark and Herman got together to discuss the issue and the impact the fishy odor may have on property values, according to the press release put out last week by Herman announcing the meeting.

"Clark then reviewed the matter with his county team and found that based upon what was reported by the Swan Lake residents, the noxious odor may be cause for residents with real property surrounding Swan Lake to explore the ability to have their properties devalued by Washoe County," it said.

A lower assessed property value would mean lower property taxes.

Clark told the RGJ that it's like the difference between two otherwise identical homes, but one is on a noisy, busy street and the other is in the middle of a quiet subdivision. They would be valued differently.

He said that in addition to the fish smell, new warehouses have diminished the quality of life for some Lemmon Valley residents.

"They say they can't sleep in their own house," he said of people speaking at public meetings. "There are the floodlights at night and the trucks backing up —beep beep beep."

He said the people were already living there when the city of Reno granted permits and authorization to build the warehouses next to them.

"These aren't people that move next to the airport and then complained about airport noise," he said. "The warehouses were built after they were living there. They've got a legitimate gripe, so I'm looking into that as well."

Ethics concerns

Asked about possible ethics concerns from talking about lowering property values before an election, Clark said he just heard about the issue recently.

“I thought I was acting prudently and getting on top of it,” he said.

Any reassessment would need to be done before the end of November, he said, and urged Swan Lake residents who feel their property tax-assessment value should be lowered to send their contact information to the assessor’s office. It can be reached at exemptions@washoecounty.com.

When there was flooding in Lemmon Valley and the Little Valley Fire, those residents were immediately taken off the assessor’s rolls and his office didn’t need to get approval to do that, Clark said. He views this as a similar action to help taxpayers who have been negatively affected.

“We need to act on it quickly because we can get that in the (assessor) rolls before we have to send them off to the state,” he said. “So if we're gonna make an adjustment, this is the best time of the year to do it. From that standpoint, the timing couldn't be better for this to come to my attention.”

More: What future do you want to see for Reno's Virginia Street corridor?

Mark Robison covers local government for the Reno Gazette-Journal, as well as writes Fact Checker and Ask the RGJ articles. His position is supported by donations and grants. Because of this, the journalism he creates is free for all to read. If you'd like to see more articles like this, please consider sharing this article or giving through PayPal here — 100%of donations go to Mark's wages.

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In remote Nevada valley, race for more lithium comes down to water

Daniel Rothberg October 31st, 2022 at 2:00 AM Environment

SHARE

To recover lithium, Albemarle pumps brine from an underground aquifer and coveys it into massive evaporation ponds, seen on Oct. 6, 2022 during a media tour of the Silver Peak lithium mine in Silver Peak, Nev. (David Calvert/The Nevada Independent)

There is an otherworldly feel to the crystalline-blue evaporation ponds that sit in Clayton Valley, an arid area in Nevada's least populated county, Esmeralda. From above, the ponds look like a grid of pooled water arranged in a gradient that moves from a deep-sea blue to a light-sky tone.

The man-made desert pools contain what is naturally underneath the ground: water.

Pumps, drilled deep into the Earth, pull brine from an underground aquifer, and pipes move the salty water into the expansive holding ponds. This is not *just* any water. It is rich in lithium, a mineral needed for electric cars and large-scale storage batteries, technologies in high demand as countries and industries seek to decarbonize national economies and electric grids.

In the United States, policymakers see these pools and the valley surrounding them as playing a central role. The ponds are part of the Silver Peak mine, an operation run by Albemarle, a global lithium player based in North Carolina. For many years, this mine was the country's only active domestic lithium source. As **lithium prices have skyrocketed**, more mines have looked to come online — and Albemarle is looking to expand its footprint and operations in Clayton Valley.

During a recent media tour of Silver Peak, Karen Narwold, Albemarle's executive vice president and chief administrative officer, said the expansion could double output. Currently, Silver Peak can produce about 5,000 metric tons of lithium per year (one metric ton is about 2,205 pounds).

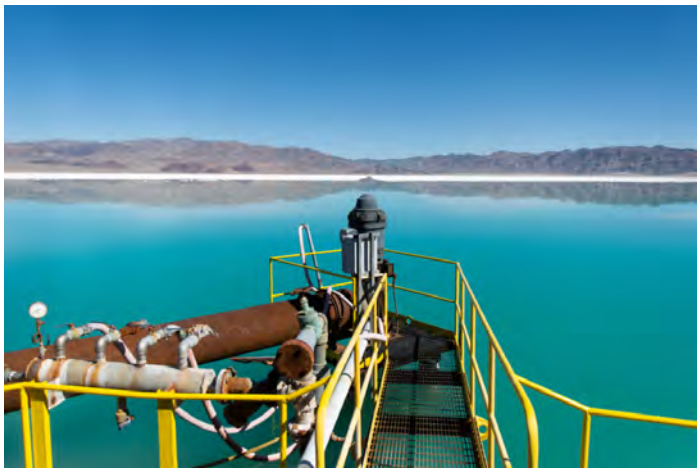
"The current demand for lithium is probably around half a million," Narwold noted. "So this is a relatively small site, but very important from the standpoint of a U.S. domestic supply chain."

"Customers," she added, "are asking for more and more lithium, all the time, as you see [electric vehicle] demand increasing," and the expansion of Silver Peak could help fill the supply gap.

Yet Albemarle is not the only player in Clayton Valley. SLB, a global oil eld services company formerly known as Schlumberger, holds mining claims for a lithium project next to Albemarle's existing ponds. The company, eyeing a pivot from fossil fuels to renewable energy, argues that its plant would extract lithium more e ciently and sustainably, all with a smaller water footprint.

Behind the scenes is a contentious and ongoing administrative battle over water rights and the laws that govern mining in the West. At issue is which company has the legal right to extract the lithium concentrated within the valley's salty waters — and on what terms mining takes place.

Representatives with SLB's Nevada project have argued that Albemarle has used its large water holdings to actively prevent competition in Clayton Valley, e ectively wielding "monopoly" power and shutting out other players with federal claims to mine lithium using new extraction methods.



A large-scale evaporation pond at the Silver Peak lithium mine on Oct. 6, 2022. The evaporation process can take a year and a half to complete. (David Calvert/The Nevada Independent)

Heavy equipment is used to manage the Silver Peak lithium mine, an operation that relies on the evaporation ponds. A solid salt is a byproduct of the process. (David Calvert/The Nevada Independent)

The settlement of those water rights and mining claims could have major implications for how the race for lithium in Nevada, and in the United States, unfolds. In total, about 30 companies are involved with mining proposals in Clayton Valley, **according to the Nevada Division of Minerals.**

The division, which tracks more than 17,000 claims for lithium, has seen a roughly 58 percent annual increase in lithium claims. Lithium companies are exploring areas across Nevada, from Dixie Valley to Railroad Valley. Still, Clayton Valley is an area that continues to capture interest.

“There’s a lot of contention there between the entities in Clayton Valley and who has rights to this, that and the other,” noted Mike Visher, the division’s administrator. “At the end of the day, everyone is trying to determine what assets they have — and what’s the value of that asset.”

Employees at the Silver Peak mine prepare and stack bags of lithium carbonate, a white powder, on Oct. 6, 2022. Lithium is in high demand as countries seek to decarbonize their economies. (David Calvert/The Nevada Independent)

A water dispute

Here, in Clayton Valley, water rights are everything. Once the brine is pulled from the ground, it is left to sit in the large ponds. Over roughly a year and a half, the brine is transferred to different holding ponds and left to evaporate.

With little precipitation and a lot of sunlight, the Silver Peak mine relies on evaporation to get a more concentrated solution. That salty solution is eventually piped to a nearby processing and production facility, where it ends up as a white lithium powder.

All of this is done at scale, and continuously. Albemarle has about 70 wells operating every day, Narwold said. To expand, the company added 22 wells, and it could bring additional evaporation ponds online. The mine includes about 23 ponds. The company, Narwold said, could build two to five new ponds or bring old ponds online by dredging the salt that amasses as a byproduct.

Those investments are to prepare for more brine coming into the system. By the end of the year, Albemarle plans to use all its water rights to produce more lithium, bolstering a domestic supply chain for a mineral increasingly seen as critical for the global economy. Yet SLB is challenging Albemarle's plans, and its hold on Clayton Valley. SLB argues it has rights to tap into the water.

Two companies with big backing, effectively competing for the same water: Albemarle **supplies Tesla** and SLB's operation is **strategic partners** with Panasonic Energy of North America.

In much of the West and in Nevada, water is regulated on a **"first in time, first in right"** basis. In the face of scarcity, those who claimed water rights first — or are "senior" — have the priority to use all their water before those who received water rights more recently. But there are important caveats: Water must be put to use within a certain amount of time, or you could lose your right.

That condition, known as "use it or lose it," is meant to prevent speculators who might otherwise hoard water rights — for financial gain or competitive advantage — without ever using them. At the end of the day, while water in Nevada can be put to private use, **water belongs to the public.**

Sign posts show the Silver Peak mine's proximity to other areas of the state. Mining has taken place in this area of Nevada since the 1860s (David Calvert/The Nevada Independent)

As brine is moved between evaporation ponds, it becomes more concentrated in the water. The ponds, at this point in the process, take on a bright blue color. (David Calvert/The Nevada Independent)

For more than half a decade, the courts and regulators have been grappling with this issue and the question of who is entitled to profit off of Clayton Valley's water and the lithium concentrated in it.

Albemarle holds the rights to almost all the water rights in all of Clayton Valley — about 20,000 acre-feet in total (an acre foot is the amount of water that can fill an acre to a depth of one foot).

"Our position quite simply has been there is no water to be given to anyone because we have all the water rights," Narwold said at the Silver Peak tour in October. "And we've been operating for many years here and can successfully show that we're actually making a commercial product."

There's a catch to that: Over the years, the Silver Peak mine has only used about 60 percent of its water allotment. That means Albemarle might be running afoul of the "use it or lose it" rule.

SLB's Nevada project argues that Albemarle has speculatively held onto water rights it never put to use. In a **filing this year**, a lawyer for Pure Energy Minerals, SLB's partner, said that "for over three decades, Albemarle has been permitted to hold excess water hostage in Clayton Valley though it has never been able to put that water to use, nor is it permitted to do so."

"Albemarle is undoubtedly engaging in speculation that is against Nevada water policy and the anti-speculation doctrine adopted by the Nevada Supreme Court," **Pure Energy Minerals wrote.**

Employees in SLB's NeoLith Energy on-site mobile laboratory. NeoLith Energy is beginning on-site work for a pilot plant to test an extraction process that would have a smaller water footprint. (Courtesy of NeoLith Energy)

Through a subsidiary, Pure Energy Minerals had applied for a series of water rights, water that Albemarle has not used in the past. Those rights, pending approval by state regulators, would help NeoLith Energy — an SLB subsidiary — fully develop its lithium project in Clayton Valley.

That lithium project would rely on direct lithium extraction, a closed-loop system whereby brine would be pumped from the aquifer, processed and put back in the ground. If successful, some industry observers hope the direct extraction process could speed up lithium processing using a smaller water footprint, with an estimated 80 percent of the water recycled back into the aquifer.

NeoLith Energy has mining claims for its project, and 50 acre-feet of permitted water rights for a pilot plant. The company, operations manager Richard Morrison said, also received a state mine permit, and crews are beginning to work on constructing the facility. But for a full build-out of the project, NeoLith Energy needs more water, water Albemarle now plans to use for its expansion.

“The issue is not water availability,” Morrison said during an interview. “The issue is maintaining a monopoly through holding water hostage, and it has been. And that's not just been for us.”

Pending legal questions

For several years, Pure Energy Minerals has challenged Albemarle’s claims to use most of the water in the valley. Pure Energy Minerals took particular aim at state decisions giving Albemarle “extensions of time,” legal exemptions to the “use it or lose it” condition. In total, Albemarle has received 21 extensions since the 1980s, **according to** a recent filing from Pure Energy Minerals.

In August 2020, a district court judge sided with Pure Energy Minerals, remanding one of those extensions back to state regulators for further deliberations. That, Morrison observed, was when Albemarle started to get serious about its plans to expand, suggesting water was a key motive.

“Before that, everything’s been very ceremonial,” he said.

Two challenges to state decisions — an extension of time in 2017 and 2018 — are now pending before water regulators, according to Micheline Fairbank, a deputy administrator at the Division of Water Resources. Fairbank said the state agency expects to rule on the issue later this year.

She said the issue has been fraught since about 2014, when companies began exploration and staking mining claims in Clayton Valley. These claims come with their own set of rights under an 1872 federal mining law, a rulebook written more with panning gold, not pumping brine, in mind.

That began about eight years of litigation involving state regulators and companies active in Clayton Valley, what Fairbank described as “one of the more challenging resource management areas we have in the state.” No matter how regulators rule, their decisions often end up in court.

The state agency, she said, “is really kind of caught in the middle.”

At the Silver Peak mine, pipelines can be seen. Some of them appear inactive, part of ponds no longer in use. But other pipelines are used to transport water from wells to the ponds. (David Calvert/The Nevada Independent)

As NeoLith Energy has challenged Albemarle’s water holdings, Albemarle has pushed back against their claims to water rights, filing an **extensive protest letter** with state regulators. The letter expresses concerns with its proposed water use, its process and raises concerns that it might contaminate the groundwater aquifer (these concerns, Morrison said, are unfounded).

“We’ve been very transparent about what’s being used,” Morrison said, noting the company has worked with state regulators. “What goes back into the aquifer is as clean as what comes out.”

The fight over water is unlikely to be resolved any time soon. Water decisions from the state are subject to judicial appeal, and those with mining claims in Clayton Valley face many unanswered legal questions. Visher, the administrator of the state’s minerals division, said everyone working in the valley has “opinions of what they’re entitled to” when it comes to water and mineral rights.

“The claimant believes that under the mining law, they are entitled to the mineral that’s located under their claim,” he said, referencing the General Mining Act of 1872. “Albemarle contends that ‘No, because we have the water rights, we have the rights to all of the lithium in the basin.”

“And that’s going to end up in the courts at some point, most likely,” Visher added.

In the meantime, Albemarle is pushing forward, with a goal of expanding by the end of the year.

When asked about water, Narwold noted the pending issues, but she said that “until someone tells us we don’t have the water, the default is that we have all those water rights and we can pump them. That’s part of the expansion here, making sure we’re using all those water rights.”

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Update: Winter weather advisory issued, snow accumulation downgraded

News [FOLLOW NEWS] | Oct 31, 2022

Staff Report

Update 12:30 p.m.: The National Weather Service in Reno upgraded to a winter weather advisory Monday morning but with slightly less snow accumulation than Sunday when it issued a winter weather watch.

The advisory, in effect from noon Tuesday to 8 p.m. Wednesday, says up to 9 inches of snow could fall above 7,000 feet with 1 to 3 inches at lake level.

The winds are holding strong with gusts up to 50 mph expected and 80 to 100 mph gusts along the Sierra crest.

“Snow levels will crash on Tuesday with snow expected for all elevations,” the advisory said. “There will be an initial band of heavy snow pushing through Tuesday afternoon into the evening. This will be followed by periods of snow showers Tuesday night through Wednesday.”

Original post

TRUCKEE, Calif. — The Truckee-Tahoe region has been issued its first winter storm watch of the season.

The National Weather Service in Reno issued the watch for an incoming storm that could drop up to a foot of snow, winds that could reach triple digits and cold temperatures that will feel even colder with the strong gusts.

The service is forecasting 5 to 12 inches of heavy, wet snow above 7,000 feet and up to 5 inches above 5,500 feet.

The watch is in effect from 5 a.m. Tuesday, Nov. 1. through 5 p.m. Wednesday, Nov. 2.

The wintry conditions could impact the morning and evening commutes.

“Once the storm arrives, travel may be difficult or impossible for an extended period of time,” the statement said.

West to southwest winds could reach up to 50 mph, except along the ridges where gusts may hit 100 mph.

The service said strong winds may create sub zero wind chills along the foothills and ridgelines of the Sierra and could also result in tree damage.

Monday is a good day to prepare if traveling in the mountains over the next few days. Make sure to have an emergency kit that includes extra food, water and clothing and remember to pack tire chains.

Monday’s high will reach the low 60s which drops to the high 40s on Tuesday and the high 30s on Wednesday. The lows on Tuesday through Thursday will be in the low to mid teens.

More Like This, Tap A Topic (weather)

Tahoe Daily Tribune | Lake Tahoe action

Tahoe Conservancy grants $5.2 million to reduce fire risk in basin

News [FOLLOW NEWS] | Oct 31, 2022

SOUTH LAKE TAHOE, Calif. — The California Tahoe Conservancy has awarded two grants, totaling $5.2 million, to improve forest health and reduce wildfire risk in the Lake Tahoe Basin. The two grants include a $5,024,037 to the USDA Forest Service Lake Tahoe Basin Management Unit to address public safety risks and replant trees in areas damaged by the Caldor Fire, and $197,000 to the South Tahoe Public Utility District to reduce wildfire risk around Tahoe's critical water and sewer infrastructure by developing a vegetation management plan for water providers on the California side of the basin.

Cal Fire and California Conservation Corps crews clear brush on Tahoe Conservancy property in the Chiapa Drive/Tolteca Court neighborhood in August.
Bill Rozak/Tahoe Daily Tribune

Funding for these grants comes from California's 2021 wildfire package. These grants advance the goals of the 2020 Shared Stewardship Agreement between California and the Forest Service to increase treated acres of forest and rangelands in California.

"I am excited for the Conservancy to be able to support our partners in these important efforts," said Conservancy Board Chair and El Dorado County District 5 Supervisor Sue Novasel. "The Caldor Fire showed how important it is for us to work together to improve the health of our forests and to speed up work that reduces wildfire risk to our communities."

Grant for post-Caldor Fire work on national forest lands

This grant supports the LTBMU's efforts to protect public safety and restore lands damaged by the 2021 Caldor Fire, which burned almost 10,000 acres within the basin, mostly on National Forest lands. In addition to the fire damage, firefighters bulldozed approximately 55 miles of fire lines to contain the fire and as a contingency to protect South Shore communities. The LTBMU will thin 1,240 acres of forest impacted by the Caldor Fire, removing fire—killed or weakened trees that pose a hazard to roads, trails, private property boundaries, and recreation sites. This thinning also reduces wildfire risk. LTBMU will also reforest and restore a combined 247 acres of fire—damaged forest and bulldozed areas.

Reducing wildfire risk to water supply infrastructure

This grant supports work to reduce wildfire risk to critical water and sewer facilities. Damage to such facilities could be catastrophic for firefighters battling a large wildfire. In 2021, STPUD completed a fire vulnerability assessment of water and sewer infrastructure on the California side of the basin, supported by a prior Conservancy grant. STPUD will use the new grant funding to complete a vegetation management plan to reduce wildfire risk around infrastructure identified in the fire vulnerability assessment, and to complete related environmental review and permitting. Planning will cover STPUD infrastructure as well as Tahoe City Public Utility District, North Tahoe Public Utility District, and local private water companies.

Economic Development in Nevada

Opportunities and Obstacles

November 1, 2022 By Jennifer Rachel Baumer

Economic development has been scaling up in recent years, working to diversify into a more stable state economy.

"We work with all the regional development authorities," said Bob Potts, deputy director, Governor's O ce of Economic Development (GOED). "They get state funding from us, and we contract with them for the scope of work." GOED works the legislative and policy side, and the strategic planning for the economy as a whole. They partner with eight regional development authorities (RDAs), and municipal planning departments.

Every region offers different assets to companies and industries it hopes to recruit. Bringing RDAs together boosts marketing efforts and allows individual regions familiarity with others when suggesting the best landing site for potential businesses.

"While each municipality has its own identity and vision for the future, we all want to diversify our economies and encourage job growth and creation," said Jared Smith, director of economic development and tourism, City of Henderson. Henderson markets its region using digital and traditional campaigns targeting specic industry sectors.

Economic Development Authority of Western Nevada (EDAWN) aggressively markets through relationships with regional and statewide partners to highlight growth in the Reno-Sparks area. EDAWN works closely with Las Vegas Global Economic Alliance (LVGEA). The regions are so different, there's little competition.

"A company looking at the North is generally not looking at the South, and vice versa," said Mike Kazmierski, president and CEO, EDAWN. "Oftentimes we'll get a client prospect that is looking for certain things that we cannot provide, or that fit better with the South, and we refer them to LVGEA. Or it's more a rural kind of prospect and we'll refer it to our sister organization in Carson City, Northern Nevada Development Authority (NNDA). This is a team sport. We work well as a state on the economic development front."

LVGEA works with brokers, city and county municipalities, GOED, developers, and existing businesses that can connect them with businesses looking at Nevada. "Once we establish a relationship with those companies, we talk about things like tax incentive programs, if that's applicable. We talk about connecting them to workforce, to help their businesses. We talk about connecting them with the community and understanding the different regulatory processes we have, understanding each one of the jurisdictions or cities and their niche assets," said Tina Quigley, CEO, LVGEA.

LVGEA takes potential recruits and site selectors on tours to local parks, schools, cultural centers, industrial centers, familiarizing them with the region. Lead generation trips, picking up again post-pandemic, allow team members to scope out industry clusters that could flourish in southern Nevada.

North Las Vegas looks for businesses with leases expiring where they are. "We like to have conversations with them, pique their curiosity about doing business in North Las Vegas and see what we can do to move them here," said Terri Sheridan, manager, North Las Vegas Economic Development.

Obstacles

Every region faces unique obstacles, but as a whole, Nevada's economic development is challenged by land availability, water limitations and the need for workforce training.

"Obstacles are very localized," said Kazmierski. "For example, our housing prices have gotten very expensive. They're not as expensive in the rurals or in Vegas. If that's an important aspect of what a company's looking for, it affects their decision."

Nevada faces many of the same obstacles that occur nationwide: rising housing prices; tight labor pools. Most regions have similar challenges. But northern Nevada faces some unique challenges.

"We have limited land up here. We have plenty of water, so you should flip that around to what is limiting or potential obstacles. In Vegas, water may come up as one of the obstacles. For us it's land. We have a lot of BLM land around us and that forces companies to look at opportunities a little further away from the metro area, which may then make it harder for them to attract the labor they may need," said Kazmierski.

The dynamics of economic development has changed dramatically over the last couple years, according to Sheldon Mudd, executive director, Northeastern Nevada Rural Development Authority (NNRDA). While the entire state shares many of the same economic development problems, for rural Nevada, housing, workforce development and infrastructure are often challenging.

"But the biggest obstacles we have faced in the last couple years, more than others, are attitudes and policy at the state level regarding economic development," said Mudd. There's been a shift since Elon Musk called Nevada the get it done state. "I don't think you can say that anymore. The attitudes and efforts that are being put forth in order to enhance the business environment in Nevada have fallen completely to the wayside from my perspective. It's just harder to do business in Nevada now than it was in the past."

The need for infrastructure, everything from water and sewer to broadband, makes recruiting to rurals challenging. Even getting housing built can be difficult if there are no local builders. In some rurals, getting supplies and construction to the area is too challenging.

Companies locating in Nevada need facilities for the business, housing for employees and a trained or trainable workforce.

"Creating quality, high-paying careers for our residents and for prospective companies is a key priority in Henderson," said Smith. Which is why the city is partnering with College of Southern Nevada on a Center of Excellence, a facility designed to create a skilled workforce in advanced manufacturing, set to open in 2023. Assembly and advanced manufacturing is growing throughout Nevada, often due to companies leaving California.

Opportunities

Much like obstacles, opportunities vary by region. There's an entirely different tact taken with metro versus rural, and even between northern and southern Nevada's urban areas.

"Different flavor, different audience, different supply chain, they even have a different market," said Potts. "You have to think about their unique characteristics. There are some amazing opportunities in both the urbans and the rurals, but in different lanes."

Some rural counties—Eureka, Elko, Lander—are cutting edge in extractive mining. Lithium mining is poised to take off in counties that haven't had mining and is an opportunity for Nevada once permitting is finished and technology in place, according to Potts. Nevada is home to the only operating lithium mine in the U.S., located in Clayton Valley. In June 2022, permits were approved for mining at Thatcher Pass, approximately 60 miles from Winnemucca on the Oregon border.

Other RDAs are creating opportunities. NNRDA covers four counties and roughly 40,000 square-miles of rural Nevada. It has a huge region, with a tiny population. NNRDA markets worldwide, and also close to home.

"We've taken on a more active role in small business space, a grow your own approach, trying to empower local residents to start businesses and engage in active commerce and providing services," said Mudd.

NNRDA has two small business initiatives. READY AIM Small Business Primer is a program created because small business owners wanted a bare bones, speaking-our-language program to help startups. NNRDA went all in and developed an entire curriculum.

The second initiative, Launch Rural Nevada, is a pitch and networking event originated by GOED that provides small businesses mentorship, access to capital and connections to agencies that assist small business.

Growing entrepreneurial businesses is one area of the state has been slow to get traction. Organic growth means RDAs don't have to work as hard to bring in new companies.

GOED is working to create programs to support small business and encourage entrepreneurial ventures, and to get programs state funding.

"What we really want to start focusing on are businesses that are going to be low water consumers, that have a natural alliance with who we are already, and are easily or organically attracted here," said Quigley. Businesses that support those already present are a good bet.

With southern Nevada's growing sports industry, LVGEA targets vendors already supplying southern Nevada sports companies to find overlaps, where the same company is working for several sports franchises. Because if they've already got that much activity in southern Nevada, why not relocate or establish a presence there?

Land Availability

One statewide obstacle to recruitment is land availability. In southern Nevada, federally managed BLM land creates barriers to growth. In northern Nevada, both BLM land and the mountains constrain growth. Some land issues are offset by Tahoe-Reno Industrial Center east of Sparks. In southern Nevada, much of the buildable land is in North Las Vegas.

"We have Apex, a 12,000-acre industrial park with about 7,000 developable acres that is going to keep us on the map as far as land that can be developed over the next several years," said Sheridan. Development of Apex was first stalled by the Great Recession, then by lack of infrastructure. For some time there was only well water available and only to some sites. Now the city is making investments to water infrastructure, delivering city water to Apex. With infrastructure in place, businesses should follow. Kroger and Ball Corporation are two of the businesses already on site.

Bringing in infrastructure to kickoff development works. In 2006, North Las Vegas had 1,100 developable acres by the Speedway industrial area. There was some water, but more infrastructure was needed. Since investments were made in sewer and roadway infrastructure, close to 850 acres have been developed, increasing industrial product available and creating jobs.

Climate Change

"Water challenges can affect economic development," said Smith. "While we, as economic development practitioners, know that we must be responsible stewards for our municipalities, we also recognize that Henderson is, and can grow to be, so much more economically diverse in our job creation. We have a real opportunity to merge economic diversification and environmental priorities by recruiting clean tech companies."

"Water is top of mind for everyone," said Quigley. "There's a myth that all the communities along the Colorado River are going to run out of water. Las Vegas is the best positioned for a couple reasons." For one, the city gets return flow credits in terms of its allotment from the Colorado River because it reclaims and processes water back into Lake Mead. "The other reason we'll fare far better than other communities dependent on the Colorado is that we have what we call the third intake, at the bottom of Lake Mead. So even if the water isn't able to continue to flow downstream, we will still be able to draw from the base of the lake and continue to return that water back in."

"Water is a factor. We need to be asking the right questions and understanding the needs of companies coming in," said Sheridan. "If they're using water for cooling purposes, what other methods might they consider in lieu of water? We want businesses to be making smart decisions and we want to be talking to businesses that are making smart decisions."

Wish List

Not every industry is a good fit for every location. But sometimes it's the lack of existing industry making recruitment difficult. Sometimes it only takes one company to set the ball rolling.

Until recently, North Las Vegas hasn't been able to attract medical and associated R&D.

"We had 640 acres conveyed to the city as part of a job creation zone," said Sheridan. From that 640, the city separated out 135 so Pacific Group can develop it into Helios Medical Center. The campus will include hotels, a hospital, some retail commercial and medical office buildings. It's also the city's gateway into the medical and medical R&D industry.

Most states want to add tech companies to their economic development roster. Nevada is no exception, but until Nevada has a more robust technology-related workforce, recruitment will remain difficult. At the same time, it's likely Nevada's attraction to advanced manufacturing companies will slow until there's more land and infrastructure investment to meet their needs.

NNRDA has been targeting warehousing and distribution, primarily because the region is centrally located in the Western U.S., and because the industry involves big capital but not

necessarily big workforce demands. That's good for a big region with a tiny workforce. But companies require big buildings and turnkey solutions.

"I don't have a building over 15,000 square-feet available in my area, and most of these guys are looking for 100,000 [to] 200,000 square-feet, and they want it built and ready to go," said Mudd. "We don't have it, nor do we have the builders that have the capacity to put together something that size in this area. If we had the buildings I could almost guarantee we could get the company to fill it within six months. It's one of the biggest challenges with one of our target industries."

Open for Business

Sometimes economic development is the result of economic upheavals. Both the Great Recession and the pandemic caused leisure and hospitality jobs to decline. Simultaneously, logistics and operations jobs increased. Those transitioned into advanced and assembly manufacturing jobs, leading to more technology companies coming in, leading to more R&D companies coming in, each step leading to higher paying, higher skilled jobs.

Southern Nevada now has more jobs than it did pre-pandemic. Rural communities are expanding with the ripple effect of economic activity in urban centers creating commuters.

Eight years ago northern Nevada had zero data centers. Now the region is seeing success with data centers, which are stable, high wage businesses that contribute a lot of capital investment to the region.

Industries continue to shift. Smith expects long-term diversification to growth in clean technologies, healthcare services, and smaller, more advanced manufacturing. Quigley believes economic development in the next decade will need more than industrial, logistics, and warehousing. “It will mean growth that’s appropriate for re-development and infill. It will be shifting towards higher skill, higher wage jobs appropriate with the land and the resources we’ve got.”

Every rural community addresses economic development differently. When it comes to growing desert communities, how much growth is possible while keeping the flavor of the small town?

“Everyone out here for the most part are here for a reason and they like the small town feel, they like the kind of old west culture, certainly rugged individualists, very independent, self-sustained attitude and we like that. The fact of the matter is that it’s not realistic that we’re going to have so much development that it’s going to compromise any of those things,” said Mudd. When it comes to proposed growth, Mudd relies heavily on local population and community leaders to give feedback on what’s a good fit.

Economic development doesn’t happen in a vacuum. It affects communities, businesses, and people.

“We are a team of 12 people,” Quigley said. “Economic development is really, truly a team sport with your entire community. Twelve people do not move the needle in terms of creating economic prosperity in a community.”

Filed Under: Cover Story
Tagged With: Bob Potts, Economic Development Authority of Western Nevada (EDAWN), Governor's Office of Economic Development (GOED), Jared Smith, Las Vegas business, Las Vegas Global Economic Alliance (LVGEA), Mike Kazmierski, Nevada business, North Las Vegas Economic Development, Northeastern Nevada Rural Development Authority (NNRDA), Reno business, Sheldon Mudd, Terri Sheridan, Tina Quigley

Tahoe Daily Tribune | lake tahoe action

Fewer boats with aquatic invasive species intercepted this year at Tahoe

News FOLLOW NEWS | Nov 1, 2022

News release

Watercraft inspectors decontaminate a boat at the Meyers inspection station. Inspectors decontaminated more than 3,300 vessels in 2022.
Provided/Corey Rich/Novus Select

STATELINE, Nev. — As Lake Tahoe watercraft inspections shift to winter operations, inspectors report intercepting far fewer vessels this year with aquatic invasive species onboard. They credit improvements to the program as part of the reason.

The Tahoe Regional Planning Agency and the Tahoe Resource Conservation District announced Monday that out of 5,800 boats, jet skis, and trailers inspected since January, 56 were found to have AIS onboard and eight of those were carrying quagga or zebra mussels, making this one of the lowest years on record for intercepting the prolific invader. This was a marked reduction from 2021, which was one of the highest ever with inspectors intercepting 132 vessels with AIS and 28 of those carrying quagga or zebra mussels. The high number of discoveries triggered an expanded outreach effort to boaters nationwide.

“Aquatic invasive species threaten Lake Tahoe’s ecosystem, economy, and recreation resources,” Tahoe RCD AIS Program Manager Chris Kilian said. “Boaters are key to protecting these waters and we are committed to providing high-quality services to get them on the water quickly and safely.”

This month, watercraft inspection services made their seasonal move closer to the lake through April 30 next year. Inspections are available during daylight hours at Lake Forest boat ramp in Tahoe City from 8 a.m. to 6 p.m., and Cave Rock boat ramp in Glenbrook from 6 a.m. to 4 p.m. Vessels needing a decontamination, including all watercraft with ballasts, must call ahead. Visit tahoeboatinspections.com or call 888-824-6267 for more information.

2022 Season Summary

Since the mandatory watercraft inspection program began in 2008, more than 100,000 boats have been inspected and there have been no new AIS detected in Lake Tahoe. A critical component of the program is an effective boater education campaign to ensure vessels, trailers, and gear are Clean, Drained, and Dry before entering the Tahoe Basin, according to the agencies.

Around 30% fewer boats came through the inspection stations this year than last, likely due to higher fuel prices and unfavorable weather early in the season. However, the number of invasive species detections dropped by 73%. Boats need to undergo a thorough decontamination process if there are signs of mud, plants, animals, or water found during the inspection process, or the boat has a ballast system such as a ski or wake boat. Boaters continue to do their part with more than 50% of watercraft arriving Clean, Drained, and Dry, further reducing the risk to the Tahoe Region.

Additional Risk-Reducing Measures

In addition to advertising, billboards, and social media, program managers emphasized the new online appointment system this year by placing ads in national publications. In addition to added convenience and reduced wait times, the appointment system improves communication with boaters about the Clean, Drain, Dry message. TRPA and Tahoe RCD also joined a new, nationwide "Call Before You Haul" hotline that puts boat transporters in contact with watercraft inspectors at their destination. The measures likely reduced the number of detections, according to the agencies.

"Strengthening partnerships and adding innovations increases efficiency and further reduces the threat to Tahoe," TRPA Aquatic Resources Program Manager Dennis Zabaglo said. "Our collaborative approach and focus on helping boaters are part of the reason Lake Tahoe's program has become a model program in the nation."

Zabaglo has represented the Lake Tahoe Watercraft Inspection Program to congressional and state legislative bodies and as Chair of the Western Regional Panel on Aquatic Nuisance Species. He was also recently named to a blue-ribbon commission to develop policy solutions to prevent and reverse the spread of AIS in the U.S.

The national recognition has helped attract additional funding to the region. Earlier this year, the U.S. Fish and Wildlife Service announced a cooperative agreement with TRPA to fund high-priority Lake Tahoe Aquatic Invasive Species Program projects, including removal of Eurasian watermilfoil, public outreach and education, and investments in permanent inspection stations. A total of $17 million from the Bipartisan Infrastructure Law will be available over the next five years, with $3.4 million in the first year. The U.S. Fish and Wildlife Service is also engaging the Washoe Tribe of California and Nevada to support Tribal leadership and involvement in the Lake Tahoe program.

Permanent Inspection Stations

Equipment upgrades and infrastructure improvements, such as securing permanent inspection stations, are also important to the program's success, according to Tahoe RCD's Kilian.

Since 2010, inspectors have annually set up and broken down three to five regional inspection stations, each requiring separate permits and agreements with landowners.

"Pursuing permanent inspection stations can maximize efficiency of the program and build the long-term reliability and sustainability of boat inspections," Kilian said.

The new federal funding along with funding from the State of Nevada is helping TRPA design the basin's first permanent station at Spooner Summit, Nev. near the location of the current inspection site. The agency is investigating opportunities for the Meyers, Calif. inspection station as well.

Source: TRPA

LOCAL NEWS

Reuse system turns wastewater at San Francisco high-rise into clean water, soil, energy

BY JOHN RAMOS

NOVEMBER 1, 2022 / 8:42 PM / CBS SAN FRANCISCO

SAN FRANCISCO (KPIX) -- For many, Tuesday's rain was simply a reminder of how dry things have been. Repeated droughts are changing attitudes about how we think about a resource we once took for granted. now, a new generation of buildings is coming to San Francisco that reimagine how water is used.

"There's no reason why we should be taking fresh water from Hetch Hetchy to flush our toilets in downtown San Francisco," said Aaron Tartakovsky, founder of a company called Epic Cleantec.

His company operates a self-contained water treatment and recycling system for a 40-story apartment building on Mission Street, simply known as "Fifteen Fifty." When it opened in 2020, it was the first to comply with a 2016 law requiring large new buildings to have a water re-use system.

Tartakovsky said it is still the only building in the city with such a system and after two years of testing, it has become a model for what's possible in water conservation.

"By reusing 7,500 gallons per day, or up to two-and-a-half million gallons a year," he said.

"That's two-and-half million gallons less of fresh drinking water they have to bring into this building."

Water from sinks, showers and laundry rooms is carried in a separate pipe system to a 10,000-gallon holding tank in the basement. From there, the water is sent to the filter room where it rst sits in an aeration tank, to let microbes digest organic matter. Then that

water is pushed, under pressure, through permeable membranes where it is nally disinfected with bleach and UV light. When it's nished the ultra-cleaned water is sent back up into the building to ush toilets and urinals.

"So, the water that's going to be entering into people's toilets or used to flush urinals, you would never know the difference," said Tartakovsky.

They're also experimenting with collecting and filtering water from toilets. The solids are sent to a facility across the street where a composting system turns it into a sweet-smelling

fertilizer for the courtyard garden. Tartakovsky said it's even possible to capture ener y from warm wastewater. It's an entirely new way of thinking about what we've been sending down the drain.

"Buildings bring water in and they send water out," said Tartakovsky. "We call that 'wastewater.' What we're showing here is that the 'waste' in wastewater, is not really waste at all, that we can turn wastewater into clean water, into soil, into ener y, into all these amazing things that we just don't typically think of."

Currently, San Francisco mandates any new building over 100,000 square feet to have a water re-use system. The legislature is considering similar requirements for buildings statewide. It's happening now at Fifteen-Fifty, but that trickle will soon become a flood as builders include treatment and recycling systems to meet changing laws, and changing attitudes. The "Re-use Revolution" has begun.

John Ramos accidentally launched a lifelong career in journalism when he began drawing editorial cartoons and writing smart-alecky satire pieces for the Bakersfield High School newspaper.

First published on November 1, 2022 / 8:42 PM

A domestic well in Fallon, Nev. on Nov. 2, 2022. (David Calvert/The Nevada Independent)

Indy Environment: Contaminants lurk in unregulated domestic wells. Some go untested and untreated.

Good morning, and welcome to the Indy Environment newsletter.

As always, we want to hear from readers. Let us know what you're seeing on the ground and how policies are affecting you. Email me with any tips at daniel@thenvindy.com

If you received this from a friend, sign-up here to receive it in your inbox.

If you live in Las Vegas or Reno, the water you use to drink and cook likely comes from a utility that applies rigorous treatment protocols to deliver clean water. But for an estimated 182,000 Nevadans who source their water from private wells, safe drinking water is harder to ensure.

In Nevada and across the West, private water wells are often the site of the most pronounced contamination issues. At the same time, such water wells are not regulated by state and federal environmental agencies, a trend that is true in other Western states leaves private owners, typically in rural areas where there are few other options, responsible for their own water quality.

The geology of Nevada, its climate and human-caused changes to the environment can present an uphill battle for keeping well water within health thresholds established by the Environmental Protection Agency and widely used to determine safe drinking water. Although researchers have worked to track contamination, it can be difficult with a lack of widespread and consistent data.

But when wells are tested, the results can be staggering. Arsenic, a contaminant that naturally exists in Nevada's geology, is pervasive in private well water, with some samples registering as much as 80 times the EPA health standard for the toxic element.

That figure comes from a recent study produced as a partnership between the Desert Research Institute, Renown Health and the Hawaii Cancer Center, which found unhealthy levels of arsenic in about one quarter of 174 wells. Eight percent of the wells drew water with unhealthy levels of uranium and iron, followed by 6 percent showing unhealthy levels of lithium and manganese.

Though the average untreated well tested under the uranium drinking water standard of 30 parts per billion, one well exceeded the threshold by nearly fivefold, registering a uranium level of 147 parts per billion. The average untreated well tested for more than twice the safe level of arsenic.

Monica Arienzo, a lead author on the study, said the results echo what previous groundwater studies have found, both in Nevada and across the arid West. Still, the issue often goes under the radar. Because the responsibility for testing and treatment falls on homeowners, she said "there's a real potential there for homeowners to be drinking water contaminated with metals."

"What I've learned in this process is there is a real need for free or low-cost well-water testing. There's a real need for free or low-cost [treatment] — or even just education on treatment," she added, noting that nearly half of the study's initial survey respondents had no records of testing.

Exposure to drinking water contaminants, such as arsenic and uranium, can lead to long-term illnesses. According to the World Health Organization, arsenic may cause cancer, skin lesions and cardiovascular issues. Uranium, as a chemical, has been associated with kidney damage.

The study, published by *Science of the Total Environment*, offers a snapshot into the situation facing many private well owners across the Great Basin, which extends from Reno to Salt Lake City. Many participants in the study had wells in northwestern Nevada, specifically in the areas around Reno, Carson City and Fallon, where some of the arsenic contamination is most acute.

In a joint interview, Arienzo and co-author Daniel Saftner, who both study water sciences at the Desert Research Institute, said there are a number of follow-up investigations they would like to see. For one, they are working to better understand the demographics of private well owners in Nevada. Research is also looking at the origins of the contamination and the effects of drought.

Although the metals of concern are naturally occuring, both climate and human activities could influence the groundwater chemistry and the way that the metals are spread. Particularly when looking at deep private wells, Saftner noted the importance of considering past contaminants.

He added that in agricultural areas, arsenic was historically used in pesticides, though it is not anymore. Moreover, how water is pumped in a groundwater aquifer can influence the spread of contaminants and the way that underground rock might interact with water stored in the ground.

Investigating the origins of contamination can be challenging and require extensive modeling. A prominent and complex example is in the area near the Anaconda Copper Mine, where studies have shown historic mine activities and agricultural pumping both contributed to the presence and spread of uranium and other metals found in local groundwater wells. A more recent model suggested a natural geothermal system also influenced the area's geochemistry.

In terms of prolonged drought and an increasingly arid climate, Saftner said there is uncertainty about what the long-term effects might be, but getting more data is a crucial step.

"There are plenty of theories that I can throw at you," Saftner said, "but I think the state of the research right now, specifically in Nevada, is that there's more data that really is needed."

On the other side of the equation is treating contaminated wells.

About half the wells tested in the recent study were untreated. The other half — 41 percent— of the wells in the study had some form of treatment in place. Even so, not all treatment systems fully protected private well owners from exceeding safe water standards. While treatment was effective in reducing contaminants, "concentrations above guideline values were still observed." And nearly a quarter of the treated wells still registered unhealthy levels of arsenic in the water.

"Many treatment systems cannot reduce the concentration below guideline values because of water chemistry, treatment failure, or improper treatment techniques," the study's authors wrote.

In a statement, the Nevada Division of Environmental Protection, known as NDEP, said it does not have authority to regulate well water, with one exception: The state regulates and certifies the labs that are involved in water testing and analyzing well samples. Still, the division provides homeowners with a fact sheet about arsenic and recommends two treatment methods, including reverse osmosis, whereby water is filtered through a system with a semi-permeable membrane.

An agency spokesperson added that "as a courtesy to the public, NDEP is available to discuss water quality results and treatment options with private well owners if they reach out to us."

Fallon, Nev. on Nov. 2, 2022. (David Calvert/The Nevada Independent)

LATEST HEADLINES

Pure Water Monterey nets national engineering award

Operators at work in the Pure Water Monterey advanced water purification facility. (Photo courtesy of Monterey One Water)

By **DENNIS L. TAYLOR** | newsroom@montereyherald.com | Monterey Herald

PUBLISHED: November 2, 2022 at 2:37 p.m. | UPDATED: November 2, 2022 at 2:41 p.m.

MONTEREY — Pure Water Monterey, the Monterey Peninsula's recycled potable water project, was one of 11 projects receiving a national award for outstanding engineering achievement — a project heralded as a key part of the state's portfolio of water supply projects.

"To be recognized alongside high-profile national projects is truly a great honor," said Mary Ann Carbone, the chair of Monterey One Water's board of directors and the mayor of Sand City, in a news release.

The Oct. 25 award was from the American Society of Civil Engineers, which has been recognizing nationwide projects with its Outstanding Civil Engineering Achievement award for the past six decades. Pure Water Monterey, the first such project in Northern California, was the only project in the state to receive the award.

"This prestigious award honors the project that best illustrates superior civil engineering skills and represents a significant contribution to civil engineering progress and society," reads a description of the awards on the Society of Civil Engineers' website.

The engineer of record is Todd Reynolds of Kennedy/Jenks Consultants Inc., which has offices in Santa Clara and San Francisco.

The Pure Water Monterey project itself is described by the engineers' group as a $130 million groundwater replenishment program providing 3,500 acre feet a year of new water supply. The project includes new source water facilities, an advanced water purification facility, purified water conveyance and groundwater injection facilities.

"(Pure Water Monterey) is the first potable reuse project to purify unused municipal effluent, food industry wash water, agricultural drainage water and urban stormwater," the award entry reads.

Christopher Stevens, the assistant deputy director of the finance division of the State Water Quality Control Board, also called the Water Boards, said on Wednesday that the type of project like Pure Water Monterey is increasingly becoming an important part of the state's portfolio of water projects.

Pure Water Monterey is called an indirect potable water project because it takes as its source water effluent, agricultural runoff and stormwater and runs it through a state-of-the-art advanced purification system and then injects it down through underground strata.

As the water meanders down through layers of sand and rock into the Seaside Groundwater Basin it becomes no different from freshwater pumped into households. It is then pumped out and distributed to water users along the Peninsula.

Stevens noted that the Water Boards is working on a new set of regulations that in the future will govern purification systems that can take wastewater and purify it to such a high degree that it can be pumped directly into households. This type of recycled supply is called direct potable water.

These types of projects that are designed to offset over-drafted aquifers in the state are continuing to gain momentum. Stevens' division covers a portion of the cost to construct recycling facilities statewide.

"Our Legislature and regulatory agencies have prioritized recycled water policies to help increase its use statewide," wrote Jennifer West, the managing director of WateResue, a nonprofit trade association that promotes water recycling, in an article for CalMatters.

"The state uses approximately 728,000 acre-feet a year in recycled water, but this amount is expected to at least double in coming years, primarily due to the expansion of 'potable reuse,' that is, using treated wastewater for drinking water," she wrote.

One such project the state is helping to fund is Pure Water Soquel in Santa Cruz County. The state has determined that the Mid-County Groundwater Basin that provides water to residents in Soquel, Aptos and a portion of Capitola is critically over-drafted. So the Soquel Creek Water District is constructing a facility similar to Pure Water Monterey, which is expected to come online in 2024.

Tags: **Newsletter**

Dennis L. Taylor

Dennis L. Taylor has reported on diverse issues for three decades in the San Francisco and Monterey bay areas, including 10 years in the Silicon Valley business press covering venture capital and technology investments.

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A look at the West's megadrought

Lauren Liebhaber, Data Work By Emma Rubin
Nov 3, 2022

Stacker cited data from the U.S. Drought Monitor, USDA Natural Resources Conservation Service, and the California Department of Water Resources to visualize the current megadrought in the West and its impact on the region.

A look at the West's megadrought

Nov 3, 2022

The United States, specifically the Southwest, has not experienced a drought as severe as the one it is presently withstanding in roughly 1,200 years. Any drought lasting longer than 20 years is considered a megadrought. The American West is entering year 23 of devastating dryness, and by most measures, the situation is worsening. Experts say these conditions could last through 2030.

Between 2000 and 2021, temperatures in the West were, on average, 1.6 degrees Fahrenheit warmer than d previous 50 years. As a result, about 75% of all land in the nine westernmost states in the continental U.S. ar drought conditions; 35% of the land in those states is baking under drought conditions classified as extreme or exceptional. And while the situation is worst in the West, more than 80% of the U.S. is facing abnormally dry conditions, according to the U.S. Drought Monitor.

Major systems pivotal to daily life and economic stability in the West are under threat. The flow of the Colorado River, a lifeline for 40 million people in the upper and lower river basins, has declined by 20% since the start of the megadrought. Reservoirs along the river, like Lake Mead and Lake Powell, are central to agricultural and utility operations, and they are drying up at certain times of the year at a rate of foot per week.

A 2022 UCLA study found that human-caused climate change has led to a 42% reduction in soil moisture, which is among the most serious consequences of drought. As temperatures rise, moisture is sapped from the soil, leaving behind poor-quality or unworkable farmland. Seasonal snowmelts, which help to quench dry lands, are happening earlier and faster and cannot adequately replenish moisture. Moisture reductions in the vegetation also lead to an increased risk of wildfires, turning entire landscapes into tinderboxes.

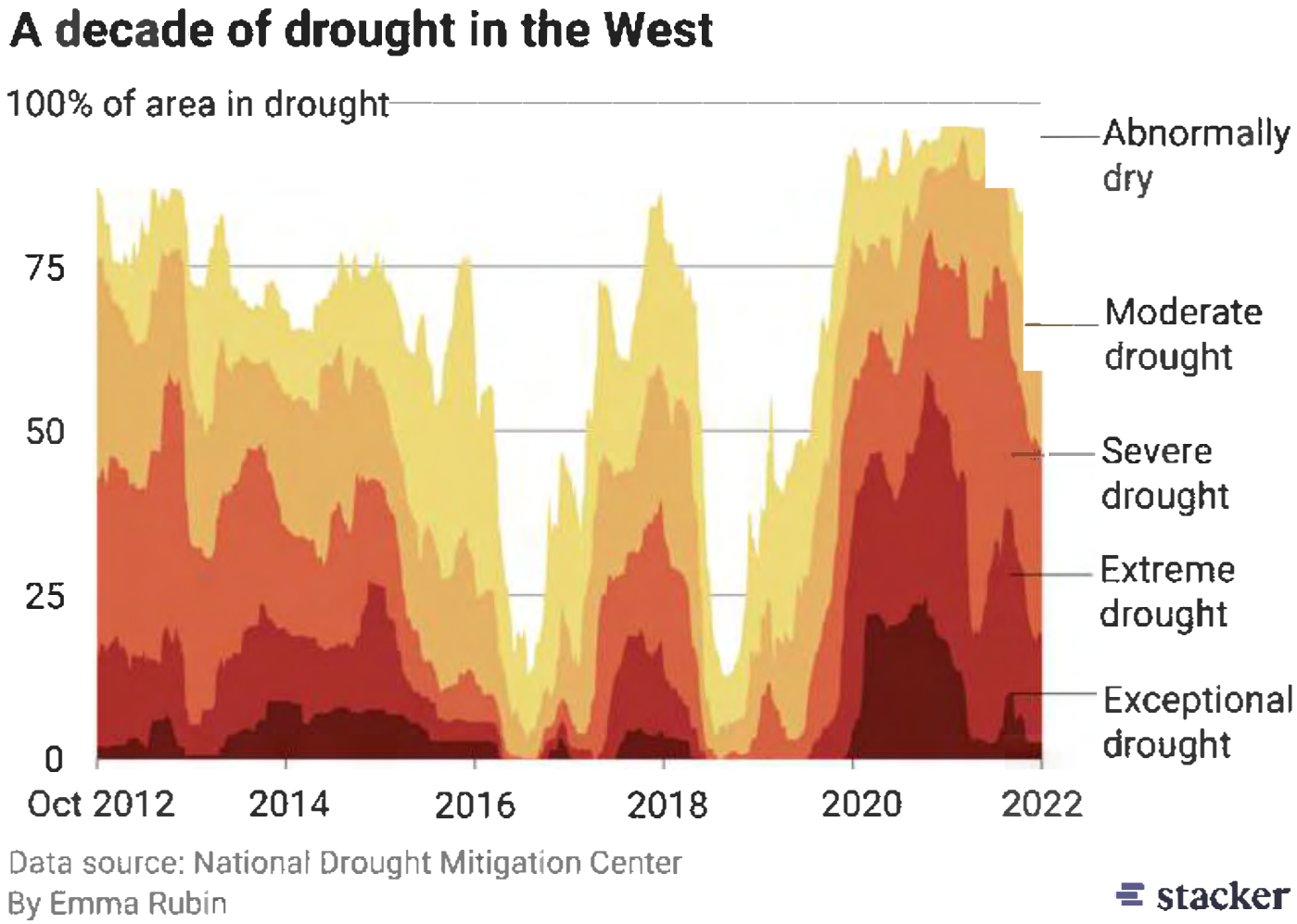
Droughts are likely to be a regular occurrence in the future. To better understand what our future might look like, and how we could be better prepared, Stacker cited data from the U.S. Drought Monitor, USDA Natural Resources Conservation Service, and the California Department of Water Resources to visualize the current megadrought in the West and its impact on the region.

You may also like: What summer weather was like the year you were born

https://s3.amazonaws.com/stacker-images/10180X3A.png

Almost all of the West is experiencing drought

Nov 3, 2022

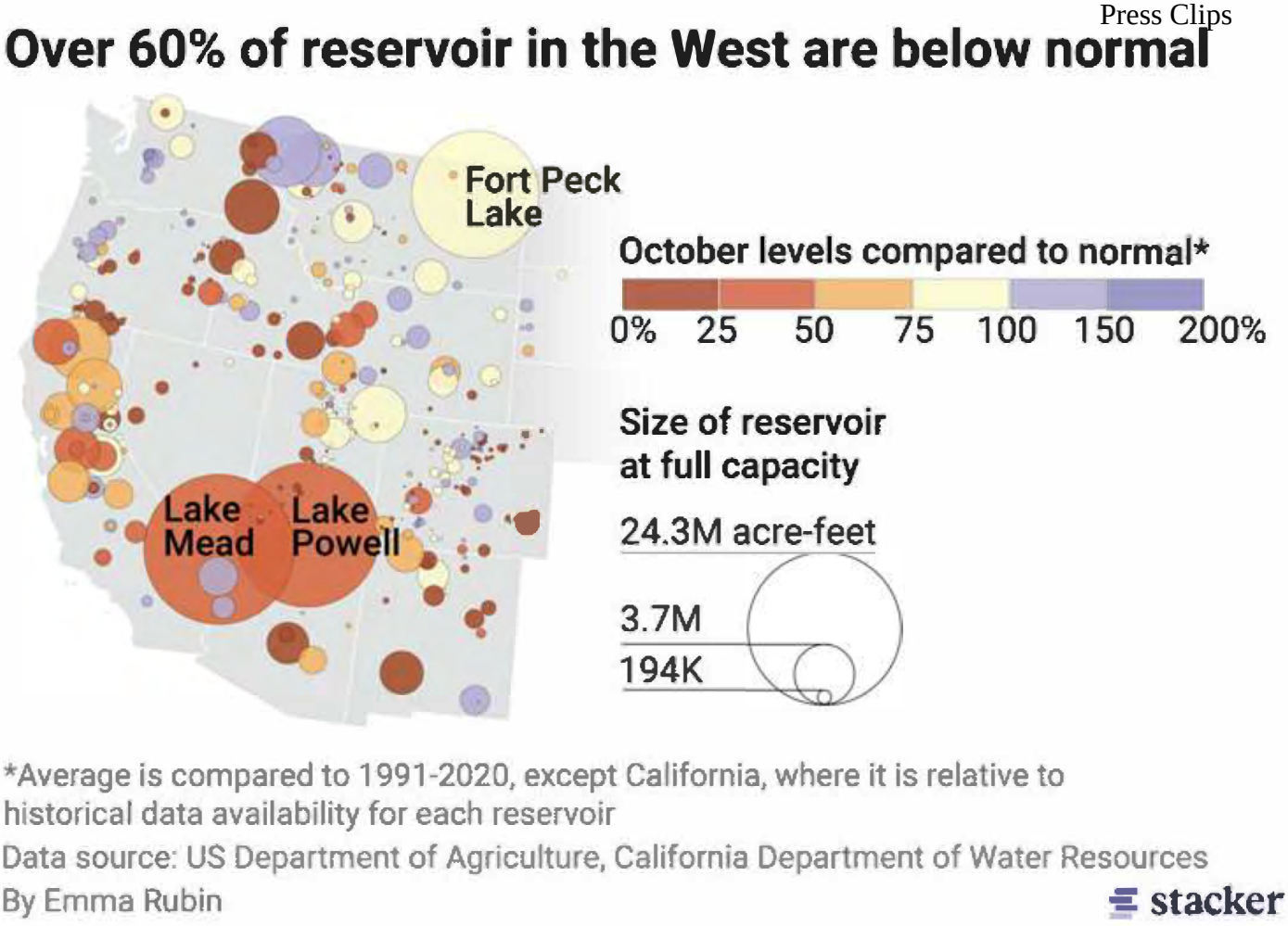


Over a quarter of all land in the West experienced exceptional drought conditions during the summer of 2021. This designation is defined primarily by widespread and exceptional loss of agricultural lands like crops and pastures and water emergencies due to extensive reservoir, river, stream, and well depletion, according to the U.S. Drought Monitor. The central valley region of California, home to more than 5 million acres of farmland, is among the hardest hit by exceptional drought.

Emma Rubin // Stacker

Low-reservoir levels impact water availability and hydroelectricity generation

Nov 3, 2022



Prolonged drought exacerbated by human-driven climate change is depleting reservoirs throughout the West. In California alone, nearly every major reservoir is below—often significantly below—historical averages, according to data collected by the California Department of Water Resources. Due to drought conditions, hydroelectric power in California was down by nearly 50% in 2021.

Lake Mead and Lake Powell, the two largest reservoirs in the U.S., recorded unprecedented low water levels in 2021. Over the last two decades, Lake Mead has been depleted from roughly 1,200 feet to 1,041 ft. If the reservoir falls below 895 feet, reaching what experts call "dead pool" status, water will not be able to flow downstream from the Hoover Dam, impacting hydroelectric capacity, drinking water access, and irrigation for more than 25 million people who rely on the lake for daily life. Experts believe this possible outcome is still years away.

To preserve the Colorado River system, the U.S. Bureau of Reclamation announced the first-ever tier 2a shortage for Lake Mead in August 2022, instituting water usage restrictions for millions throughout lower basin states, including a one-fifth reduction in Arizona.

Emma Rubin // Stacker

Dry landscapes heighten wildfire risk

Nov 3, 2022

As extreme drought dries out and kills plant life, this natural waste acts as vegetative fuel, or tinder, for wildfires. The buildup of this fuel, when ignited, can lead to hotter, larger fires that spread faster and burn longer. Carefully planned controlled burns executed by fire professionals are essential to maintaining a healthy ecosystem by clearing vegetative fuel, unhealthy flora, and overgrowth. The U.S. Forest Service has acknowledged the agency's fire mitigation efforts have not matched the worsening conditions on the ground and, as a result, is committed to treating 50 million acres of government-owned, tribal, and private lands against wildfires. These intentional burns are not without risk, however. The largest wildfire in New Mexico's history, which took place in May 2022, resulted from a controlled burn that escaped its confines.

Another factor that makes dry landscapes so dangerous and prone to wildfires is humans. People ignite about 85% of all wildfires in the U.S., often in regions called the wildland-urban interface where human development meets wild, often drought-ridden land. Highly desirable real estate regions in the West and Southwest, including the Sierra Nevada foothills, San Francisco Bay, San Diego, and San Antonio, have some of the largest swaths of land covered in this type of low-moisture vegetative fuel. In recent years, they have also experienced significant population increases, creating a volatile mixture of tinder and spark.

PATRICK T. FALLON/AFP via Getty Images

Farmers are confronting water scarcity

Nov 3, 2022

The agricultural industry in the American West is contending with severely low soil moisture, record-low precipitation rates, and severely reduced water allotments to irrigate farmlands. In 2021, drought in California led to economic losses totaling more than $1 billion, as well as the elimination of nearly 9,000 jobs for farmers and thousands more across upstream industries that touch the agricultural sector. According to the California Department of Food and Agriculture, about 400,000 acres of farmland were fallowed due to water scarcity.

In Texas, cotton farmers anticipate half a normal yield in 2022 and a loss of $2 billion. Drought impacts crops like cotton, grains, fruits, and nuts, as well as the pastures livestock farmers rely on to feed their herds. More than two thirds of livestock farmers in the West have had to reduce the size of their herds and fallow rangelands due to water scarcity, according to a 2022 survey conducted by the American Farm Bureau Federation.

ROBYN BECK/AFP via Getty Images

Wildlife populations are also impacted

Nov 3, 2022

Food shortages, dehydration, habitat loss, and even biological changes induced by heat are all causes of declining animal populations in the drought-stricken West, with ripple effects echoing throughout the food web. The food supply for foraging species like the mule deer is dwindling and, as a result, so are their populations. Cold-water fish struggle to breathe in warmer, less oxygenated water and must compete for resources with invasive species that thrive in warmer temperatures. Less food availability means certain species cannot reach full maturity, which is critically important for animals like elk who use antlers—a sign of their physical maturity—to joust for territorial or mating rights. These environmental changes also push more species into contact and often conflict with humans as they seek water and food in the communities abutting their natural habitats.

David McNew // Getty Images

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The Washington Post
Democracy Dies in Darkness

States take on PFAS 'forever chemicals' with bans and lawsuits

They don't naturally break down and are so widespread that they are found in the blood of 97 percent of Americans

By Alex Brown
November 5, 2022 at 7:04 a.m. EDT

"Forever chemicals" are everywhere. The thousands of chemicals in the group known as perfluoroalkyl and polyfluoroalkyl substances, or PFAS, are found in cookware, packaging, cosmetics, clothing, carpet, electronics, firefighting foam and many other products.

The chemicals don't naturally break down and are so widespread that they're found in the blood of 97 percent of Americans. Some PFAS compounds may decrease fertility, cause metabolic disorders, damage the immune system and increase the risk of cancer.

As they wait for regulations from the Environmental Protection Agency, some states have banned the use of PFAS in certain consumer products. Others have issued stronger water quality standards or empowered state agencies to speed up regulations. Many are pursuing cleanup and remediation efforts, with states suing polluters for compensation ranging from tens of millions to nearly a billion dollars.

Safer States, an alliance of environmental health groups focused on toxic chemicals, has tracked 203 recent bills in 31 states related to PFAS issues.

"I have heard from legislators that testing has been a driving force for them," said Mara Herman, environmental health manager with the National Caucus of Environmental Legislators, a forum for state lawmakers. "It's being found in so many places, it's not really an urban issue or a rural issue."

But advocates want federal action to hold multinational companies accountable for past contamination, clean infected waterways and impose sweeping bans on PFAS in new products.

"State by state is just absolutely ridiculous," said Laurene Allen, co-founder of Merrimack Citizens for Clean Water, a New Hampshire group that has pushed the state to act on PFAS. "The progress you have shouldn't be determined by your Zip code."

The EPA has proposed a rule to regulate two common PFAS chemicals under the Superfund law.

Industry advocates, meanwhile, are lobbying on the federal level and in statehouses, arguing that attempts to regulate PFAS broadly could end up banning harmless chemicals that are crucial for important products and industries.

PFAS compounds were long seen as a chemistry "miracle" due to properties that made them nonstick, stain-repellent, waterproof or fire-resistant.

"The most problematic pieces of legislation include inappropriate and overly broad definitions of PFAS that pull in many potentially unintended substances and products," the American Chemistry Council, a trade association, said in a statement sent by Tom Flanagin, senior director of product communications.

Flanagin's email cited a category of fluoropolymers used in renewable energy, health care, electronics and other industries as critical to many products while carrying a low safety risk.

PFAS bans

Lawmakers in several states point to Maine's 2021 passage of a law banning PFAS in all new products as a landmark moment. The measure, which will take effect in 2030, bans any intentionally added PFAS, but allows for exceptions in products that are essential for health, safety or the functioning of society and don't yet have a PFAS-free alternative.

Many other states have enacted laws targeting PFAS in food packaging, cosmetics, firefighting foam or textiles. Colorado, for example, passed a law this year covering many products, while also ending its use in oil and gas production.

Colorado state Rep. Mary Bradfield, a Republican who co-sponsored the bill, said other lawmakers wanted to pursue an economywide ban as broad as Maine's, but she said she thought the targeted approach — which includes carpets and rugs, food packaging and children's products — was more achievable.

In Hawaii, legislators passed a ban on PFAS in food packaging and firefighting foam this year. And California passed laws this year to ban PFAS in cosmetics and textiles, while requiring companies to report data on other products containing PFAS.

In some states, agency officials have led the response to PFAS contamination. In Michigan, for example, regulators crafted rules over the past several years for levels of some PFAS compounds in drinking water, groundwater and surface water. The state also brought together seven state agencies to form the Michigan PFAS Action Response Team, known as MPART, which serves as a coordinating group for testing, cleanup and public education efforts. The state has conducted extensive testing to identify contaminated sites.

"If we've got a source [of contamination], we're going to find it in groundwater, so that's the easiest way to define and start those compliance actions," said Abigail Hendershott, MPART's executive director.

Now that it has a better handle on testing and regulating water, the state may turn its attention to consumer products, she said.

Cleaning up

Banning products and setting regulations may help prevent future contamination. But states still have much work ahead to address the forever chemicals found in their water, soil and residents.

This year, Florida legislators passed a bill requiring the state Department of Environmental Protection to establish rules by 2025 for target cleanup levels of PFAS if the EPA has not set a national standard by then.

"There will be state, federal and local funding that will need to come into play to address the problem," said state Rep. Toby Overdorf, a Republican who co-sponsored the bill. "We are going to be educating municipalities and letting them know they need to develop a plan to get a hold of this so they can deliver clean drinking water."

New Hampshire set aside $25 million this year to bolster a loan fund for PFAS remediation of public water systems and wastewater facilities. And lawmakers in Vermont gave residents the right to sue chemical companies for medical monitoring costs if they've been exposed to PFAS.

Meanwhile, 15 state attorneys general separately have sued companies alleged to be responsible for PFAS contamination, seeking damages for the harm caused by the pollution. Minnesota settled with 3M, which produced nonstick chemicals that polluted groundwater in the Twin Cities area, for $850 million in 2018. Delaware also reached a settlement, but the other lawsuits are still ongoing.

But some industry leaders think it's unfair to hold PFAS manufacturers accountable for every instance of contamination.

"It's not the person who manufactured it who caused the spill or leak, it's the person on whose property the leak occurred," said Scott Manley, executive vice president of Wisconsin Manufacturers & Commerce, a pro-business lobbying association.

The group opposes a lawsuit brought by Gov. Tony Evers and Attorney General Josh Kaul, both Democrats, seeking nearly $1 billion from 18 companies state leaders say failed to protect the public.

Manley noted that his group has supported efforts to create a grant funding program to help local governments deal with PFAS hot spots.

But in some states, leaders would rather see polluters than taxpayers pay for cleanup.

"These chemicals are very difficult to clean up, and it's very expensive," said Minnesota state Rep. Ami Wazlawik, a Democrat who sponsored a bill that banned PFAS in food packaging. "The taxpayers of Minnesota are not responsible for putting these chemicals there."

This article is from Stateline, an initiative of the Pew Charitable Trusts.

reno gazette journal

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

Do your part for sustainability during National Recycling Week

Alexis Hill
Published 7:00 a.m. PT Nov. 7, 2022

This opinion column was submitted by Alexis HIll, vice chair of the Washoe County Commission, representing District 1.

If there's one way to indulge autumn in Reno after a long hot summer, it's time to ditch the car and enjoy it by bike or on foot. A change in season is a renewing experience; just because the leaves fall from the trees, it doesn't mean we can stop being "green."

Going green is a lifestyle adjustment. I have seen cynicism take over our attitudes about fighting climate change, and as my mother brilliantly says, cynicism is the enemy of progress. The World Economic Forum says that only 5-6 percent of plastic waste in the U.S. — or about 2 million tons of it — was recycled out of the 40 million tons of plastic waste generated. We can do better!

Since I've taken office as county commissioner, one of my major goals has been to implement regional sustainability policies. Sustainability focuses on a broad range of nature's well-being indicators, and recycling plays a huge role in how we cultivate the life around us. There are many ways to contribute to our environment beyond neighborhood clean-ups that can be done, starting in your own home. With the observation of National Recycling Week, Nov. 7-13, we can deeply invest in supporting green initiatives, starting together by leveraging local programs committed to environmental sustainability and adopting the mindset in all aspects of our lives.

Here are some ways you can get do your part for sustainability:

► Recycle the right way. According to Waste Management, roughly 20% of the material that Washoe County residents put in our blue bins is actually trash. When trash gets in the recycling stream, the carbon footprint for the disposal of that trash item is significantly increased and actually undercuts some of the benefits intended with recycling. Renorecycles.com provides some great tips on the right way to recycle and do your part.

► Even if you don't own an environmentally-friendly car, or you have limited waste services in your area, the key is to consume less and contribute more. Landfills are the third largest emitters of methane in the United States, according to the U.S. Environmental Protection Agency, and this could easily be reduced by limiting the amount of waste by sorting it properly.

► Say "thank you" to your Waste Management drivers and maybe leave them a snack. Waste Management contracts with my favorite public servants in Washoe County: the Teamsters. These folks work through all of the elements, including during the pandemic, to serve us! They are our neighbors and our friends and do an incredible job to help keep this community clean and green.

► If you must utilize single-use plastics, cans or glass, make sure you rinse these recyclables. Don't put it in plastic bags and crush your cans to save space. If wasting food and liquid are some of your biggest concerns, consider composting.

► Composting is an incredible process, as many potting and gardening soils are produced this way. Decaying plants and food waste are some of the main ingredients of your garden's next meal; it's all compiled into a plant fertilizer for your trees, lawn or nursery.

In a 2018 study conducted by a recycling consulting firm, more than 20 percent of waste in Washoe County is food. One of the best ways to leave a smaller footprint in your community is to support local environmental programs such as Down to Earth Composting, serving both Reno and Sparks. All you have to do is dump your food scraps in the bucket provided by the organization and swap it out once a week for pick up. Then, the compost is returned to you to use for your house or garden plants.

But composting isn't limited to Washoe County; Full Circle Soils & Compost, Nevada's all-natural composter based in Carson City, has also been selling their compost soil at local grocery stores for nearly 20 years.

As somebody who has been passionate about public service since a young age, I believe a huge part of leadership should be a local vision of conserving our natural resources and creating smart growth opportunities. And as a new mother, I believe it's incredibly important that we lead by example for the children in our community. If you don't recycle, why would your kids?We need to be less cynical in everything we do, from sorting waste to driving less. It all comes down to building a healthier ecosystem for everyone.

Alexis HIll is the vice chair of the Washoe County Commission, representing District 1.

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

Power over Planning

Who gets to shape our city?

Alicia Barber
Nov 8

Well, it's been a wintry Election Day, and as we wait for all the results to be tabulated, we are of course deeply aware of the role our local elected representatives play in development, as I laid out in a recent Brief, "Exercise Your Right to Representation." It is an enormous amount of power, and with great power comes great responsibility.

Key to that responsibility is maintaining a deep respect for the field and the role of planning. When it comes to laying the groundwork for successful development (and redevelopment) there is nothing more fundamental than professional, informed public planning. Planning responds to demonstrated and anticipated needs and gives a city a blueprint for how to respond to changing circumstances. It is a professional and technical field that relies on data, experience, and deep knowledge of how the various and complex physical components of a city function in relationship with each other to produce a desired result.

Good planning analyzes situations, determines the appropriate steps to take, secures the resources to fund specific outcomes, and then executes a plan to achieve them. Good planning takes the interests of relevant constituents and interested parties into account, but operates independently of power structures. Good planning inspires trust among the populace by ensuring that the decisions being made are in service of the public good, not in support of special interests seeking an outcome that would benefit them but negatively impact others.

In the sphere of urban development, problems arise when those in positions of power or influence, whether special interests, politicians, or other leaders, use that power or influence to pursue an outcome that flies in the face of sound, public planning. It's always a danger when a handful of people have that power, requiring constant attention and vigilance, particularly in a city like Reno, where powerful entities have largely dictated the shape of certain parts of town for decades. And no area of Reno is more susceptible to the pressures of powerful special interests than what used to be its traditional downtown, but morphed over time into the central casino core between the river and Interstate 80.

In the 1980s and 1990s, as the smaller downtown casinos began to close due to outside competition, Reno's larger gaming companies consolidated their power and property. In 1992, a joint venture between Eldorado Resorts and Circus Circus (then owned by MGM Resorts) bought the site of the Mayfair Market and built the Silver Legacy, linking all three together with massive skyways.

In 2015, Eldorado Resorts bought Circus Circus and its 50% stake in the Silver Legacy from MGM Resorts, and in 2018, Eldorado Resorts re-branded their tri-properties "The ROW," referring to them as a "City within a City." In 2020, Eldorado acquired Caesars for $18 billion and took on the name of Caesars Entertainment. It is a global company with more than $9 billion in annual revenue that just announced its intent to build a resort casino in the heart of Times Square. Caesars Entertainment doesn't need anything on Virginia Street to change, including its own street-facing presence there, in order to achieve its privately-held goals. That's power.

Power, planning, and the Center Street Cycle Track

Enter planning. The stalling of the Center Street Cycle Track project has been the source of intense frustration for a wide swath of community members because it was the product of a plan backed by technical expertise, public support, and RTC Board approval. Then last summer, word emerged that Caesars Entertainment didn't like it. As I wrote about in my September 6, 2021 Brief, "What's the Future of Virginia Street?", "The ROW's attorney, Michael Pagni, expressed the company's desire to have the protected bike lanes moved to Virginia Street, calling it 'a more appropriate corridor' and arguing that 'Virginia Street provides greater access to retail and other business uses which are likely to be frequented by bicyclists,' among other advantages." Bookmark that claim about all the "retail and business uses" along Virginia Street for a moment—we'll be coming back to it. Suddenly, the Center Street project was placed on hold, and without any advance notice to the public or even to business owners located along Virginia Street, the City and RTC installed a temporary "Micromobility Pilot Project" there (and along Fifth Street), to test out protected lanes on Virginia Street, an option that had been thoroughly considered and dismissed by RTC planners and its transportation consultants.

Despite what some at the heads of the City and RTC have stated, it is not at all common for an RTC project to reach a stage of 30% design and then be placed on an indefinite hold or stopped entirely. The questionable explanations for the pause have already received significant media attention. And now Bob Conrad, journalist and publisher of the online news site *This is Reno*, has taken a deep dive into the pause of the Center Street Cycle Track project, using public records and other research to write a meticulously documented piece published on Sunday titled "City: Long term plans for Center Street bike lane 'unlikely' to proceed."

This incisive piece is a must-read, so please take the time. As the title indicates, Reno City Manager Doug Thornley, who was hired in 2020, now says that the Center Street Cycle Track may not move forward at all, telling Conrad last Friday, "I think it's unlikely and we're actively exploring other, more feasible possibilities." Ultimately responsible for the pause and the potential squelching of the project is Bill Thomas, the former City of Reno Assistant City Manager who was hired as the Executive Director of RTC Washoe in April of 2020 by a Board headed by then-Reno Councilmember (and now Executive Director of the Downtown Reno Partnership) Neoma Jardon.

But that Board never voted to pause or stop the Center Street Cycle Track project. Instead, Bill Thomas made the decision to pause the in-progress, approved Center Street Cycle Track project himself, **without authorization**. And that is not only highly unusual and procedurally fraught, it sets a dangerous precedent for unilateral action operating outside the public process. Which brings us back to this.

As Conrad writes, "Characterizing the Center Street cycle track as problematic came about from new leadership at RTC and the City of Reno — in contradiction to their own consultants, and only in about the past two years. Prior statements and current documentation still show support for Center Street as the most preferred option for a downtown cycle-track." Furthermore, "Records show officials from different agencies attempting to coordinate messages, editing one another's public statements and denigrating those expressing concerns or raising questions. An RTC executive even said RTC was not being transparent. That missive was sent the day she quit."

It's an alarming situation. If you are confronted by a paywall when trying to access the piece, please take the opportunity to consider paying for a subscription to support the ongoing operations of *This is Reno*, which since its founding in 2009 has become a steady, reliable source of in-depth reporting about our area.

The Sorry State of Virginia Street

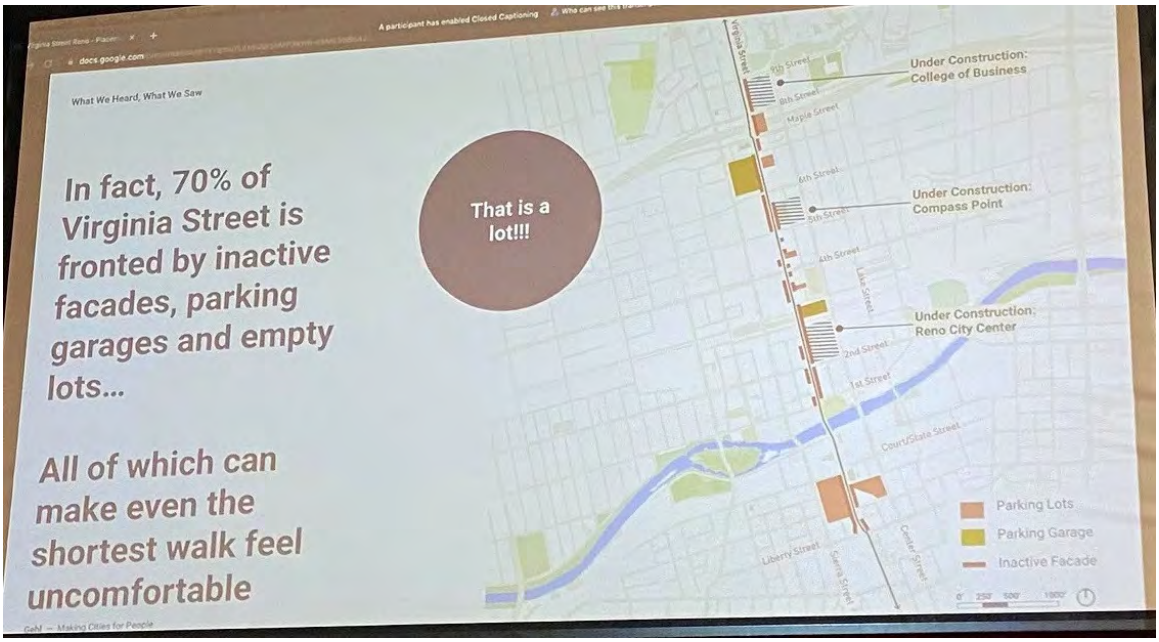
Entangled in this whole Center Street Cycle Track/Micromobility Pilot Project web is the Virginia Street Placemaking Study, which I've written about several times, including last September, this past February and April, and again just last month. It was cited in part as one of the reasons for the pause in the Center Street Cycle Track.

As I wrote in my last Brief, the next stage of the Placemaking Study, which focuses on Virginia Street (and its immediate environs) between the UNR campus and Liberty Street, took place last week. You may recall that I had voiced some skepticism about the survey that the City issued this past summer on behalf of the consulting firm Gehl Studios to solicit input on what residents think about Virginia Street, when they go there, and if not, why not. My primary concern was that the questions were so vague, they didn't ask about specific spaces, and I feared that the results might be as vague.

But wow. Those who responded to the survey really came through with detailed comments, and in combination with Gehl Studio's own expert analysis, the picture that emerged last week of the downtown stretch of Virginia Street, and in particular of the once-thriving casino district between the river and the UNR campus, was the most honest, most descriptive, and frankly the most depressing that we've ever seen, given the narratives we're often given about how great everything is going down there. This stage of the Placemaking Study was all about diagnosing the present conditions and usage, and while the attorney for Caesars Entertainment might claim that Virginia Street is full of "retail and other business uses which are likely to be frequented by bicyclists," the facts tell a very different story.

I sat by Mike Van Houten of the fabulous Downtown Makeover site at the Wednesday night session, and I'd like to direct your attention to the excellent recap he published the next day: "GEHL's Virginia Street placemaking study headed in right direction." As Mike highlighted, one of the most stunning observations of all—one that aligns with what I've been pointing out for years but still shocked me in its amplitude—is Gehl's assessment that **70% of the frontage along this section of Virginia Street consists of inactive space**. SEVENTY PERCENT. That includes vacant storefronts, vacant lots, empty plazas, and long, blank casino walls. Here's the slide of that audit.

Notably, when asked by an audience member whether they would recommend closing Virginia Street to vehicles, as some have suggested, the Gehl representative responded that they would not suggest that at this time, because the street is simply not active enough. And looking at that map, it's hard to argue with that.



The consultants also met with a few smaller groups the next day, and I was happy to be invited to one of those sessions, although I don't know who else participated in any beyond those attending with me and a few people I saw in the hallway. I do think it would be a good idea for the City to publish the list of invitees, so residents can understand precisely who is being considered a "stakeholder" in this process, and to whom the consultants are directly speaking.

The next phase of the study asks the public to provide feedback on what Gehl just presented. After that, they will be putting together some "conceptual street design and programming options" for public review. So now the ball is back in your court, as **the feedback window is only open through November 16**. I can't emphasize enough how important it is to watch Gehl's outstanding 30-minute presentation first. You can access it via the City's Placemaking Study webpage (be sure to refresh the page if you've visited it before to access the new content) and it's also on YouTube. The feedback form is here (and it feature a link to their presentation, too).

Diagnosing the problem was an important first step, but coming up with solutions that will work for this uniquely problematic part of town will be the true challenge. Many of the images depicted in the ideas that they're offering for public consideration would be nearly impossible to implement at the moment given the current state of the street. People love sidewalk cafes, but who's going to operate one down there? What would entice restauranteurs to open any kind of eatery along Virginia Street in its current condition? And what can be done to reverse the decline caused by the complete domination of the street by casinos, the decline of the vast majority of them, and the failure of those that have survived to alter how they interact with their surroundings?Change, as Gehl reminded us, will not happen overnight. So send in that feedback, select the images that appeal to you, and hopefully we'll have a robust discussion about which ideas are actually feasible when they return in February.

The Power of Planning

One response to that question of "What can be done?"—a response that is already right in front of us—is found in the City of Reno Master Plan. That plan, adopted by the City in 2017 after the most expansive public engagement process it has ever undertaken, laid out a methodical, incremental way to address inactive space and other persistent problems caused by years of decline. That's what planning does.

Front and center are two core principles: increased density and effective design. It's all delineated in great detail in the Land Development Code, Title 18. The dead zone we're talking about corresponds to what has been named the Entertainment District. And the guidelines for development in this district acknowledge that it's the 24-hour entertainment area but set forward parameters for any type of new construction.

Entertainment District (ED)

The Entertainment District comprises the central core of the Downtown Regional Center. This district functions as the 24-hour gaming area and includes major hotel-casinos, the Events Center, and National Bowling Stadium.

Entertainment District. The general boundaries of the Entertainment District are shaded in gold.

DTRC-ED.1: DENSITY AND INTENSITY

The Entertainment District supports the most intensive, transit supportive development within the Downtown Regional Center and the region as a whole:

- Nonresidential and mixed-use development within the Entertainment District should provide a minimum floor area ratio (FAR) of 3.0.
- Multi-family development within the Entertainment District should provide a minimum density of 45 units per acre.

Minimum densities apply to vacant sites or to sites where existing structures would be razed and a new structure or structures built. Lower densities may be considered to accommodate the preservation of historic structures, support the adaptive reuse of vacant or underutilized buildings, and/or accommodate transitions in intensity adjacent to the Powning District, or other less intensive districts.

Increasing density adds people, and people create activity. That simple yet fundamental fact runs entirely counter to how Virginia Street has been trending in recent years, as vacant lots have not only remained vacant, but even more have been created as buildings are demolished with nothing constructed in their place.

Increasing density also happens to run counter to the vision put forth by Caesars Entertainment, as seen in the infamous letter from Michael Pagni that I described (and linked to) last September. Caesars wants not just to keep some of those vacant sites along Virginia Street vacant for use as surface parking and event space, but wants to create even more open space if they can acquire more property, including the old CitiCenter bus station between Center and Virginia Streets.

The second principle put forth by the Master Plan for downtown, is DESIGN. As planners well know, it's good design that fulfills the City's desire to "Enhance public safety and create inviting streets and public places for people (Citywide Policy 3.2). So what does that mean? Again, in the language of the Master Plan, it means this:

> "Enhance streetscapes through the incorporation of generous walkways, prominent building entries, transparent storefronts, outdoor dining, seating, street trees, awnings, decorative lighting, public art, bike racks, and other distinctive urban design elements—particularly on streets where concentrations of pedestrian activity are desired (i.e., Sierra Street, Virginia Street, and Center Street)" (p. 35).

Let me remind you: SEVENTY PERCENT INACTIVE SPACE. And that figure does not just include the blank walls and vacant lots owned by Caesars Entertainment, but public space, too. The same page referenced above includes the dictate to "Limit the addition of new public spaces to those that will be programmed year-round," something I remember whenever I pass by the colorful but lifeless Locomotion Plaza. Every single time, I can't help but recall the astounding, comprehensive 2007 ReTRAC Corridor Study by Freedman Tung & Bottomley that the City of Reno spent $500,000 to produce. It delineated the assets and attributes of downtown's core and offered a detailed vision for how to revitalize the new east-west corridor created by lowering the railroad tracks and the surrounding blocks. It can be viewed in its entirety here.

Downtown Virginia Street is no longer a casino district, and yet the major gaming properties still want to dictate how development there will proceed. So what will it be—density or open space? Responsible public planning or reckless power plays?

City Council to appoint a new Planning Commissioner Nov. 9

On Wednesday, November 9, Reno City Council is scheduled to appoint a new member of the Planning Commission to replace Kathleen Taylor, who was herself appointed by City Council to complete the term of departing Ward 5 Councilmember Neoma Jardon. The appointment is item G.1 on the agenda. The eight candidates are listed in the staff report and their full applications are also available via separate links.

Those who have been paying close attention to the recent slew of city appointments will recognize some of the candidates' names. Elliot Malin, Alex Goff, and Jacob Williams all threw their hats in the ring to replace Jardon on City Council, but lost out to Kathleen Taylor (who had herself unsuccessfully run for City Council in 2012). Goff and Williams also both ran unsuccessfully for State Assembly earlier this year and have a record of campaign contributions to show for it. Some of Goff's are delineated here with full financial disclosures here. Williams' financial disclosures are here.

That's a lot of political activity and aspiration for a pool of candidates for Planning Commissioner, a critical role that should arguably be more independent of politics than any other citizen Board or Commission. As I've mentioned before, my husband, Mark Johnson, currently serves on the Reno Planning Commission, and like me, harbors no aspirations for any political office. He terms out next summer.

Given the heightened role that developers are increasingly playing in the local political arena, the prospective appointment of outwardly aspiring politicians with no background or experience in planning to the City's Planning Commission is concerning. And while it's laudable for citizens to acquire experience on a government board or commission before running for office, the Planning Commission is not the place for those inexperienced in planning to learn the ropes. The Planning Commission is not a consolation prize for losing out on another election or appointment. It is arguably the most important citizen commission in the City, with its members serving in a quasi-judiciary capacity for a wide range of duties listed here and including the following:

> Serve and advise the City Council on future physical planning and economic development of the City, urban planning including policy development, community design, natural resource conservation and enhancement, economics, housing, land use, population, streets, zoning, subdivision regulation, transportation, the comprehensive plan, etc.

Planning Commissioners are tasked with making technical and objective decisions about projects based on specific findings. It's critical that they are not simultaneously pondering the impact of their decisions on their future political prospects. More than ever, we need Planning Commissioners who have backgrounds in fields related to planning. For those interested in serving the community and learning about many aspects of government (including planning), plenty of other boards and commissions including the Neighborhood Advisory Boards offer the perfect opportunity for residents to serve. But for the Planning Commission, residents deserve the appointment of experienced individuals qualified to evaluate planning proposals and policies, untainted by the prospect (or appearance) of political strategizing.

Council will also conduct their annual appointment of a Vice Mayor under Item G.3.

[11/10/22 update: On November 9, 2022, the Reno City Council appointed Harris Armstrong to the Reno City Planning Commission and Devon Reese as Vice Mayor.]

Latest News

City of Reno hosting sewer connection fee public workshop

Proposed one-time sewer connection fee would apply to new or expanded uses only

Post Date: 11/09/2022 12:13 p.m.

The City of Reno's Regional Infrastructure team is reminding the community of the upcoming sewer connection fee public workshop on Thursday, November 10, 2022 at 6 p.m. on the first floor of Reno City Hall (located at 1 E 1st St, Reno, NV 89501) in the Council Chamber.

Sewer connection fees are a one-time fee paid to connect to the sewer system either through a new or expanded existing use. These fees are used to pay for increased capacity improvements within the sewer collection systems or treatment at water reclamation facilities and for the management of the resulting effluent.

Earlier this year, the City partnered with Farr West Engineering to conduct a sewer connection fee study. The public workshop will explain the study findings and how it impacts the public. A proposal will be presented to increase the sewer connection fee and how it will support continued growth and development in Reno. City staff will obtain feedback from the public before taking the item to the Reno City Council for consideration.

It's important to note that the proposed one-time sewer connection fee would be for new uses, not user fees paid by existing customers quarterly. Businesses and entities that have paid sewer connection fees in the last three years were sent a mailer earlier this year, inviting them to the public workshop.

Community members are invited to join in person or virtually.

Background

Sewer connection fees have not been increased since October 1, 2014. Increased sewer connection fees will pay for the expansion of the Truckee Meadows Water Reclamation Facility, Reno Stead Water Reclamation System, and sewer collection system from the development site to the water reclamation facility to allow for increased sewer capacity for all new development and growth in Reno.

A sewer connection fee study was conducted in 2022 by Farr West Engineering. The study reviewed setting fees based on separate sewersheds, a uniform fee, and whether to include potential grant funding or credits for the future sale of water rights. Ultimately, the study recommended increasing sewer connection fees and setting the rate based on separate sewersheds and including an offset for the sale of future water rights.

CSUF News

Study Shows How Changing Climate Influences Tree Growth in Sierra Nevada

Faculty-Student Research Published in The California Geographer

Nov. 9, 2022

SHARE THIS:

Alumnus Raymond Villalba used a hand-held increment bore to sample rings of a tree in Sequoia National Park.

As a graduate student, alumnus Raymond Villalba spent 10 days on a camping and fieldwork trip to Sequoia and Yosemite national parks to collect tree samples for his research project on how changing climate influences tree growth.

Many of the trees sampled, which included sugar pines, western white pines and Jeffrey pines, were in hard-to-reach areas and at elevations of 11,000 feet.

Villalba, his classmates and faculty mentor Trevis Matheus, spent eight- to 10-hour days hiking to various tree locations and collecting tree core samples.

"It's exhausting work and requires a team," said Villalba, who conducted the fieldwork as part of the "**Mountain Field Geography**" course.

For Villalba, who earned a master's degree in geography in 2020, his arduous work paid off. His research was published Nov. 7 in **The California Geographer**, the peer-reviewed annual publication of the California Geographical Society. Matheus, associate professor of geography and the environment, is co-author of the paper and Villalba's graduate adviser.

Villalba's study focuses on a subfield of dendrochronology — the study of tree rings to record and date past events and environments. This subfield is called dendroclimatology, where he used tree rings to study climate.

Geography students examine a tree core after it is extracted from a tree during fieldwork in the Sierra Nevada.

He analyzed the tree sample cores he collected during the 2018 fieldwork course in CSUF's **Cal-Dendro Tree-Ring Lab**, directed by Matheus.

Villalba correlated the data with existing climate data to determine how precipitation and temperature are influencing the growth of the three tree species that were sampled.

What the researchers revealed is that the trees studied in the Sierra Nevada are severely impacted by modern-day warming and an increasingly drying climate. The driest recorded soil moisture in the study was 2014, but this year is already drier, and researchers expect extreme drought conditions to continue.

Trevis Matheus, associate professor of geography and the environment

"Drought and rising temperatures are impacting the region, making these trees much more susceptible to disease and fire," said **Matheus**, adding that as a result, wildfires are becoming more frequent and devastating.

"California is in one of the worst droughts of the past 1,200 years. I like to tell my students that it is difficult to know where you are going if you don't know where you have been. We can look back at periods of time in the tree-ring record when the climate was warmer and drier and this provides us a framework of what to expect as our climate warms in the near future."

Villalba explained that future increases in temperature will leave forest trees vulnerable to future droughts, plus the snow and rain that falls in the Sierra Nevada are a main water source for California. According to his study, the Sierra Nevada accounts for 27% of the total precipitation in the state and provides 60% of the state's total water supply.

"Droughts can not only have a profound negative impact on trees, but also on water supply and threaten California's water security," Villalba added. "California goes through many long periods of drought, and studies suggest that they are becoming more frequent. Research in dendroclimatology can provide methods to improve the accuracy of climate data and help researchers learn more about the severity of past droughts."

These processed pine tree cores are ready for measuring the tree-ring widths in the campus lab.

Matheus' **students** are contributing to his bigger picture research to reconstruct the snowpack and precipitation of the Sierra Nevada over the last 1,000 to 2,000 years.

"This will hopefully better inform water policy and give us an idea of what to expect in the coming decades," Matheus said.

For Villalba, who earned a bachelor's degree in geography from Cal State Long Beach, his research and lab experience and learning tree-ring methods gave him the tools and knowledge to pursue a career in the environmental field.

Villalba currently works full time in wastewater regulation for the Orange County Sanitation District, part time for the city of Los Angeles in urban forestry and as a geography tutor at Cerritos College. His long-term career goal is to teach geography at a community college.

"I look forward to passing down what I've learned at CSUF to future students, academics and other professionals in the field. I hope that others will build upon my research and continue with this work to further our understanding of climate variability in California."

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NTPUD adopts strategic plan, updates mission, vision, core values

News [FOLLOW NEWS] | Nov 10, 2022

Submitted to the Sun

TAHOE VISTA, Calif. – The North Tahoe Public Utility District Board of Directors recently adopted a new five-year strategic plan for the agency, which provides water, wastewater, and recreation and parks services to the communities of Kings Beach, Tahoe Vista, Carnelian Bay, Cedar Flat, and Agate Bay.

The plan identifies the District's critical focus areas for the next five years and includes a comprehensive update of the District's mission, vision, and core values.

"As we approach our 75th anniversary of service to North Lake Tahoe, it is vital that we remain responsive to the needs of our diverse community," said Sarah Coolidge, NTPUD Board President. "We are committed to continuing to embrace our essential role in maintaining the natural beauty and resources of Lake Tahoe while also recognizing how our region and our environment are changing and clearly defining what we can do to improve the lives of our residents and visitors."

The plan identifies the District's strengths, threats (such as environmental hazards and climate change issues, workforce retention, and rising costs), areas of improvement, and opportunities.

The plan also outlines the District's strategic goals and corresponding objectives, which are focused on providing safe, efficient, and sustainable water and wastewater services; high-quality community-driven recreation opportunities and event facilities; enhancing the District's partnerships; reinforcing good governance; and maintaining a strong organization with a skilled and empowered workforce.

"I'm especially proud to share our updated mission, vision, and core values with the community," said Bradley Johnson, P.E., NTPUD General Manager/CEO. "These guiding principles reflect the culture of service across the District. They demonstrate our values and inform our decisions as a public service agency. They define our purpose and serve to differentiate our functions and core expertise from other organizations that are working in different ways toward the same vision for North Lake Tahoe."

The mission of the NTPUD is to: Serve North Lake Tahoe by providing exceptional water, wastewater, and recreational resources.

The vision of the NTPUD is that: North Lake Tahoe is a vibrant and healthy community where we optimize our resources for the greater good and protect our environment for generations to come.

NTPUD serves as a leader by demonstrating its Core Values – NTPUD C.A.R.E.S : Collaboration, Accountability, Respect, Excellence and Stewardship.

The District's planning process was guided by the Glen Price Group and included local representatives, community partners, and staff through a variety of activities, including interviews, public meetings, staff meetings, and a staff survey.

The District's new five-year strategic plan is available online at https://ntpud.org/strategicplan.

reno gazette journal

BUSINESS

Apple installing ground station in Reno-Sparks for new iPhone 14 Emergency SOS feature

Apple's Emergency SOS via satellite service will allow iPhone 14 and iPhone 14 Pro users to share location and send emergency messages when outside of cellular or WiFi coverage.

Jason Hidalgo
Reno Gazette Journal

Published 5:00 a.m. PT Nov. 11, 2022

Apple's new Emergency SOS via satellite feature will have a Reno-Sparks connection.

The Cupertino, California-based company announced on Thursday morning that it is investing $450 million to build new infrastructure across the United States to support Emergency SOS for its iPhone 14 lineup, including in Northern Nevada.

One of the ground stations will be built just east of Reno in the city of Sparks, a company spokesperson confirmed with the Reno Gazette Journal. The ground station will use high-power antennas to communicate with Globalstar satellites for Apple's new emergency service.

ICYMI: Reno-based Clear Capital lays off more than a quarter of its 'global workforce'

"Emergency SOS via satellite is a perfect example of how American ingenuity and technology can save lives," said Jeff Williams, Apple's chief operating officer, in a statement. "We are proud this service is enabled by leading US companies, and that our users can explore off-the-grid areas knowing they are still within reach of emergency services if they are in need."

Emergency SOS via satellite is a new feature from Apple that allows users to send emergency messages even when they are outside of cellular range or do not have a WiFi connection, such as people hiking or camping outdoors. The service also allows users to share their location via the Find My app.

Once a message is received by a ground station, it will be routed to emergency services that can send help via dispatch. If the closest emergency service is unable to receive the message, it will be routed to a relay center with Apple-trained emergency specialists instead, the company said.

In addition to allowing users to send emergency messages, Emergency SOS via satellite will also automatically dial emergency services if it detects an accident such as a car crash. This allows the service to call for an emergency response even if the user is rendered unconscious by the accident.

Emergency SOS via satellite will only work on the iPhone 14 and iPhone 14 Pro, which means older iPhone models will not be compatible with the feature. The service will be available in the United States and Canada later this month and will be free for two years.

Jason Hidalgo covers business and technology for the Reno Gazette Journal, and also reviews the latest video games. Follow him on Twitter @jasonhidalgo. Like this content? ***Support local journalism with an RGJ digital subscription.***

Friday, November 11, 2022

GOVERNMENT

City increases wastewater treatment capacity in North Valleys for New Developments

By Kelsey Penrose | **Published:** June 1, 2022 | **Last Updated on**

By Kelsey Penrose

The Reno City Council today approved the use of an additional 100,000 gallons per day of sewer capacity at the Reno Stead Water Reclamation Facility (RSWRF) following a presentation on Swan Lake capacity and usage.

The city was previously sued and settled a multi-million dollar lawsuit that alleged it had been negligent in the management of Swan Lake. This, according to residents, led to damages to homes and properties in the North Valleys after repeated flooding.

According to city staff, there is limited sewer capacity remaining at the RSWRF connected to a short term capacity project that diverts or "shaves" the raw sewage flow to a pipe used to pump sludge to the Truckee Meadows Water Reclamation Facility for processing.

While this project provides up to half a million gallons of sewer capacity, the council had only authorized a total of 125,000 gallons.

Sewer capacity was limited to allow the remaining flow potential to be used to reduce the volume of effluent going to Swan Lake, reducing the potential of flooding, according to city staff.

> *"When we're in a drought, we're not thinking about floods. When it's flooding, we're never thinking about drought. But in Nevada we're alway either in droughts or floods."*

In November 2020, council approved the use of an additional 50,000 gallons of flow shave capacity a total of 125,000 gallons of the 500,000 gallons of overall capacity.

Staff today requested an additional 100,000 gallons, bringing the total to 225,000, which was approved with a 6-1 vote with Councilmember Jenny Brekhus voting against the increase.

Brekhus said she was still not comfortable with approving additional flow capacity, and stated that basin takes additional flows from unincorporated Washoe County, which is not tracked by those lan that are at flood risk.

She also said the city is in a “bad place” because there isn’t certainty for development.

“It’s a race. It’s hunger games to get your connections,” said Brekhus.

A presentation was held detailing mitigation effects to keep water levels lower at Swan Lake to prev future flooding from occurring, including constructing a pump to bring irrigation to American Flat Farm from April to October.

According to staff, American Flat Farm pumped over 400 million gallons of water from Swan Lake during the irrigation season, equivalent to 1.1 million gallons per day or 1,200 acre feet of water.

However, as Councilmembers Brekhus and Naomi Duerr pointed out, the pumps would not be operating during the winter months when flooding is most likely to occur.

“This pumping does not give me confidence if we had an event which is very focused—like an atmospheric river—that this would save us,” said Brekhus.

Duerr added that while we might be in drought conditions currently, weather can change rapidly and the city needs to be prepared for these events.

“When we’re in a drought, we’re not thinking about floods,” said Duerr. “When it’s flooding, we’re never thinking about drought. But in Nevada we’re always either in droughts or floods.”

Duerr also asked staff to provide updates on stormwater reservoir compliance checks. In a prior assessment it was found that 40% of the stormwater reservoirs were out of compliance, according t Duerr.

Swan Lake flooding in 2019. Image: Bob Conrad

This Is Reno

“It would give me more confidence because …a portion of the problem at Swan Lake was due to overflowing or malfunctioning stormwater retention systems, and some percentage came from the sewage treatment plant,” said Duerr. “That’s one reason we did the flow shave.”

Flow shaving is not occurring because flows have not gone over the 2 million gallons per day amoun

The reason for requesting additional capacity, according to staff, is due to expansion as well as for future projects that have already been approved, such as Evans Ranch, Silver Star Ranch, Prado Ra and others, which total 1.57 million gallons per day of new developments.

Prior to approval, there were only 5,000 gallons per day left to distribute, while 72,000 additional gallons per day capacity was needed.

The long-term solution for increasing wastewater treatment capacity, according to staff, is the expansion of RSWRF from 2 million to 4 million gallons per day; the Advanced Purified Water Faci and the American Flat Aquifer Storage and Recovery project.

City staff projects the Advanced Purified Water Facility project to be completed in about three years

Council also approved an agreement with the Washoe County School District for provision of recycl water from the Reno Stead Water Reclamation Facility for landscape irrigation at O’Brien Middle School in an amount not to exceed $336,000.

Kelsey Penrose is a proud Native Nevadan whose work in journalism and publishing can be found throughout the Sierra region. She received degrees in English Literature and Anthropology from Arizona State University and is currently pursuing a Masters in Creative Writing with the Univers of Nevada, Reno at Lake Tahoe. She is an avid supporter of high desert agriculture and rescue dog

Tahoe Daily Tribune | Lake Tahoe action

Tahoe's largest wetland restoration wraps up construction after 3 years

News FOLLOW NEWS | 22 hrs ago

Submitted to the Tribune

The N. Upper Truckee marsh in Dec. 2021.
Provided/Conservancy

SOUTH LAKE TAHOE, Calif. — Major construction is complete for the multi-year Upper Truckee Marsh Restoration project, Lake Tahoe's largest ever wetland restoration, the California Tahoe Conservancy announced Monday.

The Conservancy has completed steps to repair damage caused by 20th century development, restoring and enhancing hundreds of acres of wetland habitat. A new trail offers improved access for all to experience and enjoy the lake's shoreline.

"As the largest wetland restoration project in the Lake Tahoe Basin, this is a remarkable accomplishment," said California Natural Resources Secretary Wade Crowfoot. "Restoring this wetland will help keep Tahoe waters clean, provide great habitat for fish and wildlife, and be one more beautiful place we can all visit."

The Upper Truckee marsh in May 2022.
Provided/Conservancy

Begun in June 2020, key features of the project include:

- New stream channels in the center of the marsh will divert some of the Upper Truckee River's water when river levels are high. The channels spread water across more than 200 acres of wetland that had been left dry when developers straightened the river decades ago.
- 12 acres of new wetlands replace an area that developers dredged and filled in the 1950s and 60s for a never-completed condominium complex. During high flows, the river will spread out over 70,000 new wetland plants. These new wetlands will provide critical wildlife habitat and filter pollutants before entering Lake Tahoe.
- A new trail to Lake Tahoe that skirts around the 12 acres of new wetlands, with a hardened, unpaved surface. The fully accessible shared-use trail runs approximately a half mile from the east end of Venice Drive to a beach at the Lake.

The N. Upper Truckee marsh in Aug. 2022.
Provided/Conservancy

"It's so exciting to see this project completed, despite the disruptions of the pandemic and wildfire evacuations, along with the challenges any project this size would face," said El Dorado County Supervisor and Conservancy Board Chair Sue Novasel. "I'm grateful to our partners who helped us keep this project on track, and look forward to seeing the benefits of the restoration for years to come."

The Conservancy designed the restoration to produce multiple benefits for wildlife, climate resilience, and equitable public access. The restoration makes the wetland habitat more resilient to droughts and extreme storms that are increasingly common under climate change. Functioning wetlands act as a natural filter for water, trapping fine sediments that would otherwise flow into Lake Tahoe. Healthy wetlands also store more carbon than impaired wetlands.

The Conservancy will monitor the project to track how the restoration acts as a nature-based solution to climate change. Returning river flows to the Marsh enriches native fish and bird habitat, fostering biodiversity. The new trail's hardened surface, composed of native decomposed granite, makes it easier for people using wheelchairs, strollers, and bicycles to access the marsh and shoreline.

No restoration project ever truly ends. The Conservancy will continue work in the coming years to establish new wetland plants, monitor the project area, and maintain the restoration elements and new trail. In addition, the Conservancy expects to return in the future for further restoration across the 560 acres of wetlands that make up the marsh. The Conservancy and its partners also continue to advance complementary restoration projects upstream along the Upper Truckee River, which is the largest tributary to Lake Tahoe.

Funders and project partners included the California Wildlife Conservation Board, California Department of Fish and Wildlife, USDA Forest Service, U.S. Army Corps of Engineers, Bureau of Reclamation, the Lahontan Regional Water Quality Control Board, and the U.S. Geologic Survey. Other key partners include the California Department of General Services, Washoe Tribe of Nevada and California, Meyers Earthwork Inc., Northwest Hydraulic Consultants Inc., Western Botanical Services Inc., Tahoe Regional Planning Agency, and Tahoe Resource Conservation District.

Source: Tahoe Conservancy

8 NEWS NOW INVESTIGATORS

Could the SNWA's multi-billion dollar 'water grab' still happen?

by: George Knapp
Posted: Nov 14, 2022 / 06:17 PM PST
Updated: Nov 14, 2022 / 07:21 PM PST

SHARE

LAS VEGAS (KLAS) — Whatever happened to the multi-billion dollar plan to siphon groundwater from rural Nevada? Officially, it is off the table, but the coalition of citizens who fought against it said they expect what they call the "water grab" to rise from the grave.

The Coalition

The coalition, gathered in Baker, is an amalgam of urban liberals and rural conservatives. Ranchers and environmentalists. Figurative "cowboys and Indians." Traditional adversaries who set aside their differences to oppose a plan that would siphon billions of gallons of groundwater from eastern Nevada aquifers and send it via a 300-mile-long pipeline to thirsty Las Vegas.

The Southern Nevada Water Authority was willing to spend $15 billion — perhaps more — to build the pipeline system. The plan is backed by Nevada's most powerful forces: casinos and developers. Opponents were told resistance was futile.

The Pipeline

The Great Basin National Park is the crown jewel of Nevada's public lands. It is also one of the places that could have been jeopardized by the SNWA's ambitious groundwater plan, and so, it seems, is an appropriate backdrop for what was called a "victory party."

"We were not just fighting the project," explained Abby Johnson, an opponent of the SNWA's plan. "We were fighting inevitability. People would say, 'You can't fight the Southern Nevada Water Authority.' But of course, we did."

The Money

The SNWA has spent in excess of $100 million in public funds on the project. Records show the public is still paying for a long list of high-priced law firms, public relations companies and lobbyists who were hired, in part, to overcome opposition to the "water grab", but scientific studies showed that sucking an ocean of groundwater from the rural counties could, in effect, create a vast dead zone in Nevada.

The Case

A lone attorney, Simeon Herskovits, prevailed again and again in state and federal courts.

"Their entire case was built on misdirection and misrepresentation of fundamental questions of fact, law, and policy," Herskovits said. "You could see that this is not permitted to take water that doesn't exist."

After multiple defeats in court, the SNWA formally pulled the pipeline plan off the table and withdrew its claim to rural water. Despite the win, no one in the opposition thinks the fight is over. They point to one glaring fact — the SNWA still owns and operates a vast ranching empire in the targeted area.

The Fight

Water agencies paid nearly $80 million to buy those seven large ranches. The ranches even have their own lawyer and lobbyist, paid with public dollars.

"They're running cattle, and they're running sheep, and you know they have close to one million acres of grazing allotments up there," said Kyle Roerink with the Great Basin Water Network. "I don't think that the Southern Nevada Water Authority remains on ag operations 300 miles north of here because they like the hay business."

The SNWA declined to speak on camera about why it is spending public dollars to raise sheep and grow hay hundreds of miles away from its customers. In its formal documents, the SNWA explains its "northern resources" are a way to demonstrate "improved agricultural practices and livestock genetics and husbandry" and also to demonstrate financial ei ciency.

Those lessons seem lost on the much smaller private ranchers who say they are being ground to dust being forced to compete against a government agency with deep pockets. The SNWA has gone after the grazing rights of ranchers Hank Vogler and Kena Gloeckner, among others, forcing them into costly legal fights that have dragged on for years.

Gary Perea, White Pine County Commissioner, fought the project while crisscrossing the state with his stepfather, late rancher Dean Baker. Perea predicts agencies will try to revive the "water grab" in the Nevada legislature by crafting legislation that might bypass water laws.

"The amount of money they're putting into those ranches and running them is not …economically feasible," Perea explained.

The Future

In the past, The SNWA has used what many call scare tactics to justify the "water grab." There were numerous predictions of disaster and economic collapse unless Las Vegas could get the rural water by 2013. That deadline came and went nearly a decade ago, and Las Vegas is still thriving.

Opponents say the extended drought is likely to be the new excuse. Headlines about climate change and images of the drop in water levels at Lake Mead have already generated statements about how the SNWA needs to leave all options on the table.

When asked whether the rural pipeline is dead or alive, the SNWA told said it has been "deferred."

"They deferred that project from their water resource plan," said Kyle Roerink. "But they never said that we will never do this ever."

Stanford | News Service

NOVEMBER 14, 2022

Dams could play a big role in feeding the world more sustainably, Stanford researchers find

Analysis finds that dammed reservoirs could store more than 50% of the water needed to irrigate crops without depleting water stocks or encroaching on nature. The researchers caution against building new dams, however, and urge consideration of alternative storage solutions.

BY ROB JORDAN

Stanford Woods Institute for the Environment

A bogeyman to many environmentalists, dams could actually play a significant role in feeding the world more sustainably, according to new Stanford University research. The study, published the week of Nov. 14 in *PNAS*, quantifies for the first time how much water storage would be required to maximize crop irrigation without depleting water stocks or encroaching on nature, and how many people this approach could feed. While the researchers find that dammed reservoirs could be used to store more than 50% of the water needed for such irrigation, they emphasize that large reservoirs are only part of the solution and recommend evaluating alternatives to building new dams due to their damaging impacts on river ecosystems.

"There is an urgent need to explore alternative water storage solutions, but we have to acknowledge that many dams are already in place," said study lead author Rafael Schmitt, a lead scientist with the Stanford Natural Capital Project. "Our research illuminates the crucial role of water storage for ensuring food security in the future."

Typical agricultural practices in many parts of the world deplete and pollute water resources, damage natural landscapes, and together generate one-fourth of global greenhouse gas emissions. Two-thirds of global cropland depends on rainfall and often makes up for its absence by using non-sustainable water resources, such as non-renewable groundwater, or impeding environmental flows.

A farm worker carries an irrigation pipe in San Luis, Arizona. *(Image credit: Getty Images)*

Sustainable irrigation's potential

The researchers analyzed the amount of freshwater in surface and groundwater bodies generated and renewed by natural hydrological cycles, as well as water demands of current crop mixes on irrigated and rainfed lands. They estimated that the full potential of storage-fed irrigation could feed about 1.15 billion people. If all 3,700 potential dam sites that have been mapped for their hydropower potential were built and partially used for irrigation, the world's dams could supply enough water storage to irrigate crops for about 641 million people or 55% of the total.

Despite dams' potential, the researchers caution against relying on them as a significant part of the sustainable irrigation solution, citing dams' socio-environmental consequences, such as fragmentation of rivers, with impacts on fish migration and sediment transport, and displacement of people. Dams are also less appealing for irrigation storage because of water loss, expense, and ecological damage related to the need for conveyance to distant agricultural fields, as well as higher levels of evaporation across large reservoirs' large water surfaces.

"Amongst all supply and demand side options to increase food and water security, building more dams should be the last resort," the researchers write.

Alternative solutions to provide more environmentally sound water storage for irrigation include water harvesting with small dams, recharging groundwater systems with excess surface water from winter storms or spring snow melt, and better management of soil moisture on farm fields. These decentralized approaches lose less water due to evaporation, require less conveyance infrastructure, and often create co-benefits for local communities and wildlife.

Food systems might be an important driver of future dam construction, an aspect that has been so far overlooked, as debates around future dams have predominantly focused on hydropower, according to Schmitt. Where irrigation will require more reservoir storage after alternatives are exhausted, the researchers urge strategic planning approaches to minimize impacts of future irrigation dams.

Additionally, the researchers highlight that the demand for stored water can be reduced through better irrigation techniques, or adoption of crops that are better aligned with water availability. With storage being such a bottleneck for future agriculture, better land management that reduces erosion – and thus sedimentation and storage loss – in existing reservoirs is an additional priority.

"Nutritional security is a core challenge for sustainable human development," said study senior author Gretchen Daily, co-founder and faculty director of the Stanford Natural Capital Project. "Our study highlights the urgent need and opportunity for nature-positive investments into irrigation and water management to reduce harmful impacts of agriculture while supporting other vital benefits of farmland and freshwater ecosystems."

Daily is also the Bing Professor of Environmental Science in the Stanford School of Humanities and Sciences, and a senior fellow at the Stanford Woods Institute for the Environment.

The study was co-authored by Lorenzo Rosa, an assistant professor (by courtesy) of Earth system science in the Stanford Doerr School of Sustainability and a principal investigator at the Carnegie Institution for Science's Department of Global Ecology.

The research was funded by the Wallenberg Foundation.

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U.S. DEPARTMENT OF AGRICULTURE

Biden-Harris Administration Launches Interactive Map Showcasing Wildfire Reduction Projects

New map shows the impact of the Bipartisan Infrastructure Law on Forest Service, partner efforts to reduce hazardous fuels in western states

Press Release
Release No. 0242.22

Contact: USDA Press
Email: press@usda.gov

WASHINGTON, Nov. 15, 2022 – The Biden-Harris Administration is announcing today that the U.S. Department of Agriculture's Forest Service has launched a new interactive map showing the progress the agency and its partners have made in addressing the wildfire crisis in eight western states as part of the Forest Service's 10-year wildfire crisis strategy. This easy-to-use "story map" gives users the opportunity to see the impact of the historic investments from President Biden's Bipartisan Infrastructure Law across 10 initial landscapes (PDF, 9 MB) in Washington, Oregon, California, Idaho, Montana, Colorado, New Mexico and Arizona.

This announcement comes as USDA celebrates the accomplishments made since the Bipartisan Infrastructure Law was signed one year ago.

"Western states are living the reality of climate change every day, where record droughts and catastrophic fire threaten lives and livelihoods like we have never seen in our history," said Agriculture Secretary Tom Vilsack. "This new resource gives everyone a chance to see the real impacts of the on-the-ground work the USDA Forest Service and its partners have already done to protect the communities and the resources that are most at risk."

"We are working with communities and partners to implement critical hazardous fuels work on the initial landscapes. This work will meaningfully change how people, communities and natural resources experience risk from wildfire," said Forest Service Chief Randy Moore. "With this story map, audiences across the country can see in real-time where investments are being made to create safer communities and healthier, more resilient forests."

This online story map is designed to be easy to use and is continually updated to show the progress of wildfire reduction e orts on national forests and grasslands as well as other federally managed, state, and private lands. Individual landscape maps allow users to interactively identify national forests, Congressional Districts, active partners, landscape boundaries and "firesheds," or areas where wildfire is likely to pose the greatest risk to communities and resources.

Since it was first announced earlier this year, the Forest Service and its partners have used the best available science to identify the highest risk landscapes for treatment projects as part of the 10-year wildfire crisis strategy. The Forest Service found that around 80% of the wildfire risk to communities is concentrated in fewer than 10% of firesheds.

These initial investments focus on firesheds of the highest risk, where projects are ready to begin or to expand. The first-year investments are a part of the strategy to reduce the exposure of communities and infrastructure to the risk of catastrophic wildfire. A detailed update on first-year investments is available at:
www.fs.usda.gov/sites/default/files/fs_media/fs_document/WCS-Progress-Summary.pdf (PDF, 7 MB).

Each year the Forest Service will plan and implement more work as part of the 10-year strategy as funding allows, continuing to reduce the risks of extreme wildfire for communities in these vulnerable areas.

USDA touches the lives of all Americans each day in so many positive ways. Under the Biden-Harris Administration, USDA is transforming America's food system with a greater focus on more resilient local and regional food production, promoting competition and fairer markets for all producers, ensuring access to safe, healthy and nutritious food in all communities, building new markets and streams of income for farmers and producers using climate-smart food and forestry practices, making historic investments in infrastructure and clean energy capabilities in rural America, and committing to equity across the Department by removing systemic barriers and building a workforce more representative of America. To learn more, visit www.usda.gov.

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PPIC | PUBLIC POLICY INSTITUTE OF CALIFORNIA

BLOG POST · NOVEMBER 16, 2022

Ellen Hanak and Jeffrey Mount

Climate-Challenged

California Must Learn to Thrive with Less Water

Join us on Friday, November 18 for our fall water priorities conference in Sacramento. Register here.

California has long been a hub of innovation. But managing the increasing variability of our weather in an era of climate change will challenge even the best and brightest water and land managers. Conditions are changing fast—and they will keep changing. And the warmer, drier conditions are revealing some profound weaknesses in our water supply systems.

As we argue in our new report, *Priorities for California's Water: Thriving with Less*, even if we do everything right, water supplies are likely to decline. The grand challenge for 21st-century water management in California is learning to thrive with less.

It is important to acknowledge that climate change is here and not some future threat. California's already variable climate is becoming increasingly volatile, with drier dry periods and wetter—but less frequent—wet periods.

This is made worse by an atmosphere that is increasingly thirsty, principally due to warming. This thirsty atmosphere draws water out of the landscape, leaving less available for runoff into rivers or seepage into aquifers. To complicate matters, California's largest reservoir—its snowpack—is dwindling, which means less water is available during the summer when demands are highest.

All of these changes are impacting a water supply system designed for conditions during the mid-20th century when precipitation, snowpack, and runoff were more reliable and temperatures lower. To sustain our urban and rural communities, agriculture, and ecosystems, we'll need to adjust course.

Some actions are already underway and should be celebrated. In total, California's communities, farms, and non-farm businesses use roughly the same amount of water as they did in 1990, despite adding 10 million people and more than doubling the size of the economy. These efforts to increase water use efficiency should continue.

But conservation will only go so far. To adapt to changing conditions we must also modernize the way we store and convey water. At the top of the list is taking better advantage of occasional wet years to get through dry times. This involves developing new storage—particularly underground—and connecting our storage to conveyance infrastructure, so that water can get to its highest and best uses. Water recycling and stormwater capture will also be key to modernizing storage in urban areas.

Rural communities—which are dealing with falling groundwater tables and dry wells—will need to consider interconnecting and consolidating their small water utilities to build resilience. Upgrading wells and investing in new supplies, including by partnering with urban agencies, can also help. More interconnections will also help urban areas manage modern droughts. Preserving affordability—in both urban and rural communities—remains key.

Agriculture—California's largest water user—will need to reduce its irrigated footprint over the next few decades. Although California will continue to be the nation's most productive agricultural state, land will have to be fallowed to respond to dwindling supplies and to meet groundwater sustainability goals. There are ways to soften the economic impacts of fallowing through water trading and groundwater banking. Alternate uses for fallowed land—like water-limited farming or solar development—also could help keep those lands economically productive while reducing environmental hazards like dust.

Finally, managing water for the environment—and the multiple benefits provided by healthy ecosystems—remains a fundamental challenge with no easy answers. The state needs a strategy to help ecosystems—

California's vital natural infrastructure—adapt to the impacts of warming and drying. This includes setting aside dedicated water supplies, accelerating the pace and scale of restoration activities, and finding and protecting climate refugia—habitat buffered from climate impacts.

All of these actions will require unprecedented coordination and integration. And while the challenge is large, we chose the word "thrive" deliberately. California has the skill and the will to confront these crises, along with abundant natural and human resources and a new infusion of state and federal funding to support needed actions. In short, we have all the tools to thrive, even in this unpredictable climate.

Los Angeles Times

WORLD & NATION

Facing Colorado River shortage, 30 urban suppliers pledge to target decorative grass

A restricted area upstream of Glen Canyon Dam at Lake Powell on June 8 in Page, Ariz. (Brittany Peterson / Associated Press)

BY IAN JAMES | STAFF WRITER NOV. 17, 2022 5 AM PT

With the federal government calling for major cuts in water use to address the historic shortage on the Colorado River, the leaders of 30 agencies that supply cities from the Rocky Mountains to Southern California have signed an agreement committing to boost conservation, in part by pledging to target the removal of one especially thirsty mainstay of suburban landscapes: decorative grass.

The water agencies, which supply Denver, Las Vegas, Phoenix, Santa Monica, Burbank, San Diego and other cities, have committed to a nonbinding list of actions, including creating a program to remove 30% of "nonfunctional" grass and replace it with
"drought- and climate-resilient landscaping, while maintaining vital urban landscapes and tree canopies."

The pledge could strengthen efforts across the Southwest to remove grass along roadsides and medians and in areas subject to homeowners associations, apartment complexes, businesses and other properties.

The 30 urban water suppliers also agreed in their memorandum of understanding to expand programs to improve water efficiency indoors and outdoors; increase wastewater recycling and reuse where it's feasible; and implement various "best practices" for conservation, such as offering rebates to customers who remove grass, adopting rate structures that incentivize saving, and establishing mandatory schedules for outdoor watering, among other things.

While urban water suppliers have already been working toward conservation goals, the agreement represents a broad-based effort by agencies throughout the Colorado River Basin that are "coming forward together and really doubling down on those commitments in light of the crisis that we're facing," said Liz Crosson, chief sustainability officer for the Metropolitan Water District of Southern California.

"This commitment from agencies from multiple states right now is hugely significant," Crosson said. "We're all coming to the same conclusion that we really need to address some of the remaining water waste that we see out there in our landscapes."

One of the prime areas where water managers see big potential to downsize is the sprinklers spraying unused strips of grass that line streets and the entrances of businesses and public properties, where no one walks except to mow. By converting those grassy patches that serve no recreational or community purpose to other types of plants that require less water, cities can substantially shrink their water footprint.

New measures have already been adopted in some states outlawing nonfunctional grass.

Last year, the Nevada Legislature passed a law that, starting in 2027, bans watering of nonfunctional grass.

In May, California's State Water Resources Control Board adopted drought rules that similarly outlaw watering of nonfunctional grass.

And in October, the Metropolitan Water District's board passed a resolution recommending that cities and water agencies throughout Southern California pass ordinances permanently prohibiting nonfunctional turf at businesses, public properties and homeowners associations.

These measures don't affect lawns at people's homes, but many cities have also been trying to encourage homeowners to take out grass by offering rebates for each square foot converted to low-water-use plants. The Los Angeles Department of Water and Power recently increased its lawn-removal rebate from $3 to $5 per square foot.

In the Las Vegas area, more than 5 million square feet of grass has been removed and converted to desert landscaping this year, according to the Southern Nevada Water Agency.

Public officials who set water policies throughout the Colorado River watershed are under growing pressure to find ways to rapidly reduce water use, in cities as well as farming areas.

The river has long been overallocated, and its flows have shrunk dramatically during a 23-year megadrought that is being amplified by humanity's heating of the planet. Lake Mead and Lake Powell, the nation's two largest reservoirs, now sit nearly three-fourths empty.

And scientists have warned that climate change is leading to long-term aridification of the region, eroding the amount of water that can be expected from the river.

Without major cuts in water use, the latest projections show growing risks of the reservoirs approaching "dead pool" levels, where water would no longer pass downstream.

Since June, federal officials have urged the seven states that rely on the river to come up with plans to reduce water use by 2 million to 4 million acre-feet per year, a decrease of roughly 15% to 30%. But negotiations among the states and water agencies have yet to produce an agreement on how to achieve that level of reduction.

The U.S. Interior Department and Bureau of Reclamation announced plans last month to revise their current rules for dealing with shortages, saying they may also need to release less water from the dams as the reservoirs continue to decline.

The signing of the agreement, which was presented to the Bureau of Reclamation, shows that urban water users are willing to move forward with approaches for dealing with drought and the effects of climate change, said John Entsminger, general manager of the Southern Nevada Water Authority.

"Given the lack of progress on the negotiations between the seven states, I think it demonstrates that reasonable people of goodwill can continue to make progress on important ways to use less water and adapt to a warmer, drier future," Entsminger said. "The future is going to require all of us to use less water, and you're really seeing that widespread acceptance of the need for adaptation."

Cities use roughly 20% of the Colorado River's water, while agriculture uses approximately 80%.

Southern California water districts recently submitted a proposal to the federal government to reduce water use by about 9% for the next four years.

One of those four agencies, the Imperial Irrigation District, uses the single largest allocation of Colorado River water to supply farms in the Imperial Valley. IID's managers have pledged to take on the largest share of California's reductions, saying they plan to prioritize conservation based on improving water efficiency rather than leaving fields dry and fallow.

"As we consider the long-term aridification of the Colorado River Basin, the math is simple: Water uses exceed water supplies," Entsminger said. "Every user is going to have to find a way to use less."

Leaders of seven environmental and conservation groups, among them the Environmental Defense Fund, American Rivers and the National Audubon Society, voiced support for the memorandum of understanding in a letter to the federal government, calling it "an important step in the right direction."

"The [Colorado River] Basin no longer has the privilege of time to methodically prepare for a hotter and drier future," they wrote in the letter. "The pace and scale of solutions to successfully reduce the Basin's water supply risks must be accelerated … if we have any hope of assuring a sustainable Colorado River Basin going forward."

Madelyn Glickfeld, co-director of UCLA's Water Resources Group, said that the agreement is a good step but cities will need to do more, and that agricultural water districts should make similar water-saving commitments.

"Agriculture has got to consider growing less water-intensive crops," Glickfeld said.

As for the ubiquitous lawns in cities and suburbs, she said, "everyone should be taking out their nonfunctional grass — and even their functional grass where there are good replacements."

One big question will be how the water agencies get to the goal of removing 30% of nonfunctional grass, Glickfeld said.

"They've never done that. So let's see how they do," Glickfeld said, "and how fast they can do it."

"The changes we have to make are huge," she said. "And because we've let things get so bad, we don't have a hell of a lot of time."

Ian James

Twitter Instagram Email Facebook

Ian James is a reporter who focuses on water in California and the West. Before joining the Los Angeles Times in 2021, he was an environment reporter at the Arizona Republic and the Desert Sun. He previously worked for the Associated Press as a correspondent in the Caribbean and as bureau chief in Venezuela. He is originally from California.

Las Vegas water district proposes new golf course limits

by News 3 Staff
Thursday, November 17th 2022

Derek Jeter plays a round of golf during the first day of the Derek Jeter Celebrity Invitational Golf Tournament at Shadow Creek Golf Course in Las Vegas, Nev. on April 19, 2018. (Photo by Guillermo Hernandez Martinez/The Players' Tribune)

Las Vegas (KSNV) — More water conservation may be on the way for local golf courses.

According to a recent meeting held by the water district, the district is proposing golf courses limit their water use to 4-acre feet per acre of land.

MORE ON NEWS 3 | 1 person in Nevada hospitalized in listeria outbreak linked to mushrooms

will take place on January 3rd of next year.

Man arrested after killing wife, abandoning daughter near Barstow

by Martha Cruz
Wednesday, November 30th 2022

FILE: Handcuffs

Barstow, CA (KSNV) — A man is in custody after allegedly abandoning his daughter at a gas station in the Southern California desert after killing his wife.

side of the road before dropping her off at the gas station.

The victim, identified as 31-year-old Sonia Flores, was found deceased around 11:43 a.m. the next day, according to the San Bernardino County Sheriff's Office.

Deputies were also able to locate Jaimes-Rosas' abandoned vehicle on a dirt road overnight on Saturday. He was taken to the hospital with self-inflicted injuries but was later released.

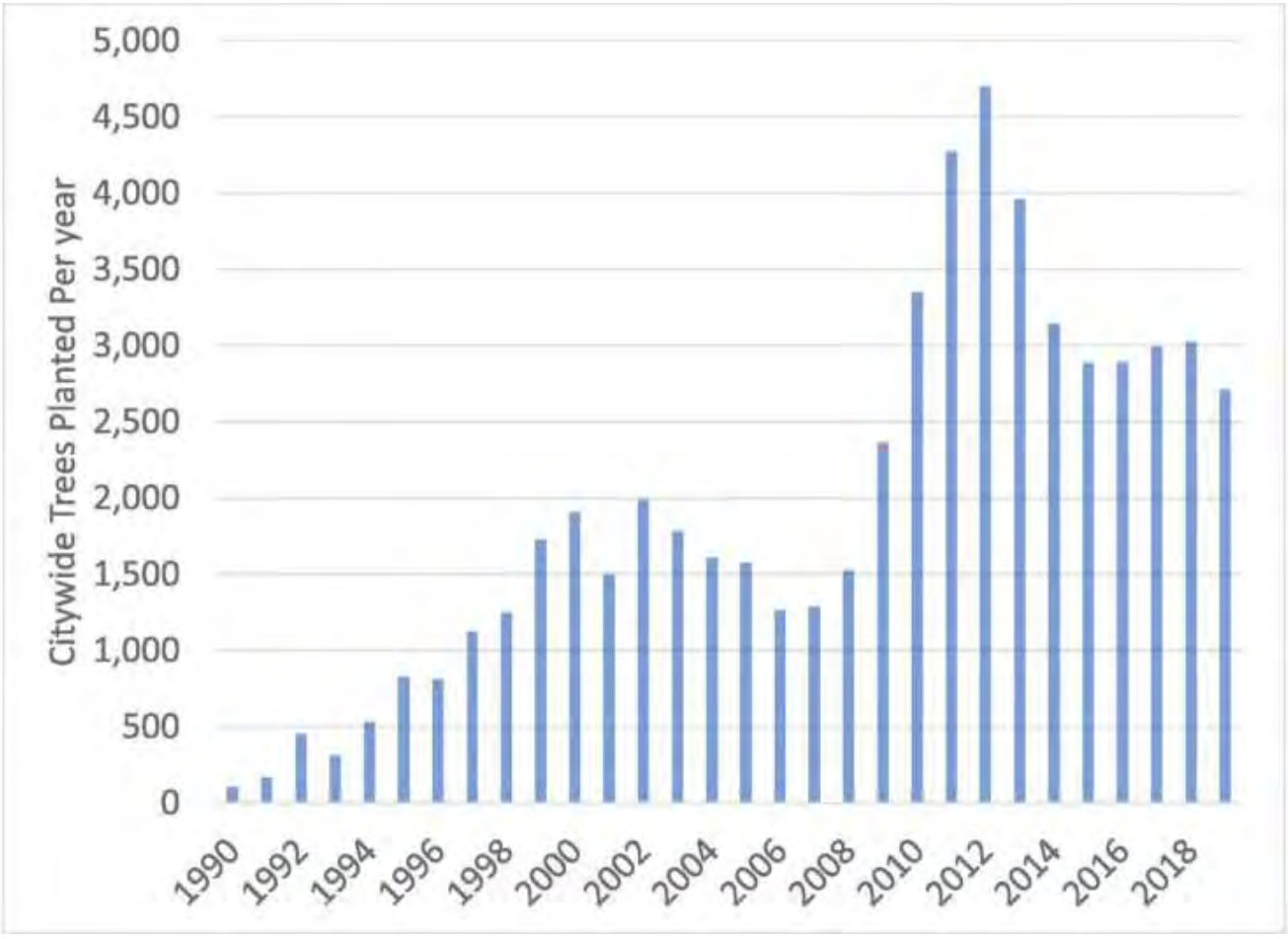
Jaimes-Rosas was arrested for murder and booked in at the High Desert Detention Center, where he is held without bail.

Anyone with information regarding this incident is urged to contact the Homicide Detail at 909-890-4908. Callers wishing to remain anonymous should call the We-Tip Hotline at 1-800-78-CRIME (27463) or go to www.wetip.com.

NOVEMBER 17, 2022

Planting trees can save lives, study of 30-year tree planting campaign finds

by Barcelona Institute for Global Health



Number of street trees planted annually by Friends of Trees in Portland, Oregon. Credit: *Environment International* (2022). DOI: 10.1016/j.envint.2022.107609

In the past 30 years, the non-profit organization Friends of Trees planted trees along the streets of Portland, Oregon. Now, a new study shows that each tree planted was associated with significant reductions in non-accidental and cardiovascular mortality (of 20% and 6%, respectively, for trees planted in the preceding 15-30 years).

The researchers also estimate that the annual economic benefits of planting trees greatly exceed the cost of maintaining them. The study, co-led by the Barcelona Institute for Global Health

(ISGlobal), together with the USDA Forest Service, was published in *Environment International*.

Evidence pointing to an association between exposure to nature and lower mortality is accumulating. "However, most studies use satellite imaging to estimate the vegetation index, which does not distinguish different types of vegetation and cannot be directly translated into tangible interventions," says Payam Dadvand, ISGlobal researcher and senior author of the study.

Thus, the authors took advantage of a natural experiment that took place in the city of Portland: between 1990 and 2019, Friends of Trees planted 49,246 street trees (and kept records of where the trees were planted, and when).

So, the research team looked at the number of trees planted in a given area (specifically, a census track, where approximately 4,000 people live) in the preceding 5, 10 or 15 years. They associated this information with mortality due to cardiovascular, respiratory or non-accidental causes in that same area, using data from the Oregon Health Authority.

The results show that in neighborhoods in which more trees had been planted, mortality rates (deaths per 100,000 persons) were lower. This negative association was significant for cardiovascular and non-accidental mortality (that is, all causes excluding accidents), particularly for males and people over the age of 65.

Furthermore, the association got stronger as trees aged and grew: the reduction in mortality rate associated with trees planted 11-15 years before (30%) was double that observed with trees planted in the preceding 1-5 years (15%). This means that older trees are associated with larger decreases in mortality, and that preserving existing mature trees may be particularly important for public health.

This study doesn't provide a direct insight into how trees improve health. However, the finding that large trees have a greater health impact than smaller ones is telling, because larger trees are better at absorbing air pollution, moderating temperatures, and reducing noise (three factors linked to increased mortality).

"We observed the effect both in green and less green neighborhoods, which suggests that street tree planting benefits both," says Geoffrey H. Donovan, from the USDA Forest Service and first author of the study. The analysis took into account other factors that may influence mortality, such as income, education and racial composition of the neighborhoods.

Finally, according to the authors' estimates, the benefits of tree planting greatly outweigh the cost: the annual cost of planting and maintaining one urban tree in each of Portland's 140 census tract areas would range somewhere between 3,000 and 13,000 USD, while it would generate around 14.2 million USD annually in lives saved.

"Our results provide an important evidence-base for tangible interventions (e.g., planting trees) to increase the longevity of urban residents," concludes Dadvand.

More information: Geoffrey H. Donovan et al, The association between tree planting and mortality: A natural experiment and cost-benefit analysis, *Environment International* (2022). DOI: 10.1016/j.envint.2022.107609

Journal information: Environment International

Provided by Barcelona Institute for Global Health

The Atlantic

The Supreme Court Case That Could Break Native American Sovereignty

Haaland v. Brackeen could have major consequences for tribes' right to exist as political entities.

By Rebecca Nagle

The Atlantic

NOVEMBER 8, 2022

Every generation of Americans has seen an effort to undermine Indigenous sovereignty. The latest attempt heads to the Supreme Court tomorrow.

In the sprawling federal lawsuit *Haaland v. Brackeen*, a handful of white foster parents, among other plaintiffs, are asking the Supreme Court to overturn a law called the Indian Child Welfare Act. ICWA was created in 1978 to prevent family separation in Native communities. When the law passed, about a third of Native children had been removed from their families. But in the lawsuit, far more than the future of Native children is at stake.

When a Native child is up for adoption, ICWA prioritizes placing that child rst with relatives, then other members of their tribe, and then other Native families. ǿ ese placement preferences, the non-Native foster parents claim, give them "fourth-tier status."

Their pro bono lawyer Matthew McGill told the Fifth Circuit that this was all because "they are not and cannot be, because of their race, Indian families." (Notably, in two of the three underlying custody cases, the non-Native foster parents won custody—when blood relatives also wanted to raise the children.) Citing the equal-protection clause of the Fourteenth Amendment, the plaintiffs claim that ICWA violates their constitutional rights by discriminating against them.

What makes the case tricky is that many people in the United States think of Native Americans as a racial group. But that is not how American law works. Under federal law, tribes and tribal citizens are not a racial group, but a political one. Accordingly, ICWA applies only to Native children who either are enrolled in a federally recognized tribe or are eligible based on a given tribe's citizenship requirements. Just as certain laws apply to me because I am a citizen of the United States or a resident of Oklahoma, certain laws apply to me because I'm a citizen of the Cherokee Nation. Those laws flow from the treaties signed between my sovereign Indigenous nation and the United States, established through the same constitutional process the U.S. uses to sign treaties with Britain or Japan.

A host of federal statutes—including on land rights, water rights, health care, gaming, criminal and civil jurisdiction, and tribal self-governance—treat Native Americans differently based on this political classification. In this light, I fear that the Brackeen lawsuit is the first in a row of dominoes—if the Court strikes down ICWA, everything else could soon go with it.

If ICWA is unconstitutional because it is based on race, then what of the clinic where I get my health care that serves only tribal citizens? If ICWA discriminates against non-Native foster parents, what of gaming regulations that allow tribes to operate casinos where non-Native casino developers can't? What "racial group" in the United States has their own police forces, courts, elections, governments, and lands, as tribes do? The possible shift is radical. The U.S. has been passing laws that treat tribes and tribal citizens differently from non-Native citizens since the founding of the republic.

If that is unconstitutional, the entire legal structure defending the legal rights of Indigenous nations could crumble.

For people who know Native history, all of this is reminiscent of a terrifying pattern, in which attacks on Native children are a prelude to broader attacks on tribal sovereignty.

In the late 19th and early 20th centuries, the federal government ruthlessly separated Native children from their families and sent them to boarding schools. There, they were stripped of their clothes, given English names, and punished for speaking their language, and they faced widespread emotional, physical, and sexual abuse. Today, where many of these children are buried is the subject of federal inquiry.

The justification for the boarding schools was that Native people would achieve "equality" in the United States only if they assimilated to white society. Boarding schools would help Native children be more like white children, through assimilation. But the schools also served another purpose. At the same time, the U.S. wanted to privatize tribal land and open big areas to white settlers. In the pressure campaign, Native children were the bargaining chips. "The children would be hostages for the good behavior of their people," one U.S. official wrote at the time. And it worked. When Lakota and Dakota leaders agreed to land cessions in 1889, they acknowledged that losing their children had driven them to the bargaining table.

Rebecca Nagle is a journalist based in Tahlequah, Oklahoma. Her podcast, *This Land*, won the American Mosaic Journalism Prize in 2020.

The Tahoe National Forest lines the Truckee River at Boca Dam. (Courtesy of the Truckee Meadows Water Authority)

Indy Environment: Why a Nevada water utility is looking upstream to forest management in California

Good morning, and welcome to the Indy Environment newsletter.

As always, we want to hear from readers. Let us know what you're seeing on the ground and how policies are affecting you. Email me with any tips at daniel@thenvindy.com

If you received this from a friend, sign-up here to receive it in your inbox.

Miles and miles away from Washoe County's border with California, snowpack is starting to fall on the eastern Sierra Nevada. Over the next several months, with a few more storms, that snow will accumulate and begin to slowly melt and run off, trickling into the streams that feed the Truckee River.

The Truckee River, which pours out of Lake Tahoe, winds its way through California and crosses into Nevada, where it is used as a source for water in Reno and Sparks. **What happens in the forests that the Truckee cuts across has a direct effect on what happens downstream.**

That's why the Truckee Meadows Water Authority, the main utility for the fast-growing region, is looking upstream to reduce the risk of extreme wildfires that have, in recent years, torn through forests across the West, scarring soil, eroding streambeds and altering the water cycle. A fire can affect both water quality through contamination and water quantity through runoff changes.

"When you have wildfires that go through reservoir areas, like we've seen in Colorado, it can create burns and then it creates a lot of sediment into the reservoir," said Stefanie Morris, the director of legal and regulatory affairs for the water authority. "So two things happen. [Wildfire can reduce] the storage capacity of the reservoir and it can have water quality impacts."

Last month, the regional water authority signed onto an agreement with the U.S. Forest Service and several nonprofit groups to develop a 10-year forest vegetation plan for an important stretch of the river from Lake Tahoe to the Nevada state line. The agreement's goals: Thin heavy forest growth, reduce wildfire risk and identify resources to support projects.

The memorandum of understanding — also signed by The Nature Conservancy, the Truckee River Watershed Council and the National Forest Foundation — aims to be more proactive than reactive. Unlike other parts of the West, including the Feather River watershed to the north and Tahoe to the south, extreme and large-scale blazes have not ignited in the middle Truckee area.

"We're fortunate we haven't had any really bad fires in our watershed for decades," said Mickey Hazelwood, conservation director for The Nature Conservancy in Nevada, which has ecosystem restoration projects across the Truckee River Basin. "But they've been getting closer and closer to home. I think that's one of the things that's gotten people's attention in the last few years."

Over time, like most rivers across the West, the Truckee has endured more than a century of manipulation, from runaway logging to the construction of dams and policies that suppressed fires necessary to maintain forest health. **Intense logging followed by strict fire suppression Hazelwood said, meant that "we ended up with a system that's just highly out of whack."**

It also puts the middle Truckee River, spanning about 315,000 acres and including the town of Truckee, at a higher risk for a severe wildfire. Stands of trees, because of suppression, are thicker in some areas, and understory brush is more present than if frequent "natural" fires had occurred.

"Current conditions indicate that the forest and habitats in the Middle Truckee River watershed are likely not resilient to a variety of disturbances," according to the memorandum, which calls for more "intensive" forest management. "These conditions greatly increase the likelihood of destructive wildfire causing significant damage to human communities and watershed health."

Some of this work is already happening. Since 2009, the Nature Conservancy has been working with the Forest Service on thinning forest around Independence Lake, habitat for an important population of Lahontan cutthroat trout, a threatened species whose population plunged over the past century as it faced numerous manmade threats from industrial development to overfishing.

Earlier this month, the Forest Service conducted several prescribed fires near Truckee, Lisa Wallace, executive director of the Truckee River Watershed Council, noted. Already several projects identified through the agreement are undergoing some level of environmental review.

Another effort to reduce wildfire fuels, known as the Ladybug Project, is underway. It focuses on 2,500 acres near Stampede Reservoir, northwest of Reno. The roughly $3.8 million project, expected to be completed by 2025, relies on a variety of methods, including hand thinning, removing timber, clearing forest with heavy equipment and prescribed burns, whereby officials light a controlled fire to improve forest health and reduce overall fire risks.

Cutting trees? Prescribed burns? What forest treatment looks like can vary significantly from place to place and project to project — and it's not without controversy. In a number of cases across the West, environmental groups and local residents have challenged logging projects aimed at improving forest health. Earlier this year, Earth Island Institute halted a tree removal project in Yosemite National Park, arguing that thinning is not an effective strategy for wildfire mitigation.

Other environmental groups have raised concerns that projects, billed to reduce wildfire risk, are actually eliminating old-growth trees — to the benefit of commercial logging. Climate Forests, a coalition including the Sierra Club, Earthjustice and the Center for Biological Diversity, released a report this month looking at projects from California to West Virginia. The report called on the Biden administration to ensure federal forest treatment projects avoid land with mature forests.

Supporters of forest thinning and prescribed burning argue that treated areas, when carefully managed, can make wildfire behavior less extreme. As one example, they point to the Caldor Fire, where treated areas helped slow down the wildfire's spread and decrease flame length.

In the middle Truckee River watershed, the agreement discusses taking an "ecologically-based approach" that focuses on sustaining a biodiverse forest and emphasizing smaller-scale fires that can be beneficial for the ecosystem. The agreement also contemplates working with local businesses to reprocess some materials for biomass or to create commercial wood products. In a follow-up email, Hazelwood said he did not recall, from past mapping, any old-growth forest in the area where they are proposing treatments.

The coalition that signed onto the agreement has identified about 60,000 acres of forest that it said are in need of management. The 10-year management plan is meant to help guide those efforts. Morris said she hopes the plan can be modeled after collaborative efforts to do similar forest management work on the North Yuba River, on the western side of the Sierra. In the coming months, the coalition plans to host public meetings and collect input.

Wallace, with the Truckee River Watershed Council, said the group plans to use modeling and new science that considers variables, such as species diversity, topography, climate change and the way features on the land, such as meadows, function in the ecosystem.

The overall management efforts, she added, will not only focus on thinning: "We hope that we're going to be increasingly sophisticated about where and how we're doing thinning and where and how we're leaving trees and how we're restoring creeks, streams, wetlands and meadows."

The Truckee River upstream of Reno, Nev. in April 2022. (Daniel Rothberg/The Nevada Independent)

WEST · **Published** November 18, 2022 11:26am EST

Western US cities to remove decorative grass to reduce water use amid shortage

Phoenix, Salt Lake City, Southern California among the places that pledged to rip up its ornamental grass

Associated Press

Fox News Flash top headlines for November 18

Fox News Flash top headlines are here. Check out what's clicking on Foxnews.com.

A group of 30 agencies that supply water to homes and businesses throughout the western United States has pledged to rip up lots of decorative grass to help keep water in the over-tapped Colorado River.

The agreement signed Tuesday by water agencies in Southern California, Phoenix and Salt Lake City and elsewhere illustrates an accelerating shift in the American West away from well-manicured grass that has long been a totem of suburban life, having taken root alongside streets, around fountains and between o ce park walkways.

The grass-removal pledge targets turf that people don't work on, like in front of strip malls, in street medians or at the entrance to neighborhoods. It doesn't mean cities plan to rip up grass at golf courses, parks or in backyards, though some may pay homeowners to voluntarily replace their lawns with more drought-resistance landscaping.

MISSISSIPPI GOV. TATE REEVES CALLS SPECIAL SESSION TO CONSIDER INCENTIVES FOR ECONOMIC DEVELOPMENT PROJECT

Beyond reducing ornamental grass by 30%, the agencies say they'll boost water efficiency, add more water recycling and consider actions like changing how people pay for water to encourage savings.

"Recognizing that a clean, reliable water supply is critical to our communities, we can and must do more to reduce water consumption and increase reuse and recycling within our service areas," read the memo.

The agreement did not include details about the amount of water the agencies were collectively committing to save, but cities account for about one-fifth of Colorado River water use. The rest goes to agriculture.

Tra c passes a grassy landscape on Green Valley Parkway in suburban Henderson, Nevada, on April 9, 2021. (AP Photo/Ken Ritter, File)

"Cities — the 20% — can't solve the math problem. But we can certainly contribute to solving the problem," said John Entsminger, the Southern Nevada Water Authority's General Manager.

The commitments, light on details, could spur agencies to offer payment for property owners to tear out grass and replace it with drought-tolerant desert landscaping.

The commitment to tear out 30% marks the first time water agencies throughout the region have collectively committed to a numerical benchmark targeting one specific kind of water use. It comes as the states scramble to reduce their consumption to meet demands from federal officials who say cuts are needed to maintain river levels and protect public health, food systems and hydropower.

The letter adds additional signatories to an earlier agreement five large water districts reached in August. Water agencies in Albuquerque, Las Vegas and Denver are among those who signed.

Denver Water spokesperson Todd Hartman said the city hoped to replace roughly 75 million square feet of non-functional turf but didn't share how much water that would conserve. He said the agency hopes to roll out programs by 2024.

No matter the savings, the new commitments will amount to far less conservation than is needed to keep water flowing through the Colorado River and prevent its largest reservoirs from shrinking to dangerously low levels.

DINOSAUR TRACKS UNEARTHED IN TEXAS STATE PARK AS DROUGHT DRIES RIVER

Phoenix wants its program up and running by the spring; it will be the city's first time offering payment for people to rip up grass, said Cynthia Campbell, the city's water resources management adviser. Even without a program, lots of people have removed grass anyway. In the 1970s, about 80% of homes had grass covering most of their property; today, it's 9%, but that doesn't include the sprawling suburbs outside of city boundaries, she said.

Like others, she stressed that water savings from cities won't solve the river's problems.

"There is no level of municipal conservation in the entire western United States that could make up for the water that's going to be needed to be" conserved, she said. But, "we are giving till it hurts, as much as we possibly can."

The letter doesn't include any commitments from agriculture, which uses about 80% of the allocated water in the seven states that rely on the river — Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming.

Lake Powell and Lake Mead, the river's two main reservoirs, are each about a quarter full.

In June, U.S. Bureau of Reclamation Commissioner Camille Touton warned the states needed to dramatically cut their use, but amid squabbles over who would shoulder what burden, officials failed

to answer her call. The bureau has since offered varying levels of payment for water districts to reduce their use, through things like leaving farm fields unplanted or asking urban residents to use less at home.

Proposals for some of that money are due Nov. 21.

The Metropolitan Water District of Southern California, which supplies water for about half of California's residents, in October urged cities and water agencies in its territory to ban the addition of any new decorative grass in business parks, public spaces and neighborhoods. Its board also urged agencies to stop watering and consider removing such grass that's already planted.

Southern Nevada has for decades used a mixture of cash incentives and fines to discourage grass watering and limit both functional and non-functional turf. The agreement has little effect on the area because a state law passed last year requires 100% of the non-functional turf be torn out in the Las Vegas area by 2026.

Utah passed a statewide conservation program last year that included $5 million to incentivize turf removal and has targeted decorative grass on public property. Yet some municipalities maintain ordinances passed for aesthetic reasons that prohibit residents from replacing grass with drought-tolerant landscaping.

October–December 2022, Volume 32, Number 4

Managing Forests to Protect Drinking Water Quality

Prescribed burns and other forest management strategies can play key roles in source water protection.

By Raven L. Lawson, Central Arkansas Water

Asset Management and Infrastructure Drinking Water Source Water Protection

A crew gathers under a heavy forest canopy mid-morning. Dressed in bright yellow flame-resistant shirts and hardhats, they wield a suite of gear ranging from heavily outfitted utility terrain vehicles hauling tanks of water to an assortment of rakes, hand tools, and metal cannisters that drip fire onto the ground. These workers are meeting up for their prescribed fire safety briefing before the day's events get underway. A recognizable scene for some—especially for folks in the southeastern part of the United States—you might be surprised to learn that this crew is employed by a local drinking water utility: Central Arkansas Water (CAW). For CAW's Watershed Protection Team this is just another day at the office and a growing part of their daily job duties (Figure 1).

Central Arkansas Water is Arkansas' largest water utility, serving safe, reliable, high-quality drinking water to more than 500,000 Arkansans each day. An elaborate network of more than 2,600 miles of pipes and two treatment plants distributes water to community members day-in and day-out. This water's journey starts at the utility's source water reservoirs, Lakes Maumelle and Winona, both nestled in the Ouachita Mountains west of Little Rock.

Source: Courtesy of Ben Thesing, Central Arkansas Water

Figure 1. Crew meeting before a cooperative burn with The Nature Conservancy of Arkansas

CAW created its Watershed Protection Program (Program) following recommendations from the 2007 *Lake Maumelle Watershed Management Plan* (Plan; Tetra Tech 2007). The Plan provides guidance on how to implement measures throughout the watershed's 88,000 acres to protect the 8,900-acre Lake Maumelle, which supplies two-thirds of the utility's daily water demand. The Plan proposes a series of strategies, such as managing the impacts of new development, promoting household best management practices, and maintaining good land management practices, including using prescribed fire and ecological timber thinning as management tools for improving forest health.

For the areas around Lakes Maumelle and Winona, CAW set forest management goals to improve than 90% forest cover—a figure that drives much of the Program's activities. While Lake Winona's watershed is primarily within the Ouachita National Forest, Lake Maumelle's lies just a few miles from Arkansas' largest metropolitan area and remains largely unprotected from forest conversion.

Land Acquisitions

CAW'S LAND ACQUISITION program stands at the forefront of our watershed protection strategy. Urban sprawl and rural development pose some of the largest threats to southeastern forests, which are becoming valuable assets to those longing to move away from the threats of wildfires and the diminishing water availability of the western United States. Without large, intact, and well-managed forests, however, the southeast could face similar issues. Our land acquisition goals are to keep as much of these lands as possible in forest cover, paying particular attention to riparian areas and tributary corridors across contiguous landscapes in our watersheds.

Since the adoption of the Plan, CAW has purchased more than 5,000 acres of land, and owns and manages a total of 24,000 acres of land and water sources. How does a public water utility buy land? In 2008, rate payers asked CAW to implement a watershed protection fee to carry out the Plan's land purchasing goals (1,500 acres at the time of adoption). This fee was added as a transparent line item to customers' bills in May of 2009 as a monthly charge of $0.45 per meter, which went unchanged for more than a decade. Today the fund nets just over $2.2 million per year through a $0.90 per meter per month charge on consumer bills dedicated to land acquisitions and watershed land conservation. Having this fund has allowed CAW to be innovative in extending land holdings and placing privately owned lands under permanent protection through conservation easements. CAW has been able to successfully leverage these funds against grants and buy and flip properties with conservation easements (a strategy we term "buy-protect-sell").

In 2020, CAW issued the world's first-ever Green Certified Bond to purchase forestlands as part of water infrastructure (CAW 2021). CAW views forests as a critical part of our utility's infrastructure and a key factor in the Program's success. As with any traditional infrastructure, these assets need regular maintenance and monitoring. Central Arkansas Water believes that a managed forest is a healthy forest, and healthy forests foster healthy water—a true forests to faucets approach to providing water to our communities.

Prescribed Fire as a Management Tool

simultaneously improving public safety and increasing recreational opportunities. In the last decade, Arkansas has increased the amount of land managed with prescribed fire (Figure 2) to average about 300,000 acres annually across the state—a number that grows every year. This positive trend can be attributed to the partnerships among state and local agencies, nonprofits, and NGOs who make up the Arkansas Prescribed Fire Council (Council), of which CAW is an active member.

In 2016, the utility developed its Fire Support and Safety Team. The team's original intent was to assist contractors on burns, ensure proper protocol usage, perform maintenance fires, and assist agencies in emergency response, all while keeping the utility's goals for utilizing fire at the forefront of every burn. As of 2021, the utility has eight employees on the team, each of whom has attended the Arkansas Prescribed Fire School: a week-long, intensive, hands-on state training program put on by members of the Council for practitioners of prescribed fire. In 2020, CAW hired a registered forester and trained burn boss to join the Program as the land conservation coordinator; this position now leads the utility's prescribed fire efforts. Enhancing capacity in this way has dramatically increased the number of utility-owned acres that are treated annually. Utility employees can now tackle a larger portion of the burn work that was previously 100%, nearly

Source: Courtesy of Bryan Rupar, Central Arkansas Water

Figure 2. Prescribed burn at Lake Maumelle

5,600 acres, with 42% of those acres burned in 2021 and the first half of 2022. Nearly 30%of the acres burned in 2022 were burned by the utility's own employees.

For CAW, forest management is multi-faceted. Our top priority in utilizing prescribed fire is to reduce the amount of total organic carbon (TOC) that enters the reservoir from the landscape. Prescribed fire breaks down and removes downed timber and accumulated leaf litter from forests, ensuring that less TOC enters our lakes than would if the timber was left to decay naturally. TOC in raw water supplies can lead to the formation of disinfection byproducts (DBPs), many of which are federally regulated drinking water contaminants that utilities are required to control. While several methods of DBP removal exist, limiting the input of TOC to raw water sources is the best control for DBP formation. If we reduce the amount of TOC in forests, we reduce the amount entering surrounding reservoirs, leaving the treatment plant with less to manage. Any time a contaminant can be reduced before it reaches the treatment plant, there are fewer energy, time, and chemical needs to treat the water to meet federally required levels for safe consumption—a cost-savings we gladly pass along to our customers.

> "In 2020, CAW issued the world's first-ever Green Certified Bond to purchase forestlands as part of water infrastructure.

Secondarily, the combination of prescribed fire and ecological timber thinning enhances water filtration on the forest floor. In dense and crowded forests, more organisms compete for limited nutrients and water, making the vegetation more susceptible to drought, disease, and pests. Prescribed burns control undesirable vegetation and allow more sunlight to reach the forest floor, reducing competition. Prescribed fires also return valuable nutrients to the soil through the resulting ash, thereby improving conditions for new plant growth. These changes promote an abundant and diverse grassy understory with more resilient vegetation. The robust root complexes and new vegetation growth help slow and absorb runoff, turning the forest into a first line of defense against pollutants that could enter the lake from rain events.

Forest management also reduces wildfire risks. Much of CAW's forestland had not been managed in over 50 years, resulting in dense and overcrowded forests with an abundance of leaf litter, downed woody debris, and potentially diseased or damaged vegetation that burns easily and

at forests and cause serious damage to standing timber or buildings. With the proactive implementation of prescribed burns, we can remove heavy fuel loads and provide opportunities for firebreak installations, which aid in wildfire containment and response should a wildfire occur. Wildfire is not only detrimental to landscapes, habitats, and communities in the traditional sense; for a water utility, the onslaught of material and TOC flushed into water supplies after catastrophic fires (often followed by heavy rain events) is very hard to treat and increases the potential for DBP formation. Many utilities in the western United States experienced this as wildfires have increased in size and intensity over the past 25 years. Reacting to wildfires often involves changes in water treatment processes and rebuilding of landscapes, which can cost tens of millions of dollars, making proactive management a desirable and cost-effective alternative.

CAW also utilizes prescribed fire to enhance wildlife habitat, increase plant and animal diversity, and create recreational opportunities. Burning activities stimulate the growth of seeds that are often buried beneath leaves and debris. Without burning, these seeds can lay dormant for many years until conditions become favorable for growth. In the short duration of the CAW prescribed burning program, the diversity of native wildflower species in demonstration areas and other treated lands has increased. One reason for this is that approximately 46% of the state's rare terrestrial plants and animals depend on fire at some point during their lifecycle. Some of the plants now growing in CAW prescribed burn areas had not been found in abundance there in years, if at all. One of the recently recorded plant species is an obligate host plant to a rare moth. Others are endemic to the immediate region, and state botanists track them as species of interest. These native grasses and wildflowers provide food and habitat for wildlife, including pollinators and migrating bird species. This valuable ecological process provides optimal habitat for a diverse mix of plants and animals, including game species like quail, turkey, and deer.

The Program's forest management efforts don't stop at prescribed fire and ecological thinning. In 2021, CAW became the first water utility to certify its lands (in the Lake Maumelle watershed, in this case) under the Sustainable Forestry Initiative standards for forest management, demonstrating a commitment to responsible stewardship. The Program has also planted more than 130,000 trees since 2016, most recently working to restore areas of native short leaf pine that were heavily harvested and replaced by non-native, timber-producing species.

Forest Management Education and Outreach

THE SIMPLE REALITY OF A utility owning land is that those lands must be maintained and managed. However, building a forest management program within the organization wasn't easy. It

number of trained staff, add critical personnel, and purchase equipment. Even with all those pieces in place, educating others on the importance of active forest management, both internally (within the utility's leadership and employees) and externally (our customer base and local landowners) was one of our toughest challenges.

Internal support was easier to obtain. Presenting sound science and the connections of forest management to our end water product was effective, but creating the internal capacity to execute a portion of this management in-house took some time. Today, we carry out most of our internal education through tours of our forest management demonstration area, where interns and employees visit the watershed and enjoy a 2.3-mile interpretive hike lead by Program staff.

> "The simple reality of a utility owning land is that those lands must be maintained and managed.

External support has slowly built over time. It's rare for a water utility to assume an active role in natural resource management. Most consumers pay their bills and turn on a tap without giving much thought to the process of delivering that water safely and reliably. Some may connect the lines back to the treatment process, but, in reality, a large number of consumers do not know where their water originates. So, when a water utility begins the very visible act of dabbling in forest and recreation management, fears arise. Customers fear that this will create higher water bills, nearby landowners see fires along roadways and worry about wildfire inundating their lands, and general questions about the "what" and "why" emerge quickly.

To ease the minds of both consumers and landowners, CAW has taken to educating the community in a few different ways. At a higher level (and at the biggest benefit to rate-paying customers), we have given presentations at many local civic and city organizations' regular meetings and have provided burn demonstrations for student and teacher workshops (Figure 3). We also host a larger utility effort called the Citizen's Water Academy twice a year. This academy is for local leaders in city, civic, and business organizations. They spend an entire day touring utility operations "from forest to faucet" and learn about the inner workings of the services we provide to the community. For the nearby watershed landowners, we have utilized a mailing campaign over the years. This campaign begins each burning season (autumn), using maps to forecast projected burn areas and acreage and sending a letter to explain the "why" of our

we spearheaded a monthly postcard campaign that provided updates about our burning efforts for that season and answered frequently asked questions. Today we perform an annual mailout, and run a listserv for those wishing to receive day-of-burn announcements. Each year, we've seen progress from these efforts as more community members and leaders understand the importance of forest management and share our story.

Source: Courtesy of Raven Lawson, Central Arkansas Water

Figure 3. Prescribed fire demonstration using different fuel types

Protection of water quality at modern utilities is done in accordance with the Safe Drinking Water Act's "multi-barrier approach." These barriers are actions taken throughout the storage, treatment, and distribution of drinking water to ensure its safety. Multiple barriers must be breached for the customer to receive water that does not meet safe consumption standards. A critical part of this multi-barrier approach is prevention: preventing contaminants from entering source waters. This can be accomplished through sound watershed forest management.

> "A critical part of this multi-barrier approach is prevention: preventing contaminants from entering source waters.

and ecological forest thinning. These approaches have many benefits, including improved source water TOC management, enhanced water filtration through the forest floor, reduced wildfire risk, healthier habitats, and an increasingly supportive customer base. The community is so supportive that some customers have become forest management ambassadors. The benefits of active forest management far outweigh the costs of reactionary measures. At CAW, we believe that forest management is an important part of water quality protection.

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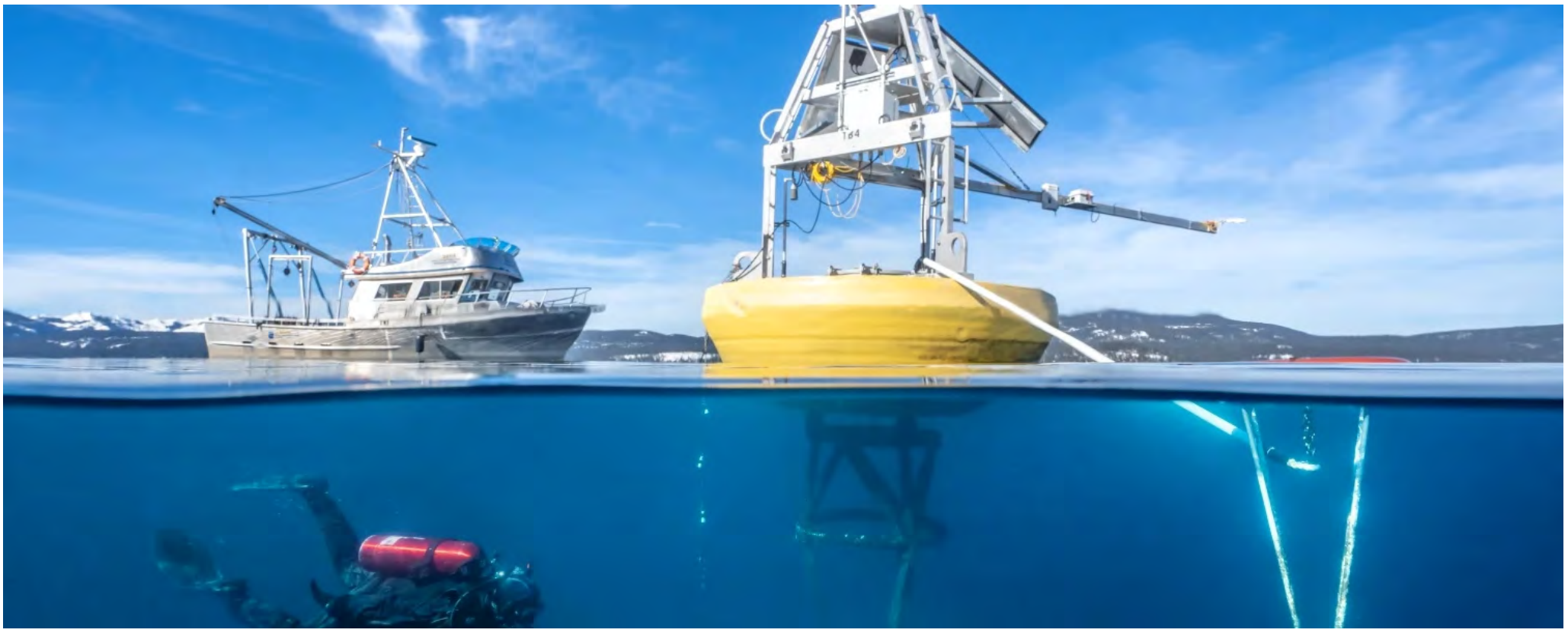


Saving Lake Tahoe

By Clémentine Sicard

Lake Tahoe's waters are world-famous for their clarity and beautiful Sierra setting—they also provide key environmental and economic resources to Northern California. But with climate change and other human impacts degrading both the lake and its surrounding basin, urgent action is needed to preserve this jewel of the Sierra Nevada.

"There is only one Lake Tahoe," said Geoffrey Schladow, director of the UC Davis Tahoe Environmental Research Center (TERC) and professor of civil and environmental engineering. "It's our job to keep this region as beautiful as it ever was."

Since its founding in 2004, TERC experts have worked to build a more resilient future for the Tahoe Basin, conducting key research and actively seeking solutions to improve outcomes for the lake's waters and its surroundings.

With donor support for new technology and research, TERC will have an even greater impact on Tahoe's future.

State of the lake

TERC is the largest facility for limnology—the study of lakes and other bodies of fresh water—west of the Great Lakes. Its research team includes biologists, chemists, engineers and more.

A key annual contribution from center researchers is TERC's "Tahoe: State of the Lake" report, which informs the public about important factors affecting the health of Lake Tahoe and provides the scientific underpinnings for restoration and management decisions within the Lake Tahoe Basin.

The 2022 report described the top issues facing the lake, including the collapse of the zooplankton and Mysis shrimp populations; an abrupt change in the phytoplankton community; and the extent of algal growth impacting large sections of the Tahoe shoreline.

"Any one of these changes would be a big deal in a single year," said Schladow. "All three occurring at once is particularly alarming and a huge opportunity to learn lessons that can be used to inform future management."

A blooming threat

Algal blooms along the shoreline are one of the most pressing issues facing the lake's aquatic health.

"These nearshore blooms degrade water quality, make large areas of beach unpleasant with mats of decomposing algae, and for particular types of algae, can pose toxicity issues," Schladow said. "They also occur where the greatest numbers of people, residents and visitors directly interact with the lake."

Brandon Berry, dive officer at the UC Davis Tahoe Environmental Research Center, inspects algae growth in Lake Tahoe.

Beginning in 2017, TERC began examining the entire shoreline with an instrumented helicopter and a drone several times each year. This novel and powerful approach painted a better picture of the algal blooms that have been a growing ecological threat to Lake Tahoe's ecosystem.

TERC is now learning that the areas impacted do change radically, and may be increasing due to the combined effects of warming water temperatures and changing water levels. But public funding for this work has dried up.

Schladow said TERC needs to raise enough private funding so the program can not only be maintained but expanded to include research into the best cleanup and mitigation methods.

Protecting the land

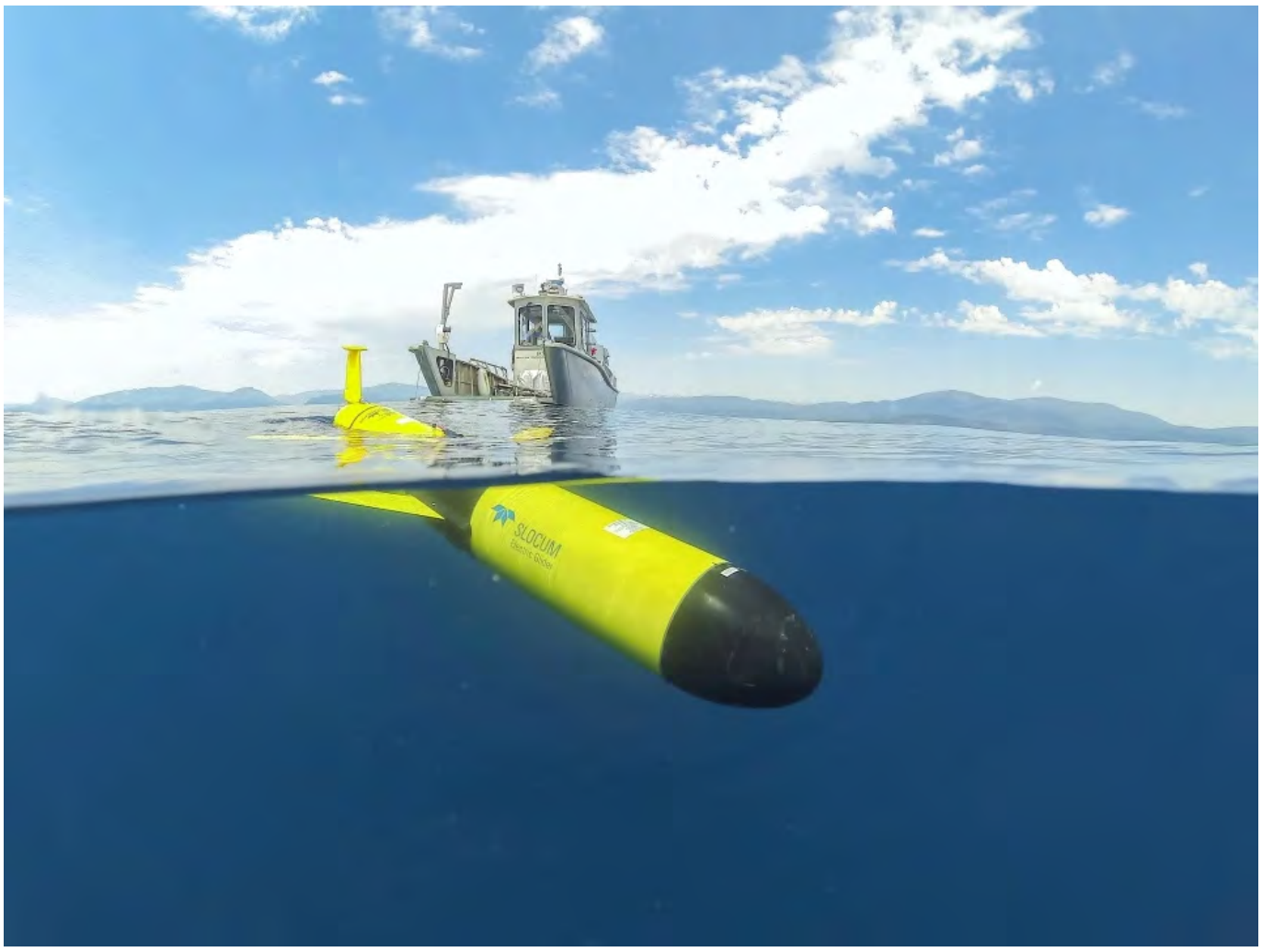
Beyond the lake, the Tahoe Basin ecosystem includes its shore and surrounding forest—unique areas that require careful monitoring and maintenance. One of the largest threats to the region in recent years is wildfire.

"Megafires are a threat not just to the whole ecology and health of the forest, but also to the people living here," said Schladow. TERC scientists are actively working on solutions to restore the forest and minimize the damage from wildfires.

New tools and technology

With high-tech labs, field equipment and a small fleet of vessels, TERC scientists are conducting interdisciplinary research on the terrestrial and aquatic ecosystems of Lake Tahoe. As this work evolves, it requires more advanced resources, including donor support.

One high-priority need is a new and innovative vessel for lake exploration—the current vessel, R/V John LeConte, has been serving UC Davis for nearly 50 years. TERC has formed a team to design and build the first high-speed, all-electric research vessel that will minimize impact on the environment.



An autonomous underwater vehicle launched from a vessel in Lake Tahoe.

“The new vessel will expand what we can do, allowing us to take students out on the lake for class experiences like no others in the world, and conduct even more research directly there,” said Schladow.

Another priority is an automated sampling station powered by wave energy, called a Wire Walker. It can record and send real-time data to labs every 20 minutes, including when crews are unable to go out to collect samples.

"Covid has disrupted the research funding just when the lake is in crisis. We must act immediately to keep the research efforts going,
and to remove the algae from the lakebed."
- Mike Bruno, TERC advisory board member and donor

Educating the local community and beyond

Learners of all ages and backgrounds—from K-12 and college students, to international researchers and local tourists—can visit TERC’s interactive educational centers to explore how they can help the environment.

“Our goal is to provide science-based information about the Lake Tahoe region to foster responsible action and stewardship,” said Heather Segale, director of education and outreach at TERC.

TERC’s education and outreach efforts serve more than 15,000 people annually, with plans to expand.

“Lake Tahoe is emblematic around the world and people are looking at what we’re doing here. Our work has impact on other lakes and mountain systems across the globe,” said Schladow.

The NEVADA INDEPENDENT

Indy Q&A: Supreme Court Justice Hardesty on training judges to hear water cases

Daniel Rothberg November 23rd, 2022 at 2:00 AM Courts Environment

Irrigation pivots on February, 25, 2020.
(David Calvert/The Nevada Independent)

Over the past few years, several consequential water cases have landed in front of the Nevada Supreme Court. Many of these cases are complex, involving long-running disputes with deep histories, conflicting interests and contested interpretations of a century-old statutory framework.

And they put the judiciary at the forefront of some of Nevada's most pressing water issues.

Although many water issues are pronounced in Nevada, as the driest state in the country, they are by no means exclusive to it. Across the West, water is over-appropriated — there are more legal rights to use water than there is water to go around. On top of that, the drought, worsened by a changing climate, has triggered further shortages in many watersheds. When conflicts do arise over who gets water, when and on what terms, it's often left to the courts to step in.

Some states have turned to water courts. Other states have looked at training judges. Last year, the Supreme Court formed a formal commission to study how Nevada can improve its process for moving

water disputes through the courts in a more timely manner. The commission, chaired by Justice James Hardesty, includes district court judges as well as representatives from Native American tribes, urban water utilities, rural counties, irrigation districts, mining and agriculture.

The commission, Hardesty said, has focused on two recommendations: creating an educational curriculum for lower court judges, and piloting a program to assign cases to trained judges.

Exactly how that would work is something the commission is still working on through the end of this year. But in general, trained judges would comprise something of an informal water court, a system whereby water disputes would go before a District Court judge with training in that area.

Last week, *The Nevada Independent* spoke with Hardesty about the commission's work and what he has learned presiding over water cases during his nearly two decades as a Supreme Court justice.

Unlike other states, Hardesty said Nevada lacked a curriculum to train District Court judges in hearing water cases: "Throughout the West Coast, states have undertaken studies about the best way to process cases that involve pretty complex areas of law. And from those studies, at least four states have initiated — either by rule or by statute — certain requirements for the education of judges who hear the cases and for the processing of those cases."

"And this all comes at a time when water resources are becoming scarcer, water rights are over-appropriated and legal battles have occurred between a variety of groups trying to compete for access and priority to water. In our state, there was, at least up until the commission was formed, no formal education for a District Court judge to take that would assist in their review of our water law and the complex hydrological and geological challenges that surround it. The commission was initiated for the purpose of trying to determine how the judiciary should proceed in handling these cases."

Although water cases are not the largest category of cases on the judiciary's docket, Hardesty noted that the cases tend to be complex and can have significant implications for how water law is interpreted: "All of these cases have an enormous record of historical information and hydrological information, geological information and engineering studies that make them present as difficult and complex as many of the construction defect cases were in just the last decade and a half. So I thought it was important that our state undertake a study, since most of the law that is being developed is coming out of the judicial branch."

"We are dealing with a very old water law statute that has not been modified very many times. And as a consequence, there are some ambiguities and some uncertainties, and that instability in the water law is not healthy for an economy, like in our state, that is so dependent on a declining resource."

Nevada Supreme Court Justice James Hardesty on stage during Governor Steve Sisolak's inaugural address on the steps of the Nevada State Capitol in Carson City, Nev., Monday, Jan. 7, 2019. (David Calvert/The Nevada Independent)

In the coming weeks, several District Court judges will receive additional training at an upcoming National Judicial College conference in New Mexico. But Hardesty said it would be important for the judges to acquire specific education on Nevada law, including at an upcoming judicial conference in April: "I think this process will accelerate the capability of the judges to handle these cases, [improve] their expertise in this area and hopefully, from my standpoint, enable us to process them more quickly in the judicial system."

"These water law cases can take a long time, and a lot of that is wading through a record, not all of which is really relevant to the issues in front of the judge. But you have to go through the whole record. And I think this will really help us accelerate decisions in this area and help provide some stability to the water law area in our state and fill in those gaps that exist in some of our statutes."

As for those gaps in Nevada water law, reviewing statutory language was not a part of the commission's mandate, and Hardesty said it would be difficult to do, given the many interests involved and the short length of legislative sessions. But he said there is an area where the Legislature can act without changing the law. It can increase funding for the office of the State Engineer, Nevada's top water regulator: "I don't think there's any question that one can benefit from

updating statutory direction. The challenge, though, is you've got a lot of competing interests, and the Legislature has such a limited amount of time... I think it would be really an enormous challenge to get something that a large number of stakeholders could get behind in such a short amount of time as a 120-day legislative session."

"Our commission has been in business for more than a year and a half, at least. And we're just talking about the kinds of education [needed for judges] and how to structure the judicial system to handle these cases. When you identify so-called gaps within the statute, that's another challenge."

"Now there is an area, frankly, that I hope that the Legislature will look at and doesn't require legislative change. The state engineer's office is seriously underfunded. That fact alone is causing enormous delays [for people who are] seeking water rights, trying to perfect the water, trying to make appropriations. And that really harms the economy. I think it's imperative that the Legislature dedicate some resources to strengthen the capacity of the state engineer to hire additional engineers, to hire additional officers and experts and conduct more hearings."

The process of creating a water law curriculum for judges and assigning cases to trained judges would be set through the Supreme Court's rulemaking process: "Our commission is not going to request a statutory change. We believe that the state will be more nimble if the judiciary, which constitutionally has the authority to assign cases and direct the process of cases anyway, develops this process by rule. And if in fact some modifications are needed...that can be done pretty quickly by a ruling from the Supreme Court, as opposed to waiting every two years for the Legislature to convene and then trying to study that in a short legislative session."

"And particularly for a pilot program, we want to see how this works in Nevada. All of the commissioners polled said 'Yes, at least a two-year pilot program.' So we [can] get a good understanding of the data and the statistics, the assignments, the processing and the timing of cases. Is this something that would have been helpful years ago? Absolutely. But you have to start somewhere. And I think it's a major step forward for the state."

Over the past several years, the Supreme Court has issued important rulings in several areas of water law. In 2020, the court weighed in on a dispute over the Walker River and the public trust doctrine, a government's obligation to protect natural resources for the public and future generations. And this year, in an opinion by Hardesty, the court upheld a locally approved groundwater plan that deviated from the principles that guide Western water law. Both cases were closely watched: "I think those cases and some other recent ones, and some other cases pending, frankly, underscore some of the uncertainties that exist in our water statutes and underscore the conflicting interests that exist over access to water and the utilization of water. They also underscore, I might add, just how voluminous the records are and how long it takes to get these cases to us and to get them decided."

"I believe that the decisions we have made have provided guidance in those areas. But obviously there are other areas where judicial guidance would be helpful... I wish I had my notes in front of me, but I gave a speech to the Western Regional Water Conference, which is a conference of water law experts in

the Western states. And I cataloged the number of Supreme Court decisions that have existed since the adoption of our water statute... Without question, the highest number of Supreme Court decisions on this topic have existed within the last decade as compared to all of the decades preceding 2010..."

"We're anticipating, as a judicial system, an increase in the number of those discrete but important legal questions. So we need to get our judges ready and prepared to address this, and to address them as timely and as quickly as possible. On the executive branch side, as I mentioned earlier, more money to an important agency is not a legislative change. That's just a recognition that that agency should have priority because it's going to be the agency that's responsible for Nevada's water."

Daniel Rothberg

Daniel Rothberg is a staff reporter covering water, climate change and public land.

U.S. DEPARTMENT OF AGRICULTURE

Biden-Harris Administration Announces $20.5 Million in Grants to Protect Water, Increase Wood Processing Capacity

Press Release
Release No. 0247.22

Contact: USDA Press
Email: press@usda.gov

WASHINGTON, Nov. 17, 2022 – Today, the Biden-Harris Administration announced $20.5 million in grants to help states or federally recognized tribes establish temporary bridge programs to protect water resources during forest-related operations and to assist wood processing facility owners to establish, reopen, retrofit, or expand. The grants are focused on sawmills or other wood processing facilities that purchase and process byproducts from forest restoration activities in areas of severe fire risk and insect or disease infestation.

The funds, made available by President Biden's Bipartisan Infrastructure Law, support the U.S. Department of Agriculture's e orts to ensure tribes and historically marginalized or underserved communities receive equal access and opportunities to funding and programs, and to support community e orts vital to forest health. This funding opportunity also follows through on President Biden's Executive Order directing USDA to scale up rural economic development and Agriculture Secretary Tom Vilsack's direction to the Forest Service to find new ways to use byproducts from landscape improvement and wildfire mitigation projects to enhance carbon sequestration while creating jobs and economic opportunities.

"We are working to increase economic opportunities for rural and tribal communities adjacent to national forests and grasslands," said Forest Service Chief Randy Moore. "Our tribal, state and wood processing partners are working in the woods every day to improve forest health and protect water resources. Today's investments will expand these opportunities and provide much needed financial resources to restore and conserve our forests."

The $20.5 million being committing in fiscal year 2022 includes:

- $12.5 million targeted as financial assistance for owners of facilities that purchase and process byproducts from forest restoration projects including thinning, wildfire resilience activities and habitat management. Owners must identify how their work will use byproducts from areas of high or very high risk of severe wildfire or insect and disease infestation based on the high priority firesheds identified in the Forest Service 10-year Wildfire Crisis Strategy or by using the Wildfire Risk to Communities and National Insect and Disease Risk maps.
- $8 million is available to states and tribes to support the establishment of temporary bridge rental, loan or cost-share programs to protect water resources and reduce water quality degradation during forest-related operations. The funding is to help states and tribes create a program that provides portable skidder bridges, bridge mats or other temporary water crossing structures to loggers and others working in forests areas. These bridges will minimize damage from trucks and other equipment in forested areas, especially sensitive wetlands.

As an example, in 2022, the San Carlos Apache Tribe was awarded $1 million as part of the Forest Service Community Wood Energy and Wood Innovations grant program to purchase a lumber dry kiln and planing mill. The funding will help the Tribe improve forest management while providing significant employment opportunities for tribal members.

More information about these funding opportunities is available at the Forest Service website and on Grants.gov.

USDA touches the lives of all Americans each day in so many positive ways. Under the Biden-Harris Administration, USDA is transforming America's food system with a greater focus on more resilient local and regional food production, promoting competition and

fairer markets for all producers, ensuring access to safe, healthy and nutritious food in all communities, building new markets and streams of income for farmers and producers using climate-smart food and forestry practices, making historic investments in infrastructure and clean energy capabilities in rural America, and committing to equity across the Department by removing systemic barriers and building a workforce more representative of America. To learn more, visit www.usda.gov.

#

GREEN IT

COMPANIES > AMAZON

Data Center Water Management: How Amazon and Google Steward Earth's Most Vital Resource

Wendy Schuchart, Data Center Knowledge editor-in-chief, presents a close analysis of both Amazon and Google's water management efforts.

Wendy Schuchart | Nov 29, 2022

On Monday at AWS: Invent 2022, Amazon announced details on its plans to return more water than its data centers use by the year 2030. This on the heels of last week's

announcement by Google's Urs Holzle, who detail how the Alphabet company planned to similarly reduce its water footprint by the year 2030, along with detailed 2021 water usage metrics for its US data centers.

While energy sourcing is still a hot button issue for data center organizations and providers, water consumption is swiftly a hot topic in the face of record-breaking droughts and worldwide climate change. In 2011, the Green Grid proposed a metric to measure water usage in data centers called the Water Usage Effectiveness
(WUE), or the ratio between the annual site water usage in liters from data centers. According to the United Nation World Water Development Report 2022, over 50%of the people on the planet are at risk for having no access to clean water year-round.

Related: AWS First CSP to Publish Data Center Water Usage Efficiency Metrics

Invent conference

Water scarcity is a major issue around the world, and with today's water positive announcement, we are committing to do our part to help solve this rapidly growing challenge," said Adam Selipsky, CEO of AWS during today's announcement from the middle of the Mojave Desert in Las Vegas. "We all need to innovate new ways to help conserve and reuse this precious resource."

Water Usage Efficiency (WUE) Doesn't Tell the Entire Story

Dr. Newsha K. Ajami, chief strategy and development officer for Research at the Berkeley Lab Earth and Environmental Sciences Area, focuses on water resource management from the Bay Area, California, a region of the United States that teems with data centers. "Water is often the missing link. Companies often focus on energy to mitigate climate change and reduce their carbon footprint, and water usage and the quality of the water being used is often forgotten," Ajami says, in an exclusive interview with Data Center Knowledge.

Using direct evaporative cooling reduces data center power consumption by upwards of 10% but does so at a cost of removing water from the watershed, usually in the form of potable, treated municipal water.

For instance, in the Southwestern US, communities face water restrictions and are removing irrigation-dependent crops such as almond trees and residential lawns, while data centers are eager to take advantage of the power density and higher availability of green power sources such as hydro and solar in those same communities. In the end, data centers and communities are fighting for the same dwindling water resources.

"It's important to think about the quality of the water being used. Is it treated wastewater that's suitable for data center cooling and flushing our toilets or watering our lawns? We have a once-through water infrastructure model that treats water to the highest quality, and then use that water for purposes that do not need high (drinkable)-quality water, such as cooling a data center," Ajami says.

According to Amazon, the "preferred cooling strategy for AWS data centers uses evaporative technologies. In this system, hot air is pulled from outside and pushed through water-soaked cooling pads. The water evaporates and cools the temperature of the air sent to the server rooms."

At Google, all but one of its 15 U.S. data ceters rely entirely on potable water. Douglas County, Georgia's Google facility uses 408 million gallons of reclaimed wastewater and only 13 million gallons of potable municipal water. In comparison, Google's Council Bluffs, Iowa data center uses more than a billion gallons of water, most of which is treated from the Missouri River or the Missouri River Alluvium. The Missouri River is the longest in the United States, part of an enormous watershed that includes parched areas of the country such as Idaho, Montana, North and South Dakota, while its tributaries provide water across much of Wyoming, Colorado, Nebraska, and Kansas. That's a big potential impacted area, all controlled by a deal made by one small Iowa municipality and a big tech company.

And that's the larger issue of water usage and water rights, one that the industry is still grappling with as civic leaders woo larger corporations to more and more rural landscapes with promises of tax incentives and guaranteed utility prepurchase agreements. Water is a huge part of that equation.

Going Back to the Well

What's more, depending on where the municipality gets its water – whether from an aquifer such as a large body of water or a river, or from the groundwater table –the carbon footprint of that water collection is varied. Municipal water must be pumped, transported, and sanitized for human consumption, all of which is a carbon impact that often isn't calculated in an organization's WUE.

What then happens with the water that AWS and Google return to the facilities could be the most critical element of the equation. If that water is inextricably polluted when it returns to the ground watershed, it tends to remain polluted, according to the UN report.

"All sorts of things can negatively impact a watershed," Ajami says. "What has happened to that water as it is returned to the environment? how much of the water is returned to the environment? In what quality. (e.g. higher temperature)? These are all important considerations."

The UN report estimates that roughly 50% of the world's populaiton lives "in areas that suffer from severe physical water scarcity for at least one month per year." To combat combat this insecurity, both Amazon and Google have vowed to be water positive by 2030, meaning that they will contribute back more water than they use for their operations.

And Google goes one better by putting a quantitative goal to the forecast -- its water stewardship plan states "Google will replenish 120% of the water we consume, on average, across our offices and data centers and help restore and improve the quality of water and health of ecosystems in the communities where we operate. We'll focus our efforts in water scarce regions to support those who need it most."

How Can Data Centers Become Water Machines?

At AWS re:Invent on Monday, Amazon highlighted the efforts to replenish water from its corporate "water+" initiatives, including working with The Rivers Trust and Action for the River Kennet (located 48 miles west of London) to create wetlands near the River Thames which would recharge groundwater and improve water quality for the Thames River basin. Additionally, AWS announced its partnership this winter with the Freshwater Trust to "recharge 189 million liters of groundwater per year using winter water from the Cosumnes River" stating that it would "allow water to gradually flow through the groundwater table and back into the Sacramento and San Joaquin watershed, increasing water flows during drier summer months."

While these corporate initiatives are not without merit, it could distract from the impacts in drier, more water insecure areas.

For instance, Alphabet includes data center locations in very water-conscious or water-starved communities such as Henderson, Nevada (a suburb of Las Vegas), Storey County, Nevada (outside of Reno) and rural Midlothian, Texas. Amazon is vague about the locations of its data warehouses, grouping them in ambiguous regions and "availability zones" but cites locations operating in water-starved areas such as Los Angeles, Denver, Houston and Las Vegas.

Google, on the other hand, last week released its actual water withdrawal and discharge water metrics for 2021, which revealed that it consumed more than 4.3 billion gallons of water last year at its 15 U.S. data centers and other global locations.

"You can't just use water resources from one watershed and replenish another one. It's not transferrable and will impact those geographies very differently," Ajami says.

In Santa Clara, California, AWS uses recycled water for its cooling systems, which is treated using a multi-step process to reduce impurities. "After the recycled water runs through the cooling system, it returns to the wastewater facility for another round of treatment so it can be used again," the company's announcement states.

Santa Clara's officials approve of this system. "Recycled water is a sustainable source of water, and it offsets our precious potable water," says Shipla Mehta, the City of Santa Clara's assistant director of Water and Sewer Utilities. "Reusing it saves our city's potable water for the places and people that need it most."

Just in Time – We Hope

Ultimately, Google and AWS are industry vanguards in the cloud services and data center industry, and the fact remains that they are choosing to make significant effort to address the issues around water usage and climate change within the technology industry.

And that counts for something – especially in a major climate event impacting the water availability at such scale.

"I'm pleased to see that (the data center industry) is drawing attention to their water usage. Transparency is the name of the game as we try to combat climate change." Ajami says. With that she paused about how their actions impact water usage. People are so detached from the process, they don't connect that their actions, all of this data we generate on an hourly basis, many of us live our lives online these days, it all has an impact."

TAGS: SUSTAINABILITY

0 COMMENTS

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