August 13, 2025

155 Bovet Road, Suite 650
San Mateo, California 94402
(650) 349-3000 tel. (650) 349-8395 fax

MEMORANDUM

TO:	**BAWSCA Board of Directors**
FROM:	**Tom Smegal, CEO/General Manager**
DATE:	**August 7, 2025**
SUBJECT:	**Chief Executive Officer/General Manager's Letter**

State Water Resources Control Board (State Board) DRAFT Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed:

On July 24, the State Board released for public review and comment a revised draft of potential updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed (Bay-Delta Plan). The proposed changes are focused on the portions of the plan relevant to the Sacramento River watershed, Delta eastside tributaries (including the Calaveras, Cosumnes, and Mokelumne Rivers), and Delta (Sacramento/Delta) (Phase 2) for the reasonable protection of fish and wildlife beneficial uses. The State Board will receive public comments on the July 2025 revised draft updates both in writing by September 10, 2025, and orally at a hearing on September 8 and 9, 2025. Although the Tuolumne River is part of Phase 1 of the Bay-Delta Plan, both BAWSCA and the SFPUC are tracking the progress of Phase 2 and will keep the BAWSCA Board apprised as it moves through the public review process.

State Board Correspondence on FERC Relicensing Process:

On June 27, the Modesto and Turlock Irrigation Districts (collectively "Districts") provided notice that they have prepared a Draft CEQA Supplemental Analysis Initial Study/Mitigated Negative Declaration (IS/MND) for the Don Pedro and La Grange Hydroelectric Projects FERC Licensing. That notice included a 30-day public review period, with written comments due by close-of-business July 27, 2025.

Neither BAWSCA nor the SFPUC provided comments. However, a number of comments were submitted, including those from the State Board, California Department of Fish and Wildlife, and miscellaneous Conservation Groups (including the Tuolumne River Trust). Those comment letters all asked that the CEQA analysis used to make the MND determination be expanded to also consider the ability for the proposed Project to meet the Bay-Delta Plan Phase 1 flows (40% unimpaired flow) as adopted by the State Board in 2018.

BAWSCA will continue to monitor the FERC proceedings and track how the Districts address the public comments received.

BAWSCA Request for Qualification (RFQ) for Water Use Efficiency Workshops:

As an element of BAWSCA's FY 2025-26 Work Plan, BAWSCA committed to supporting member agencies on their ongoing efforts to comply with new regulations related to water use efficiency. Those

regulations continue to be developed by the State Board. In consultation with BAWSCA agencies, it was determined that support could best be provided by hosting a series of water use efficiency regulation workshops (workshops) in FY 2025-26. BAWSCA requires consulting support to plan for and assist in such hosting.

An RFQ seeking consultant assistance was published by BAWSCA on August 22, 2025 (Website link = https://bawsca.org/about/jobs/rfp). Individual emails were also sent to BAWSCA contacts at 18 firms notifying them of the opportunity.

The selected consultant will facilitate a series of workshops focused on new water use efficiency regulations. 12 workshops are assumed for cost estimate purposes (at least 1 in-person), beginning in October 2025 and running through the close of FY 2025-26.

Consultant costs would be split between BAWSCA and Valley Water. An MOU between BAWSCA and Valley Water detailing the cost share has been developed and will be executed by mid-August. Workshops will serve BAWSCA member agencies and Valley Water's retail water agencies.

Statements of Qualifications (SOQs) are due by 5:00 PM PDT on Friday August 22, 2025. BAWSCA desires to have a consultant recommendation to provide to the BAWSCA Board for approval at the September 18th meeting.

Note that this work item was included in BAWSCA's FY 2025-26 Budget.

SFPUC Hetch Hetchy Tour:

BAWSCA is pleased to announce a second tour of the San Francisco Regional Water System (RWS), including Hetch Hetchy Reservoir, on September 30 – October 1, 2025.

The tour to Hetch Hetchy Reservoir involves extensive coordination on the part of both the SFPUC and BAWSCA. The SFPUC will provide accommodation for attendees at their facilities adjacent to the Reservoir. Travel is provided by the SFPUC, with the tour departing the morning of September 30th from BAWSCA office in San Mateo and returning late in the afternoon of October 1st. Space, as always, is limited.

BAWSCA highly encourages Board Members' participation in the tour as it provides valuable information essential to representing the interests of water users in the BAWSCA region. Participation in the tour is on a first-come first served basis, with priority being given to new Directors, and Directors who have never participated in the tour.

Please let BAWSCA's Assistant to the CEO/General Manager, Lourdes Enriquez, know prior to Friday, August 29th of your interest in attending the tour. Additional information and confirmation will be sent at least two weeks prior to the date of the tour.

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August 13, 2025

BAY AREA WATER SUPPLY AND CONSERVATION AGENCY
BOARD OF DIRECTORS MEETING

August 7, 2025

Correspondence and media coverage of interest between July 24, 2025 and August 7, 2025

Press Release

From: Office of Governor Gavin Newsom
Date: July 24, 2025
Subject: California advances Bay-Delta Plan Update to restore ecosystem health and Improve water supply reliability

From: State Water Resources Control Board
Date: July 24, 2025
Subject: State Water Board releases proposed updates to Sacramento/Delta portions of Bay-Delta Plan

Water Policy:

Date: July 24, 2025
Source: Los Angeles Times
Article: Newsom's plan to give water agencies more leeway in meeting rules moves forward

Date: July 24, 2025
Source: California Farm Water Coalition
Article: Will the Bay-Delta Plan Succeed? I Has a Good Chance if the Healthy Rivers And Landscapes Alternative is Allowed to Work

Water Supply Management

Date: July 25, 2025
Source: ProPublica
Article: The Drying Planet

Water Infrastructure:

Date: August 1, 2025
Source: EarthDay.org
Article: From Sewage to Clean Water: What Three Global Cities Teach us About Climate Ingenuity

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GOVERNOR GAVIN NEWSOM

FOR IMMEDIATE RELEASE
Thursday, July 24, 2025
Governor's Press Office: (916) 445-4571

California advances Bay-Delta Plan Update to restore ecosystem health and improve water supply reliability

Governor Newsom praises the State Water Board for incorporating the Healthy Rivers and Landscapes Program into the Bay-Delta Plan

What you need to know: The Newsom Administration's innovative Healthy Rivers and Landscapes Program, which improves environmental conditions and provides more water supply certainty for California's communities, farms, and businesses, is moving forward for consideration in the Bay-Delta Plan. This comes alongside a recent legislative proposal to streamline the adoption of water quality plans through new CEQA exemptions.

SACRAMENTO – Today, the State Water Resources Control Board (State Water Board) proposed an update to its Bay-Delta Water Quality Control Plan that will help protect the Sacramento River, the Delta and associated tributaries (Sacramento/Delta) for generations to come and safeguard water supplies for millions of Californians. The new plan update will help maintain a strong balance between protecting precious ecosystems and ensuring the state can meet the needs of Californians. If adopted, the plan will update environmental science, restore tens of thousands of acres of habitat, and incorporate a groundbreaking program developed by the Newsom administration, creating voluntary agreements with water users, including municipal water agencies, agriculture, and other water rights holders. Advancing California's Abundance Agenda, the Governor is also introducing a legislative proposal through a separate trailer bill to create new CEQA exemptions for water quality plans.

"I am proud to see the Healthy Rivers and Landscapes Program represented in this plan update — it's a testament to California's commitment to a collaborative, science-driven approach to managing our water for the benefit of our communities, economy, and fish and wildlife. However, our work is not yet done — I have proposed legislation to create a CEQA exemption for all Water Quality Control Plans that would accelerate the time it takes to get these critical plans done by removing unnecessary and redundant process requirements. We're done with barriers and obstacles to our state's success. We must work together to protect our natural resources for the benefit of the habitats and people of our state." Governor Gavin Newsom

The Newsom Administration, along with state, federal, and local leaders, developed the Healthy Rivers and Landscapes (HRL) Program as an innovative alternate approach to traditional regulatory requirements to improve environmental conditions while providing more water supply certainty to communities, farms, and businesses throughout California. Now, the program has advanced to the State Water Board for consideration as an implementation pathway in the Bay-Delta Plan.

"The State Water Board's draft plan update marks a crucial step toward safeguarding the Bay Delta's water quality," said California Environmental Protection Agency Secretary Yana Garcia. "By embracing collaborative, science-driven solutions, the board is actively ensuring a more sustainable water future for communities, ecosystems, and generations to come."

The Bay-Delta Plan update now includes two regulatory pathways for water users:

- A comprehensive Healthy Rivers and Landscapes Program, which would produce ecosystem benefits through a combination of flow and habitat projects.
- A flow-only approach for those who are not parties to the HRL program.

Following a public comment period, the plan will advance before the State Water Board for final consideration. The plan, developed with extensive public input, including public water agencies, environmental nonprofits, tribal partners, and local governments, is a win for all Californians.

Streamlining Government to Work Better

The Bay-Delta Plan for the Sacramento/Delta has not been meaningfully updated since 1995. Continuing to operate under a plan that does not reflect the most current science, a growing population, or a changing climate is a disservice to California's communities and ecosystems. In 2022, Governor Newsom brought together local, state, and federal partners to submit an actionable framework for the Voluntary Agreements, later named the Healthy Rivers and Landscapes Program, to the State Water Board.

If adopted by the State Water Board, the HRL program would dedicate a large quantity of water to the environment and restore more than 45,000 acres of aquatic habitat for fish and other animals. In addition, Governor Newsom secured funding commitments totalling $2.9 billion to implement the HRL program over the next 8 years.

"This program will improve the health of our rivers by both restoring river flows and revitalizing habitat," said California Natural Resources Secretary Wade Crowfoot. "After all, fish and wildlife need both to thrive. It also improves coordination and collaboration among public agencies charged with improving river conditions and will enable real-time, science-based decision making that we desperately need to better manage our river systems."

"The Healthy Rivers and Landscapes Program will allow for a more collaborative and scientifically sound way to balance conflicting demands for water in an extremely complex watershed. We're grateful to the State Water Board for embracing this approach as a potential pathway within their regulatory framework," said California Department of Water Resources Director Karla Nemeth. "Working together, we will find new solutions to the old problem of balancing the needs of ecosystems and economies."

"The inclusion of voluntary agreements in the development of this plan will be a big win for California, and will help provide more opportunities for our partners across the state to support California's irreplaceable fish populations and habitats," said California Department Fish and

Wildlife Director Charlton H. Bonham. “By focusing on the science of restoration, and prioritizing additional flows to support healthy habitats, we can ensure the best possible outcomes for California’s precious natural resources, now and in years to come.”

Furthering the administration’s agenda to reduce barriers to progress and move projects that Californians need forward, Governor Newsom has also introduced trailer bill language to streamline the adoption of water quality control plans and create new exemptions for water projects under the California Environmental Quality Act (CEQA). This would expedite the potential adoption of the Bay-Delta Plan and the ecosystem benefits it would provide, while still allowing for vital public process and input.

More information about the proposed Bay-Delta Plan update is available on the State Water Board’s website.

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Press Release: State Water Board releases proposed updates to Sacramento/Delta portions of Bay-Delta Plan

Proposal incorporates both voluntary agreements and a regulatory pathway

Maven | July 24, 2025 | From the State Water Resources Control Board

Continuing the state's work to protect the ecosystem of the Sacramento River and Delta watershed while balancing the need to protect water supply, the State Water Resources Control Board today announced important proposed updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed (Bay-Delta Plan).

The announcement begins a public review and comment period on the proposal that would update measures in the Bay-Delta Plan to protect the Sacramento River, the Delta and associated tributaries (Sacramento/Delta).

The State Water Board's proposed updates include two distinct pathways for water users and agencies to comply with water quality requirements: one that incorporates voluntary agreements (VAs) proposed by some state and federal agencies and other water users, known as the Healthy Rivers and Landscapes Program, and a regulatory pathway for those who are not parties to approved VAs. Both pathways will create legally enforceable requirements.

The proposal also incorporates tribal beneficial uses and formally designates Tribal Tradition and Culture beneficial uses in the watershed in recognition of the intrinsic connection between native fish populations—including salmon—and tribal tradition and culture.

"The proposed updates to the Bay-Delta Plan would improve conditions for fish and wildlife through a combination of flow and habitat measures while considering the needs of cities, towns and farms," said State Water Board Executive Director Eric Oppenheimer. "It reflects a holistic approach to the Bay-Delta that leverages cooperation to advance ecosystem benefits as soon as possible."

The Bay-Delta Plan, which was first adopted by the board in 1978, identifies beneficial uses of water in the Delta watershed, water quality and flow objectives to protect those uses, and an implementation program that includes monitoring and reporting requirements.

To address changing environmental conditions, including the increasing intensity and frequency of drought, the board periodically reviews the plan and considers updated protective measures. In December 2018, the board adopted new flow objectives and an implementation program in the Lower San Joaquin River and its three salmon-bearing tributaries (Stanislaus, Tuolumne and Merced rivers) and also outlined a framework for revisions to the plan's Sacramento/Delta requirements.

The proposed updates to those requirements released today are based on the September 2023 staff report and the October 2024 draft plan; they are also informed by extensive public input gathered across 11 topic-specific meetings, a multi-day hearing, a multi-day workshop,

consultation with independent subject matter experts and a comprehensive scientific basis report, which was written collaboratively by board staff, the California Department of Water Resources and the California Department of Fish and Wildlife.

Specifically, the proposal includes new narrative Sacramento/Delta inflow, cold water habitat, Delta outflow, interior Delta flow, and fish viability objectives. The board will implement these objectives via new requirements on water right holders, through either the VA or regulatory pathway.

The board is accepting written comments on the proposed updates through September 10. It will hold a public hearing to receive oral comments on September 8, with the potential to extend the hearing to September 9 if needed. The board will consider adopting the proposal at a future date.

Voluntary Agreement Pathway
The voluntary agreement pathway allows water right holders who are parties to the VAs to implement Bay-Delta Plan requirements, including water quality objectives, through a combination of flow and habitat restoration commitments that would be documented through accounting provisions and periodic review by the board.

Key elements of the VAs include the following: a combination of additive flows occurring largely during the ecologically important January-June period; habitat restoration commitments; substantial funding for habitat restoration and water purchases; a science program to test benefits of flow and habitat for native fish; annual reports and triennial reviews to demonstrate compliance and evaluate ecosystem benefits; and monitoring, accounting and reporting to ensure flow and habitat commitments materialize.

The VAs have the potential to bring habitat, flows and resulting benefits more quickly than the regulatory approach. However, if the VA parties fail to adhere to flow and habitat commitments, or the board determines after eight years that the benefits are insufficient, the board could initiate a process to compel compliance through the regulatory pathway.

Regulatory Pathway
The proposed regulatory pathway provisions would apply in the absence of approved VAs and for water right holders who are not parties to approved VAs. This pathway would direct water right holders to implement new water quality objectives largely through an approach requiring a percentage of the unimpaired flow to remain instream. This approach is consistent with the board’s efforts in 2018 on the Lower San Joaquin River tributaries.

Since the October 2024 draft, the regulatory pathway provisions have been refined to include flow measures, called water supply adjustments, that create a more dynamic unimpaired flow requirement. The new adjustments take dry and wet conditions into account (requiring higher flows during wet periods and lower during dry) and allow for reductions of required inflows from

55% of unimpaired flow down to 45% and 35%, as well as offramps to inflow requirements during extreme conditions on specific tributaries.

The adjustments provide for greater adaptive management and are designed to reduce potential water supply impacts to agriculture, municipal water service and hydropower production, while maintaining reasonably protective flows and preserving cold water in reservoirs for fish downstream.

More information about the proposed Bay-Delta Plan update is available on the board's website.

Click Here for the Draft Report

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Newsom's plan to give water agencies more leeway in meeting rules moves forward

Los Angeles Times | July 24, 2025 | Ian James

Aerial view of an oceangoing grain ship transiting the deep water channel in the Sacramento-San Joaquin River Delta between the Port of Sacramento and the San Francisco Bay.(Getty Images)

- California water officials have released a new proposed water plan for the Sacramento-San Joaquin River Delta, backing an approach supported by Gov. Gavin Newsom.
- Newsom calls it a "collaborative, science-driven approach to managing our water." Environmental groups argue the approach would harm the Delta's native fish populations, which have been declining.

California regulators are supporting a controversial plan backed by Gov. Gavin Newsom — and opposed by environmental groups — that would give water agencies more leeway in how they comply with water quality rules.

The Newsom-backed approach is included as part of a proposed water plan for the Sacramento-San Joaquin River Delta, released by the State Water Resources Control Board on Thursday.

The plan would give water agencies two potential pathways to comply with water quality goals — either a traditional regulatory approach based on limiting water withdrawals to maintain certain river flow levels, or an alternative approach supported by the governor in which water agencies, under negotiated agreements, would make certain water flow commitments while contributing funding for wetland habitat restoration projects and other measures.

The proposed plan is intended to protect native fish species and the ecosystem through water quality standards and flow objectives for the Delta and San Francisco Bay.

Major water agencies have lined up to support these so-called voluntary agreements, which Newsom and his administration have touted as a solution to break away from the traditional conflict-ridden regulatory approach and improve the Delta's ecological health.

Newsom called the plan "a testament to California's commitment to a collaborative, science-driven approach to managing our water for the benefit of our communities, economy, and fish and wildlife."

The proposed plan, developed by the state agency's staff, will now go through a public comment process, and will eventually go before the five-member state water board for a decision on adoption. Members of the board are appointed by the governor.

Environmental and fishing groups, as well as leaders in Delta communities, have argued that the voluntary approach would harm the estuary's deteriorating ecosystem and fish species that have suffered dramatic declines.

The Delta draws together rivers from a vast watershed and flows toward the San Francisco Bay. On the south side of the Delta, pumps operated by the state and federal governments send water flowing to cities and farms.

Eric Oppenheimer, executive director of the state water board, said the proposed update of the water quality plan would "improve conditions for fish and wildlife through a combination of flow and habitat measures while considering the needs of cities, towns and farms."

Oppenheimer noted that the state water board would track agencies' commitments under the voluntary agreements, which have also been called the Healthy Rivers and Landscapes Program.

Under the draft plan, state officials would review the voluntary agreements after eight years to determine if they should be extended, modified or terminated. The board could decide to return water agencies to the traditional regulatory approach if they determine the voluntary agreements haven't achieved the desired results.

"We included the voluntary agreement pathway because we think the voluntary agreements have merit," Oppenheimer told reporters during a briefing. "The basic concept behind these voluntary agreements is that by combining both flow and habitat, we think we can achieve significant ecosystem improvements, and we think it can be done with a lower water supply impact."

Oppenheimer said state officials believe this approach will "engender a high degree of cooperation and buy-in from the water users."

Environmental and fishing groups have condemned the agencies' proposed voluntary agreements as backroom deals struck without input from Native tribes, Delta communities or conservation advocates. They have said that by failing to protect existing flows, the agreements are aimed at setting the stage for massive additional water diversions.

Newsom and his administration are pushing for the proposed Delta Conveyance Project, seeking to build a 45-mile water tunnel beneath the Delta, and are also moving ahead with plans to build Sites Reservoir, the state's first new major reservoir in decades, in a valley north of Sacramento.

Ashley Overhouse, water policy advisor for the environmental group Defenders of Wildlife, said she is very concerned about the state board's approach.

"This is just the latest attempt by the Newsom administration to promote the woefully inadequate and inequitable voluntary agreements, undercutting bare minimum protections," Overhouse said. "The proposal to cut freshwater flows through the Delta during wet and dry years will be devastating for species and the overall health of the estuary."

Overhouse and other environmental advocates argue that the voluntary deals struck by major water suppliers would be disastrous for threatened and endangered fish, including salmon, steelhead, green sturgeon, longfin smelt and Delta smelt. They have called for more stringent flow requirements to help populations recover.

This year, populations of Chinook salmon were so low that regulators shut down the commercial fishing season along the coast for a third straight year, though limited recreational fishing was allowed.

The state water board “seems to be collapsing under pressure from the governor to approve the fatally flawed voluntary agreements,” said Scott Artis, executive director of Golden State Salmon Assn., a nonprofit group that represents fishing communities.

Artis said the voluntary approach would worsen the environmental crisis in the Delta and set the stage for “even more damaging diversions by the massive Delta tunnel.”

His group has also criticized the $2.9 billion in proposed funding that would be needed to carry out the agreements, much of it from state and federal funds. The group has called it a “shell game” and a “taxpayer rip-off.”

The update of the Bay-Delta Water Quality Control Plan has been years in the making. The last substantial changes in water quality and flow requirements were adopted in 1995 for much of the watershed. In 2018, the State Water Board released new standards to increase flows in the San Joaquin River.

The pending update will set rules for the Sacramento River watershed and the rest of the Delta.

The State Water Resources Control Board plans to hold a public hearing on the draft plan Sept. 8-9, and will be accepting written comments until Sept. 10. A date for a decision by the board has not been set.

The proposal also calls for establishing tribal “beneficial uses” of water in recognition of the connections between Native tribes and fish populations. There are over 100 tribes in the Bay-Delta watershed. State officials say this designation would not guarantee tribes a certain volume of water but would ensure that cultural uses of water, including for fish species, have protections under the plan.

Wade Crowfoot, the state’s natural resources secretary, said the approach outlined under the plan will “improve the health of our rivers by both restoring river flows and revitalizing habitat.”

Newsom noted that he has also proposed legislation to create an exemption under the California Environmental Quality Act for all such water quality plans. The governor said

this would “accelerate the time it takes to get these critical plans done by removing unnecessary and redundant process requirements.”

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Will the Bay-Delta Plan Succeed? It Has a Good Chance if the Healthy Rivers and Landscapes Alternative is Allowed to Work

California Farm Water Coalition | July 24, 2025 |

On July 24, 2025, the State Water Resources Control Board released an updated Bay-Delta Water Plan, a critical framework designed to protect the ecological health of the Sacramento-San Joaquin Delta while addressing California's diverse water demands. The plan outlines two primary approaches—the Unimpaired Flow Alternative and the Healthy Rivers and Landscapes (or Voluntary Agreements) alternative, to balance water quality, ecosystem restoration, and water supply needs. So, what are the key differences between these approaches? How is their success evaluated? And what is the unimpaired flow alternative water users may have to adopt? A dive into the Plan helps answer those questions, and more.

Key Differences Between Approaches

The Bay-Delta Water Plan presents two distinct strategies for managing water quality and ecosystem health in the Delta. The Unimpaired Flow Alternative focuses on maintaining a specific percentage of natural river flows, typically set at 55% but adjustable between 45% and 65% depending on water year types (e.g., wet or dry conditions). This approach prioritizes flow as the primary mechanism to support water quality and habitats for native species, such as salmonids and Delta smelt. In contrast, the HRL program integrates water flow with non-flow measures, such as restoring spawning grounds, rearing habitats, and floodplains. This pathway provides greater flexibility, allowing water users to adjust flow releases and construct habitat projects to meet specific needs according to local conditions. The unimpaired flow alternative relies on regulatory enforcement through water right curtailments whereas Healthy Rivers and Landscapes emphasizes collaborative agreements and adaptive management, enabling water users to adjust strategies based on real-time ecological data and adaptive management.

Measuring Success

The plan outlines distinct criteria for evaluating the success of each approach. For the unimpaired flow alternative, success hinges on maintaining the required instream flow and achieving biological goals, which has been the way much of the system has been managed for several decades while fish populations continue to decline. The goal of increasing the "abundance, productivity, genetic diversity, and spatial distribution of native fish populations" seems unattainable without a new, more comprehensive restoration effort.

Regular monitoring and annual reports track compliance and ecological outcomes, which would be demonstrated by increased fish populations and improved water quality, including meeting salmon doubling objectives. For the HRL program, success is measured by fulfilling flow commitments above baseline conditions, completing habitat restoration projects within its planned eight-year term, and evaluating success on the quality of improved habitat and the benefits it provides species that depend on the system. Regular reporting on flow and habitat benefits will demonstrate whether or not the Healthy Rivers and Landscapes alternative will be successful. I believe it will because fish need more than just more water to thrive, they need a healthy place to live and that's what HRL is all about.

Compliance with Unimpaired Flow Rules
The Water Quality Control Plan specifies when water users must comply with unimpaired flow rules. Water users on certain tributaries, such as the Stanislaus, Tuolumne, Merced, and other Sacramento/Delta tributaries, are subject to these rules if they are not part of an approved HRL plan. If a water user under this alternative fails to meet flow, habitat, or monitoring commitments, the State Water Board may terminate their participation in the alternative HRL plan, requiring compliance with unimpaired flow rules. The Board may also enforce these rules if water users fail to protect beneficial uses, jeopardize native fish survival, or if they violate water quality or temperature objectives.

During water scarcity, junior water rights holders may face curtailments to meet flow objectives. Additionally, according to the Bay-Delta Plan, applicants for new water rights or changes to existing rights may need to adhere to unimpaired flow rules as a condition of approval. These rules automatically apply to specified tributaries unless a water user is in an approved HRL Landscapes plan or qualifies for an exception, such as minimal diversions.

The Bay-Delta Water Plan's dual approaches offer distinct paths to address the Delta's ecological challenges. The unimpaired flow alternative continues to lean on the failed, flow-centric strategy that has led to the near total demise of the Delta smelt and lackluster salmon recovery. On the other hand, Health Rivers and Landscapes creates collaboration and flexibility, combining flows with habitat restoration and a better chance at succeeding in species recovery.

Both approaches rely on robust monitoring and adaptive management, but their quantifying success differs, with unimpaired flows focusing on flow compliance and biological outcomes, and HRL emphasizing integrated ecosystem recovery.

The State Water Board retains its authority to enforce unimpaired flow rules to ensure compliance with Bay-Delta Plan objectives, particularly if the HRL alternative falls short, which is unlikely, based on the success of similar efforts already underway throughout the Sacramento River and San Joaquin River watersheds.

Comment on the Draft Plan
The public comment period is open until September 10, 2025. The water user community and the public have a critical opportunity to provide input, shaping the plan's implementation to safeguard the Delta's ecosystem while meeting California's water needs, hopefully through the implementation of sensible, science-driven projects.

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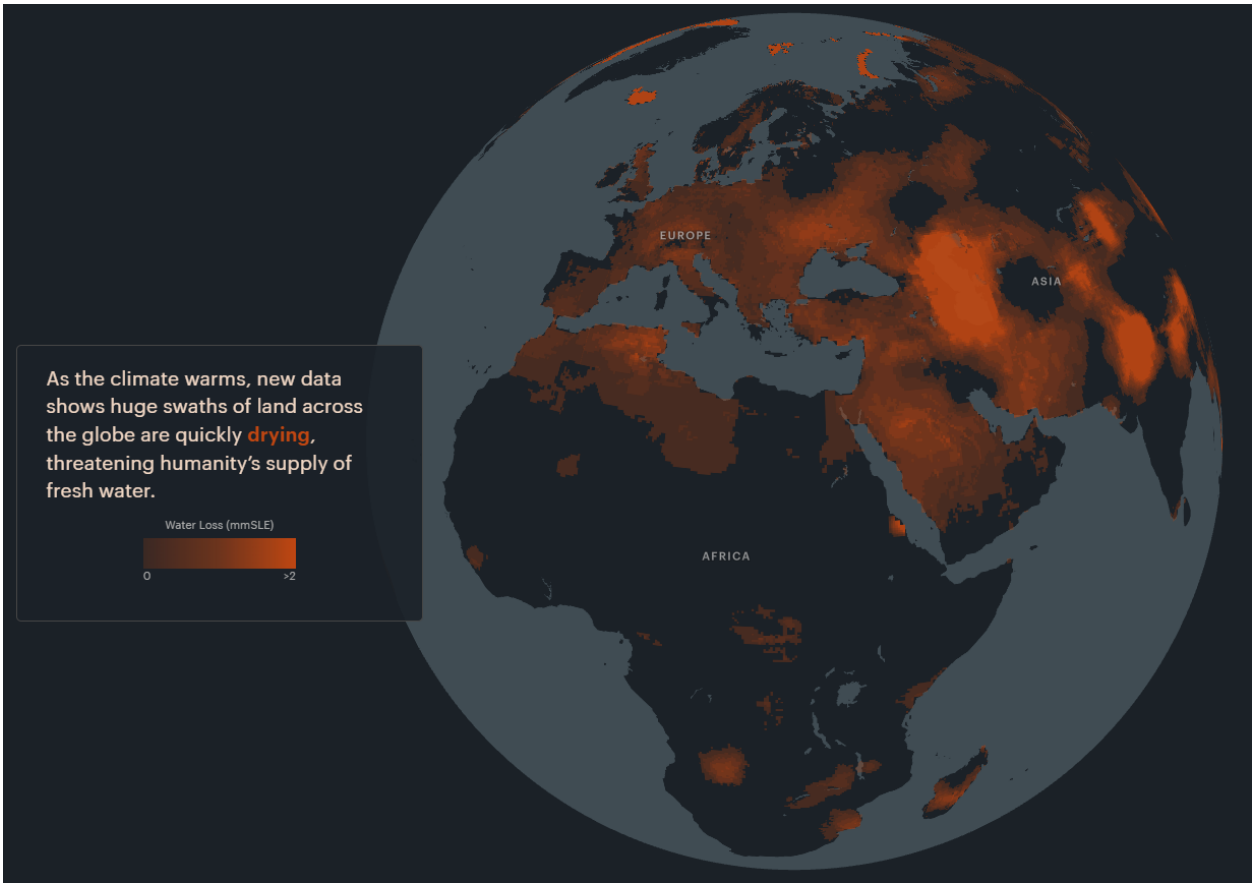
To read or comment on the Bay-Delta Plan, visit:

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/docs/notice-baydeltaplanupdates-07-2025-en.pdf

The Drying Planet

As the climate warms, new data shows huge swaths of land across the globe are quickly drying, threatening humanity's supply of fresh water

ProPublica | July 25, 2025 | Abrahm Lustgarten



In the far north, the detected loss is due largely to glaciers melting and subarctic lakes drying.

But farther south — where most people live — it is largely the race to suck groundwater from aquifers that is removing the water from the continents.

So much groundwater is now being pumped that it is filling the oceans as it drains off land, becoming one of the largest drivers of global sea level rise.

As the planet gets hotter and its reservoirs shrink and its glaciers melt, people have increasingly drilled into a largely ungoverned, invisible cache of fresh water: the vast, hidden pools found deep underground.

Now, a new study that examines the world's total supply of fresh water — accounting for its rivers and rain, ice and aquifers together — warns that Earth's most essential resource is quickly disappearing, signaling what the paper's authors describe as "a critical, emerging threat to humanity." The landmasses of the planet are drying. In most places there is less precipitation even as moisture evaporates from the soil faster. More than anything, Earth is being slowly dehydrated by the unmitigated mining of groundwater, which underlies vast proportions of every continent. Nearly 6

billion people, or three quarters of humanity, live in the 101 countries that the study identified as confronting a net decline in water supply — portending enormous challenges for food production and a heightening risk of conflict and instability.

The paper “provides a glimpse of what the future is going to be,” said Hrishikesh Chandanpurkar, an earth systems scientist working with Arizona State University and the lead author of the study. “We are already dipping from a trust fund. We don’t actually know how much the account has.”

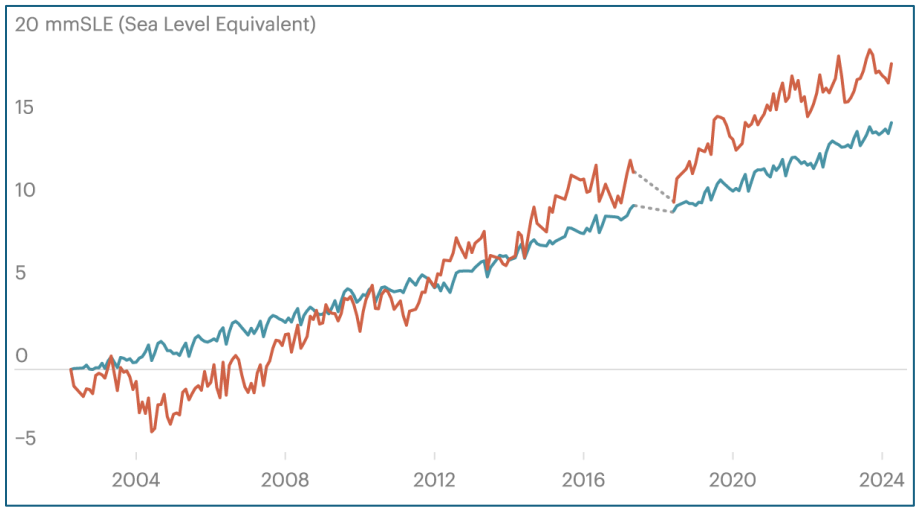
The research, published on Friday in the journal Science Advances, confirms not just that droughts and precipitation are growing more extreme but reports that drying regions are fast expanding. It also found that while parts of the planet are getting wetter, those areas are shrinking. The study, which excludes the ice sheets of Antarctica and Greenland, concludes not only that Earth is suffering a pandemic of “continental drying” in lower latitudes, but that it is the uninhibited pumping of groundwater by farmers, cities and corporations around the world that now accounts for 68% of the total loss of fresh water in those areas, which generally don’t have glaciers.

Groundwater is ubiquitous across the globe, but its quality and depth vary, as does its potential to be replenished by rainfall. Major groundwater basins — the deep and often high-quality aquifers — underlie roughly one-third of the planet, including roughly half of Africa, Europe and South America. But many of those aquifers took millions of years to form and might take thousands of years to refill. Instead, a significant portion of the water taken from underground flows off the land through rivers and on to the oceans.

The researchers were surprised to find that the loss of water on the continents has grown so dramatically that it has become one of the largest causes of global sea level rise. Moisture lost to evaporation and drought, plus runoff from pumped groundwater, now outpaces the melting of glaciers and the ice sheets of either Antarctica or Greenland as the largest contributor of water to the oceans.

Water From Land Has Become a Leading Driver of Sea Level Rise

Most of the water lost from drying regions is from groundwater pumping, which ultimately shifts fresh water from aquifers into the oceans.



Note: Glaciers refer to the parts of the continents covered in glaciers but excludes the ice sheets of Greenland and Antarctica. Drying land and aquifers refer to the water lost by the continents in areas not covered by glaciers, including river flow and evaporation. Groundwater loss accounts for 68% of the drying in those places.

The study examines 22 years of observational data from NASA's Gravity Recovery and Climate Experiment, or GRACE, satellites, which measure changes in the mass of the earth and have been applied to estimate its water content. The technique was groundbreaking two decades ago when the study's co-author, Jay Famiglietti, who was then a professor at the University of California, at Irvine, used it to pinpoint where aquifers were in decline. Since then, he and others have published dozens of papers using GRACE data, but the question has always lingered: What does the groundwater loss mean in the context of all of the water available on the continents? So Famiglietti, now a professor at Arizona State University, set out to inventory all the land-based water contained in glaciers, rivers and aquifers and see what was changing. The answer: everything, and quickly.

Since 2002, the GRACE sensors have detected a rapid shift in water loss patterns around the planet. Around 2014, though, the pace of drying appears to have accelerated, the authors found, and is now growing by an area twice the size of California each year. "It's like this sort of creeping disaster that has taken over the continents in ways that no one was really anticipating," Famiglietti said. (Six other researchers also contributed to the study.) The parts of the world drying most acutely are becoming interconnected, forming what the study's authors describe as "mega" regions spreading across the earth's mid-latitudes. One of those regions covers almost the whole of Europe, the Middle East, North Africa and parts of Asia.

The Drying of the Earth Accelerated in Recent Years

The dramatic depletion of groundwater and surface water plus the melting of glaciers between 2014-24 has connected once-separate arid places, forming "mega-drying" regions that stretch across whole continents.

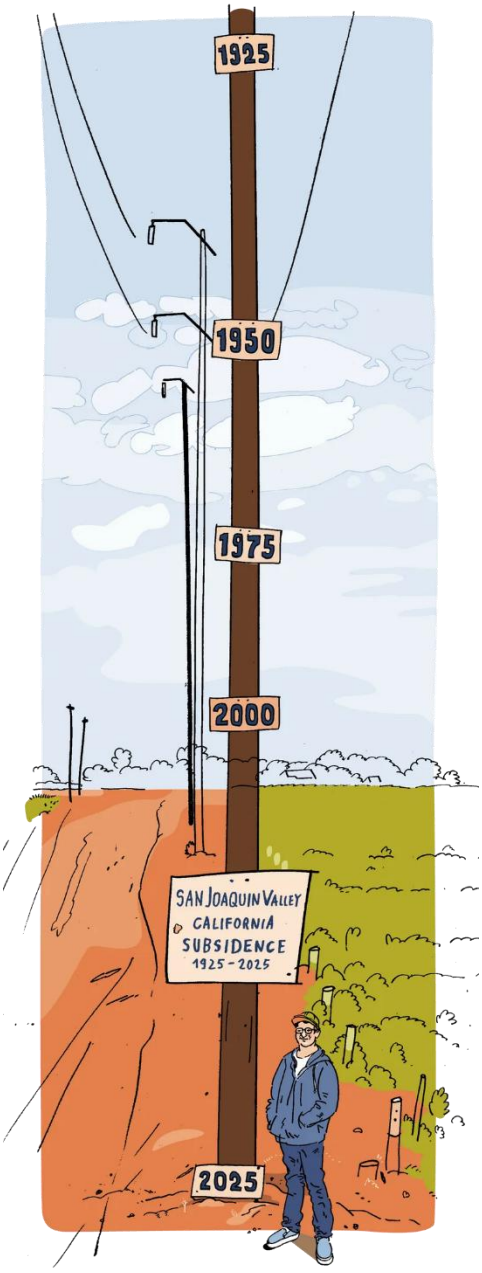
In the American Southwest and California, groundwater loss is a familiar story, but over the past two decades that hot spot has also spread dramatically. It now extends through Texas and up through the southern High Plains, where the Ogallala aquifer is depended on for agriculture, and it spreads south, stretching throughout Mexico and into Central America. These regions are connected not because they rely on the same water sources — in most cases they don't — but because their populations will face the same perils of water stress: the most likely, a food crisis that could ultimately displace millions of people.

"This has to serve as a wake-up call," said Aaron Salzberg, a former fellow at the Woodrow Wilson Center and the former director of the Water Institute at the University of North Carolina, who was not involved with the study.

Research has long established that people take more water from underground when climate-driven heat and drought are at their worst. For example, during droughts when California has enforced restrictions on delivery of surface water to its farmers — which the state regulates — the enormous agriculture enterprises that dominate the Central Valley have drilled deeper and pumped harder, depleting the aquifer — which the state regulates less precisely — even more.

For the most part, such withdrawals have remained invisible. Even with the GRACE data, scientists cannot measure the exact levels or know when an aquifer will be exhausted. But there is one foolproof sign that groundwater is disappearing: The earth above it collapses as the ground compresses like a drying sponge. The visible signs of such subsidence around the world appear to match what the GRACE data says. Mexico City is sinking as its groundwater aquifers are drained, as

are large parts China, Indonesia, Spain and Iran, to name a few. A recent study by researchers at Virginia Tech in the journal Nature Cities found that 28 cities across the United States are sinking — New York, Houston and Denver, among them — threatening havoc for everything from building safety to transit. In the Central Valley, the ground surface is nearly 30 vertical feet lower than it was in the first part of the 20th century.



Ground subsidence around the world is one of the clearest ways to identify where groundwater is overdrawn.

When so much water is pumped, it has to drain somewhere. Just like rivers and streams fed by rainfall, much of the used groundwater makes its way into the ocean. The study pinpoints a remarkable shift: Groundwater drilled by people, used for agriculture or urban supplies and then discarded into drainages now contributes more water to the oceans than melting from each of the world's largest ice caps.

People aren't just misusing groundwater, they are flooding their own coasts and cities in the process, Famiglietti warns. That means they are also imperiling some of the world's most important food-producing lowlands in the Nile and Mekong deltas and cities from Shanghai to New York. Once in the oceans, of course, groundwater will never again be suitable for drinking and human use without expensive and energy-sucking treatment or through the natural cycle of evaporating and precipitating as rain. But even then, it may no longer fall where it is needed most. Groundwater "is an intergenerational resource that is being poorly managed, if managed at all," the study states, "at tremendous and exceptionally undervalued cost to future generations."

That such rapid and substantial overuse of groundwater is also causing coastal flooding underscores the compounding threat of rising temperatures and aridity. It means that water scarcity and some of the most disruptive effects of climate change are now inextricably intertwined. And here, the study's authors implore leaders to find a policy solution: Improve water management and reduce groundwater use now, and the world has a tool to slow the rate of sea level rise. Fail to adjust the governance and use of groundwater around the world, and humanity risks surrendering parts of its coastal cities while pouring out finite reserves it will sorely need as the other effects of climate change take hold.

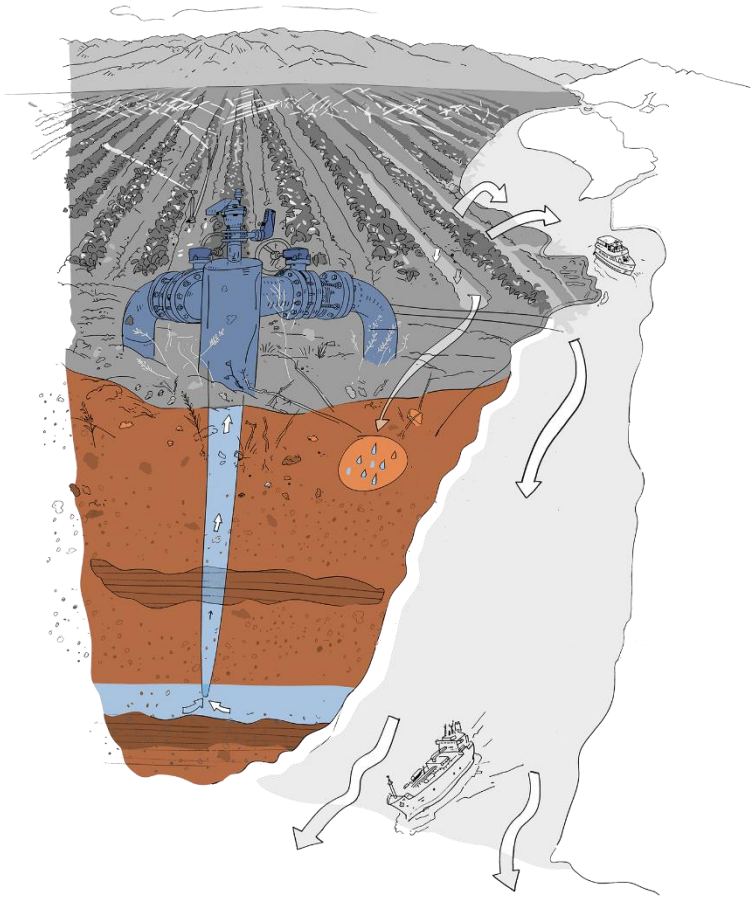
How Groundwater Becomes Ocean Water

The process starts when deep underground aquifers are tapped to make up for a lack of water from rainfall and rivers.

Worldwide, 70% of fresh water is used for growing crops, with more of it coming from groundwater as droughts grow more extreme. Only a small amount of that water seeps back into aquifers.

Instead, most of the water runs off the land into streams, eventually flowing into rivers.

The rivers ultimately drain into the ocean, where fresh water becomes salt water. For that water to be usable again, it must either be industrially treated or return to the land as rain. But with climate change, these same drying regions are seeing less rainfall.



If the drying continues — and the researchers warn that it is now nearly impossible to reverse “on human timescales” — it heralds “potentially staggering” and cascading risks for global order. The majority of the earth’s population lives in the 101 countries that the study identified as losing fresh water, making up not just North America, Europe and North Africa but also much of Asia, the Middle East and South America. This suggests the middle band of Earth is becoming less habitable. It also correlates closely with the places that a separate body of climate research has already identified as a shrinking environmental niche that has suited civilization for the past 6,000 years. Combined, these findings all point to the likelihood of widespread famine, the migration of large numbers of people seeking a more stable environment and the carry-on impact of geopolitical disorder.

Peter Gleick, a climate scientist and a member of the National Academy of Sciences, lauded the new report for confirming trends that were once theoretical. The ramifications, he said, could be profoundly destabilizing. “The massive overpumping of groundwater,” Gleick said, “poses enormous risk to food production.” And food, he pointed out, is the foundation for stability. The water science center he co-founded, the Pacific Institute, has tracked more than 1,900 incidents in which water supplies were either the casualty of, a tool for or the cause of violence. In Syria, beginning in 2011, drought and groundwater depletion drove rural unrest that contributed to the civil war, which displaced millions of people. In Ghana, in 2017, protesters rioted as wells ran dry. And in Ukraine, whose wheat supports much of the world, water infrastructure has been a frequent target of Russian attacks.

“Water is being used as a strategic and political tool,” said Salzberg, who spent nearly two decades analyzing water security issues as the special director for water resources at the State Department. “We should expect to see that more often as the water supply crisis is exacerbated.”

India, for example, recently weaponized water against Pakistan. In April, following terrorist attacks in Kashmir, Prime Minister Narendra Modi suspended his country's participation in the Indus Waters Treaty, a river-sharing agreement between the two nuclear powers that was negotiated in 1960. The Indus system flows northwest out of Tibet into India, before turning southward into Pakistan. Pakistan has severely depleted its groundwater reserves — the region is facing one of the world's most urgent water emergencies according to the Science Advances paper. The Indus has only become more essential as a supply of fresh water for its 252 million people. Allowing that water to cross the border would be "prejudicial to India's interests," Modi said. In this case, he wasn't attempting to recoup water supply for his country, Salzberg said, but was leveraging its scarcity to win a strategic advantage over his country's principal rival.

What's needed most is governance of water that recognizes it as a crucial resource that determines both sovereignty and progress, Salzberg added. Yet there is no international framework for water management, and only a handful of countries have national water policies of their own.

The United States has taken stabs at regulating its groundwater use, but in some cases those attempts appear to be failing. In 2014, California passed what seemed to many a revolutionary groundwater management act that required communities to assess their total water supply and budget its long-term use. But the act doesn't take full effect until 2040, which has allowed many groundwater districts to continue to draw heavily from aquifers even as they complete their plans to conserve those resources. Chandanpurkar and Famiglietti's research underscores the consequences for such a slow approach.

Arizona pioneered groundwater regulations in 1980, creating what it called active management areas where extraction would be limited and surface waters would be used to replenish aquifers. But it only chose to manage the water in metropolitan areas, leaving vast, unregulated swaths of the state where investors, farmers and industry have all pounced on the availability of free water for profit. In recent years, Saudi investors have pumped rural water to grow feed for cattle exported back to the Arabian Peninsula, and hedge funds are competing to pump and sell water to towns near Phoenix. Meanwhile, four out of the original five active management areas are failing to meet the state's own targets.

"They like to say, 'Oh, the management's doing well,'" Famiglietti said, but looking out over the next century, the trends suggest the aquifers will continue to empty out. "No one talks about that. I don't think it's an exaggeration to say it's an existential issue for cities like Phoenix."

Appeals Court Overturns Murder and Kidnapping Conviction in Etan Patz Disappearance
Both California and Arizona grow significant portions of America's fruits and vegetables. Something has to give. "If you want to grow food in a place like California," Famiglietti asked, "do you just bring in water? If we deplete that groundwater, I don't think there's enough water to really replace what we're doing there." The United States might not have much choice, he added, but to move California's agriculture production somewhere far away and retire the land.

Chandanpurkar, Famiglietti and the report's other authors suggest there are ready solutions to the problems they have identified, because unlike so many aspects of the climate crisis, the human decisions that lead to the overuse of water can be speedily corrected. Agriculture, which uses the vast majority of the world's fresh water, can deploy well-tested technologies like drip irrigation, as Israel has, that sharply cut use by as much as 50%. When California farms reduced their take of Colorado

River water in 2023 and 2024, the water levels in Lake Mead, the nation's largest reservoir, jumped by 16 vertical feet as some 390 billion gallons were saved by 2025. Individuals can reduce water waste by changing simple routines: shortening showers or removing lawns. And cities can look to recycle more of the water they use, as San Diego has.

A national policy that establishes rules around water practices but also prioritizes the use of water resources for national security and a collective interest could counterbalance the forces of habit and special interests, Salzberg said. Every country needs such a policy, and if the United States were to lead, it might offer an advantage. But "the U.S. doesn't have a national water strategy," he said, referring to a disjointed patchwork of state and court oversight. "We don't even have a national water institution. We haven't thought as a country about how we would even protect our own water resources for our own national interests, and we're a mess."

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Correction

July 25, 2025: This story originally included a quote from Jay Famiglietti characterizing Arizona's water supply as facing total depletion by the end of the century. Famiglietti communicated a correction to that assertion to ProPublica, which failed to incorporate it before the story was published. The quote has been adjusted to reflect Famiglietti's view that Arizona's water supply will be diminished but may not disappear.

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From Sewage to Clean Water: What Three Global Cities Teach us About Climate Ingenuity
EarthDay.org | August 1, 2025

August is National Water Quality Month, established to emphasize the importance of water for humanity, ecology, and economy. It is a great time to appreciate and take stock of our clean water resources. With climate change and human overuse triggering more frequent droughts, water is becoming an even more precious commodity, and researchers are being forced to find solutions in unusual places. So, could the answer to our water needs be running through our sewers?

The Solution in Our Sewage
Some regions are being hit harder than others. Since the year 2000, the Southwestern United States has been experiencing a megadrought: over two decades of high intensity drought. Its severity rivals the most severe droughts of the late 1500s. Exacerbated by climate change, this drought is considered the worst the region has faced in over a thousand years.

Water levels in rivers and lakes are dropping due to a combination of intensely dry weather and continued human overuse of the water that remains. Towns and cities in the region are scrambling for a solution.

Enter wastewater reclamation: the process of cleaning and reusing water which has already been used — be it from our kitchen sinks or even our toilets!

Several countries already use wastewater. Facilities like the Goreangab Water Reclamation Plant in Namibia and Changi Water Reclamation Plant in Singapore have been hugely successful in using advanced water treatment technologies to transform wastewater into high-quality, safe water.

The US could benefit from following their example. Southwestern cities across California, Arizona, and Nevada, are already viewing wastewater reclamation as a solution to their water needs. Expanding wastewater reclamation efforts to wider areas could be massively beneficial for climate resilience.

Let’s take a deeper dive into three global cities that showcase the ingenuity of wastewater reclamation.

Windhoek, Namibia, Africa
Namibia is no stranger to water scarcity. As one of the driest countries south of the Sahara, it has long sought ways to increase and make the most of its limited water supply. In 1968, it opened the Goreangab Water Reclamation Plant (GWRP) in its capital city, Windhoek.

Goreangab was the first facility in the world to engage in Direct Potable Reuse (DPR) — filtering and disinfecting sewage to extremely high standards before it is reintroduced into the drinking supply. Goreangab’s success set a precedent, and Windhoek is still a shining example to the

rest of the world. In 2002, GWRP was replaced by the New Goreangab Wastewater Reclamation Plant (NGWRP), which now provides 21 million liters daily — over a third of the area's drinking water.

The idea of drinking purified water that was once sewage is unthinkable to many, but Goreangab employs an intensive 10-step process, including several layers of filtration and disinfection, even using bacteria to help remove organic matter in the water. This ensures that the water Goreangab produces meets Namibia's own rigorous water quality standards as well as those of the World Health Organization (WHO). And it works: the facility has never been the cause of waterborne disease.

But DPR is not the only method of water reclamation. Most places that reclaim their water for drinking follow Indirect Potable Reuse (IPR). IPR involves mixing reclaimed water with unused water in an "environmental buffer" such as a lake before treating it again to make it safe to drink. Orange County in California, for instance, has long used IPR, and many perceive it more positively than DPR despite its higher energy costs and longer turnaround times.

Singapore, Southeast Asia

One of the most famous IPR facilities in the world is Singapore's Changi Water Reclamation Plant. With a processing capacity of 920 million liters of purified water per day, Changi is more than 40 times bigger than Goreangab.

Changi is also unique in that it sits below another facility: the Sembcorp NEWater Plant, which further purifies the water processed at Changi into "NEWater." The final ultra-clean product is mostly used in Singapore's many factories, but some is added to drinking water reservoirs, especially during the country's hot summers.

The Changi plant was recognized at the Global Water Awards 2024, along with Singapore's desalination plant, which turns seawater into drinking water. Together, these two facilities allow Singapore to maintain access to clean water despite its lack of abundant freshwater sources like rivers or lakes.

St. George, Utah, United States

Windhoek and Singapore are both large cities, but in the American West, water shortages are severe enough that even St. George, a small city of only 200,000 people, has decided to commit to the high financial costs of water reclamation. The project will cost about a billion dollars in total.

St. George has many programs in place to conserve water, including paying residents to tear up their lawns and replace them with water-efficient landscaping. Limits on outdoor irrigation further reduce water use. Residents are even subsidized to replace old toilets with more efficient models.

The new water reclamation plant, with 60 miles of new pipeline, and advanced wastewater treatment technology will enable them to stretch their resources even further.

The St. George facility is not yet completed, but by the end of 2025, it will be several times the size of Goreangab and serve surrounding towns as well. The initial plan is to use the water on fields and lawns to free up drinking water for locals. They will likely switch to DPR within 20 years.

While there are no active DPR facilities up and running in the United States right now, El Paso, Texas and San Diego, California are both considering DPR projects for the future. And diminishing regional water sources mean that we will likely see more water reclamation projects in the coming years across the Southwestern U.S.

Looking to the Future

As global temperatures continue to rise and our need for water increases, droughts are likely to worsen in frequency and severity. To ensure that everyone has water access in the decades to come, drought-prone areas must use it as efficiently as possible. That means conserving water, but it can also mean recycling our wastewater to be used more than once.

Don’t look down on wastewater reclamation, particularly DPR — thanks to the strict standards it is held to, it is entirely safe. This National Water Quality Month, think about how we can best conserve our fragile water resources. Wastewater reclamation has proven its value several times over; it could soon become a much more widespread strategy for water conservation.

To stay up to date on stories like this one, click the “join us” button and get updates on the top environmental news.

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