BAY AREA WATER SUPPLY AND CONSERVATION AGENCY
BOARD OF DIRECTORS MEETING

February 3, 2023

Correspondence and media coverage of interest between January 19, 2023 and February 3, 2023

Correspondence

From:	Tom Francis, BAWSCA Water Resources Manager
To:	BAWSCA Board of Directors through Nicole Sandkulla, BAWSCA CEO/GM
Date:	February 3, 2023
Subject:	Response to Questions Posed by Board Members on the BAWSCA Water Loss Management Program

From:	Nancy L. Hom, SFPUC Chief Financial Officer
To:	Nicole Sandkulla, BAWSCA CEO/General Manager
Date:	February 1, 2023
Subject:	Response to BAWSCA Comments on Proposed SFPUC 10-Year Capital Plan for Fiscal Year 2024-33, and Proposed FY 2023-24 Capital Budget

From:	Steven Ritchie, SFPUC Asst. General Manager Water Enterprise
To:	SFPUC Wholesale Customers
Date:	January 31, 2023
Subject:	Initial Water Supply Availability Estimate

From:	Los Vaqueros Reservoir Expansion Project
To:	CCWD Board
Date:	January 29, 2023
Subject:	Monthly Report

From:	Nicole Sandkulla, BAWSCA CEO/General Manager
To:	The Hon. Newsha Ajami, SFPUC President and members of the Commission
Date:	January 27, 2023
Subject:	Proposed SFPUC 10-Year Capital Plan for FY 2023-33, and Proposed FY 2023-24 Capital Budget

From:	Peter Drekmeier, Tuolumne River Trust Policy Director
To:	President Newsha Ajami and SFPUC Commissioners
Date:	January 27, 2023
Subject:	January 30, 2023 SFPUC Budget Hearing

From:	Dave Warner
To:	Board Chair Larsson and Board Members, BAWSCA
Date:	January 24, 2023
Subject:	Tuolumne Salmon Counts

February 8, 2023 – Agenda Item #7E

Press Release

From: Department of Water Resources
Date: January 26, 2023
Press Release: Recent Storms Allow State Water Project to Increase Expected 2023 Deliveries to 1.27 Million Acre-Feet of Water

From: Department of Water Resources
Date: January 26, 2023
Press Release: DWR Approves Groundwater Sustainability Plans for Four Northern California Basins

From: Department of Water Resources
Date: January 20, 2023
Press Release: DWR Launches Interagency Task Force as Part of Advance Planning for Drought Conditions

Media Coverage

Water Supply Conditions:

Date: February 1, 2023
Source: Maven
Article: This Just In: Second Snow Survey Reflects Boost From Atmospheric Rivers, Statewide, Snowpack is 205 Percent of Average

Date: January 31, 2023
Source: Mercury News
Article: Sierra Nevada snowpack hits biggest level in nearly 30 years

Date: January 30, 2023
Source: UC Merced
Article: What Will it Take to End the Drought in California?

Date: January 30, 2023
Source: Redding Record Searchlight
Article: Drenched by higher-than-normal rain, Lake Shasta water level rises 50 feet during January

Date: January 28, 2023
Source: KCRA
Article: California plans to increase water deliveries after winter storms. Here's a look at reservoir Levels

Date: January 27, 2023
Source: Sacramento Bee
Article: Have California drought conditions improved this week? Here's the latest update

Date: January 26, 2023
Source: The Mercury News
Article: California drought eases as state increases water deliveries to cities, farms

Date: January 24, 2023
Source: KCRA
Article: Two of California's largest reservoirs hit their highest level since the summer of 2020

Date: January 24, 2023
Source: Newsweek
Article: When Did the California Drought Start?

Water Supply Management:

Date: January 30, 2023
Source: Forbes
Article: Can We Store Enough Extreme Rainfall To Break Droughts?

Date: January 29, 2023
Source: ABC 10
Article: California Drought: NASA SWOT mission to improve water management in California

Date: January 23, 2023
Source: Science
Article: Can California's floods help recharge depleted groundwater supplies?

Date: January 23, 2023
Source: CBS News
Article: Despite recent parade of storms, California unveils drought resiliency task force

Water Infrastructure:

Date: January 22, 2023
Source: The Hill
Article: How Arizona, California and other states are trying to generate a whole new water supply

Date: January 19, 2023
Source: CapRadio
Article: How will California's water storage hold up in future dry-wet cycles?

Miscellaneous:

Date: February 1, 2023
Source: San Francisco Chronicle
Article: Here's how S.F. is trying to fix its 'absolutely insane' hiring process

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Bay Area Water Supply & Conservation Agency

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

TO: BAWSCA Board of Directors

FROM: Tom Francis, Water Resources Manager

THROUGH: Nicole Sandkulla, CEO/General Manager

DATE: February 3, 2023

Re: Response to Questions Posed by Board Members on the BAWSCA Water Loss Management Program

At the January 19, 2023 Board meeting, a presentation on the BAWSCA Water Loss Management Program (WLMP) was given by BAWSCA staff. Following the presentation, several questions were posed that required BAWSCA to confer with its technical consultant for the WLMP, E Source Companies LLC (E Source). This memorandum addresses those questions with feedback from E Source.

Question 1: Is there an "efficiency standard" for water loss in gallons per "connection"? If so, how does BAWSCA compare to other California water agencies?

There is no water loss efficiency standard available that is applied to California utilities across the board.

Question 2: On a graphic used in the presentation, where the metric used for comparison was "Water Loss in Gallons per Service Connection", can a different metric for comparison be shown, such as "% Loss of Total Production". If so, can BAWSCA produce such a graphic, and moreover, is it possible for that graphic to also include a comparison to the State median?

In the water loss field, leakage volumes are typically quantified using gallons per service connection per day or gallons per mile of main per day. Comparing the leakage volumes to infrastructure (service connections or miles of main) normalizes the volumes across utilities, allowing utilities of different sizes to be compared appropriately.

Additionally, the water loss field has moved away from using percent-based metrics to evaluate water loss. In 2019, the American Water Works Association released a report recommending that percentage-based metrics should not be used to evaluate water loss for the following reasons:

- They are greatly affected by changes in customer consumption;

- They cannot distinguish the components of non-revenue water, which are apparent losses, real losses, and unbilled authorized consumption;
- They do not provide information about the underlying water volumes; and
- They may be influenced by parameters unrelated to non-revenue water.

Question 3: How does water loss calculations "deal with" accounting for hydrant use and system flushing? If it does include those quantities, how does the calculation address any recapture of that flushing water?

The water loss audit process performed by and/or for utilities has inputs they can use to document hydrant usage and system flushing. The categorization of these volumes in the annual water loss audit depends on how the utility tracks these volumes:

- If these uses are typically not billed, they are generally categorized in the Unbilled Authorized Consumption section of the audit;
- If a utility meters these volumes, then the utility will enter their documented hydrant and flushing usage in the Unbilled Metered Authorized Consumption audit input;
- If a utility estimates these volumes, then the utility will enter their estimated hydrant and flushing usage in the Unbilled Unmetered Authorized Consumption audit input;
- If a utility knows it has hydrant and/or system flushing, but does not have metered or estimated volumes, the utility can use an American Water Works Association water loss audit default calculation of 0.25% of Water Supplied volume to estimate Unbilled Unmetered Authorized Consumption; and
- Even in the case of recapture, these volumes should still be included in the audit inputs mentioned above and will need additional considerations associated with recapture to be evaluated on a utility-by-utility basis

Question 4: Does BAWSCA or its consultant, E Source, have any data on what BAWSCA agencies expend on leak detection "fixes"?

Neither BAWSCA nor E Source have received data on BAWSCA member agencies' repair costs associated with leaks identified through proactive leak detection.

When agencies select to participate in the BAWSCA leak detection service offering, as one of the optional subscription program services, E Source's technicians conduct a manual acoustic leak detection survey and identify potential leaks in their system. These locations are provided to the agencies, and it is the agencies' responsibility to investigate and repair the leaks. Agencies may track the cost of leak repairs in-house, however E Sources has found, in their work for

BAWSCA member agencies as well as for other water agencies throughout California and the US, that many agencies do not track detailed information on leak repair costs.

Question 5: Reducing the quantity of 'Non-Revenue Water' is something that a particular BAWSCA member agency is working to address. The experience of one member agency has been that converting to ultra-sonic meters improves meter readings, thereby helping to reduce the volume recorded as losses. Do ultra-sonic meters serve as a better measurement tool?

BAWSCA and our consultant E Source would be interested in any documentation, such as lessons learned, that this particular member agency may have produced as part of their AMI conversion and deployment project. E Source notes however, that in their experience, meter conversions do not always result in expected revenue improvements, so it is not a one-size-fits all strategy in terms of what meter type to select.

Question 6: For water loss reporting to the State, and the work of BAWSCA and E Source through the WLMP and the subscription program offerings, is it correct that the focus is on an agency's distribution system and not on customer side water losses?

Yes, this is correct. BAWSCA and E Source's water loss work (through the WLMP) and the water loss audit required by the State focuses on distribution system/supply-side leakage.

Question 7: What kind of improvement in reduced water losses (savings) year over year has taken place since this program has been in place? How do we track success of the program?

The success of the program can be gauged through member agencies' improvement in data quality and management. At the beginning of the program, many BAWSCA member agencies did not have an accurate assessment of their water losses due to poor data quality. Through the subscription program, E Source and the member agencies have worked together to pinpoint areas of concern and improve data quality. At this stage, member agencies are continuing to increase their data quality in preparation for upcoming state water loss regulations. As BAWSCA agencies' data quality improves, the estimate of water losses for these agencies will increase in accuracy. With better data, in the years ahead, it will be possible to better assess changes in water losses from year to year and provide such information to the Board.

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San Francisco
Water Power Sewer
Operator of the Hetch Hetchy Regional Water System

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February 1, 2023

Nicole Sandkulla
Chief Executive Officer/General Manager
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 650
San Mateo, CA 94402

Dear Nicole,

Thank you for your January 27th letter regarding BAWSCA's comments on the SFPUC's proposed 10-Year Capital Plan for FY 2024-33, and Proposed FY 2023-24 Capital Budget. BAWSCA's review of our Capital Plan and Budget is an important step in our budget process and we appreciate the time you and your staff dedicate towards this review.

We have provided response to your initial questions below and will work with you to develop a prompt response timeframe for any additional questions you may have.

1. **Will the SFPUC provide written replies to BAWSCA's comments and questions prior to the February 14, 2023 Commission meeting?**

   In order to meet the intent of the WSA, BAWSCA is providing these comments and anticipates sending further detailed comments after the January 30th budget meeting. BAWSCA expects the SFPUC to respond to these comments in writing prior to adoption of its 10-Year CIP FY 2024-33, regardless of whether the comments are provided before or after the first budget meeting.

   As I mentioned in my January 30th email, though SFPUC staff provided the capital plan spreadsheets with projects and amounts on December 31, 2022, the rest of the January 30th Commission packet was not finalized until January 23, at which point we immediately provided it to BAWSCA.

   We apologize for the delay in providing a full packet of materials, as this year's adjusted budget process schedule did not capture the WSA requirement. We will take careful note and ensure to adhere to the deadline in future budget cycles.

2. **Characterizing the 10-Year Capital Plans for the Water Enterprise and Hetch Hetchy Water as robust is a misnomer.**

Does the SFPUC anticipate that budgets proposed for the latter half of the 10-year Capital Plan will increase from what is currently reflected in the proposed 10-Year Capital Plan in order to address needed funding for work to rehabilitate dams and for work to implement alternative water supply projects? Does the SFPUC anticipate that the next 10-year Capital Plan (due to be developed for Commission consideration in February 2024) will address those budgetary considerations?

We believe that the capital plans are robust. The Water Enterprise plan provides for full implementation of major Sunol Valley Water Treatment Plant improvements, including the addition of ozone treatment; significant water transmission line improvements on the Peninsula; improvements to the San Antonio Pump Station; and major improvements to the Millbrae facility which will contribute to overall staff productivity. The Hetch Hetchy Water plan includes completion of the Moccasin Generator Rehabilitation Project and the Mountain Tunnel Improvements Project; implementation of O'Shaughnessy Dam Improvements; and implementation of Moccasin Dam Improvements.

Other dam rehabilitation projects are in development but are not yet ready to be included in the capital plans. They will be considered when more accurate cost estimates have been developed. The Alternative Water Supply projects are fully funded for the next 3 years, and as stated at the January 30 hearing, they will be the subject of the Alternative Water Supply Plan to be presented to the Commission this summer. Based on the Commission's consideration of that plan we expect to have specific alternative water supply funding recommendations in the next budget cycle.

The 10-year Capital Plan is developed based on the needs, priorities, and best project information available at the time. As projects evolve and asset needs emerge, the projects are re-prioritized for consideration in the next round of the 10-Year Capital Plan, balancing capital needs with available funding based on rate impacts and affordability. Thus, projects that were not included or were deferred in this Capital Plan may be prioritized higher and/or have larger proposed budgets in future plans based on the project requirements and system priorities at that time.

3. Project deliverability challenges are likely to continue to impact the SFPUC's ability to complete the planned Capital Plan work.

Does the SFPUC believe that it can implement the first few years of this proposed 10-Year Capital Plan with no significant deliverability challenges?

The proposed costs in this capital plan went through a rigorous development process to ensure planned expenditures are realistically deliverable within the proposed project schedules. The Infrastructure Division analyzed the deliverability (the ability to implement projects and spend budgets according to the proposed schedules) of the capital programs using both "bottom up" and "top down" approaches, taking into consideration availability of staff and contracts and allowing schedule contingency for typical process times.

Overall, the deliverability review has brought to light many challenges and resource needs that have impacted deliverability. Improved processes to better mitigate these challenges are currently being developed and will be

implemented over the next few years. In general, the findings support that the current programs can be delivered with current staffing and contracting levels, but there is very little contingency built in for risks such as staff turn-over, long procurement times, and emergency response needs. In addition, current hiring and retention challenges warrant significant attention to fill existing vacancies and maintain staffing levels. Additional resources would need to be expanded to accommodate any increases in the programs.

When will the Capital Planning and Delivery Group report-out their findings to the Commission and the public?

Project teams from across the SFPUC are currently working on improvements to our capital planning and delivery processes with an aim to implement the first set of improvements during the next two-year budget cycle. We anticipate that we will bring our findings back to the Commission and the public alongside the kick-off of the next two-year budget cycle in (approximately) June 2023.

4. **Projected Wholesale Customer water sales used by the SFPUC for financial planning purposes differ from information provided in BAWSCA's demand studies and adopted Wholesale Customer Urban Water Management Plans (UWMP).**

   Will SFPUC staff, in its presentations to the Commission at the January 30, 2023 hearing, provide clarity on the source and calculation of the projected Wholesale Customer water sales provided by the SFPUC finance department? BAWSCA asks that such clarity be provided in all associated materials moving forward.

   Water sale demand forecasts used in Financial Plans will be provided to the Commission both on January 30 and February 14. The January 30 special budget hearing was not focused on setting the rates for wholesale customers nor on proposing the 10-Year Financial Plan, which is where water sales volume forecasts are relevant to financial outcomes. While we spoke to volume forecasts in the slides as a preview to the upcoming 10-Year Financial Plan adoption, it was not the focus of the meeting.

   The 10-Year Financial Plan narrative report, which is provided with the Commission materials for the February 14 meeting, goes into extensive detail on this topic. Those forecasts incorporate many inputs, including actual sales projections, economic recovery, drought conservation projections, population changes, demand elasticity etc. and ultimately results in a conservative sales forecast.

5. **Projected debt increase over time is a significant concern.**

   Please clarify the forecasted 10-year average Wholesale rate increase of 2.7% and explain how it is calculated.

   As will be shared in the February 14 meeting when the 10-Year Financial Plans are adopted, the projected average rate increase of 2.7% represents the average in wholesale rates from FY 2022-23 to FY 2032-33. Please note that the current version of the plans, which was updated after these slides were finalized, now shows a 2.5% average. Here's the year-by-year breakdown:

	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032	FYE 2033	Avg. Annual
Wholesale Rate Change	11.6%	0.0%	0.0%	0.0%	4.5%	3.6%	2.8%	0.2%	0.5%	2.2%	**2.5%**

This level of detail is not included in the January 30th slides for the Commission simply because it's a greater level of detail than made sense in the presentation for that budget hearing, which was focused on the FY 2023-24 budget adoption.

6. **The SFPUC committed to the preparation of a written report in 2023 detailing the midcycle changes to the 10-Year Capital Plan.**

   When will this report be completed? Will BAWSCA have an opportunity to review a draft version of the document? Does the SFPUC propose to produce a written report alongside every 10-Year Capital Plan update moving forward?

A draft of the FY 24-33 Capital Plan Report was provided via email on January 31, 2022. At this time, we do not know if we will produce this report every year.

Sincerely,

Nancy L. Hom
Chief Financial Officer
Assistant General Manager, Business Services

cc:

Newsha Ajami, President, San Francisco Public Utilities Commission
Members of the Commission, SFPUC
Dennis Herrera, SFPUC, General Manager
Ron Flynn, SFPUC Deputy General Manager
Steven Ritchie, SFPUC, Assistant General Manager, Water
Stephen Robinson, SFPUC, Assistant General Manager, Infrastructure
Alison Kastama, SFPUC, BAWSCA Liaison
BAWSCA Board of Directors
BAWSCA Water Management Representatives
Allison Schutte, Hanson Bridgett, LLP, Legal Counsel

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

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TO: SFPUC Wholesale Customers

FROM: Steven R. Ritchie, Assistant General Manager, Water

DATE: January 31, 2023

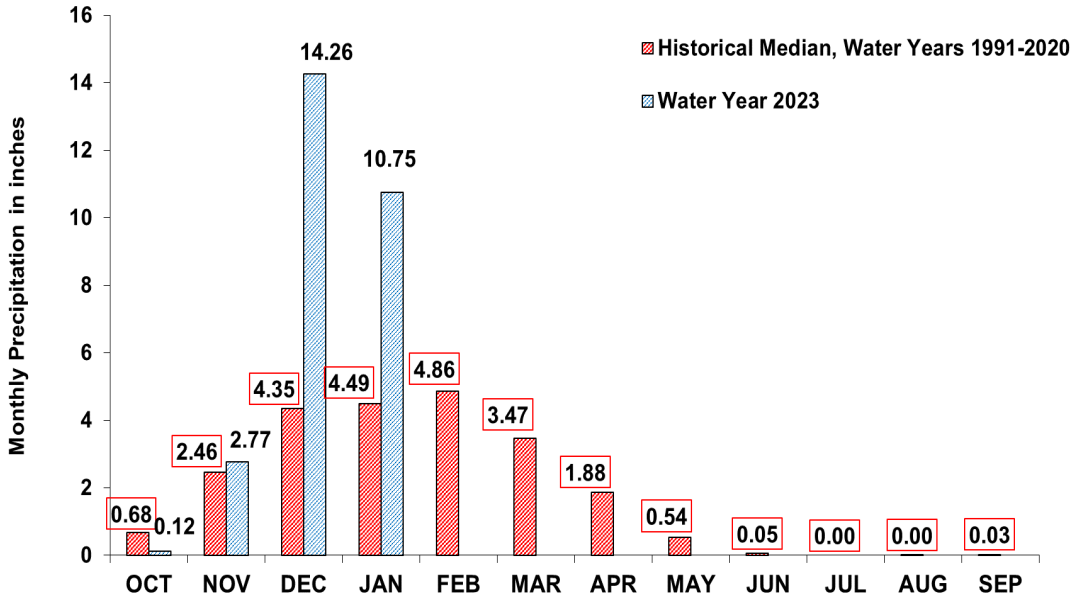
RE: Initial Water Supply Availability Estimate

This memo provides the initial water supply availability estimate for this year and the current hydrologic conditions.

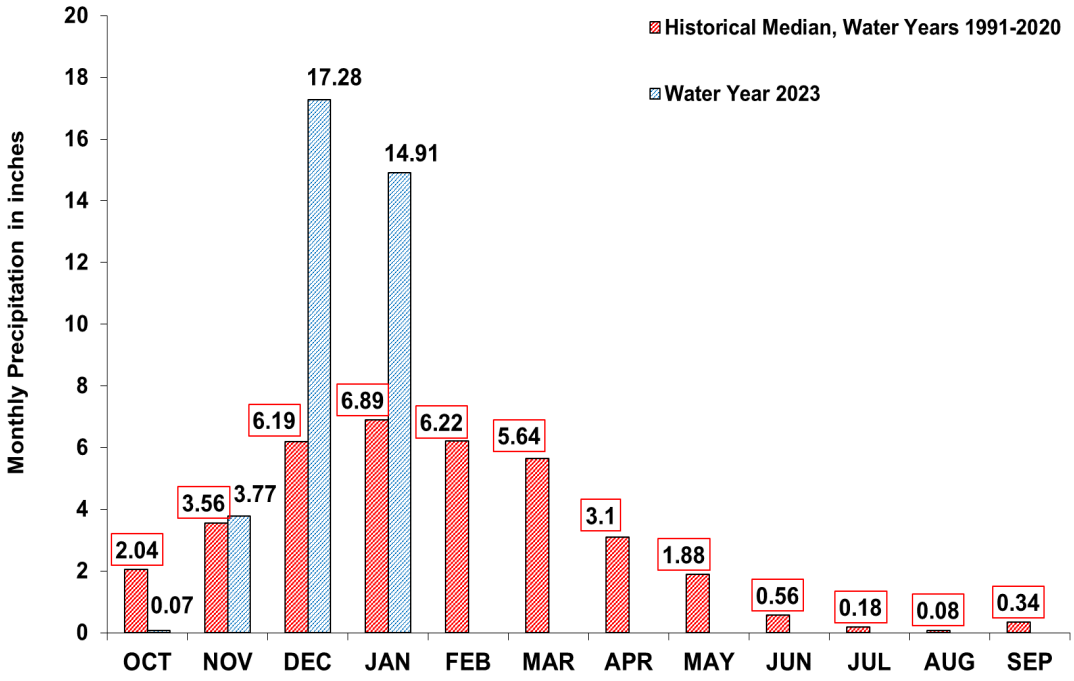
The current Water Year has thus far been wet. As the charts below show, both the Hetch Hetchy watershed and the local watersheds show a very wet November through January.

The local watersheds have received 122.36% of average annual total rainfall of 22.80 inches. The Hetch Hetchy watershed has received 98.23% of average annual rainfall of 36.68 inches. While the results of the first snow survey have not been fully analyzed yet, the lower elevation snow sensors are showing the snowpack to be well above median for this time of year.

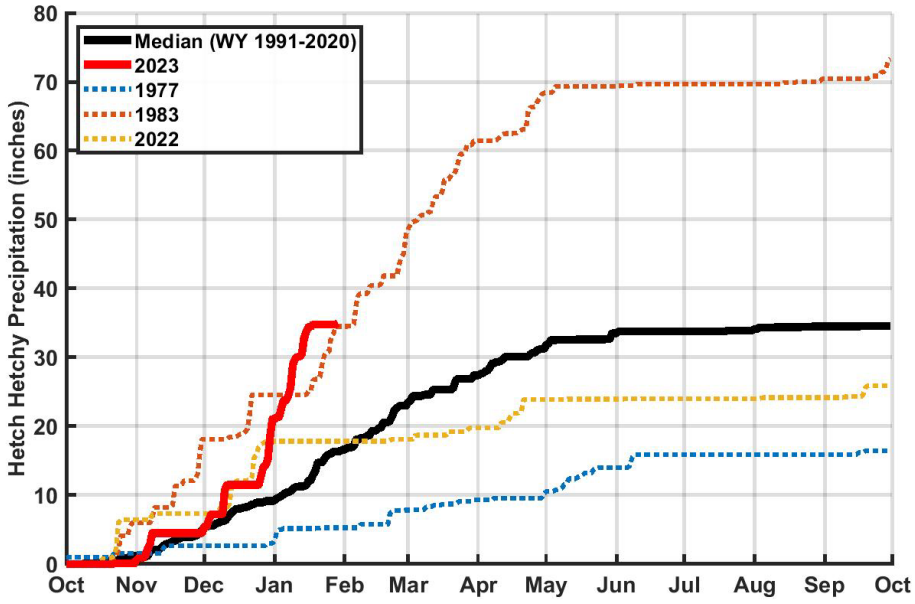
Bay Area 7-station Precipitation Index as of January 29, 2023



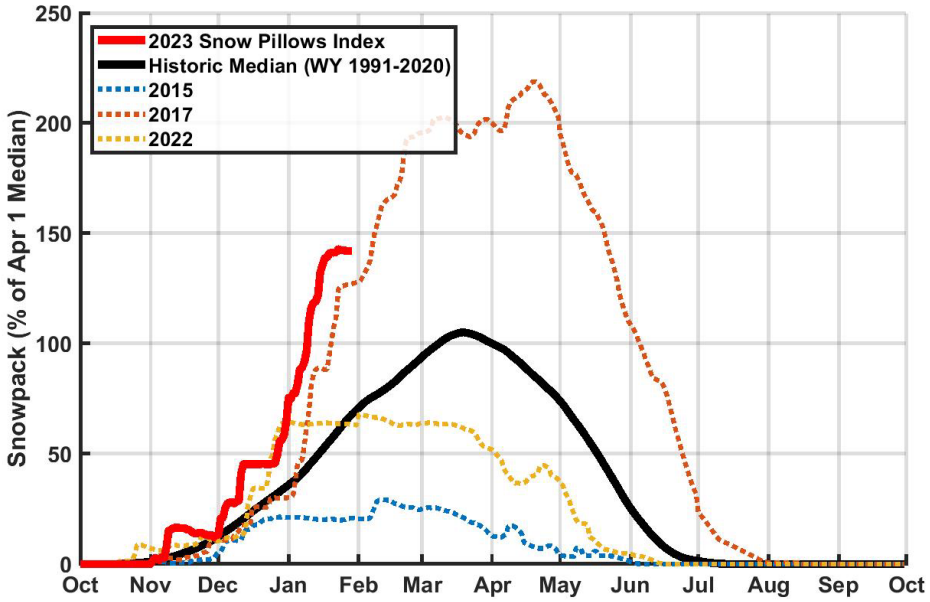
Upcountry 6-station Precipitation Index as of January 29, 2023



Hetch Hetchy Precipitation as of January 29, 2023



Upcountry Snowpack as of January 29, 2023



Reservoir storages (without Water Bank) are well above where they typically are this time of year.

Storage as of: 30-Jan-2023

Reservoir	Current Storage[1,2,3] (AF)	Maximum Storage[4] (AF)	Available Capacity (AF)	Percent of Maximum Storage	Normal Percent of Maximum Storage[5]
Tuolumne System					
Hetch Hetchy	298,800	360,360	61,560	82.9%	**69.0%**
Cherry	224,100	273,345	49,245	82.0%	-
Eleanor	19,260	27,100	7,840	71.1%	-
Water Bank	565,470	570,000	4,530	99.2%	**98.4%**
Total Tuolumne Storage	**1,107,630**	**1,230,805**	**123,175**	**90.0%**	-
Local System					
Calaveras	95,185	96,670	1,485	98.5%	-
San Antonio	53,088	53,266	178	99.7%	-
Crystal Springs	61,930	68,953	7,023	89.8%	-
San Andreas	16,699	19,027	2,328	87.8%	-
Pilarcitos	2,547	3,030	483	84.1%	-
Total Local Storage	**229,449**	**240,946**	**11,497**	**95.2%**	-
Total System Storage	1,337,079	1,471,751	134,672	**90.8%**	**80.3%**
Total without water bank	771,609	901,751	130,142	**85.6%**	-

[1] Upcountry storage is the date's 8AM storage value taken from USGS data

[2] Water bank storage reported by HHWP for 1/29/2023

[3] Local storage is the date's 8AM storage value taken from USGS data

[4] Hetch Hetchy maximum storage is with drum gates activated. Cherry and Eleanor maximum storage is with flashboards in. All maximum storages taken from rating curve.

[5] The ratio of median storage for this day over maximum storage capacity. Median storage for this day is based on historical storage data from years 1991 - 2020

In November 2021, the SFPUC declared a water shortage emergency and adopted a voluntary systemwide water use reduction of 10 percent. In response to State Board actions related to the drought in Spring 2022, the SFPUC updated its water use reduction request effective July 1, 2022 to an 11 percent systemwide reduction. Current systemwide reductions are provided in the table below.

For the Period July 1, 2022 - January 28, 2023			
CUSTOMER GROUPS	**FY2019/2020 AVG. MGD**	**FY2022/2023 AVG. MGD**	**% REDUCTION**
San Francisco Customers	**64.2**	**55.5**	**13.6%**
Wholesale Customers	**138.4**	**124.4**	**10.1%**
TOTAL	**202.6**	**179.9**	**11.2%**

While the rainfall, snowpack and reservoir storages to date indicate a strong probability that the SFPUC will be able to meet full customer demand this year, at this time, the SFPUC is not making any changes to its reduction requests. The SFPUC will continue to monitor water supply conditions and State actions regarding its emergency drought declaration, which is still in effect. The SFPUC will provide an update of the water supply conditions at the February 16th Annual Wholesale Customer Meeting. Another update on water supply availability will be provided on March 1st with a final water supply availability memo issued in early April following the last snow survey of the year.

LOS VAQUEROS RESERVOIR EXPANSION PROJECT

JANUARY 29, 2023

UPCOMING ACTIVITIES

January 30 at 3:00 p.m. (Zoom) – JPA GM Monthly Meeting

January 31 at 2:00 p.m. (Zoom) – Joint JPA Finance, Operations & Engineering Committee Meeting

February 8 at 9:30 a.m. (Zone 7 Water Agency) – JPA Board Meeting

February 16 at 10:00 a.m. (Zoom) – JPA O&E Committee

February 23 at 1:00 p.m. (Zoom) – JPA Finance Committee

UPCOMING LAP BOARD COORDINATION

February 28 at TBD – EBMUD Long-Term Water Supply Workshop

TBD – Valley Water Storage Committee

ADDITIONAL PROJECT INFO

https://www.ccwater.com/lvstudies

https://www.usbr.gov/mp/vaqueros/

https://cwc.ca.gov/Water-Storage/WSIP-Project-Review-Portal/All-Projects/Los-Vaqueros-Reservoir-Expansion-Project

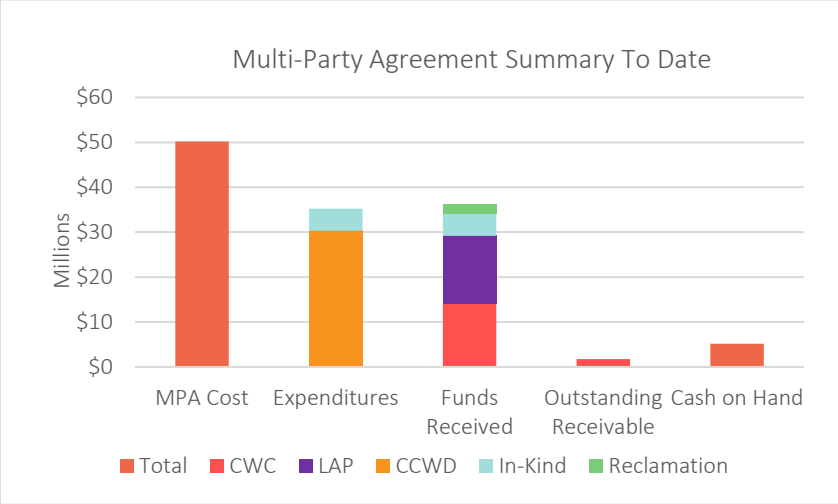
www.losvaquerosjpa.com

MONTHLY REPORT

FUNDING

Amendment No. 4 to the Multi-party Cost Share Agreement has been fully executed. The cost share for each JPA Member agency, excluding Grassland Water District, is $1,094,000. Invoices were sent this week.

The following chart provides an overview of the Multi-party Agreement (MPA) expenditures through November 2022. The funds received, outstanding receivable, and cash on hand are shown through mid-December 2022.



JPA BOARD OF DIRECTORS MEETINGS

On January 11 the JPA Board of Directors met via teleconference. The JPA unanimously re-elected officers of the JPA. The next monthly JPA Board Meeting has been scheduled for February 8 and the meeting agenda packet will be distributed to JPA Directors and Alternate Directors on Thursday, February 2 and posted to the JPA website on Friday, February 3.

PERMITTING

U.S. Fish and Wildlife Service (USFWS) continues work on the Biological Opinion for terrestrial species. USFWS Migratory Bird Program staff continue drafting an Environmental Assessment for their eagle take permit action. California Department of Fish and Wildlife (CDFW) continues work on the Incidental Take Permit for terrestrial species and Lake and Streambed Alteration Agreement. Meetings have been ongoing with CDFW to finalize modeling for the aquatic Incidental Take Permit application. Central Valley Regional Water Quality Control Board (CVRWQCB) issued its Section 401 permit on June 30, 2022. The U.S. Army Corps of Engineers (USACE)

continues work on its Section 404 permit which will be issued after Reclamation issues its Record of Decision. Draft water rights change petitions have been prepared and submitted to staff at the State Water Resources Control Board for preliminary review.

DESIGN & ENGINEERING

A technical review of the 60-percent design of the Pumping Plant No. 1 (PP1) Replacement Project is underway, which includes a limited value engineering review to identify cost saving opportunities.

The final data report for the Transfer Pipeline inspection has been prepared, which will be used to verify the pipeline condition and to develop any recommended improvements that may be needed to withstand the higher pressure requirements of the increased water level of the expanded reservoir. A summary report is anticipated in early 2023.

Coordination with the Department of Water Resources continues during their review of the 90-percent design of the Transfer-Bethany Pipeline (TBPL) Turn-In to the California Aqueduct. CCWD is developing draft terms of a Turn-In Agreement between the JPA and DWR that will define roles and responsibilities for design, construction and long-term operation, maintenance, and ownership of facilities within the DWR right-of-way. The draft terms will be reviewed with the JPA prior to sending for DWR review. Aerial surveys have been conducted to develop the topographic mapping and establish horizontal control for the preferred alignment, and an initial phase geotechnical work plan is being developed.

The draft summary report of the PP1 Replacement Project physical model is nearly complete. Minor updates to the design are being implemented to reflect recommended pump intake adjustments. The results of the geotechnical investigation have been received and recommendations are being incorporated into the design of the pump station and electrical building layout and foundations. Evaluation of vegetation screening is ongoing to identify reliable and cost effective approaches to replace the existing PP1 vegetation screen.

CCWD is preparing an update to the LV Dam Expansion design submittals to address comments from the California Division of Safety of Dams and will request final approval of the permit to construct.

Bay Area Water Supply & Conservation Agency

January 27, 2023

Via email

The Hon. Newsha Ajami, President
and Members of the Commission
San Francisco Public Utilities Commission
525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102

RE: Proposed SFPUC 10-Year Capital Plan for FY 2024-33, and Proposed FY 2023-24 Capital Budget

Dear President Ajami,

On Monday January 23, 2023, at approximately 5 pm, BAWSCA was provided electronic copies of budget information and associated staff documents developed for the proposed midcycle changes to the SFPUC 10-Year Capital Plan for FY 2024-33 for the Water Enterprise and Hetch Hetchy Enterprise, and proposed FY 2023-24 Capital Budget. BAWSCA understands that a budget hearing on January 30, 2023 is scheduled where details of the proposed midcycle changes will be shared with the Commission and the public. The proposed midcycle changes will be considered by the Commission as part of the 10-Year Capital Plan and FY 2023-24 Capital Budget adoption on February 14, 2023, at its regularly scheduled meeting.

BAWSCA is preparing detailed comments to the proposed midcycle changes that will be provided via separate correspondence in advance of the currently scheduled February 14, 2023 adoption. However, BAWSCA believes it is important to provide the following key comments in advance of the January 30, 2023, budget hearing.

1. **The SFPUC did not comply with the 2018 Amended and Restated Water Supply Agreement between San Francisco and the Wholesale Customers (WSA).** The WSA requires the SFPUC to provide BAWSCA and the Wholesale Customers with the final materials for the Commission's first budget meeting at which it will consider the 10-Year CIP no less than 14 days prior to the first budget meeting (e.g., the January 30, 2023 budget hearing). The intent of this provision is to allow BAWSCA and the Wholesale Customers time to adequately review the final materials and submit any written comments prior to the first budget meeting. San Francisco must respond to any such comments in writing before adoption of the 10-Year CIP.

   Unfortunately, the SFPUC missed this deadline and the preliminary materials that were provided to BAWSCA on December 30, 2022 were insufficient to perform an adequate review. BAWSCA understands and appreciates that this delay in receiving materials was due in some part to the effects of the recent emergency storm operations. In order to meet the intent of the WSA, BAWSCA is providing these comments and anticipates sending further detailed comments after the January 30th budget meeting. BAWSCA expects the SFPUC to respond to these comments in writing prior to adoption of its 10-Year CIP FY 2024-33, regardless of whether the comments are provided before or after the first budget meeting.

Question 1: Will the SFPUC provide written replies to BAWSCA's comments and questions prior to the February 14, 2023 Commission meeting?

2. **Characterizing the 10-Year Capital Plans for the Water Enterprise and Hetch Hetchy Water as robust is a misnomer.** The dollars budgeted for the latter half of the 10-year Capital Plan cycle, for both the Water Enterprise and Hetch Hetchy Water, are significantly lower than the dollars budgeted for the first half. Funding required to perform future work, such as implementing various Alternative Water Supply projects and performing necessary repairs and upgrades to embankments and spillways at a number of the SFPUC's storage reservoirs, is under reported. BAWSCA understands that the SFPUC needs additional studies to better estimate what those true costs would be, and further BAWSCA appreciates that the schedule for some of that work is likely to extend beyond the scope of the current 10-year Capital Plan. Nevertheless, referring to this budget as robust gives the reader, and the Commission, the impression that the budget proposed could accommodate those costs.

   Questions 2 & 3**:** Does the SFPUC anticipate that budgets proposed for the latter half of the 10-year Capital Plan will increase from what is currently reflected in the proposed 10-Year Capital Plan in order to address needed funding for work to rehabilitate dams and for work to implement alternative water supply projects? Does the SFPUC anticipate that the next 10-year Capital Plan (due to be developed for Commission consideration in February 2024) will address those budgetary considerations?

3. **Project deliverability challenges are likely to continue to impact the SFPUC's ability to complete the planned Capital Plan work.** In recent years, the SFPUC has been challenged to perform the suite of work proposed for the fiscal year that it was in. Such delays have been attributed to a number of factors including internal staffing challenges, consultant and contractor procurement bottlenecks, permitting roadblocks, and COVID. Deferred work and deliverability challenges result in unspent appropriations. In 2022, when the Commission adopted the current 10-Year Capital Plan, the SFPUC formed a new Capital Planning and Delivery Group focused on tackling the deliverability issue, and tasked to prepare a plan to better define the bottlenecks or obstacles and, if they could be removed or mitigated, propose changes. BAWSCA commends the SFPUC on its decision to form the work group. However, BAWSCA has yet to be given an update by the SFPUC as to what that group has proposed or concluded, and how the proposed Capital Plan has been influenced or changed as a result. Based on BAWSCA's understanding that continued staffing challenges are present and that other bottlenecks likely remain, the possibility of ongoing deliverability challenges can be anticipated.

   Questions 4 & 5: Does the SFPUC believe that it can implement the first few years of this proposed 10-Year Capital Plan with no significant deliverability challenges? When will the Capital Planning and Delivery Group report-out their findings to the Commission and the public?

4. **Projected Wholesale Customer water sales used by the SFPUC for financial planning purposes differ from information provided in BAWSCA's demand studies and adopted Wholesale Customer Urban Water Management Plans (UWMP).** BAWSCA recognizes that SFPUC's finance department provides estimates for near-term and mid-term water sales in a manner that safeguards the SFPUC's ability to collect sufficient revenues to fund the proposed 10-Year Capital Plan and overall agency operations. At the same time, BAWSCA reminds the Commission that the projected Wholesale Customer water sales provided as part of the information packet for the January 30, 2023 budget hearing have not been endorsed or approved by BAWSCA or the Wholesale Customers. In fact, the projected Wholesale Customer water sales provided in your information packet have no basis in actual land use plans or adopted policies, water use characteristics, or other associated work performed by BAWSCA and its member agencies to project future water purchases from the Regional Water System.

   Question 6: Will SFPUC staff, in its presentations to the Commission at the January 30, 2023 hearing, provide clarity on the source and calculation of the projected Wholesale Customer water sales provided by the SFPUC finance department? BAWSCA asks that such clarity be provided in all associated materials moving forward.

5. **Projected debt increase over time is a significant concern.** Moving toward the latter half of the 10-Year Capital Plan, debt financing (bonds, notes and commercial paper, and state and federal loans) will become an even greater portion, percentage wise, of the planned funding for capital work proposed. BAWSCA is concerned that borrowing costs will prove to have a significant, and perhaps uncertain, impact on water rates for both Wholesale and Retail Customers.

   Questions 7: Please clarify the forecasted 10-year average Wholesale rate increase of 2.7% and explain how it is calculated.

6. **The SFPUC committed to the preparation of a written report in 2023 detailing the midcycle changes to the 10-Year Capital Plan.** BAWSCA supports the preparation of this report.

   Question 8, 9, 10: When will this report be completed? Will BAWSCA have an opportunity to review a draft version of the document? Does the SFPUC propose to produce a written report alongside every 10-Year Capital Plan update moving forward?

As noted at the beginning of this letter, BAWSCA is continuing to review the package of information provided by the SFPUC on January 23, 2023 for the proposed midcycle changes to the 10-Year Capital Plan and FY 23-24 Capital Budget. BAWSCA anticipates submitting an additional comment letter prior to the Commission's adoption hearing on February 14, 2023.

BAWSCA appreciates the hard work of the SFPUC staff assigned to plan and implement the many projects that comprise the 10-Year Capital Plan for the Water Enterprise and Hetch Hetchy Water. We look forward to the SFPUC's response to the questions posed in this letter, and would be happy to have a follow-up discussion on the matter if desired.

Sincerely,

Nicole Sandkulla,
CEO and General Manager

NS/TF/le

cc: Dennis Herrera, SFPUC, General Manager
Ron Flynn, SFPUC Deputy General Manager
Steven Ritchie, SFPUC, Assistant General Manager of Water Enterprise
Stephen Robinson, SFPUC, Assistant General Manager of Infrastructure
Alison Kastama, SFPUC, BAWSCA Liaison
BAWSCA Board of Directors
BAWSCA Water Management Representatives
Allison Schutte, Hanson Bridgett, LLP, Legal Counsel

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January 27, 2023

President Newsha Ajami and Commissioners
SFPUC
525 Golden Gate Ave.
San Francisco, CA 94102
Via Email

Re: January 30, 2023 SFPUC Budget Hearing.

Dear President Ajami and Commissioners:

Given the large increase in utility rates projected in the SFPUC budget, I'm sure you'll be looking for ways to cut costs. I would suggest taking a serious look at the "Water Supply Needs" included in your Alternative Water Supply Program. Reasonable changes to the Design Drought and demand projections would lead to a significant reduction in the amount of expensive and unnecessary alternative water supplies that might otherwise be developed.

We suggest you remove one year from the Design Drought and adopt reasonable water demand projections.

Water Demand Projections

Slide 23 of the staff report shows retail water rates increasing by an average of 4.2%, and wastewater rates by an average of 8.4%, over the next 10 years. Wholesale water rates are projected to increase by 11.6% next year, and by an average of 2.7% over the next 10 years.

The main cause of these significant rate increases is to cover debt service. Slide 17 states that outstanding debt is approximately $9.4 billion, and additional debt issuance of $6.3 billion is expected by FY 2033. Higher rates will continue to drive water conservation and efficiency.

Slide 12 states that combined water and wastewater bills will increase by 90% over the next 10 years. Wastewater rates are tied to water rates, because wastewater is not metered. It is assumed that water going in, must come out, except for the limited amount of irrigation in San Francisco. People and businesses will learn they can reduce their wastewater bills by reducing water consumption.

At the July 16, 2021 Water Demand and Management workshop, staff stated that a 10% increase in water rates has historically corresponded with a decrease

in water use of 1.4% for single family homes, 2% for multi-family housing, and 1.4-3% for commercial customers.

Slide 20 of the staff report projects RWS sales will be around 188.2 mgd in 2033 (much lower than UWMP projections). At last year's budget hearing, a similar slide led Commissioners to request a comparison between Water Enterprise and Finance Bureau water demand projections. This led to a report dated July 5, 2022 that stated:

> "It [UWMP Act] was not intended to establish the projected water demands that would be used for all operational and planning purposes…the projections represent an outside bound of whatever demand will occur in the next 25 years...These demands will likely always be greater than actual demands because not all developments materialize, or they materialize slower than projected…By contrast, for the purpose of financial planning and for short term water system management, we estimate the demand that we are likely to experience. For budgeting and rate setting we use demand projections that are as close to actual as we can make them."

The report showed that both the Water Enterprise and Finance Bureau historically over-projected water demand, but Finance was much closer. The Water Enterprise, using UWMP projections, over-projected significantly.

Design Drought

We believe we made a strong case for removing a year from the Design Drought at the August 23, 2022 workshop. We cited from the SFPUC's $743,000 Long-Term Vulnerability Assessment (climate change study). Using more than 100 years of observed data, 1,100 years of tree ring data, and 25,000 simulated model runs, the study did not produce a single drought as severe as the Design Drought.

Staff, on the other hand, did not cite from the LTVA. Their main argument was that the Water Bank wasn't full, and that running low on water would be bad.

Removing a year from the Design Drought would reduce "Water Supply Needs" by 25 mgd at 200 mgd demand. At higher demand, reducing the length of the Design Drought would lead to a greater annual savings.

Our Recommendations

In order to reduce the amount of expensive alternative water supplies the SFPUC might develop, we suggest:

1) Shortening the Design Drought by one year.
2) Modeling "Water Supply Needs" using 200 mgd demand.

3) Adding a new column to the "Water Supply Needs" chart in the Alternative Water Supply Program reports titled "Lower Demands," using the scenario of a 7.5-year drought and 200 mgd demand.
4) Renaming the current "Demands" column in the AWS reports to "Highest Potential Demands."

Thank you for considering these comments and recommendations.

Sincerely,

Peter Drekmeier
Policy Director

Cc: BAWSCA Board of Directors
SFPUC Citizens Advisory Committee

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January 24, 2023

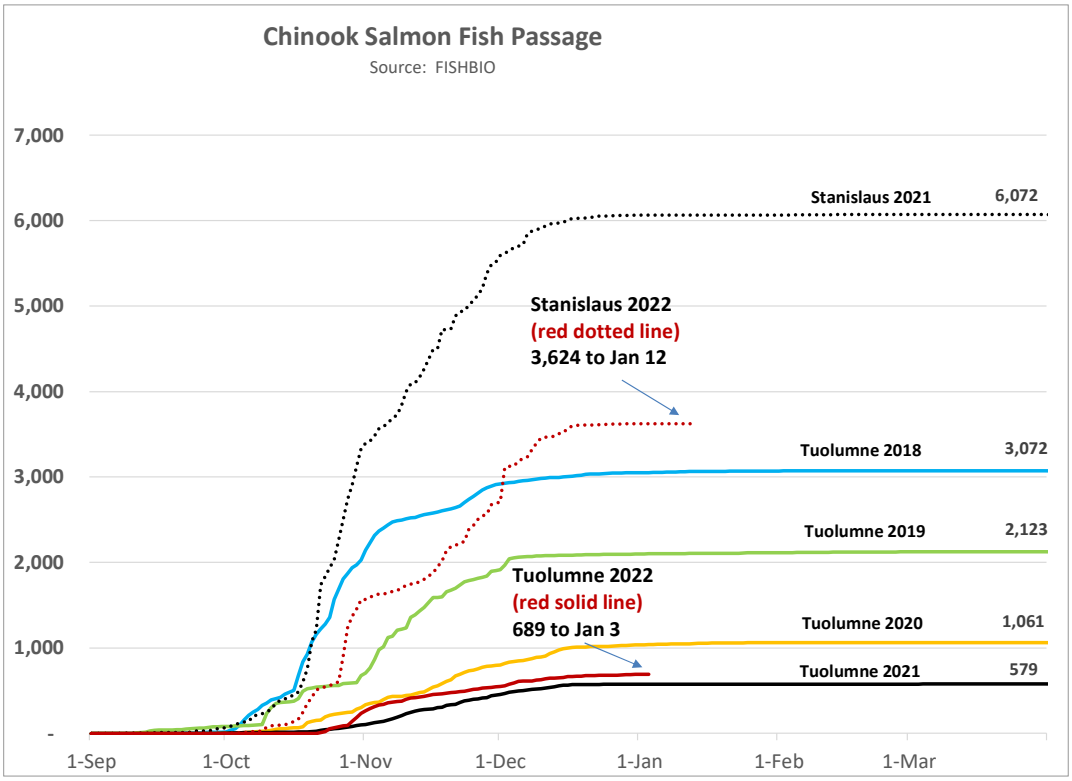
Board Chair Gustav Larsson and Board members,
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 650
San Mateo, CA 94402
Via email

Re: Tuolumne Salmon Counts

Dear Board Chair Larsson and Board members,

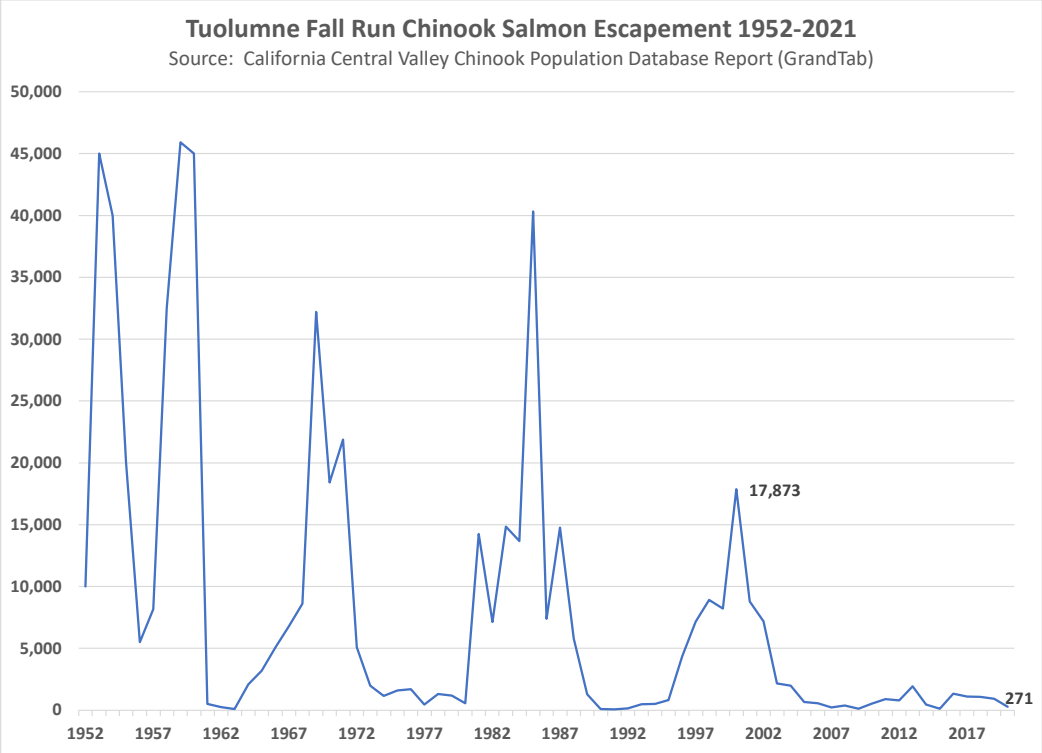
Thank you for the opportunity to speak about Tuolumne fish counts at your January Board meeting. Below are a couple charts that better depict the plight of the Tuolumne salmon. While your goals of a reliable, high quality water supply at a fair price don't include an environmental component, the desire is that BAWSCA's goals can be achieved in concert with reducing the environmental damage from our regional water system.

The first chart shows that salmon fish passage on the Tuolumne has significantly declined and now so far is holding at a remarkably low count. The average of the annual count over the last three years comes to 774. Not since FishBio's reports back to 2009 have we seen a 3 year annual average count below 1,000. The three year average is starting to look like an unfortunate trend rather than random noise, but at least it means that we still have time to favorably impact salmon and possibly avoid their extirpation on the Tuolumne.



Note that the Stanislaus fish passage data is included in the chart for comparison purposes. The Stanislaus has a substantially larger portion of its natural flows left in the river.

The second chart shows annual fish counts using the official CDFW salmon carcass counts, which average less than half of the FishBio counts. This chart shows that Tuolumne salmon haven't recovered since the last peak of 17,873 salmon in the year 2000. This is a new phenomenon which is puzzling scientists. Normally salmon counts increase 3 years after major flow increases on the river (such as the 2017 flows from heavy rains and snowmelt).



Kind regards,

Dave Warner

cc: BAWSCA CEO Nicole Sandkulla

CALIFORNIA DEPARTMENT OF
WATER RESOURCES

News Release
Published: January 26, 2023

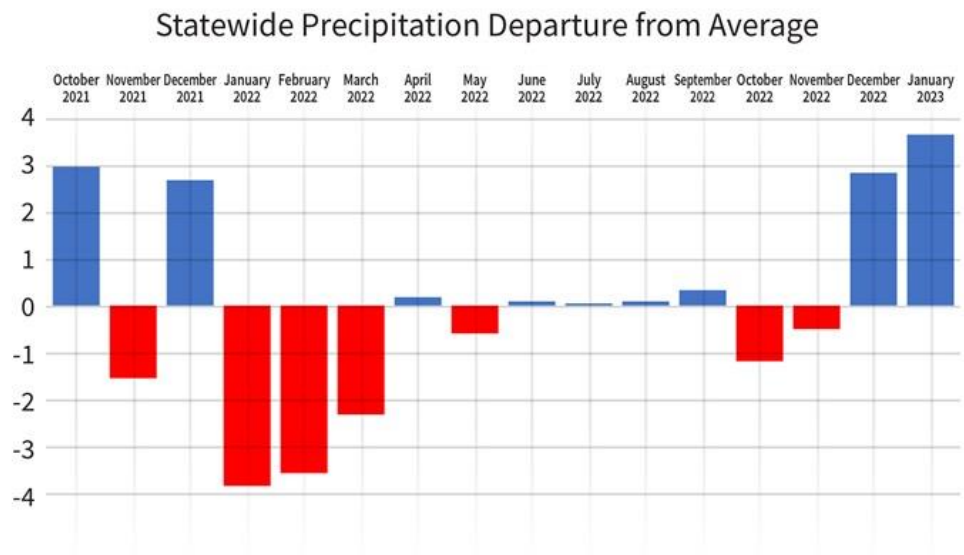
Recent Storms Allow State Water Project to Increase Expected 2023 Deliveries to 1.27 Million Acre-Feet of Water

A drone provides a view of water pumped from the Harvey O. Banks Delta Pumping Plant into the California Aqueduct at 9,790 cubic feet per second after January storms. Photo taken January 20, 2023.

SACRAMENTO, Calif. –The Department of Water Resources (DWR) today announced that recent storms will allow the State Water Project (SWP) to boost deliveries to 29 public water agencies serving 27 million Californians. Based on the amount of water captured and stored in recent weeks, DWR now expects to deliver 30 percent of requested water supplies – or 1.27 million acre-feet -- in 2023, up from the initial 5 percent announced on December 1.

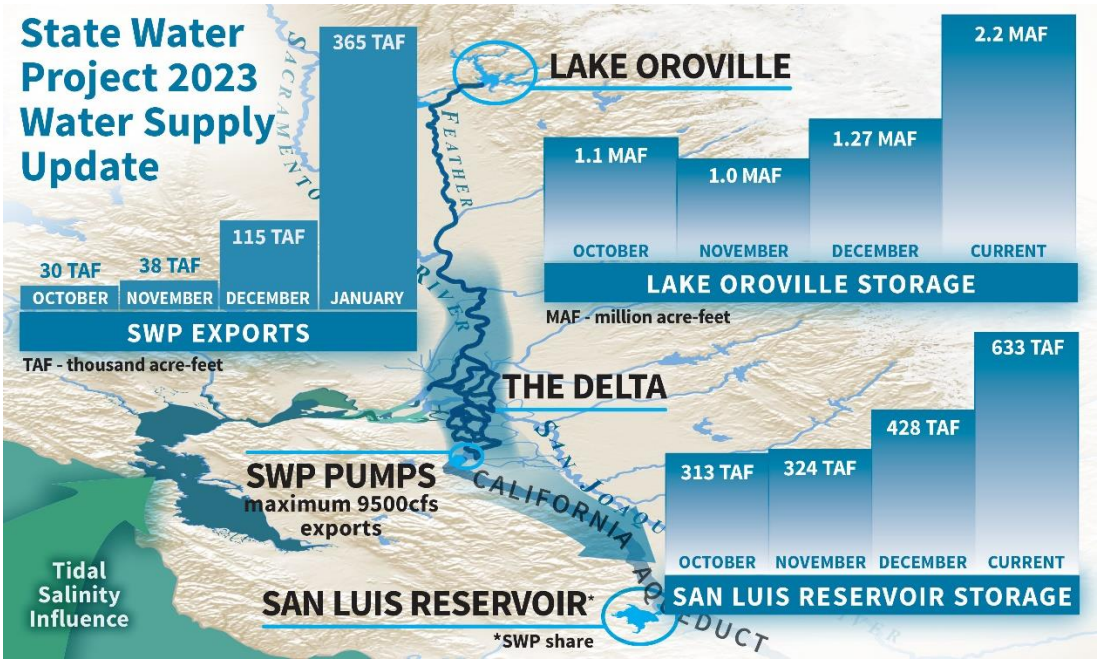
The allocation increase is the direct result of extreme weather in late December and nine atmospheric rivers in early January that helped fill reservoirs and dramatically increase the Sierra Nevada snowpack. The SWP's two largest reservoirs (Oroville and San Luis) have gained a combined 1.62 million acre-feet of water in storage -- roughly enough to provide water to 5.6 million households for a year. While Water Year 2023 began with below average precipitation, conditions shifted to extreme above average conditions.

Statewide Precipitation Departure from Average.



“We are pleased that we can increase the allocation now and provide more water to local water agencies,” said DWR Director Karla Nemeth. “These storms made clear the importance of our efforts to modernize our existing water infrastructure for an era of intensified drought and flood. Given these dramatic swings, these storm flows are badly needed to refill groundwater basins and support recycled water plants.”

The updated SWP delivery forecast takes into account current reservoir storage and is based on a conservative runoff forecast. It does not take into account the current Sierra Nevada snowpack. DWR will conduct snow surveys on February 1, March 1, April 1, and May 1 and may further update the allocation as the water supply outlook becomes clearer with the new data.



In addition to on the ground surveys, DWR will gather data from its Airborne Snow Observatory (ASO) surveys. For the second year in a row, DWR is broadening the deployment of these more sophisticated technologies, such as ASO surveys, that can collect snow measurements farther upslope of the Sierra Nevada. The data from these flights, which use LiDAR and spectrometer technology to measure snowpack across broad swaths of key watersheds, will be used by DWR to get a more accurate account of California’s snowpack and to update water supply runoff forecasts. Since the storms California experienced this month saw variable snow elevations, the data from ASO flights will help DWR verify snow course and snow sensor data and understand how snow has been distributed across the Sierra Nevada.

DWR cautioned that while recent storms have been impressive, two months remain in the wet season and California could see a return to warm and dry conditions prior to April 1. Californians should continue to use water wisely to help the state adapt to a hotter, drier future and the possible return of drought.

The SWP pumps currently are operating at maximum capacity of 9,500 cubic feet per second (cfs) and will continue to be adjusted as needed to meet State and federal requirements. However, had

the proposed Delta Conveyance Project been in place, the SWP could have stored an additional 202,000 acre-feet of water – enough to supply more than 710,000 households for a year – between January 1 and January 23 while staying within compliance of rules to protect endangered species.

California traditionally receives half its rain and snow by the end of January. Water managers will reassess conditions monthly throughout the winter and spring. Starting in February, the assessments will incorporate snowpack data and runoff forecasts.

Water managers will be monitoring how the wet season develops and whether further actions may be necessary later in the winter. Additional actions that have been taken previously, such as submission of a Temporary Urgency Change Petition (TUCP) or installation of the West False River Emergency Drought Salinity Barrier in the Sacramento-San Joaquin Delta, are unlikely this year based on current conditions.

Each year, DWR provides the initial SWP allocation by December 1 based on available water storage, projected water supply, and water demands. Allocations are updated monthly as snowpack and runoff information is assessed, with a final allocation typically determined in May or June.

The lowest initial SWP allocation was zero percent on December 1, 2021, with limited water designated only for any unmet human health and safety needs. Last year's final allocation was 5 percent plus unmet human health and safety needs. Four of the 29 State Water Contractors ultimately requested and received additional human health and safety water supply.

DWR will host a media briefing to discuss this announcement, as well as how DWR and the State are preparing for the remainder of the water year given recent storms and the ongoing drought, later today from 1:00 – 2:00 p.m. (PST). Credentialed media can register for the briefing at

# # #

Contact:
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CALIFORNIA DEPARTMENT OF
WATER RESOURCES

News Releases
Published: January 26, 2023

DWR Approves Groundwater Sustainability Plans for Four Northern California Basins

Groundwater is used to flood rice fields in an agriculture region east of Marysville, California in Yuba County. Photo taken May 27, 2009.

Sacramento, Calif. – The Department of Water Resources (DWR) announced today the approval of groundwater sustainability plans for four groundwater basins – Napa Valley Subbasin in Napa County, as well as Santa Rosa Plain Subbasin, Petaluma Valley Basin, and Sonoma Valley Subbasin in Sonoma County.

California's extreme swings between drought and flood make sustainable management of groundwater supplies more important than ever for the state's overall climate resilience.

Local groundwater sustainability agencies (GSAs) are implementing plans consistent with the requirements of the Sustainable Groundwater Management Act (SGMA), California's landmark groundwater management law enacted in 2014. SGMA requires local GSAs to achieve their groundwater basin sustainability goals within a 20-year timeframe. The plans approved for the four Northern California basins are among 65 plans submitted to DWR in January 2022. DWR has until January 2024 to review the remaining plans. Results of the evaluations will be made available throughout 2023. GSAs implement the plans while DWR completes its review.

"Climate-driven swings between drought and flood make it critical that we capture excess water and store it underground, so it is available during drought periods. Adequate preparation by local agencies is essential to do so," said DWR Director Karla Nemeth. "We appreciate and support the role of local leaders in shaping how to plan for, and oversee, a reliable groundwater supply for their communities through both wet and dry periods."

Once plans are submitted, SGMA lays out a process for local GSAs to gather information to fill data gaps, update plans, and promote science-based adaptation. Plans will be updated over time as new data and information becomes available and as conditions change in groundwater basins. DWR will review annual reports from GSAs and assess each plan every five years to determine whether GSAs are on track to meet their basin's sustainability goal. DWR anticipates releasing plan assessments for remaining GSAs throughout 2023.

Projects and programs to enhance groundwater conditions are actively being planned and put into place in many basins throughout the State. In the four basins in Sonoma and Napa counties with newly approved plans, agencies have been working on alternative water supply projects such as stormwater capture and water use efficiency programs while their plans were evaluated.

In addition to and aligned with plan evaluation, DWR continues to support GSAs by providing planning, technical, and financial assistance. In May 2022, DWR awarded $150 million in grant funding for projects to improve water supply security, water quality and groundwater supply reliability. Last month, DWR also closed the application period for more than $200 million in additional grant funding for SGMA implementation. These efforts align with the Newsom Administration's goal to provide significant additional funding for projects to improve groundwater conditions and advance safe drinking water efforts for groundwater-dependent communities identified in the Governor's Water Resilience Portfolio.

# # #

For more information, visit:
SGMA Portal: SGMA Groundwater Management (SGMA) Portal - Department of Water Resources (ca.gov)
DWR SGMA Assistance: video and webpage

Contact:
Mary Fahey, Information Officer, Public Affairs, Department of Water Resources
916-820-8083 | media@water.ca.gov

CALIFORNIA DEPARTMENT OF
WATER RESOURCES

News Releases
Published: January 20, 2023

DWR Launches Interagency Task Force as Part of Advance Planning for Drought Conditions

Scott Bambauer of Bambauer Towing delivers water to fill a 1500 gallon potable water tank at a residence in Glenn County, California, where wells have run dry."

Scott Bambauer of Bambauer Towing delivers water to fill a 1500 gallon potable water tank at a residence in Glenn County, California, where wells have run dry.

SACRAMENTO, Calif. – While California's drought outlook is improving, the State is continuing to proactively prepare for a return to dry conditions amid climate-driven extremes in weather. Today, Department of Water Resources (DWR) is officially launching a standing Drought Resilience Interagency and Partners (DRIP) Collaborative, which will include members of the public. Community members and water users are encouraged to apply.

Initiated by Senate Bill 552, the DRIP Collaborative will foster partnerships between local governments, experts, community representatives and state agencies to address drought planning, emergency response, and ongoing management. Members will help ensure support for community needs and anticipate and mitigate drought impacts, especially for small water supplier and rural communities who are often more vulnerable to droughts.

While recent storms have filled many of the state's reservoirs to average or above average levels and improved water conditions, much of the state remains in drought following the past three years of extreme drought – the state's driest on record.

"Even as the state's drought outlook improves, it's critical that the water community all work together to advance drought planning and response for the state's hotter, drier future," said DWR Director Karla Nemeth. "We're looking for a variety of representatives statewide to actively participate on behalf of all water users to achieve a drought resilient future."

The DRIP Collaborative will include a total of 26 members, comprising state agency representatives and two appointees from each of the following groups: local governments, community-based organizations, Tribes, nonprofit technical assistance providers, the general public, agriculture, environmental representatives, public water systems, small water suppliers or urban water agencies, and experts in land use planning, water resilience, or water infrastructure.

DWR is accepting Letters of Interest until February 24, 2023, and DWR will announce selected members of the DRIP Collaborative in spring 2023. Members will be chosen based on answers to a series of questions about their background, available time commitment and expected contributions to the Collaborative. Interested parties can visit the DWR website for more information on how to submit Letters of Interest.

The first meeting is scheduled for April 6, 2023. Meetings will occur tri-annually and will be open to the public. DRIP Collaborative meetings will coordinate multiple state agencies to present the current and projected drought conditions the State is experiencing, discuss potential impacts in small water supplier and rural communities, challenges on-the-ground based on water community expertise, and align state programs, funding, and strategies to anticipate and proactively address climate-driven effects. The Drought Resilience Interagency and Partners Collaborative will serve as a public forum to address drought-related issues and solutions across a State interagency team.

# # #

For more information about the Drought Resilience Interagency and Partners Collaborative, visit DWR's DRIP Collaborative webpage.

Contact:
Allison Armstrong, Information Officer, Public Affairs, Department of Water Resources
916-820-7652 | media@water.ca.gov

THIS JUST IN … SECOND SNOW SURVEY REFLECTS BOOST FROM ATMOSPHERIC RIVERS; STATEWIDE, SNOWPACK IS 205 PERCENT OF AVERAGE

Maven | February 1, 2023 | Department of Water Resources

The Department of Water Resources (DWR) today conducted the second snow survey of the season at Phillips Station. The manual survey recorded 85.5 inches of snow depth and a snow water equivalent of 33.5 inches, which is 193 percent of average for this location on February 1. The snow water equivalent measures the amount of water contained in the snowpack and is a key component of DWR's water supply forecast. Statewide, the snowpack is 205 percent of average for this date. Two months remain until April 1, when the state snowpack usually peaks.

The snowpack received a significant boost from one of the wettest three-week periods on record in California, following the driest three-year period on record. California also experienced above average precipitation in December just months after one of the hottest heatwaves in state history in September.

"California has always experienced some degree of swings between wet and dry, but the past few months have demonstrated how much more extreme those swings are becoming," said DWR Director Karla Nemeth. "California is preparing for more intense and dangerous climate swings by bolstering both drought and flood preparation. While today's results are good news for water supplies, we know from experience how quickly snowpack can disappear if dry conditions return in the months ahead."

DWR's electronic readings from 130 snow sensors placed throughout the state indicate the statewide snowpack's snow water equivalent is 33.7 inches, or 205 percent of average for this date. While those results are currently outpacing the record 1982-83 season, two months still remain. Every day it does not rain or snow, the conditions are drying. If California returns to dry conditions and the next two months lack additional precipitation, like what the state experienced last season, a significant snowpack early in the winter can quickly disappear. Periodic rain and snow over the next several months will be key to get the biggest water supply benefit from the state's snowpack without posing additional flood risks.

"Large snow totals like today are a welcome sight but also present new challenges for water managers as they walk the fine line between water supply and flood control," said DWR's Snow Surveys and Water Supply Forecasting Unit Manager Sean de Guzman. "As we move into the snowmelt season in the spring, water managers will work to manage flood risk and optimize the snowpack's water supply benefits during peak demands in the summer."

On average, the Sierra snowpack supplies about 30 percent of California's water needs and is an important factor in determining how DWR manages the state's water resources. Its natural

ability to store water is why the Sierra snowpack is often referred to as California's "frozen reservoir."

DWR is currently conducting Airborne Snow Observatory (ASO) survey flights to collect more information on the snowpack accumulated by these powerful storms. Data from these flights, which use LiDAR and spectrometer technology to measure snowpack across broad swaths of key watersheds, will be used by DWR to get an accurate account of California's snowpack and its water content and will increase the accuracy of water supply runoff forecasts. Since the storms California experienced in January saw variable snow elevations, this data, combined with snow course and snow sensor data, will help DWR understand how snow has been distributed across the Sierra Nevada.

These new data tools align with Governor Newsom's "California's Water Supply Strategy: Adapting to a Hotter, Drier Future" which calls for modernizing how the state manages water. The tools will also help inform flood management decisions, which will be increasingly important as California swings between extreme drought and flood. The recently adopted 2022 Update to the Central Valley Flood Protection Plan emphasizes the importance of flood management and the need to adapt California's flood infrastructure to a rapidly changing climate.

As the state prepares for a hotter, drier future, Californians should continue to use water wisely so that we can have both a thriving economy, community, and environment. DWR encourages Californians to visit SaveOurWater.com for water saving tips and information. As more swings between wet and dry conditions continue in the future, the public education campaign promotes making water conservation a way of life year-round.

DWR conducts five media-oriented snow surveys at Phillips Station each winter near the first of each month, January through April and, if necessary, May. The next survey is tentatively scheduled for March 1.

# # #

Sierra Nevada snowpack hits biggest level in nearly 30 years

Most snow since 1995; hopes increase for an end to California drought, but flood concerns remain

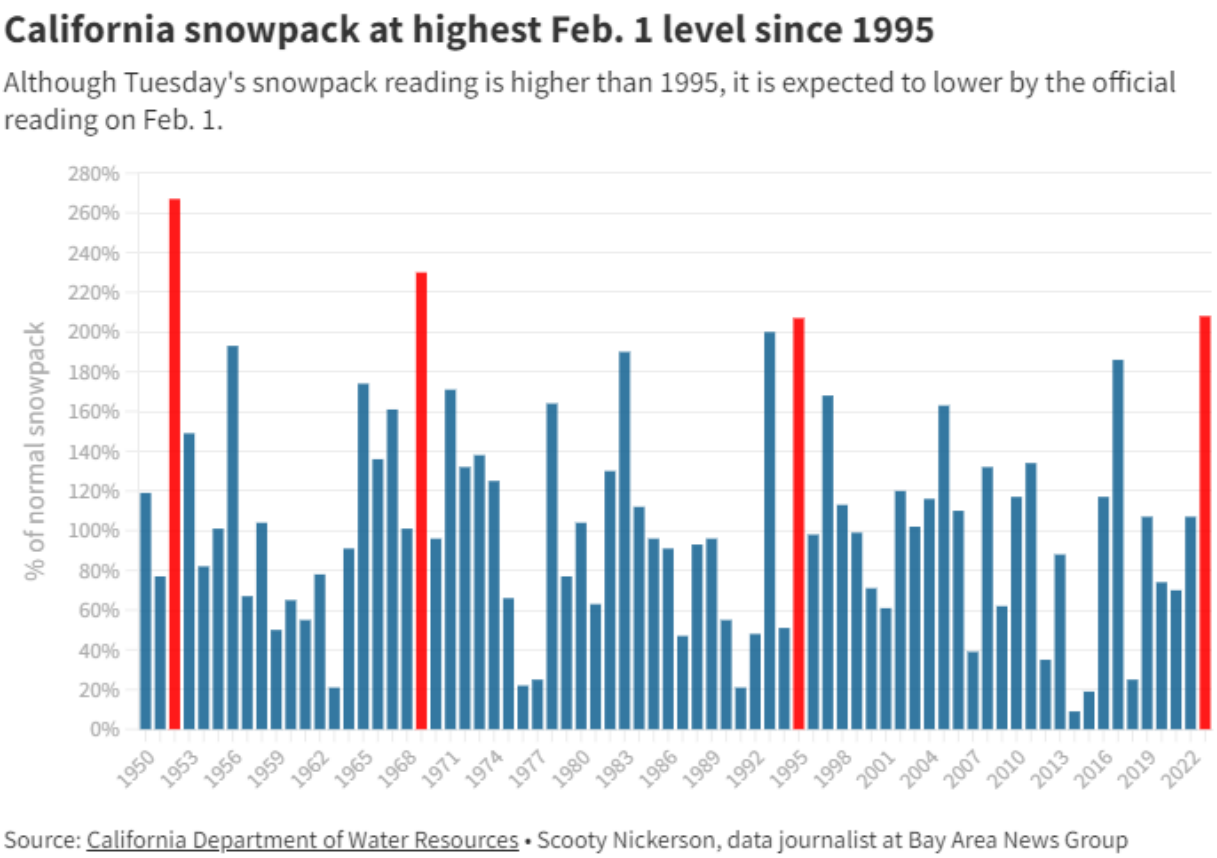
Mercury News | January 31, 2023 | Paul Rogers

Vehicles pass along a highway snowplowed through deep snow after a series of atmospheric river storms on January 21, 2023 near Kirkwood, California. California was slammed by a barrage of atmospheric river storms in January, which delivered massive amounts of snowfall to the Sierra Nevada.(Photo by Mario Tama/Getty Images)

The statewide Sierra Nevada snowpack — the source of nearly one-third of California's water supply — is at its highest level since 1995, boosting hopes that an end to the drought is near, but also raising concerns that a few warm spring storms could melt it too early and trigger major flooding.

Not since Toy Story packed movie theaters, Steve Young led the 49ers to their fifth Super Bowl win, and gasoline cost $1.28 a gallon has there been so much snow in California's most famous mountain range at the end of January.

"It's absolutely massive," said Kevin "Coop" Cooper, a ski resort consultant who lives near South Lake Tahoe. "I've spent so much time with my snow shovel that I named it. My wife thought I was having an affair."



The snowpack was 208% of its historical average for this time of year on Tuesday, a day ahead of the high-profile Feb. 1 snow survey that state officials planned to take near Highway 50 by Sierra-at-Tahoe ski resort with TV cameras in tow. The last time there was as much snow, 28 years ago, on Feb. 1, 1995, it was 207% of normal.

The huge bounty is the third largest statewide since 1950, when consistent statewide records began, according to a Bay Area News Group analysis of historical data. Only 1952 (267% of average) and 1969 (230%) had larger amounts on Feb. 1.

In a few places, like Highland Meadow in Alpine County, the snowpack is the largest in recorded history.

Around Lake Tahoe, stop signs and fire hydrants have been buried in snow. Ski resorts that struggled during three years of drought, wildfire and COVID are seeing a banner year. The snow base Tuesday at Palisades was 11 feet deep. At Kirkwood it was 12 feet. And at Mammoth Mountain, south of Yosemite National Park, it was nearly 20 feet deep.

“We’ve had a lot to dig out,” Cooper said. “I’m looking at a neighbor’s house right now. He needs to get shoveling on his roof. Gutters can fill up, freeze and fall off the house. Or if you have a flat roof it can collapse from the weight of the snow.”

The wintery windfall arrived in a series of nine atmospheric river storms that began around Christmas and continued for three weeks. Since then, temperatures have been cool in the mountains, preserving much of it.

Snow is vital to California's water supply. Many winters, storms blanket the Sierra, a 400-mile-long rocky expanse celebrated by naturalist John Muir as "the Range of Light," that includes the lower 48 states' highest peak, Mount Whitney, along with the glorious granite walls of Yosemite Valley and the sublime shores of Lake Tahoe.

It melts in late spring and early summer. Billions of gallons pour down more than a dozen Sierra rivers like the Merced, the Tuolumne, the American, and the Feather. The water is caught in major reservoirs. It also recharges underground aquifers and provides food and habitat for fish and wildlife.

But in dry years, when few storms arrive, much less water is available for cities, farms and the environment.

The January storms caused serious flooding around Sacramento, Santa Cruz, Merced and Santa Barbara, killing at least 22 people, and creating power outages, mudslides and other damage.

The water also began filling reservoirs across the state. The largest, 35-mile-long Shasta, near Redding, on Tuesday was 56% full, or 87% of its historic average for that date. The second largest, Oroville, in Butte County, was 65% full, or 112% of its historic average.

Many major reservoirs are certain to rise higher as snow melts in the coming months.

"The storms could shut off," said Jay Lund, a professor of civil and environmental engineering at UC Davis. "That's the worst case. But even in the worst case, we're still going to have a good snowpack. Most of it is in the bank, and will appear as streamflow."

State water officials are thrilled at the start of this winter. They are also eyeing all that snow cautiously.

"The snowpack is great," said David Rizzardo, a supervising engineer with the state Department of Water Resources. "But it's also providing a very unique challenge."

Simply put, the drought will end if rain and snow continue to fill reservoirs. But if California receives big, warm, soaking storms that park over the Sierra, much of the snowpack could melt suddenly, causing mayhem.

That's what happened in 1997. Several warm "Pineapple Express" storms drenched the Sierra around New Year's Day. Yosemite Valley experienced its worst floods in a century. Entire campgrounds washed away. Half of Yosemite Lodge was destroyed. Across the Central Valley,

big reservoirs filled to the top and released water uncontrollably. Levees broke, causing major flooding in Marysville, Yuba City and other communities. When it was over, 48 of California's 58 counties were declared disaster areas and damage totaled $1.8 billion.

Hoping to reduce the chances of a similar event, dam operators in recent weeks have been increasing water releases from some reservoirs, like Folsom, northeast of Sacramento, and Millerton, near Fresno, to create more space.

It's a delicate balancing act. Farms, cities and political leaders want as much water stored as possible. The public sometimes forgets the dams were built not just to store water, but also to reduce flooding, experts say.

"You want to be able to reduce the flows downstream to allow time for evacuations or levee repairs," Lund said. "You really don't want to lose control where you don't have any more room for storage. We don't want to kill anybody downstream. That's the bottom line."

If the rest of the spring plays out well, moderate storms will come in, with dry spells in between, allowing reservoirs to gradually continue filling just as summer is starting and the risk of floods is ending.

"In a perfect year," Lund said, "you refill the reservoirs right at the very end of May."

# # #

What Will it Take to End the Drought in California?
UC Merced | January 30, 2023 | Patty Guerra

Bear Creek in Merced rose above flood level after storms pummeled the area in January 2023. Though recent rains helped California's drought situation, more precipitation is needed.

In the wake of record-breaking rain and snow this winter, experts have cautioned that despite the deluge, California remains in a drought.

The United States Drought Monitor shows much of California still experiencing "moderate drought," and in some places "severe drought." That is a big improvement from last month, when much of the state was in "severe drought" with 7 percent of California in what was considered "exceptional drought" conditions.

The past three years have been the driest stretch since records have been kept. Recovering from that would take two wet years in California and a decade or more of wet years for the Colorado River Basin, said Roger Bales, a professor of engineering at UC Merced who specializes in water and climate research. The Colorado River Basin supplies water to seven states, including California, and also provides water to Mexico.

But, of course, the recent storms have done plenty to help the situation, refilling reservoirs and recharging groundwater supplies.

Several of the state's reservoirs are at or above historical averages for this time of year, according to the California Department of Water Resources. But few of them are close to

capacity, and for those that are, the situation can quickly change, depending on how many more storms come through - and how hot it gets during the summer.

Reservoirs provide seasonal storage for water supply, in addition to storage to reduce downstream flooding, Bales said.

"In wetter years such as water year 2017 they will store as much winter/spring runoff as they can for water supply, while still leaving some space for flood control in case of heavy rainfall," he said. "In drier years they may not fill all of their water-supply storage capacity. Such was the case in water-year 2022 (Oct 1 2021-Sept 30 2022), resulting in very reduced deliveries of irrigation and municipal water during the dry season."

In wetter years, there is some carry-over storage, meaning water is left over from one season into the next. But there isn't often very much of it.

"Think of it like a monthly checking account that has monthly income and expenses, where one may need to reduce spending in lean months to maintain a positive balance at the end of the month, but can spend more when income is higher, and maybe have a little carryover," Bales said.

To sufficiently fill the reservoirs, the state needs "two to three more big storms" before the end of March, Bales said.

More rainfall also will help replenish water under the surface of the earth in the soil and weathered bedrock.

"Water has drained out of the subsurface during dry years, and that is being naturally refilled as rain and snowmelt seeps into the ground," Bales said. "So, there is a little less runoff the year after a dry year than after a wet year, while the headwaters replenish this subsurface water that the forests depend on to survive dry seasons and dry years."

# # #

Patty Guerra
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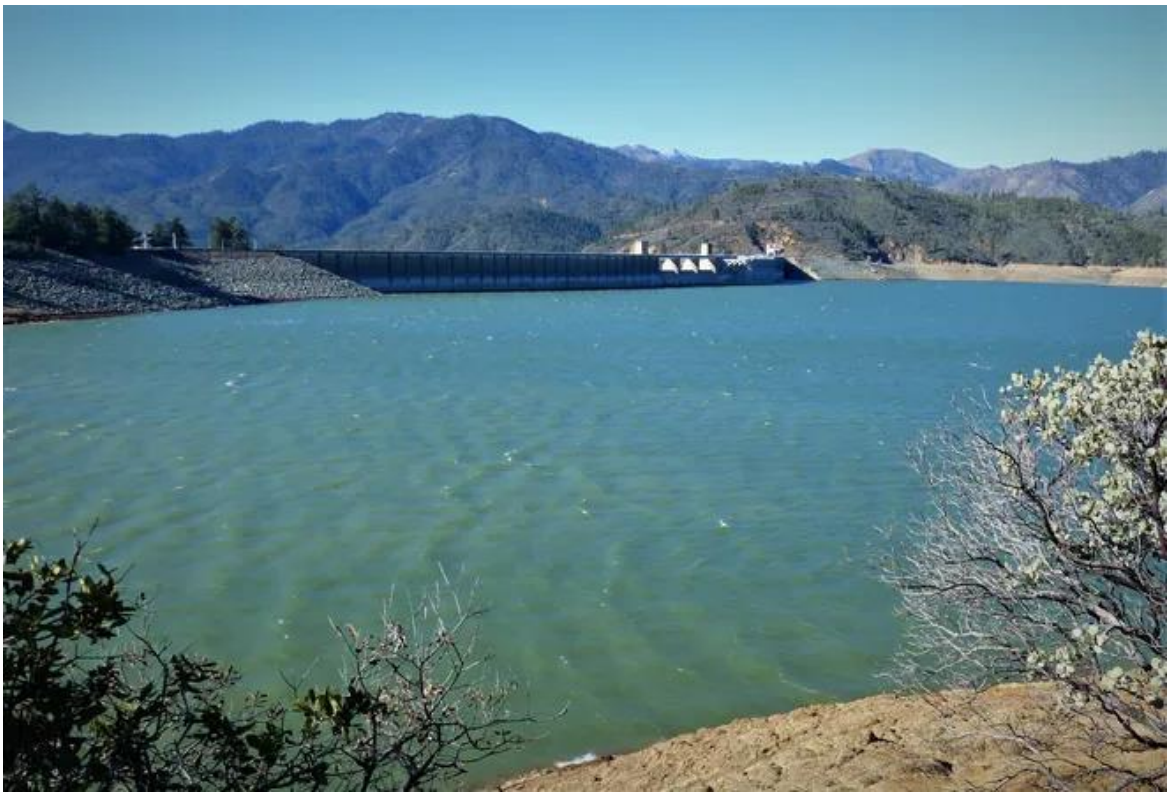
Drenched by higher-than-normal rain, Lake Shasta water level rises 60 feet during January

Redding Record Searchlight | January 30, 2023 | Damn Arthur



Lake Shasta rose 60 feet in January, due to higher-than-normal rainfall in the region. At the beginning of January parts of the head tower, used during construction of Shasta Dam, were visible above the water line, and the shoreline near the Centimudi Boat Launch extended well into the lake and was used for parking as a parking lot. The head tower and large swaths of shoreline have been submerged under the higher water level.

Higher-than-normal rainfall during the past month has dramatically changed Lake Shasta, with the water level of California's largest reservoir rising 60 feet since the end of December.

Gone are vast areas of shoreline that became parking lots and campgrounds as the lake dried up and the water level dropped during the past several years of low rainfall in the North State.

By Monday, the lake was 56% full, an improvement over the 34% recorded Jan. 3. The California Department of Water Resources said the lake was 87% of normal as of Monday, compared to the 57% of normal at the beginning of January.

After three years of drought, "normal" was welcome, said Don Bader, area manager for the Bureau of Reclamation, which manages several North State dams, including Shasta.

“It was tremendously good news,” Bader said. “It puts us right back to normal storage right for this date, which is good. We were way behind on that curve. So now it all depends on what we're going to get in the next four to five weeks for additional rain.”

At the beginning of the month, parts of the head tower could still be seen rising above the water level. The head tower was used during construction of Shasta Dam, but the structure was cut off near the base after the dam was completed in the early 1940s.

The remnants of the tower legs emerge when the lake level gets very low.

Mt. Shasta can be seen in the distance north of lake Shasta, which rose 60 feet in January. Damon Arthur/Record Searchlight

"When we get about 100 feet down, we start seeing the head tower and that means we're having a bad year," Bader said in 2021. "We don't like seeing that head tower. That's an indication we're not doing well water-wise."

The water level rising in Lake Shasta affects the entire state, as the reservoir’s water is distributed to agencies from Redding to Southern California.

The state’s drought got so bad last year that many agencies that depend on water from the reservoir received little to none of their allocation. Some North State water districts and cities that provide drinking water received only the minimum required for health and safety.

Large swaths of California have been downgraded to “moderate” drought, but Shasta County and much of the North State still remain in a “severe” drought, according to the Drought Monitor. The North State was still in an “extreme” drought at the start of January.

While January’s rains helped relieve the drought, more precipitation is needed over the next few months, Bader said.

The department of water resources measured about 18 inches of rain at Shasta Dam in January, while the National Weather Service recorded 9 inches of rainfall at the Redding Regional Airport. The average precipitation in Redding during January is 5.66 inches, according to the weather service.

No big storms are on the horizon for the rest of the week, with the weather service forecasting a chance of showers Thursday and Friday.

# # #

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California plans to increase water deliveries after winter storms. Here's a look at reservoir levels

KCRA | January 28, 2023 | Heather Waldman

After weeks of stormy weather earlier this month, California's Department of Water Resources is getting a better idea of how the state's water supply may be shaping up for the coming spring and summer.

The department is planning to increase certain water deliveries, which is a good sign.

Water managers with the Department of Water Resources say they are "cautiously optimistic" about the state's water supply heading into the second half of the winter season.

On Thursday, DWR announced that the state water project will be able to deliver 1.27 million acre-feet of water to requesting agencies in Central and Southern California.

That is about 30% of the total requested water supply.

At the start of winter, water managers were expecting to send just 5% of the requested water supply.

Last year at this time, at the height of the state's drought, no water was projected to be delivered.

The state water project is designed to deliver water from Northern California reservoirs to agencies in Southern California, the San Joaquin Valley and the Bay Area where about two-thirds of the state's population lives.

Two of the state water project's largest reservoirs, Oroville and San Luis, have risen considerably in the last month, allowing water managers to plan to send more water south, while simultaneously storing enough water for people in Northern California.

As of Thursday, Lake Oroville is at 63% of capacity and water continues to steadily flow in from the surrounding watershed.

It should be noted that the water supply forecast for the state water project is a conservative one and does not take into account the Sierra snowpack.

The statewide snowpack is at 216% of the average for Jan. 26 and 128% of the April 1 average.

DWR will conduct three more snow surveys this season and use that information along with data from aerial snow surveys to potentially adjust state water project deliveries as we get closer to the spring. The final allocations will be decided in May or June.

# # #

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Have California drought conditions improved this week? Here's the latest update
Sacramento Bee | January 27, 2023 | Brianna Taylor

California's string of heavy rainstorms in January continue to provide temporary relief to the state's chronically dry land.

Drought conditions across the golden state have either improved or remained the same compared to one week ago. The U.S. Drought Monitor, in a weekly update published Thursday, reports the state remains free of both "extreme" or "exceptional" drought for the second week in a row.

California's Central Coast, which was devastated by the severe storms, has exited moderate drought conditions and is now "abnormally dry." In the northwest corner of the state, the majority of Del Norte County is drought free for at least the second the week in a row.

Significant amounts of both rainfall and snow in January, the U.S. Drought Monitor wrote in a Thursday statement, have led to "abnormal dryness and drought improvements" including:

- Soil moisture
- Streamflow
- Reservoirs levels
- Snowpack levels

IS CALIFORNIA STILL IN DROUGHT?
A move in the needle, while it may be consistent, means all that rain has temporally improved drought conditions.

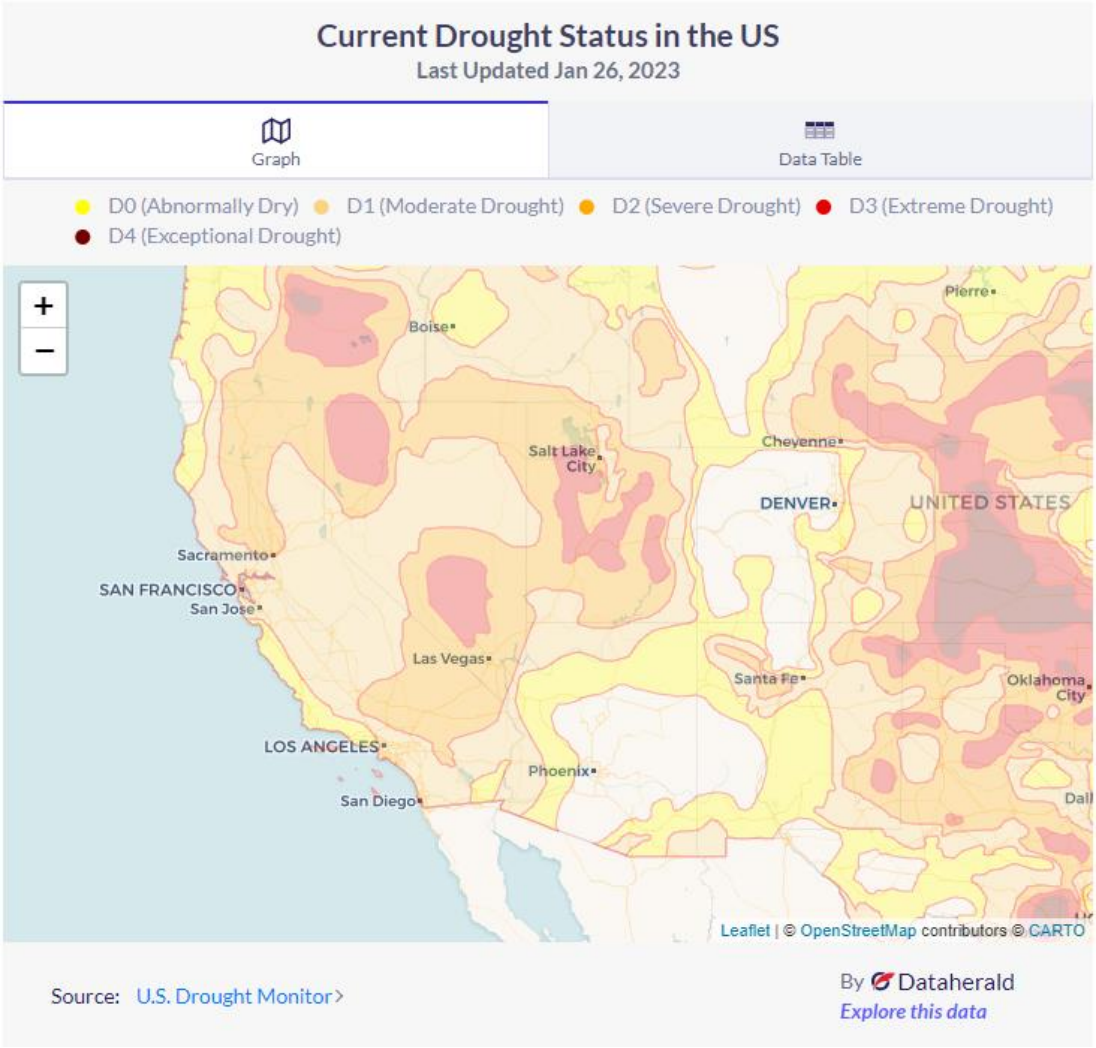
Roughly 99.4% of California remains at least "abnormally dry," while majority of the state or nearly 89.6% of the land is in "moderate drought" status. About 32.6% of the area is in "severe" drought.

This week's numbers show improvement compared to last week.

While "abnormally dry" conditions status didn't fluctuate from 99.36%, "moderate" conditions decreased more than two points. Better news: "Severe drought" status decreased more than 10 points.

The data used in this interactive map, collected from the U.S. Drought Monitor, was updated Thursday.

Here are the drought conditions in California. See where your area lands:



SNOWPACK LEVELS

Between Dec. 26 and Jan. 17, National Weather Service wrote on its Twitter page, California absorbed an average of 11.47 inches of rainfall. At least 15 feet of snow fell in the Sierra Nevada.

According to the Department of Water Resources, 49 stations in the Central Sierra Nevada are reporting at 217% of normal on Thursday.

Peak snow season is generally on April 1. As of Thursday, snowpack throughout California is 130% of average.

WHEN WILL IT RAIN AGAIN IN CALIFORNIA?

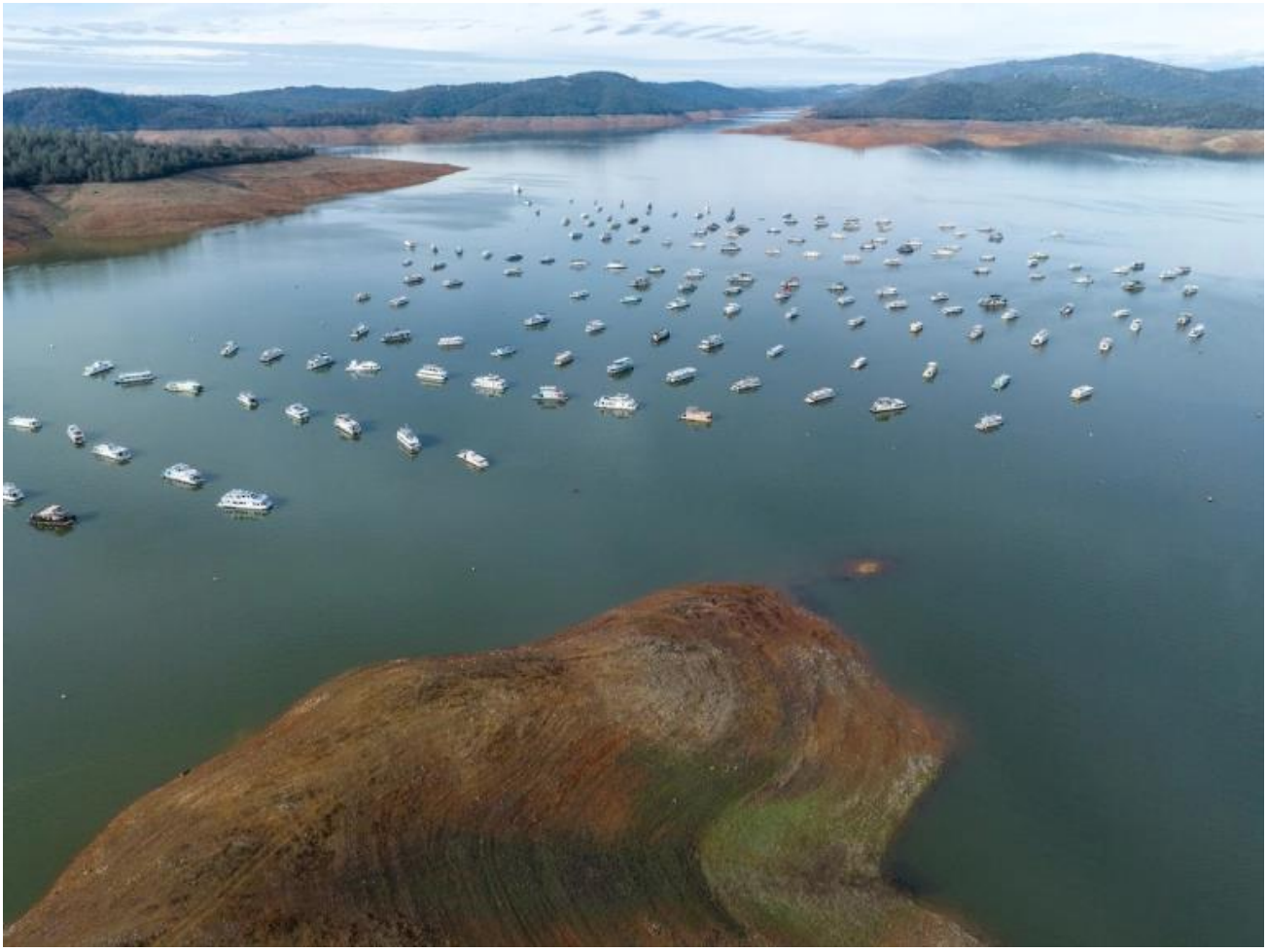
California has taken a much need break from the rainy weather — but it will return. Northern California, the National Weather Service wrote on its twitter page, typically sees up to a quarter of an inch of rain the first week February. Meteorologists predict the region could see above the normal rainfall amount.

# # #

California drought eases as state increases water deliveries to cities, farms

After three years of severe drought, water supplies are boosted and reservoirs are filling

Mercury News | January 26, 2023 | Paul Rogers



The water level at California's second-largest reservoir, Lake Oroville in Butte County, shown here on Jan. 12, 2023, has risen dramatically due to a series of large storms. The lake level rose 130 feet between Dec. 26, 2022 and Jan. 26, 2023, increasing from 29% full to 63% full in one month. (Photo: Andrew Innerarity / California Department of Water Resources)

In a major sign that California's drought conditions are easing after a series of huge storms earlier this month, state water officials on Thursday increased the amount of water that cities and farms will receive this summer from the State Water Project, a series of dams, canals and pumps that provides water to 27 million people from the Bay Area to San Diego.

The increased water deliveries — six times the amount promised on Dec. 1 — are made possible by rapidly filling reservoirs and a huge Sierra Nevada snowpack and likely will mean that many communities will ease or lift summer water restrictions if the wet weather continues through the spring.

"Thanks to the water captured and stored from recent storms, the state is increasing deliveries to local agencies that support two-thirds of Californians — good news for communities and farms in the Bay Area, San Joaquin Valley and Southern California," said Gov. Gavin Newsom. "We'll keep pushing to

modernize our water infrastructure to take advantage of these winter storms and prepare communities for the climate-driven extremes of wet and dry ahead."

The State Water Project was approved by voters in 1960 and is a key legacy of former Gov. Pat Brown. It moves billions of gallons of water from Northern California to the south by taking melting snow from the Sierra Nevada and transporting it hundreds of miles from Lake Oroville in Butte County through the Sacramento-San Joaquin River Delta to Bay Area communities and all the way to the Los Angeles Basin. In addition to supplying drinking water to two out of three Californians, it also irrigates about 750,000 acres of farmland.

On Thursday, Karla Nemeth, director of the Department of Water Resources, said her agency expects to deliver 30% of requested State Water Project supplies in 2023, up from the initial 5% allocation it announced on Dec. 1.

Nemeth said the amount is likely to increase if wet conditions continue this spring. Thursday's increase is the largest January allocation announcement since 2017 when the 29 agencies that have contracts were told they would receive 60% of their requested amounts. The rain continued, reservoirs filled, and that year, by April, they received 85%.

When asked if California's drought, which parched the state for the past three years, was ending, Nemeth said different areas are experiencing different conditions. Reservoirs are 100% full along the coast, in places such as Marin, Santa Cruz and Santa Barbara counties, where storms hit hardest. But there are still depleted groundwater basins in the Central Valley, she noted, and Southern California depends heavily on the Colorado River, which has seen 20 years of relentlessly dry conditions.

In the coming months if rains continue, Newsom is likely to remove some areas from his emergency drought declaration, Nemeth said, based on rainfall amounts and local water supply conditions. But there's no guarantee the rain will continue. Last December was wet, and almost no rain fell in January, February and March.

"We had an incredible three weeks in California," Nemeth said. "Ultimately California will either emerge from this drought completely or we will have continued erratic conditions."

"It's really too soon to tell," she added.

Nine atmospheric river storms drenched the state starting in late December, causing flooding and storm damage and killing at least 21 people. The deluges marked the wettest series of storms in five years.

The rainfall totals have been nothing short of amazing.

From Dec. 26 to Jan. 15, 17 inches fell in downtown San Francisco, making it the Bay Area's wettest three-week period since the Civil War in 1862.

The storms also brought massive amounts of snow. On Thursday, the Sierra Nevada snowpack, the source of nearly one-third of California's water supply, was 216% of its historical average.

Most reservoirs across California are at or near historical averages. The largest, Shasta Lake, near Redding, was 55% full Thursday — 87% of its historical average for that date. The second-largest, Lake Oroville, was 63% full — or 110% of its historical level. Both were less than a third full last month.

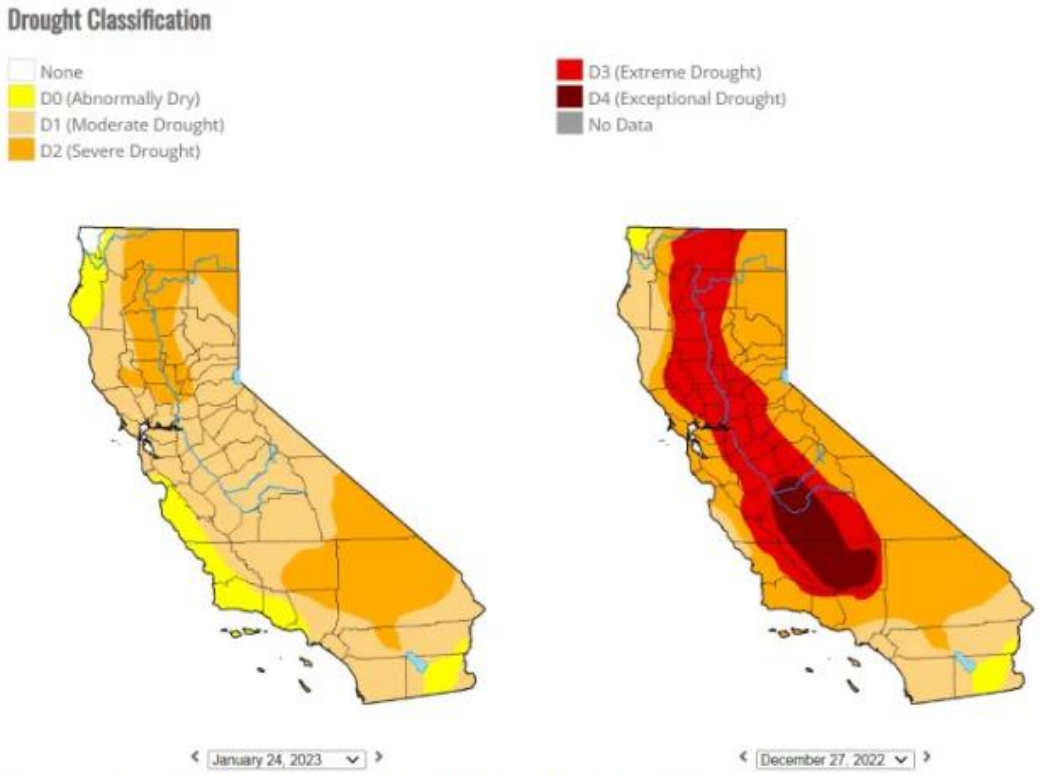
Among the agencies most affected by Thursday's increased water deliveries are the Santa Clara Valley Water District, in San Jose, which provides drinking water to 2 million South Bay residents and relies on the State Water Project for 20% to 30% of its normal annual supply. Also benefitting: the Alameda County Water District, which serves 360,000 people in Fremont, Newark and Union City; and the Zone 7 Water Agency, which serves Livermore, Pleasanton and Dublin.

"It's the best news since the drought started 3 years ago," said Rick Callender, CEO of the Santa Clara Valley Water District.

But Callender said water-supply challenges in Silicon Valley will remain because the district's largest reservoir, Anderson, near Morgan Hill, was ordered drained two years ago by federal officials for a major earthquake retrofit project that will last until 2031.

Meanwhile, a growing amount of California's land — including Santa Cruz and Monterey counties and coastal portions of San Luis Obispo, Santa Barbara, Ventura and northern Los Angeles counties — is no longer in drought, according to Thursday's U.S. Drought Monitor, a weekly report issued by the federal government.

Just 32% of California is in severe drought now, down from 42% last week and 80% a month ago, the report concluded. Most of the rest of the state, including the Bay Area, has been downgraded over the past few weeks to "moderate drought."



California's drought conditions have improved dramatically over the past month following huge rain and snow storms. The amount of the state in severe drought has declined from 80% on Dec. 27, 2022 to 32% on Jan. 24, 2023, according to the U.S. Drought Monitor, a weekly federal report. Some coastal areas are no longer in drought at all. (Source: U.S. Drought Monitor)

# # #

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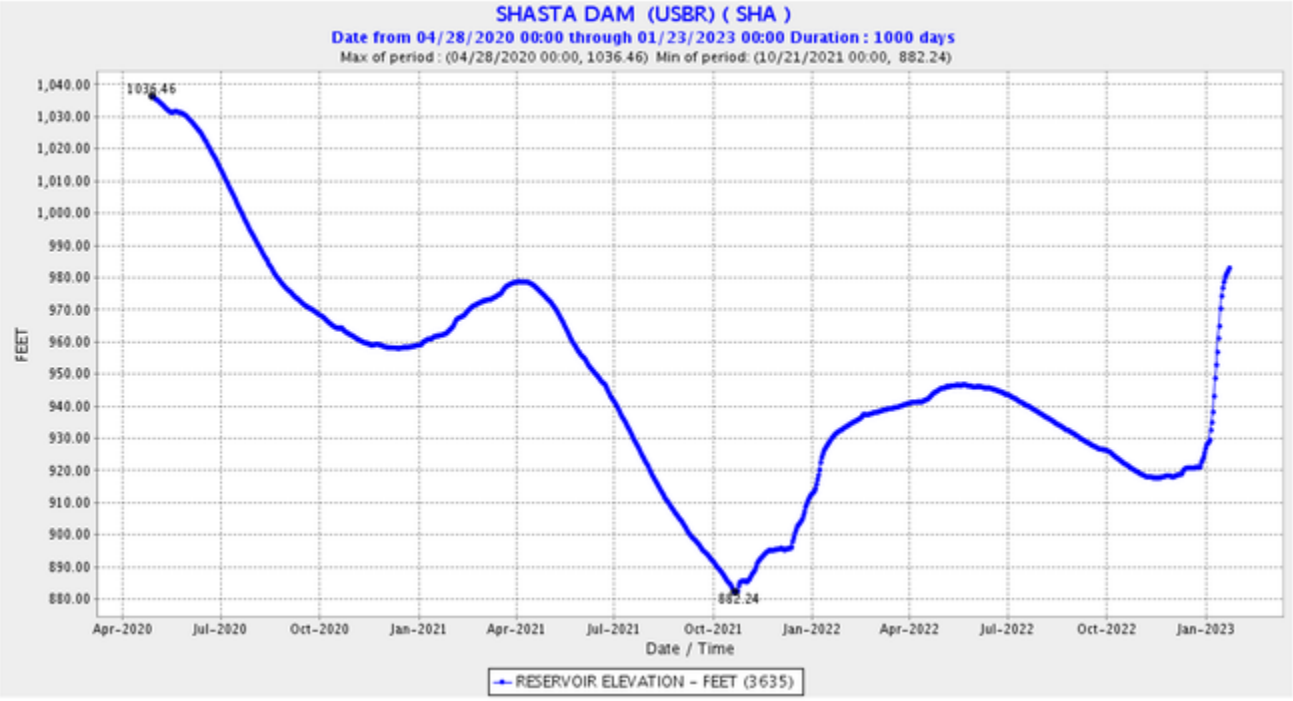
Two of California's largest reservoirs hit their highest level since the summer of 2020
KCRA | January 24, 2023 | Mark Finan

California's water supply has hit a new milestone for the year in the wake of three weeks of wet weather.

Water levels at two of the state's largest reservoirs are now at their highest point in 2.5 years, Chief Meteorologist Mark Finan said.

Lake Shasta and Oroville have both added more than 1 million acre-feet of water in the past month and the levels continue to rise. Inflow rates into those reservoirs have decreased considerably, which is to be expected during periods of dry weather.

As of Tuesday, Lake Shasta is at 55% of its total capacity and Lake Oroville is at 62% of capacity. Last summer, Lake Shasta peaked at about 40% of its total capacity.



With the snowpack above the reservoirs running near 200% of the average for this time of year, it is likely that both reservoirs will rise to near capacity by May, Finan said.

# # #

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When Did the California Drought Start?
Newsweek | January 24, 2023 | Pandora Dewan

After weeks of torrential rain, California's persistent drought is beginning to ease.

"California has been in dry conditions for much of the last 10 years, with only two years of wet," Jeff Mount, senior fellow at the Public Policy Institute of California Water Policy Center, previously told Newsweek.

"The past three years have been the driest three-year period on record [dating back to 1895.] That just beats the driest three-year period on record from 2013 to 2015. And both of these three-year periods have been the hottest on record."

For the last 23 years, the southwestern U.S. states have been gripped by a longstanding megadrought. Rick Relyea, director of the Darrin Fresh Water Institute at Rensselaer Polytechnic Institute in New York, previously told Newsweek that the U.S had not seen a drought this severe for the last 1,200 years.

The extreme conditions, combined with growing populations and demands for agriculture, have resulted in water shortages in many regions. Just this month, the city of Scottsdale in Arizona was forced to cut off its water supply to the Rio Verde Foothills because of concerns over their own residents not receiving enough.

However, since December 26, California has seen record-breaking rainfall. Over 32 trillion gallons of rain fell on the state in just three weeks, and snowpack in the Sierra Mountains is at 250 percent of what it normally would be for this time of year. So how has all of this wet weather affected the state's long-standing drought?

Californian Drought Monitor

The U.S. Drought Monitor is a map that is updated every week to show the location and intensity of drought across the country. Drought intensity is measured using five categories, from "abnormally dry" to "exceptional drought."

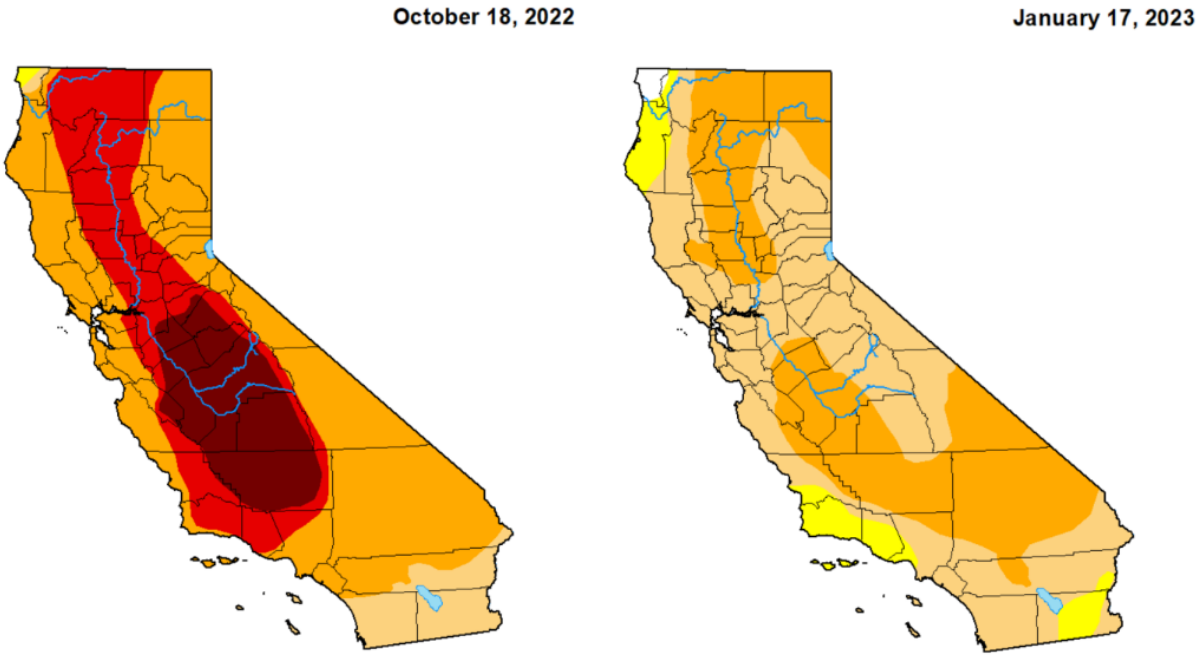
Just three months ago, 41 percent of the state was classed as being under "extreme drought," the second most-intense category, by the monitoring system, with 17 percent experiencing the most-intense "exceptional drought."

Today, for the first time since 2020, neither of these categories is present across California, and only 43 percent of the state is considered to be under "severe" drought, down from 92 percent in October.

California Drought Status
Despite improvements in California's overall drought status, 92 percent of the state is still considered to be under at least a "moderate" drought.

Graham Fogg, a professor emeritus of hydrogeology at the University of California, Davis, has told Newsweek that, although the recent rainfall has been beneficial, it is not enough to compensate fully for the drought. "It would likely take at least a couple more years of average-to-wet years for California to more fully climb out of the drought," he said.

California Drought Map January 2023
California Drought Map October 2022



At the start of this water year, which stretches from October 2022 to September 2023, the state's largest reservoir, Lake Shasta, was only a third full. It is now at 55 percent of its total capacity, but it still has a way to go.

Donald Bader, the Shasta area manager for the Bureau of Reclamation, which manages water resources in the region, previously told Newsweek that the bureau would not be able to say confidently whether there had been enough rain to restore water levels in the state's reservoirs until February, after another month of potentially wet weather.

"Right now, we're just really hoping the rains continue because we've seen it too many times where they just shut off," he said.

# # #

Can We Store Enough Extreme Rainfall To Break Droughts?
Forbes | January 30, 2023 | John Sabo

NICASIO, CALIFORNIA - MAY 28: Dry cracked earth is visible as water levels are low at Nicasio ... [+]GETTY IMAGES

California is experiencing a record drought. October 2019 to October 2022 was the state's driest three-year period on record going back to 1896.

California is also experiencing record rainfall. Over the past several weeks, nine atmospheric rivers – huge columns of atmospheric water vapor that track with the weather and each contain the equivalent of a Mississippi River's worth of water, according to NOAA – have dumped 32 trillion gallons of water on the state, bringing damaging floods and mudslides.

Both of those extremes are true at the same time—and it leads to the obvious question: Is all of the rain helping to end the drought?

While that debate has gotten a lot of air time, given the seriousness of the situation I'm eager to broaden the conversation to a more important one:

How is California—and every state—preparing for the era of climate extremes?

Staggering amounts of rain falling in a short period of time might seem like just the windfall California needs. And that could be true, but today, the state does not have a way to store extreme downpours for those inevitable not-so-rainy days (and weeks, and months, and years).

Infrastructure has been built to accommodate seasonal patterns of the past, not the wild swings that are now becoming the norm.

Storing Flood Waters in Aquifers: The Opportunities & Challenges

I've been talking about the promise of storing flood waters in aquifers for years. In the wake of the recent round of storms, this idea and similar ones have been gaining traction in major media. From my vantage point as a freshwater scientist leading the Bywater Institute at Tulane University in New Orleans and with experience in watersheds around the world, I think California's new state water strategy takes several steps in the right direction to capitalize on aquifer capacity for floodwater storage. While there's a lot of work ahead, the state is adapting and accelerating plans and investments in response to what's happening in real time.

In an age of increasing drought and flood extremes due to climate change, we will need to use the vast potential to store water underground in aquifers not just in California, but nationwide. That is especially true in places that will likely experience an overabundance of water from atmospheric rivers and other circumstances, and places such as Texas that are more vulnerable to the swings because they have hurricanes and droughts and their built infrastructure is purposely designed for flood control, not storage.

There are some challenges to getting there:

● Groundwater is out of sight and out of mind because it is underground. The news cycle moves on once some rain falls—but we can't stop talking about the gaping wound when somebody shows up with a Band-Aid. So maintaining focus after the storms cease will be critical.

● Groundwater doesn't just stay put, it moves—very slowly—underground both vertically and horizontally. And we currently lack strategic recovery plans that take into account losses due to movement beyond recovery infrastructure (well fields) and cross contamination by infiltration of agricultural return flows and/or urban pollution, including non-point septic systems.

● There's generally more planning about how much we can put in the aquifers, but little planning about how much it will cost and what the greenhouse gas implications are for pulling it back out of the ground to use later. We need coherent, science-based standards and strategies for recovery.

Underground Floodwater Storage Will Give Us More Flood Protection

However: We shouldn't see any of these challenges as barriers. They're instead areas of exploration to invest in, right now. This kind of forward-looking approach to managing extremes will also benefit people and communities in the form of flood protection. A thoughtful, distributed system can send water underground for storage instead of overwhelming neighborhoods.

I'm calling on academic colleagues, policy makers, corporate leaders and other influencers to keep forcing the conversation, invest in science and strategy, and to push for rapid, real progress.

There are examples to lead the way. In California, state agencies in collaboration with the Army Corps of Engineers are designing managed aquifer recharge programs in the Central Valley that take floodwater and use it to recharge thirsty aquifers. According to the Arizona Department of Water Resources as reported by AZ Central, Arizona has put more than 3 trillion gallons underground as of 2019 — the equivalent to one-third the full-capacity storage of Lake Mead. And there are many more Lake Meads of recharge potential available in places, such as the massive and overdrawn Ogallala aquifer under the Great Plains.

The recent California storms can and should be an inflection point, catalyzing urgent, robust efforts to explore how to capture and store the increased precipitation extremes climate change is driving. The ability to store rapid infusions of water underground is the missing safety net communities will need during the increased drought extremes climate change will also bring. There's so much at stake. When the next storm is on the horizon, will we be prepared to use it to our advantage?

# # #

John Sabo, Contributor
Director of ByWater Institute at Tulane University, avid fly fisherman

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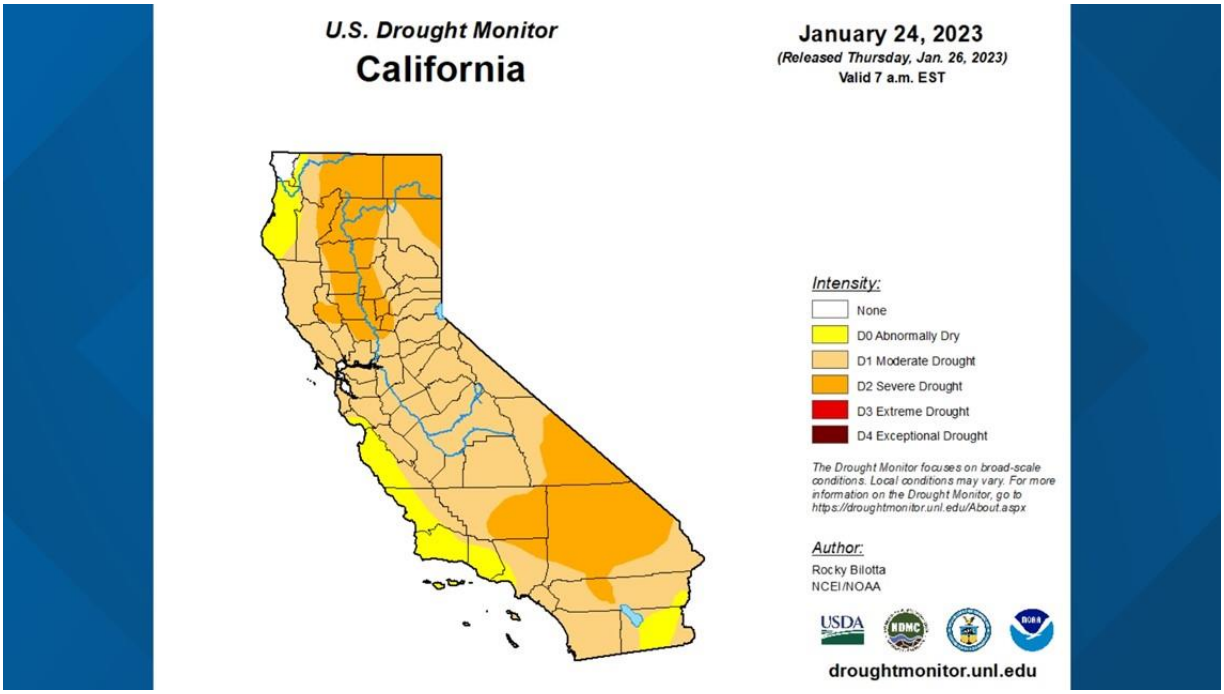
California Drought: NASA SWOT mission to improve water management in California
The satellite's resolution will be ten times higher than previous satellite imagery, allowing for worldwide mapping of water on Earth
ABC 10 | January 29, 2023 | Brody Adams

SACRAMENTO, Calif. — Although the last 10 days have been dry, the drought monitor continues to show improvement in California.

A weak, quick-hitting system will drop down from Canada on Sunday. The system is very much moisture-parched and won't bring much rain or snow to Northern California. Cold air will filter in on Sunday, as well, with temperatures not expected to escape the 40s for much of the valley.

The Sunday storm likely won't affect the drought monitor, with less than a tenth of an inch of rain expected in the valley with 4-6 inches of snow likely in the mountains. The latest update dropped much of the Central Valley out of severe drought and into moderate drought along with placing much of the coast in the "abnormally dry" category. The Drought Score Index is 212, the lowest it has been since November 2020



The San Joaquin has seen remarkable recovery in the past month, going from exceptional drought to moderate drought. Credit: droughtmonitor.unl.edu

California has one of the most volatile hydrologic systems in the world, shifting from drought to flood in a matter of weeks. However, new tools are helping officials and water managers better control California's waters.

One of these tools relates to NASA's SWOT (surface water and ocean topography) mission.

"We built a new piece of extreme engineering to observe the world's water. So we'll see all of the about 90% of the water that is covering the earth. So we're talking about surface water, oceans, rivers, lakes, reservoirs," said Dr. Cedric David, research scientist at NASA's Jet Propulsion Laboratory in Pasadena.

The mission is a collaboration between the United States, France, the United Kingdom and Canada. The satellite was launched on Dec. 16 from Vandenburg Space Force Base and is currently orbiting Earth.

The satellite is fixed with a revolutionary instrument, know as KaRIn (Ka-band radar interferometer).

"KaRIn is really special, because it allows us to take radar pictures of where the water is and how high it is. We're using radar technology that is specifically designed so that it bounces on water and doesn't bounce on anything else," said Dr. David. "When we're flying a spacecraft, we send the signal, it bounces on top of the water surface and comes back, so we know where the water is we know how high it is by measuring the time that it takes to do the round trip between the the satellite and Earth."

The SWOT measurements will be 10 times the resolution of current satellite imagery, allowing for precise mapping of water levels around the world. This includes the oceans as well, which will allow for better modeling of sea level rise and improved global climate and weather models.

Water agencies in California, such as the Department of Water Resources and Bureau of Reclamation, will be able to use the data provided from SWOT to better manage water across the state.

"It's gonna be incredible to just see those first measurements when they come. We'll be looking at the breathing of the Earth's arteries and lakes and reservoirs, like we've never seen them before, including California. It is going to be really fun," said David.

# # #

Can California's floods help recharge depleted groundwater supplies?
Plans to drown orchards and farm fields to boost aquifers get off to a slow start
Science | January 23, 2023 | Dan Charles

An almond orchard in Modesto, Calif., is flooded with water in 2016 by researchers from UC Davis

The drenching storms that hit California in recent weeks represented a long-sought opportunity for Helen Dahlke, a groundwater hydrologist at the University of California, Davis. Dahlke has been studying ways to recharge the state's severely depleted groundwater by diverting swollen rivers into orchards and fields and letting the water seep deep into aquifers. But carrying out such plans requires heavy precipitation—which had been scarce.

This week, however, water managers began to turn theory into practice. In the Tulare Irrigation District, which supplies water to more than 200 farms south of Fresno, officials started diverting water from the San Joaquin River into 70 fields as well as specially constructed ponds. Each day, some 1.5 million cubic meters of water—roughly equivalent to 600 Olympic-size swimming pools—has been pouring onto the landscape. "We are in full [groundwater] recharge mode," Aaron Fukuda, the district's general manager, wrote in an email. Similar flooding is underway in the Madera Irrigation District north of Fresno.

Over the past decade, Dahlke's experiments with submerging small plots have suggested intentional flooding can replenish aquifers without damaging either groundwater quality or crops. But she says bureaucratic hurdles and organizational inertia have blocked widespread use of the practice—despite state laws and policies designed to encourage it.

"My frustration is growing!" Dahlke says. "This always looks so easy when you write these scientific papers, and give presentations, but to really implement [flooding] on a widespread scale is very hard."

She and others hope this winter's floods will encourage more of the state's water managers to embrace the practice.

California's farmers and others often extract far more water from aquifers than normally seeps in from the surface. The idea of using working farms to slow or reverse the trend was born in 2010, when independent hydrologist Philip Bachand and farmer Don Cameron flooded some of Cameron's vineyards. The vines thrived, and the water replenished the aquifers beneath Cameron's land.

Four years later, California adopted a landmark law, the Sustainable Groundwater Management Act (SGMA), that promotes the practice. It requires farmers to treat aquifers like bank accounts, clamping down on overdrafts but also allowing those who deposit water into them to make bigger withdrawals later.

The most catastrophically depleted aquifers lie in the San Joaquin Valley, the nation's largest single source of tree nuts, fruit, and vegetables. In places, groundwater extraction has caused the land to sink by several meters, and declining runoff from the Sierra Nevada means growers can no longer depend on a steady supply of river water. In this region, Dahlke says, capturing water during wet years and storing it underground for later use will be a matter of survival. The looming shortage "is just getting really scary," she says.

But several obstacles have stood in the way of recharge projects, experts say. Some districts need state permits and getting them is time-consuming. The SGMA's limits on extraction are only kicking in now, so farmers haven't had much incentive to spend the money required to flood their fields. "If you've chosen to somewhat ignore this law, you've been able to," says Sarah Woolf, a water consultant and farmer.

Still, the recent floods are prompting new interest. In the Madera Irrigation District, General Manager Thomas Greci says farmers seem increasingly open to drenching their fields. "I have been shocked to see the number of growers coming in to sign up to take this water," he says. And other irrigation districts have been calling, asking how it's done, says Dina Nolan, the district's assistant general manager. "It was, frankly, quite shocking to me," she says. "I was like, 'You've never promoted this?'"

California's high waters are now receding, but the opportunity to capture runoff will likely continue through the spring as a hefty mountain snowpack melts. Many farmers, however, won't be inclined to drown their fields when it's time to plant or pollinate their crops. "Only certain crops are compatible [with flooding] at that time of year," says Daniel Mountjoy, director of resource stewardship with the nonprofit Sustainable Conservation.

When all is said and done, Dahlke estimates this year's intentional floods will counterbalance less than 10% of the San Joaquin Valley's typical annual groundwater deficit. But she hopes the experience will prepare the state to do better when the next deluge arrives. With that in mind, she's hoping to soon launch a study aimed at identifying easier ways of using California's extensive irrigation infrastructure to steer 1 trillion liters of floodwater into the state's aquifers. The goal, she says, is "to go more large-scale."

# # #

Despite recent parade of storms, California unveils drought resiliency task force
CBS News | January 23, 2023

SACRAMENTO -- Though the recent barrage of winter storms has certainly improved California's drought conditions, state water leaders are making moves to prepare for the inevitable dry season soon to come.

On Friday, the California Department of Water Resources kickstarted a partnership between state agencies, local governments, scientists and community members in a new task force, called the Drought Resilience Interagency and Partners Collaborative.

The DRIP group was created in part by the 2021 Senate Bill 552, which requires state agencies to take a proactive stance on drought preparedness, especially for smaller rural communities most vulnerable to droughts.

The water agency hopes the task force will draft emergency response plans and water management based on anticipated drought impacts. Meetings will include multiple state agency officials to present the ongoing and future drought conditions that California is experiencing.

Karla Nemeth, director of the water agency said that though the series of winter storms has refilled many of the state's reservoirs, California has faced a prolonged period of extreme drought for the past three years, and it's still not over.

"Even as the state's drought outlook improves, it's critical that the water community all work together to advance drought planning and response for the state's hotter, drier future," Nemeth said. "We're looking for a variety of representatives statewide to actively participate on behalf of all water users to achieve a drought resilient future."

The DRIP Collaborative will be composed of 26 members, consisting of state agency officials and two representatives from each of the following groups: local government, community organizations, tribes, non-profit providers, the general public, agriculture, environmental advocates, public water service providers, water agencies and experts in land use or water.

Residents interested in contributing to the task force can send in a letter of interest until Feb. 24. The water agency will announce the selected members of the collaborative in spring.

# # #

More information on the program can be found on the water agency's website at https://water.ca.gov/Water-Basics/Drought/Drought-Resilience-Interagency-and-Partners-Collaborative?utm_medium=email&utm_source=govdelivery

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How Arizona, California and other states are trying to generate a whole new water supply
The Hill | January 22, 2023 | Gianna Melillo

Underground storage may be a key for Western states navigating water shortages and extreme weather.

Aquifers under the ground have served as a reliable source of water for years. During rainy years, the aquifers would fill up naturally, helping areas get by in the dry years.

But growing demand for water coupled with climate change has resulted in shortages as states pump out water from aquifers faster than they can be replenished.

The fallout can also lead to damaged vegetation and wildlife as streams run dry and damage to aqueducts and flood control structures from sinking land.

Municipalities and researchers across the country are working on ways to more efficiently replenish emptied-out aquifers.

By overpumping aquifers “you’ve created space. There’s space under the ground that used to be filled with water,” explained Michael Kiparsky, water program director at the Center for Law, Energy & the Environment at the University of California, Berkeley School of Law.

“And what we can do with these groundwater recharge projects is take advantage of that space, which is vastly greater than the sum of all of the surface storage reservoirs that exist now or could be built,” he said.

Several communities across California, Arizona and other states have been using managed aquifer recharge for years to better regulate local water supplies.

If implemented on a wide enough scale, recharge projects hold the potential to bolster water security in drought-stricken regions while improving the health of the environment.

Kiparsky said if it can be pulled off, “it holds the promise of being able to generate a whole new water supply we really didn’t even know that we had.”

Regional efforts
In California — where 85 percent of the population relies on groundwater for some portion of their supply — more than 340 recharge projects have already been proposed.

The California Department of Water Resources announced this month it will expedite the permitting process for recharge projects to help meet its goal of expanding average groundwater recharge by at least 500,000 acre-feet each year.

In Orange County alone, officials pump 65 million gallons of treated water into recharge basins in Anaheim each day. The county began recharging water through infiltration basins in 1936 and serves as a model for other communities looking to implement managed aquifer recharge projects.

“If we want to maintain our groundwater systems and sustain them, not deplete them, not mine the water, and we want to have enough water for everything else — for agriculture, for cities, for the environment, for the streams — so forth, we have to put a lot of water into the ground,” said Andrew Fisher, a professor of earth and planetary sciences at the University of California, Santa Cruz. “There is literally no choice if we do not do that.”

Groundwater recharge projects can take many different forms.

Communities could create percolation basins, where stormwater or excess river flows are collected in basins that are intentionally left open. Over time, water settles itself into the soil below and eventually into aquifers. Dry wells, which stop above the water table and allow water to percolate the rest of the way, can be constructed, along with injection wells, which lead water directly into aquifers.

Arizona has a long history of managed aquifer recharge efforts, thanks in part to the 1996 establishment of the Arizona Water Banking Authority (AWBA). Since its inception, the authority has used recharge to store nearly 5,600 million cubic meters of surface water from the Colorado River, as of 2019.

The number and capacity of recharge projects increased throughout Arizona during the early 2000s, with researchers crediting the project’s success to local political consensus, favorable hydrogeology and public funding, along with other factors.

“AWBA is an important example of how a strong regulatory framework, coupled with public institutions and funding can help support the adoption of [managed aquifer recharge] on a large scale, and how [managed aquifer recharge] can achieve broad water management and public policy objectives,” a 2021 Unesco report said of the practice.

The city of Tucson also serves as a model example thanks to its flexible approach to using renewable surface water supplies.

In 2018, the city stored and recovered 76 million cubic meters in the same year, while an additional 76 million cubic meters was stored for long-term use.

The city uses “soils as the treatment method for the surface water,” explained Sharon B. Megdal, director of the University of Arizona Water Resources Research Center in an interview with Changing America.

The surface water infiltrates into the aquifers and mixes with the existing groundwater, and then officials can pull out that blended mixed water to serve customers, she said.

Despite the established nature of Arizona's programs, groundwater is still over pumped in some areas, and aquifer levels continue to decline.

"Arizona has quite an extensive history of utilizing managed aquifer recharge successfully, and yet there are still more opportunities," said Megdal. "We don't have all the answers. We still have lots to do. But from the basic point of what's going on in managed aquifer recharge, we've done quite a lot successfully."

When it comes to expanding the scope of recharge operations, "it's very important that you have the right regulatory framework for it both for sufficient protections — because there are water quality implications, other types of implications — as well as predictability," Megdal said.

Challenges remain

One type of groundwater recharge project is called Flood-MAR, or flood-managed aquifer recharge. As part of this process, water managers could divert water accumulated in rivers during big flows to other areas, flooding land during the winter, or wet season, and farming the land in the summer.

"Part of the challenge for flood recharge is finding land that's not already in use for other things, houses or fields. And finding areas where there's enough infiltration capacity, which is a term of art that means where water can flow quickly underground and into the groundwater aquifers," Kiparsky explained. Legal questions also come into play when projects aim to capture floodwater, as claims on downstream flows may already exist.

Additional challenges with recharge projects arise when water is collected in urban settings. Cities may not be located above opportune geological conditions for water to seep into aquifers. Groundwater in urban areas can also be contaminated with oil drippings or bits of tires from cars. Although this water can be treated before it's put into the aquifer, treatment can be expensive.

For other projects, communities need to determine the best sites for recharge to mitigate the need for building new transfer infrastructure.

"In some cases, some of that stored water has to remain in the aquifer and can't be pulled out later on," said Megdal. That's because groundwater is in motion, and communities may not be able to get back all the water they put in before it moves on.

Despite the many challenges unique to collecting different types of water at different times, through different means and in different areas, "there's a lot of opportunity to implement [managed aquifer recharge] depending upon what water source you're talking about, what ultimate use you're talking about," said Megdal.

“People are recognizing that we have to look at all sources of water and opportunities to make wise use of them,” added Megdal.

Not only can increased water storage help with water security in the future, but higher groundwater levels can also reconnect with streams, improving conditions for fish and vegetation along the stream’s corridor.

“We have and will continue to have too much water when we don’t want it and not enough when we do, and so storage is the key,” said Kiparsky.

“The fact that we’ve created this massive space underground holds the key to that problem,” added Kiparsky.

# # #

How will California's water storage hold up in future dry-wet cycles?
CapRadio | January 19, 2023 | Nicole Nixon

Most reservoirs aren't allowed to fill up in the winter, but Folsom Reservoir outside of Sacramento, California is using a new strategy to save more water by using weather forecasts. Ken James/California Department of Water Resources

California's recent storms have brought record amounts of precipitation but have also revived a perennial debate at the state Capitol over water storage and management.

By some estimates, more than 32 trillion gallons of water have fallen on the state since the first storms hit in late December.

On a levee overlooking the swollen Sacramento River last week, a group of Republican state lawmakers criticized their Democratic colleagues and Governor Gavin Newsom for not prioritizing new projects to capture the deluge.

"Overwhelmingly, that's flowing out to sea and not being captured," said Assembly Republican Leader James Gallagher, gesturing to the water, which was running high and fast. "Not being set aside and utilized for all the purposes we have in California" including farming and drinking water, he said.

Gallagher and other Republicans called it a "failure of leadership" by Democrats and called for more investments in water storage, both above ground and below.

A large reservoir is planned for the northern Sacramento Valley but has been undergoing a lengthy permitting process. Construction at the Sites project is estimated to begin in 2024 with operations beginning in 2030.

According to the Sites Project Authority, the reservoir could have captured 120,000 acre-feet of water between Jan. 3 and Jan. 15 if it had been operational.

Typically, one acre-foot of water is enough to serve two urban households for one year.

In 2014, voters approved Prop. 1, a $7.5 billion bond that included $2.7 billion for water storage projects including the Sites reservoir.

Newsom has approved $8.6 billion since 2021 on drought mitigation measures, including reservoir expansion and repair, improving water conveyance infrastructure, and streamlining permits for groundwater and new surface storage projects.

“California isn’t waiting to act,” Newsom said in a press release Thursday. “We’re moving aggressively to modernize how we capture and store water to future-proof our state against more extreme cycles of wet and dry.”

The governor has acknowledged the “absurd” length of time it can take to get water projects permitted. In his state budget proposal this month, the governor said he has implemented “strike teams” between agencies to speed permitting for Sites and other Prop. 1 storage projects.

A water strategy plan put out by his administration last August set new targets for additional water storage, along with increased water recycling, desalination and conservation.

According to the report, California will lose 10 percent of its water supply over the next 20 years due to a warming climate.

A bill proposed by Assembly member Devon Mathis (R-Visalia) would codify Newsom’s water storage goals: 3.7 million new acre-feet of storage capacity by 2030 and 4 million by 2040.

“The governor set these goals,” Mathis said. “This is just codifying it so we can hold his feet to the fire.”

According to the governor’s office, Prop. 1 projects including Sites would add 2.7 million acre-feet to the state’s water storage capacity – about three times the capacity of Folsom Lake.

The Division of Water Resources is also working to add 135,000 new acre-feet of storage to the San Luis reservoir, which is a critical water resource for farms in the San Joaquin Valley.

While the recent series of atmospheric rivers led to catastrophic flooding in parts of the state and broke some precipitation records, climate scientists say the state’s regular wet and dry cycles will only become more extreme in the future due to a warming climate.

How do reservoirs stack up in storage capacity?

The storms have also boosted levels in the state’s parched reservoirs, though some – including Lakes Shasta and Trinity – are still below their historical average levels.

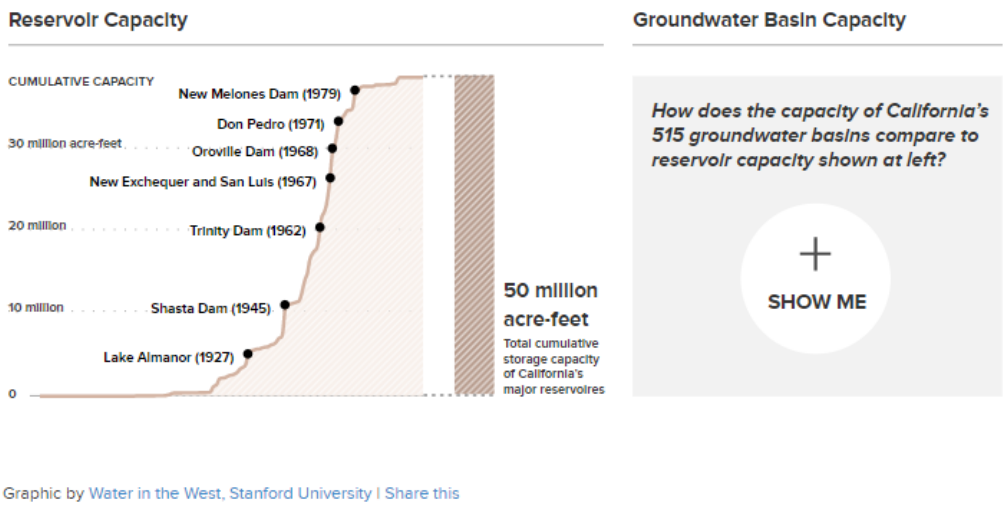
Jay Lund, Director of the Center for Watershed Sciences at UC Davis, warns building new reservoirs – as some Republican lawmakers are calling for – would be costly and the total additional storage marginal.

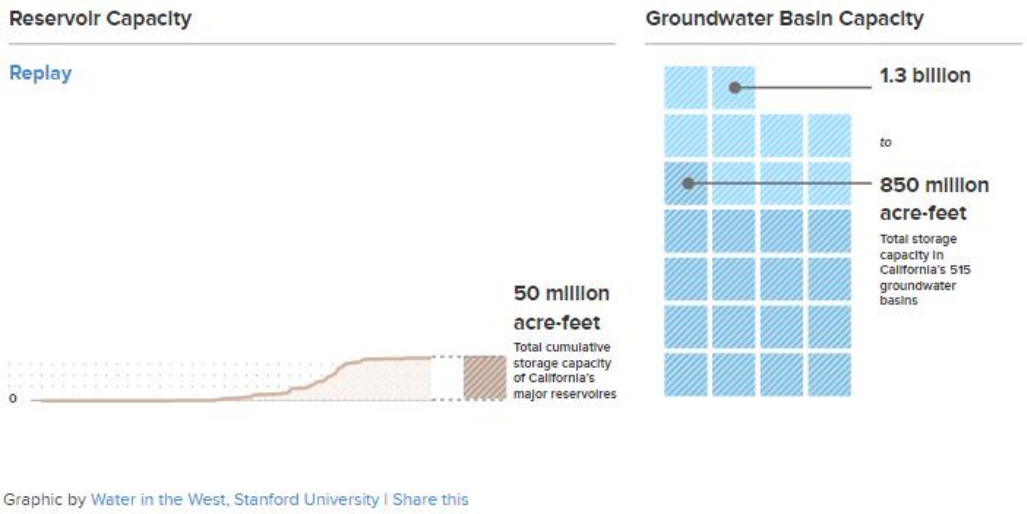
“If you built all of the proposed reservoirs that are being talked about, it would add about 10% to [the state’s storage capacity] total and it would add about 1% to the amount of water available,” he said.

Lund said new above ground storage “is not going to be a game changer for floods or droughts in California.”

Rather, he said the state should prioritize delivering more water to existing groundwater basins.

While out of sight, the state’s groundwater tables are vast: at capacity, they could hold between 850 million and 1.3 billion acre-feet of water. That’s compared to the less than 50 million acre-feet of storage at all California’s major reservoirs, according to Stanford’s Woods Institute for the Environment.





# # #

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Here’s how S.F. is trying to fix its ‘absolutely insane’ hiring process
San Francisco Chronicle | January 27, 2023 | St. John Barned-Smith

SFMTA, which runs Muni, has more than 700 openings — 11% of its total workforce.

Amanda Ford counts herself among the lucky: She made it through San Francisco’s byzantine hiring process and ended up getting a job with the city as a data scientist.

But she hadn’t been expecting some of the bumps along the way.

The astrophysicist has a doctorate in astronomy and experience teaching data science at UC Berkeley’s graduate school, but the city said her bachelor’s degree didn’t meet the minimum requirements of the job.

That was just one hiccup in a monthslong process.

“I was able to get through various barriers, but I felt that was more like luck than anything,” she said. “The process can take a very long time, and not everyone can wait that period of time.”

City officials say it spends a median of 255 days to hire a permanent city worker. That nine-month span is more than twice as long as it was back in 2015.

The lengthy process is a major reason why San Francisco has approximately 4,600 unfilled job positions, experts and officials say. The city’s open positions represent about 14% of its labor pool — more than double the number of openings before the pandemic.

Officials are now working hard to fix the city's "broken" system, which includes weeks-long application reviews, lengthy interview periods, extensive background checks and employment verification.

The current process "does not necessarily achieve our collective goals," Carol Isen, San Francisco's human resources director told the Civil Service Commission in December, "but simply adds complications, and delay, to our day-to-day operations."

On Wednesday, the commission voted unanimously to accept a series of changes to San Francisco's hiring rules, which Mayor London Breed's administration says could help reduce the time it takes to hire new employees by about 100 days — or 40%. Before the changes can be formally adopted, however, the the city must get employee labor unions to sign off on the proposed changes.

In a news release Wednesday, Breed said a city team tasked with streamlining the hiring process found 120 years of regulations accumulated since the civil service system was created have worsened the city's lengthy hiring process.

"(I)t takes way too long to hire workers to deliver the services our residents deserve and rely on," Breed said, in the news release. "One of the fundamental goals of good government is modernizing how our city works, including filling City positions faster so we can be more responsive to the needs of the people of this City."

The commission previously considered the matter a month ago, but kicked the vote to January over concerns that the proposed changes might be "regressive" and exclude some applicants from certain work opportunities. The commission's pushback also watered down the proposed reforms from the original 125-day reduction the city had first wanted.

Broadly speaking, the changes are meant to remove barriers to hiring, speed up civil service exams, give departments more flexibility to recruit, modernize hiring rules to align with tech advancements, and make hiring requirements more consistent across the city.

At some departments, the empty chairs have made it tougher to carry out the city's core functions — leaving bus routes without drivers, empty fire trucks and hundreds of unfilled jobs at the department of public health.

Some departments struggle more than others. The airport's vacancy rate is 20% — or almost 400 employees. At the Department of Public Works, 260 seats are unfilled, or 22%. And the San Francisco Municipal Transportation Agency, which runs Muni and has an average time to hire nonoperators of seven months, has more than 700 openings — 11% of its total workforce.

"It's just, you know, incredibly slow," Isen said, "and people who need a job aren't going to wait for us." She added that a 255-day process to hire an employee is "excessive."

Employee vacancies in each S.F. department

Share of full-time equivalent (FTE) positions that are vacant, as of Jan. 25, 2023

Search in table

Department	Vacancy rate	▼ Vacant FTE positions	Total FTE positions
Public Health	10%	801	7,962
Municipal Transportation Agency	11%	679	6,437
Airport Commission	20%	372	1,830
Police	13%	371	2,901
Public Works	21%	252	1,213
Fire Department	5%	99	1,884
Human Services Agency	4%	88	2,288
Port	26%	82	321
Sheriff	6%	59	1,003
City Administrator	6%	58	1,037
Homelessness Services	17%	44	261
Mayor	19%	37	192
Human Resources	13%	37	274
Technology	11%	34	299
Public Library	4%	32	708

+ Show 23 more

Includes vacancies for permanent and temporary positions for departments with at least 30 FTE funded positions. Departments with no vacancies are not shown.

Table: Nami Sumida / The Chronicle • Source: San Francisco Department of Human Resources

San Francisco is not alone. In Oakland, city leaders are trying to whittle down the time it takes to create eligible “lists” of applicants to 120 days, down from a current average of about 160 days, according to the city’s director of human services, Ian Appleyard. The department interview process then takes an additional one to three months, he said.

Like San Francisco, Oakland is also evaluating its civil service hiring process, he said, “in an effort to reduce the time to hire and eliminate unnecessary steps.”

Alicia John-Baptiste, who runs the San Francisco think tank SPUR, said that the city originally adopted a civil service system to limit patronage or nepotism.

“Putting a set of rules in place to safeguard against political favoritism, in the abstract, that’s a good thing,” she said.

In practice, however, a long hiring timeline leaves city services unfilled.

At the same time, it forces governments to rely on overtime or overload employees with unreasonable job duties, which is expensive and can lead to burnout.

The city is contemplating changes such as no longer requiring agencies to post opportunities on an actual bulletin board, and instead post them on the city’s employment website or other online platforms.

Also among the changes: shortening required notice periods before exams or reviewing or appealing exam scores, and lengthening the amount of time the city may pull candidates from lists of eligible job candidates.

At Wednesday’s meeting, Commissioner Elizabeth Salveson said she was concerned job seekers might not see shortened posting periods. Others who opposed some of the changes said they were concerned that the changes to posting rules might lead to allegations of favoritism or excluding some job seekers.

SEIU 1021 shop steward Jesse Stanton said he agreed with the need to speed up the hiring process but said the city’s past reform efforts had failed to have the desired effect.

The city’s new hiring website, he said, was less functional than its predecessor, making users fill out new applications for each job opportunity.

Another change, the three-day notice for job postings, for example, “is a really short time period,” he said. Similarly, under the new rules, after a job seeker makes it through the lengthy process, they would only have a few days to accept an offer or appeal a failing score.

“It shortens it beyond what’s reasonable,” he said.

The present time to hire stunned city insiders and other municipal experts.

“It’s unconscionable,” Civil Service Commissioner F.X. Crowley said of the wait time at last month’s commission meeting.

Board of Supervisors President Aaron Peskin went so far as to call the system “broken,” and said he was pleased Isen was “laser focused” on fixing it.

“It is high time they be fixed,” he said of the rules. “I certainly understand we want employees and prospective employees to be treated fairly and right, but (we) have to make sure the employer, the

city, is treated fairly as well. Right now, San Francisco government is not (a competitive employer). This is reflected by the fact we have scores of vacancies across the government. Part of that is because of our antiquated hiring policies."

"Absolutely insane," said Annise Parker, former mayor of Houston, the nation's fourth largest city.

Such a lengthy hiring process, she said, all but guarantees many job applicants will end up not making it through.

"No one can sit six months, nine months or a year waiting for a response," she said. "They can't put lives on hold, so they will go to the next offer."

The lengthy wait comes amid a tight job market with an unemployment rate of 2% in the city and as area job seekers must contend with crushing rent and other high costs of living in San Francisco.

The hiring system is emblematic of a broader problem within the city, said PJ Johnston, former press secretary of Mayor Willie Brown: The city's rules and regulations are so cumbersome and inefficient that they drive up costs; slow down progress; and create headaches for city officials, residents and business owners.

"Across city government, everything from trying to build housing to trying to hire workers, we have accumulated rules and mandates that have loaded all these processes over time," he said. "And the rulemaking gets to the point where it makes things burdensome and inefficient, and sometimes we look at ourselves and say, 'Why does it take so long to do something?' when, in fact, years of rulemaking led to exactly that."

Ford, the city's new data scientist, is happy in her new job. She's learned a lot, she said, working on meaningful projects she hopes will help the city.

But the hiring process was so difficult that she's not sure she'd urge friends to apply for similar jobs.

"It took a long time, and it was frustrating," she said.

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