NOTICE AND AGENDA

Regular Meeting of the Board of Trustees
SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, IMPROVEMENT DISTRICT NO.1
will be held at **3:00 P.M., Tuesday, January 17, 2023**
In-Person - 1070 Faraday Street, Santa Ynez, CA - Conference Room

OR VIA TELECONFERENCE
TELECONFERENCE PHONE NUMBER: 1-669-900-9128
MEETING ID: 929 0039 9487#
PARTICIPANT ID NO.: 180175#
MEETING PASSCODE: 180175#

Important Notice Regarding Public Participation in This Meeting: For those who may not attend the meeting in person or teleconference but wish to provide public comment on an Agenda Item, please submit any and all comments and written materials to the District via electronic mail at general@syrwd.org. All submittals should indicate **"January 17, 2023 Board Meeting"** in the subject line. Public comments and materials received by the District will become part of the post-meeting Board packet materials available to the public and posted on the District's website. In the interest of clear reception and efficient administration of the meeting, all persons participating via teleconference are respectfully requested to mute their voices after dialing-in and at all times unless speaking.

1. **CALL TO ORDER AND ROLL CALL**

2. **PLEDGE OF ALLEGIANCE**

3. **REPORT BY THE SECRETARY TO THE BOARD REGARDING COMPLIANCE WITH THE REQUIREMENTS FOR POSTING OF THE NOTICE AND AGENDA**

4. **CONSIDERATION OF RESOLUTION NO. 831 –** A Resolution of the Board of Trustees of the Santa Ynez River Water Conservation District, Improvement District No.1 Authorizing Remote Teleconference Meetings Under the Ralph M. Brown Act in Accordance with AB 361

5. **ADDITIONS OR CORRECTIONS, IF ANY, TO THE AGENDA**

6. **PUBLIC COMMENT -** Any member of the public may address the Board relating to any non-agenda matter within the District's jurisdiction. The total time for all public participation shall not exceed fifteen (15) minutes and the time allotted for each individual shall not exceed three (3) minutes. The District is not responsible for the content or accuracy of statements made by members of the public. No action will be taken by the Board on any public comment item.

7. **CONSIDERATION OF THE MINUTES OF THE REGULAR MEETING OF DECEMBER 20, 2022**

8. **CONSENT AGENDA -** All items listed on the Consent Agenda are considered to be routine and will be approved or rejected in a single motion without separate discussion. Any item placed on the Consent Agenda can be removed and placed on the Regular Agenda for discussion and possible action upon the request of any Trustee.
   CA-1. Water Supply and Production Report
   CA-2. Central Coast Water Authority Update

9. **MANAGER REPORTS - STATUS, DISCUSSION, AND POSSIBLE BOARD ACTION ON THE FOLLOWING SUBJECTS:**
   A. DISTRICT ADMINISTRATION
      1. Financial Report on Administrative Matters
         a) Presentation of Monthly Financial Statements – Revenues and Expenses
         b) Approval of Accounts Payable

B. OPERATIONS AND MAINTENANCE

1. Operational and Water Service Matters
   a) Proposed Water Main Extension and Water Main Extension Agreement
   b) Update on Infrastructure Maintenance

10. REPORT, DISCUSSION, AND POSSIBLE BOARD ACTION ON THE FOLLOWING SUBJECTS:

A. STATEWIDE STORM EVENTS AND RELATED PROJECT CONDITIONS

1. Cachuma Project Update
2. State Water Project Update

B. SUSTAINABLE GROUNDWATER MANAGEMENT ACT

1. Eastern Management Area (EMA) Update

C. CHUMASH CULTURAL CENTER

1. Request to Abandon Unutilized Utility Easement

D. HEXAVALENT CHROMIUM (CR6)

1. Review and Comments on Environmental Protection Agency's Integrated Risk Information System Draft Toxicological Assessment of Hexavalent Chromium

11. REPORTS BY THE BOARD MEMBERS OR STAFF, QUESTIONS OF STAFF, STATUS REPORTS, ANNOUNCEMENTS, COMMITTEE REPORTS, AND OTHER MATTERS AND/OR COMMUNICATIONS NOT REQUIRING BOARD ACTION

12. CORRESPONDENCE: GENERAL MANAGER RECOMMENDS FILING OF VARIOUS ITEMS

13. REQUESTS FOR ITEMS TO BE INCLUDED ON THE NEXT REGULAR MEETING AGENDA: Any member of the Board of Trustees may place an item on the meeting Agenda for the next regular meeting. Any member of the public may submit a written request to the General Manager of the District to place an item on a future meeting Agenda, provided that the General Manager and the Board of Trustees retain sole discretion to determine which items to include on meeting Agendas.

14. NEXT MEETING OF THE BOARD OF TRUSTEES: The next Regular Meeting of the Board of Trustees is scheduled for **February 21, 2023 at 3:00 p.m.**

15. CLOSED SESSION:

To accommodate the teleconferencing component of this meeting, the public access line will be closed for up to forty-five (45) minutes while the Board of Trustees convenes into closed session. Upon the conclusion of the closed session, the public participation teleconference access will be reopened for the remaining Agenda Items.

The Board will hold a closed session to discuss the following items:

A. CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION

[Subdivision (d)(1) of Section 54956.9 of the Government Code – 2 Cases]

1. Name of Case: Adjudicatory proceedings pending before the State Water Resources Control Board regarding Permit 15878 issued on Application 22423 to the City of Solvang, Petitions for Change, and Related Protests

2. Name of Case: Central Coast Water Authority, et al. v. Santa Barbara County Flood Control and Water Conservation District, et al., Santa Barbara County Superior Court Case No. 21CV02432

16. RECONVENE INTO OPEN SESSION
[Sections 54957.1 and 54957.7 of the Government Code]

17. ADJOURNMENT

This Agenda was posted at 3622 Sagunto Street, Santa Ynez, California, and notice was delivered in accordance with Government Code Section 54950 et seq., specifically Section 54956. This Agenda contains a brief general description of each item to be considered. The Board reserves the right to change the order in which items are heard. Copies of any staff reports or other written documentation relating to each item of business on the Agenda are on file with the District and available for public inspection during normal business hours at 3622 Sagunto Street, Santa Ynez. Such written materials will also be made available on the District's website, subject to staff's ability to post the documents before the regularly scheduled meeting. Questions concerning any of the Agenda items may be directed to the District's General Manager at (805) 688-6015. If a court challenge is brought against any of the Board's decisions related to the Agenda items above, the challenge may be limited to those issues raised by the challenger or someone else during the public meeting or in written correspondence to the District prior to or during the public meeting. In compliance with the Americans with Disabilities Act, any individual needing special assistance to review Agenda materials or participate in this meeting may contact the District Secretary at (805) 688-6015. Notification 72 hours prior to the meeting will best enable the District to make reasonable arrangements to ensure accessibility to this meeting.

RESOLUTION NO. 831

A RESOLUTION OF THE BOARD OF TRUSTEES OF THE SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, IMPROVEMENT DISTRICT NO.1 AUTHORIZING REMOTE TELECONFERENCE MEETINGS UNDER THE RALPH M. BROWN ACT IN ACCORDANCE WITH AB 361

WHEREAS, the Santa Ynez River Water Conservation District, Improvement District No.1 (District) is committed to promoting and preserving complete public access and participation in meetings of the District's Board of Trustees, as required, and set forth by the Ralph M. Brown Act (Gov. Code § 54950 et seq.) (Brown Act); and

WHEREAS, the Brown Act contains special provisions for remote teleconference participation in meetings when the Governor of the State of California has declared a state of emergency pursuant to Government Code section 8625 and either state or local officials have imposed or recommended measures to promote social distancing, or where in-person meetings would present imminent risks to the health and safety of attendees; and

WHEREAS, on March 4, 2020, Governor Gavin Newsom issued a Proclamation of a State of Emergency for the COVID-19 pandemic, which state of emergency has not been rescinded; the County Health Officer for the County of Santa Barbara has issued numerous Health Orders regarding health and safety requirements and protocols since the beginning of and throughout the COVID-19 pandemic, including recent Health Officer Order No. 2022-10.1, effective February 16, 2022, which incorporates guidance issued on February 7, 2022 by the California Department of Public Health (CDPH) requiring unvaccinated persons to wear masks in all indoor public settings, requires universal masking in only specified settings, and recommends continued indoor masking when the risk of COVID-19 transmission is high; and

WHEREAS, on April 20, 2022, CDPH issued updated Guidance for the Use of Face Masks which provides, among other things, that effective March 1, 2022, the requirement that unvaccinated individuals mask in indoor public settings will move to a strong recommendation that all persons, regardless of vaccine status, continue indoor masking, and that universal making shall remain required in specified high-risk settings, and that after March 11, 2022, the universal masking requirement for K-12 and Childcare settings will terminate, and that CDPH strongly recommends that individuals in these settings continue to mask in indoor settings when the universal making requirement lifts; and

WHEREAS, on September 28, 2021 the County Health Officer and County Public Health Director issued a Health Official AB 361 Social Distance Recommendation which states, among other things, that utilizing teleconferencing options for public meetings is an effective and recommended social distancing measure to facilitate participation in public affairs and encourage participants to protect themselves and others from COVID-19, and that such recommendation is further intended to satisfy the requirements of the Brown Act which allows local legislative bodies in the County of Santa Barbara to use certain available teleconferencing options set forth in the Brown Act, where such recommendation is also based in part on the increased case rate of the highly transmissible Delta variant of COVID-19 within the nation and the County; and

WHEREAS, the District finds that the current circumstances relating to COVID-19 and variants thereof can cause, and can continue to cause, risks to the health and safety of persons within the County, and therefore the District may conduct its meetings to allow remote teleconference participation in the manner authorized by AB 361, specifically including Government Code section 54953(e); and

WHEREAS, this Resolution is exempt from review under the California Environmental Quality Act (CEQA) pursuant to the exemption set forth under Section 15061(b)(3) of Title 14 of the California Code of Regulations (CEQA Guidelines) because remote teleconference meetings during a declared state of emergency do not have the potential for causing a significant effect on the environment.

NOW, THEREFORE, BE IT RESOLVED by the Board of Trustees of the Santa Ynez River Water Conservation District, Improvement District No.1, as follows:

1. The Recitals set forth above are true and correct and are incorporated into this Resolution by this reference.

2. The District may conduct its meeting to allow remote teleconference participation in the manner authorized by AB 361, specifically including Government Code Section 54953(e).

3. This Resolution shall take effect immediately upon its adoption and shall remain in effect for up to thirty (30) days as provided in Government Code section 54953(e)(3).

WE, THE UNDERSIGNED, being the duly qualified President and Secretary, respectively, of the Board of Trustees of the Santa Ynez River Water Conservation District, Improvement District No.1, do hereby certify that the above and foregoing Resolution was duly and regularly adopted and passed by the Board of Trustees of said District at a Regular meeting held on January 17, 2023 by the following roll call vote:

_____

Mary Martone, Secretary to the Board of Trustees

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, IMPROVEMENT DISTRICT NO.1
DECEMBER 20, 2022 REGULAR MEETING MINUTES

A Regular Meeting of the Board of Trustees of the Santa Ynez River Water Conservation District, Improvement District No.1, was held at 3:00 p.m. on Tuesday, December 20, 2022, in-person at 1070 Faraday Street and via teleconference.

Trustees Present:	Jeff Clay	Michael Burchardi
	Brad Joos	Nick Urton
Trustees Absent:	Jeff Holzer	
Others Present:	Paeter Garcia	Mary Martone
	Gary Kvistad	Karen King
	Eric Tambini	Laura Copple
	John Britton	

1. **CALL TO ORDER AND ROLL CALL:**
President Clay called the meeting to order at 3:02 p.m., he stated this was a Regular Meeting of the Board of Trustees. Ms. Martone conducted roll call and reported that four Trustees were present, and Trustee Holzer was absent.

2. **PLEDGE OF ALLEGIANCE:**
President Clay led the Pledge of Allegiance.

3. **REPORT BY THE SECRETARY TO THE BOARD REGARDING COMPLIANCE WITH THE REQUIREMENTS FOR POSTING OF THE NOTICE AND AGENDA:**
Ms. Martone presented the affidavit of posting of the Agenda, along with a true copy of the Agenda for this meeting. She reported that the Agenda was posted in accordance with the California Government Code commencing at Section 54953, as well as District Resolution No. 340. The affidavit was filed as evidence of the posting of the Agenda items contained therein.

4. **CONSIDERATION OF RESOLUTION NO. 828:** A Resolution of the Board of Trustees of the Santa Ynez River Water Conservation District, Improvement District No.1 Authorizing Remote Teleconference Meetings Under the Ralph M. Brown Act in Accordance with AB 361

Mr. Garcia presented Resolution No. 828 and explained that pursuant to amendments to the Brown Act (Assembly Bill 361), public agencies are authorized to conduct remote meetings via video/teleconference during the COVID-19 pandemic, provided certain conditions exist and findings are made. He stated that in order for the Board to continue to meet under the provisions of AB 361, either remotely or under a hybrid approach of remote and in-person attendance, the Board is required to review and reconsider its determinations at least every 30 days. Mr. Garcia reported that because the State of California remains in a declared state of emergency related to the COVID-19 pandemic and because state and local recommendations remain in place to reduce the transmission of COVID-19, approval of Resolution No. 828 would allow the Board to hold meetings under the provisions of AB 361.

No public comment was provided.

It was **MOVED** by Trustee Joos, seconded by Trustee Urton, to adopt Resolution No. 828, a Resolution of the Board of Trustees of the Santa Ynez River Water Conservation District, Improvement District No.1 Authorizing Remote Teleconference Meetings Under the Ralph M. Brown Act in Accordance with AB 361.

The Motion carried and Resolution No. 828 was adopted by the following 4-0-0 roll call vote:

AYES, Trustees:	Michael Burchardi Jeff Clay Brad Joos Nick Urton
NOES, Trustees:	None
ABSTAIN, Trustees:	None
ABSENT, Trustees:	Jeff Holzer

5. ADDITIONS OR CORRECTIONS, IF ANY, TO THE AGENDA:
There were no additions or corrections to the Agenda.

6. PUBLIC COMMENT:
President Clay welcomed any members of the public participating remotely and offered time for members of the public to speak and address the Board on matters not on the agenda. There was no public comment. Mr. Garcia reported that no written comments were submitted to the District for the meeting.

7. CONSIDERATION OF THE MINUTES OF THE REGULAR MEETING OF NOVEMBER 15, 2022:
The Regular Meeting Minutes from November 15, 2022 were presented for consideration.

President Clay asked if there were any changes or additions to the Regular Meeting Minutes of November 15, 2022. There were no changes or additions requested.

It was MOVED by Trustee Joos, seconded by Trustee Urton, and carried by a unanimous 4-0-0 roll call vote, with Trustee Holzer absent, to approve the November 15, 2022 Minutes as presented.

8. CONSENT AGENDA:
The Consent Agenda Report was provided in the Board Packet.

Mr. Garcia reviewed the Consent Agenda materials for the month of November.

It was MOVED by Trustee Joos, seconded by Trustee Urton, and carried by a unanimous 4-0-0 roll call vote, with Trustee Holzer absent, to approve the Consent Agenda as presented.

9. MANAGER REPORTS - STATUS, DISCUSSION, AND POSSIBLE BOARD ACTION ON THE FOLLOWING SUBJECTS:

A. DISTRICT ADMINISTRATION:

1. Board of Trustees Designations

a) Certified Election Results

The Board packet included a November 28, 2022 letter from the Santa Barbara County Clerk, Recorder and Assessor Elections Division regarding the November 8, 2022 Elections Results.

Mr. Garcia reported that on November 22, 2022, the Santa Barbara County Board of Supervisors appointed in-lieu of election Brad Joos, Trustee At-Large; Jeff Clay, Trustee Division 2; and Nick Urton, Trustee Division 3 as qualified candidates to the District's Board of Trustees. Mr. Garcia announced that the four-year terms for these Trustees run from December 2, 2022 through December 4, 2026. Ms. Martone reported that all of the appointed Trustees have taken their oaths of office. Mr. Garcia

congratulated the Trustees on their appointments to the Board and thanked them for their service.

b) Selection of Officers of the Board – President, Vice President, and Secretary and Treasurer

Mr. Garcia reported that each December the District's Board selects the positions of President, Vice President, and Treasurer and Secretary to the Board of Trustees. He explained that the process for selecting officers is based on nomination and vote by the Board members.

President Clay reviewed the current positions and called for nominations from the Board. Trustee Burchardi suggested that the positions remain unchanged. Discussion ensued and Trustee Joos indicated that he would like to nominate Trustee Burchardi as Vice President, Trustee Clay as President, and Mary Martone as Secretary and Treasurer. Following this discussion, the nominations were closed.

It was **MOVED** by Trustee Joos, seconded by Trustee Urton, and carried by a 4-0-0 roll call vote, with Trustee Holzer absent, to select Trustee Clay as President, Trustee Burchardi as Vice President, and Mary Martone as Treasurer and Secretary to the Board of Trustees.

c) Appointment of Representatives to Participating Agencies and Organizations – CCWA & ACWA

President Clay reviewed the current Board representatives to participating agencies and organizations. He reported that he and former Trustee Parker served as the Director and Alternate, respectively, to the Central Coast Water Authority Board, and he and Mr. Garcia serve as Representative and Alternate, respectively, to the Association of California Water Agencies.

Discussion ensued regarding the CCWA Alternate Director position. Trustee Urton indicated that he would be interested in serving as the Alternate for CCWA and Trustee Clay stated that he would like to remain the Director.

It was **MOVED** by Trustee Joos, seconded by Trustee Urton, and carried by a 4-0-0 roll call vote, with Trustee Holzer absent, to appoint Trustee Clay and Trustee Urton as Director and Alternate, respectively, to the Central Coast Water Authority Board of Directors, and to appoint Trustee Clay and Paeter Garcia as Representative and Alternate, respectively, to the Association of California Water Agencies.

d) Appointment of Board Committees

President Clay reviewed the current Board representative for the Ad Hoc Committees. He identified each Ad Hoc Committee, which included Trustees Clay and Joos – City of Solvang; Trustees Burchardi and Joos – Water Rates; Trustees Clay and Joos – COMB; Trustees Joos and Burchardi – SGMA; Trustees Burchardi and Parker – Cachuma Contract; and Trustees Burchardi and Parker – Los Olivos CSD.

Discussion ensued regarding each of the committees, and potential new appointments to the COMB, Cachuma Contract, and Los Olivos CSD Ad Hoc Committees.

It was **MOVED** by Trustee Clay, seconded by Trustee Joos, and carried by a 4-0-0 roll call vote, with Trustee Holzer absent, to appoint Trustees Clay and Joos to the City of

Solvang Ad Hoc Committee; Trustees Burchardi and Joos to the Water Rates Ad Hoc Committee; Trustees Burchardi and Joos to the COMB Ad Hoc Committee; Trustees Joos and Burchardi to the SGMA EMA Ad Hoc Committee; Trustees Burchardi and Urton to the Cachuma Contract Ad Hoc Committee; and Trustees Burchardi and Clay to the Los Olivos CSD Ad Hoc Committee.

2. Financial Report on Administrative Matters

a) Draft June 30, 2022 & 2021 Financial Statements - Presentation by Bartlett, Pringle & Wolf, LLP

The Draft June 30, 2022 & 2021 Financial Statements were included in the Board packet.

Mr. Garcia introduced Mr. John Britton from Bartlett, Pringle & Wolf, LLP for the presentation of the District's draft June 20, 2022 and 2021 Financial Statements.

Mr. Britton reviewed a PowerPoint presentation of the June 30, 2022 and 2021 Financial Statements. He reviewed the District's current assets, liabilities and fund equity, statement of revenues, statement of changes, statement of cash flows, and notes to financial statements. Mr. Britton reported that the District's financials conform to required Generally Accepted Accounting Principles and the State Controller's Minimum Audit Requirements for California Special Districts. He explained that the District's audit resulted in no disagreements with Management relating to the financials and was a clean audit opinion with no reportable findings or exceptions.

The Board thanked Mr. Britton and Ms. Copple for their presentation.

Mr. Garcia recommended acceptance and approval of the June 30, 2022 and 2021 Financial Statements as presented and authorization for Management to post and submit the final version of the Financial Statements to the State Controller's Office and County of Santa Barbara.

It was **MOVED** by Trustee Joos, seconded by Trustee Urton, and carried by a 4-0-0 roll call vote, with Trustee Holzer absent, to approve and accept the June 30, 2022 and 2021 Financial Statements as presented by Bartlett, Pringle & Wolf, LLP and authorize Management to execute the final documentation and distribute to the appropriate governmental agencies.

b) Presentation of Monthly Financial Statements - Revenues and Expenses

Ms. Martone announced that the Financial Statements were emailed to the Board members that morning and posted on the District's website in the Board packet materials for any members of the public wishing to follow along or receive a copy.

Ms. Martone reviewed the Statement of Revenues and Expenses for the month of November. She highlighted various line-items related to revenue and expense transactions that occurred during the month and also referenced the Fiscal-Year-to-Date Statement of Revenues and Expenses that provides a budget to actual snapshot from July through November. Ms. Martone reported that District revenues for the month of November exceeded expenses by $264,803 and the year-to-date net income was $2,160,809.39, which will be earmarked and utilized for the District's annual State Water Project payment which is due in June 2023.

c) Approval of Accounts Payable

Ms. Martone announced that the Warrant List was emailed to the Board members that morning and posted on the District's website in the Board packet materials for any members of the public wishing to follow along or receive a copy.

The Board reviewed the Warrant List which covered warrants 24882 through 24944 in the amount of $946,036.27.

It was **MOVED** by Trustee Urton, seconded by Trustee Clay, and carried by a unanimous 4-0-0 roll call vote, with Trustee Holzer absent, to approve the Warrant List for November 16, 2022 through December 20, 2022.

3. Amendment to Rules and Regulations

a) Resolution No. 829: A Resolution of the Board of Trustees of the Santa Ynez River Water Conservation District, Improvement No.1 Approving the Automatic Annual Adjustments to the Capital Facilities Charges and Meter Installation Fees Contained in Attachment of Appendix "C" and Appendix "D" of the District's Rules and Regulations

The Board packet included a December 20, 2022 Staff Report and Resolution No. 829 with appendices.

Mr. Garcia explained that draft Resolution No. 829 amends Appendix "C" and Appendix "D" of the District's Rules and Regulations relating to the District's Capital Facilities Charges and related costs under Sections 603 and 709 of the District's Rules and Regulations. He stated that draft Resolution No. 829 was presented to the Board of Trustees at the November Meeting. Mr. Garcia reviewed the calculations used to establish the Capital Facilities Charges and recommended approval of Resolution No. 829 for the automatic annual adjustment to the District's Capital Facilities Charges and meter installation fees effective January 1, 2023 pursuant to Sections 603 and 709 of the District Rules and Regulations.

It was **MOVED** by Trustee Joos, seconded by Trustee Urton, to adopt Resolution No. 829 Approving the Automatic Annual Adjustment to the Capital Facilities Charges and Meter Installation Fees contained in Amendments to Appendix "C" and Appendix "D" of the District's Rules and Regulations.

The Motion carried and Resolution No. 829 was adopted by the following 4-0-0 roll call vote:

AYES, Trustees:	Michael Burchardi
	Jeff Clay
	Brad Joos
	Nick Urton
NOES, Trustees:	None
ABSTAIN, Trustees:	None
ABSENT, Trustees:	Jeff Holzer

4. District Land and Air Space

a) Resolution No. 830: A Resolution of the Board of Trustees of the Santa Ynez River Water Conservation District, Improvement District No.1 Concerning Inventory of District Land and Air Space

The Board packet included draft Resolution No. 830 and supporting documentation.

Mr. Garcia stated that pursuant to Section 50569 of the California Government Code, the District must inventory its land and air space on an annual basis to determine if any surplus land exists. He stated that based on the inventory, no District lands are deemed surplus to the District's current and foreseeable needs and recommended approval of Resolution No. 830 as presented.

It was **MOVED** by Trustee Clay, seconded by Trustee Urton, to adopt Resolution No. 830 Concerning Inventory of District Land and Air Space.

The Motion carried and Resolution No. 830 was adopted by the following 4-0-0 roll call vote:

AYES, Trustees:	Michael Burchardi Jeff Clay Brad Joos Nick Urton
NOES, Trustees:	None
ABSTAIN, Trustees:	None
ABSENT, Trustees:	Jeff Holzer

B. OPERATIONS AND MAINTENANCE:

1. Zone 3 Concrete Tank Cleaning and Repair
   a) Review of Bids
   b) Consider Award of Contract

Agenda items 9.B.1.a and 9.B.1.b were discussed together.

The Board packet included a December 20, 2022 Staff Report and Bid Results Summary for the Reservoir 3 Concrete Tank Cleaning and Maintenance Project.

Mr. Garcia reviewed the staff report that included a description of the Project, scope of work, and historical information related to the Reservoir 3 Concrete Tank Cleaning and Maintenance Project. He stated that the District requested formal bids for the Project on October 16, 2022 and the District received two bid responses by the November 29, 2022 deadline. He informed the Board that based on the bid results, DN Tanks, LLC was the lowest responsive and responsible bidder at $163,177. Mr. Eric Tambini provided additional explanation to the Board regarding the bid process and Project details.

Mr. Garcia recommended acceptance of the bid from DN Tanks, LLC and requested that the Board authorize him to sign the Notice of Award and contract documents.

It was **MOVED** by Trustee Clay, seconded by Trustee Joos, and carried by a 4-0-0 roll call vote, with Trustee Holzer absent, to accept the lowest responsive and responsible bid of $163,177 from DN Tanks, LLC, and authorize the General Manager to sign the Notice of Award and execute the contract documents.

2. Operational and Water Service Matters
   a) Update on Water Service Applications

Mr. Garcia reported on the activities related to active and new water service applications received by the District. He stated that one pending application is for a

mainline extension. Mr. Garcia explained that staff has been working with the Applicant and the District's consulting engineer to review the details of the submitted plans and specifications and is also working with the District's legal counsel on a proposed Water Main Extension Agreement that would be entered into between the District and the Applicant. He discussed the property location, proposed size of the mainline extension, and the process the Applicant must follow to complete the project.

b) Update on Infrastructure Maintenance

Mr. Garcia informed the Board that the District experienced a mainline leak on the northside of Highway 246 near Quail Valley Road. He stated that the leak was on a 16-inch mainline which was reported by a District customer on Monday, December 19th. Mr. Garcia described the location, the District's response plan, including the necessary removal of a large tree stump, and the field crew efforts to keep temporary water service available to the three customers that were impacted by the leak. Mr. Garcia explained that several years ago a large pine tree was removed from the public road right-of-way in the exact location of the main break which could have attributed to the leak. He stated that the mainline repair was completed effectively and efficiently, and service was restored to the three affected customers. Mr. Garcia expressed his appreciation and compliments to the District's Superintendent and field crew for their expertise, teamwork, and job well done to repair this leak. Mr. Garcia also expressed his appreciation to the District customer that reported the leak.

10. REPORT, DISCUSSION, AND POSSIBLE BOARD ACTION ON THE FOLLOWING SUBJECTS:

A. SUSTAINABLE GROUNDWATER MANAGEMENT ACT

1. Eastern Management Area (EMA) Update

The Board packet included a Notice and Agenda for the November 17, 2022 Regular meeting of the Groundwater Sustainability Agency for the Eastern Management Area and a Notice of Cancellation for the December 15, 2022 Regular Meeting.

Mr. Garcia reported that the Santa Ynez River Water Conservation District submitted a Proposition 68 Grant application for Implementation of SGMA to the Department of Water Resources on December 13, 2022 on behalf of the entire Santa Ynez River Valley Groundwater Basin. Mr. Garcia stated that the December 15, 2022 Meeting was cancelled and the next Regular Meeting of the Committee will be in January 2023.

11. REPORTS BY THE BOARD MEMBERS OR STAFF, QUESTIONS OF STAFF, STATUS REPORTS, ANNOUNCEMENTS, COMMITTEE REPORTS, AND OTHER MATTERS AND/OR COMMUNICATIONS NOT REQUIRING BOARD ACTION

Trustee Burchardi provided a brief update on the activities of the Los Olivos Community Services District.

Trustee Clay reported that he and Mr. Garcia attended the Fall ACWA Conference held the week of November 28, 2022.

The Board packet included the December 2022 Family Farm Alliance Monthly Briefing.

The Board packet included a California Special Districts Association article regarding Assembly Bill 2449 related to local agency remote meeting requirements and Brown Act provisions. Mr. Garcia stated that this Assembly Bill was passed into law and becomes effective January 2023. He reviewed the new law and Brown Act requirements.

12. CORRESPONDENCE: GENERAL MANAGER RECOMMENDS FILING OF VARIOUS ITEMS:
The Correspondence List was received by the Board.

13. REQUESTS FOR ITEMS TO BE INCLUDED ON THE NEXT REGULAR MEETING AGENDA:
There were no requests from the Board.

14. NEXT MEETING OF THE BOARD OF TRUSTEES:
President Clay stated that the next Regular Meeting of the Board of Trustees is scheduled for January 17, 2023 at 3:00 p.m.

15. CLOSED SESSION:
Mr. Garcia stated that there was no need for a closed session on Agenda items 15.A & 15.B at this time.

A. CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION
[Subdivision (d)(1) of Section 54956.9 of the Government Code – 2 Cases]

1. Name of Case: Adjudicatory proceedings pending before the State Water Resources Control Board regarding Permit 15878 issued on Application 22423 to the City of Solvang, Petitions for Change, and Related Protests

2. Name of Case: Central Coast Water Authority, et al. v. Santa Barbara County Flood Control and Water Conservation District, et al., Santa Barbara County Superior Court Case No. 21CV02432

16. RECONVENE INTO OPEN SESSION:
[Sections 54957.1 and 54957.7 of the Government Code]
No closed session was held.

17. ADJOURNMENT:
Being no further business, it was MOVED by Trustee Joos, seconded by Trustee Urton, and carried by a 4-0-0 roll call vote, with Trustee Holzer absent, to adjourn the meeting at 5:58 p.m.

RESPECTFULLY SUBMITTED,

_____
Mary Martone, Secretary to the Board

ATTEST: _____
Jeff Clay, President

MINUTES PREPARED BY:

_____
Karen King, Board Administrative Assistant

BOARD OF TRUSTEES
SANTA YNEZ RIVER WATER CONSERVATION DISTRICT,
IMPROVEMENT DISTRICT NO.1
January 17, 2023

Consent Agenda Report

CA-1. Water Supply and Production Report. Total water production in **December 2022 (97 AF)** was approximately 93 AF less than total production in November (190 AF), 64 AF below the most recent 3-year running average (2019-2021) for the month of **December** (161 AF), and 75 AF less than the most recent 10-year running average (2012-2021) for the month of **December** (172 AF). As with November 2022 conditions, near record-low December production last year is likely attributable to notable rain events in that month. Generally speaking, however, the District's overall demands and total production have been trending well below historic levels for domestic, rural residential, and agricultural water deliveries due to water conservation, changing water use patterns, and private well installations.

For the month of **December 2022**, approximately **21 AF** was produced from the Santa Ynez Upland wells, and approximately **76 AF** was produced from the 4.0 cfs and 6.0 cfs well fields in the Santa Ynez River alluvium. As reflected in the Monthly Water Deliveries Report from the Central Coast Water Authority (CCWA), the District did not request or take any SWP supplies for the month. Direct diversions to the County Park and USBR were **0.83 AF**.

The USBR Daily Operations Report for Lake Cachuma in **December** (ending December 31, 2022) recorded the end of month lake elevation at **693.01'** with the end of month storage of **61,534 AF**. USBR recorded total precipitation at the lake of **5.34 inches in December**. Approximately **191.8 AF** of SWP deliveries were made to the reservoir for South Coast entities. Reservoir evaporation in **December** was **104.7 AF**.

Based on the updated maximum storage capacity of 192,978 AF (previously 193,305 AF), Cachuma reservoir was (as of **January 13, 2023**) at approximately **86.3%** of capacity, with then-current storage of **166,540 AF** (Santa Barbara County Flood Control District, Rainfall and Reservoir Summary). At a point when reservoir storage exceeds 100,000 AF, the Cachuma Member Units typically have received a full allocation. Conversely, a 20% pro-rata reduction from the full allocation is scheduled to occur in Water Years beginning at less than 100,000 AF, where incremental reductions may occur (and previously have occurred) at other lower storage levels. For the federal WY 2021-2022 (October 1, 2021 through September 30, 2022), USBR issued a 70% allocation, equal to 18,000 AF. ID No.1's 10.31% share of that allocation was 1,855 AF. **For federal WY 2022-2023, the Cachuma Member Units jointly requested a Project allocation of 3,644 AF, which would translate to a 14% allocation. By letter dated September 30, 2022, USBR responded with an initial 0% Cachuma Project allocation for WY 2022-2023. Given current reservoir conditions, USBR is certain to adjust the WY 2022-2023 Cachuma Project allocation and adjusted water accounting will need to occur to reflect spill conditions and the adjusted allocation.**

Water releases for the protection of fish and aquatic habitat are made from Cachuma reservoir to the lower Santa Ynez River pursuant to the 2000 Biological Opinion issued by the National Marine Fisheries Service (NMFS) and the 2019 Water Rights Order (WR 2019-0148) issued by the State Water Resources Control Board (SWRCB). These releases are made to Hilton Creek and to the stilling basin portion of the outlet works at the base of Bradbury Dam. The water releases required under the NMFS 2000 Biological Opinion to avoid jeopardy to steelhead and adverse impacts to its critical habitat are summarized as follows:

NMFS 2000 Biological Opinion

- *When Reservoir Spills and the Spill Amount Exceeds 20,000 AF:*
  - *10 cfs at Hwy 154 Bridge during spill year(s) exceeding 20,000 AF*
  - *1.5 cfs at Alisal Bridge when spill amount exceeds 20,000 AF and if steelhead are present at Alisal Reach*
  - *1.5 cfs at Alisal Bridge in the year immediately following a spill that exceeded 20,000 AF and if steelhead are present at Alisal Reach*

- *When Reservoir Does Not Spill or When Reservoir Spills Less Than 20,000 AF:*
  - *5 cfs at Hwy 154 when Reservoir does not spill and Reservoir storage is above 120,000 AF, or when Reservoir spill is less than 20,000 AF*
  - *2.5 cfs at Hwy 154 in all years when Reservoir storage is below 120,000 AF but greater than 30,000 AF*
  - *1.5 cfs at Alisal Bridge if the Reservoir spilled in the preceding year and the spill amount exceeded 20,000 AF and if steelhead are present at Alisal Reach*
  - *30 AF per month to "refresh the stilling basin and long pool" when Reservoir storage is less than 30,000 AF*

The water releases required under the SWRCB Water Rights Order 2019-0148 for the protection of fish and other public trust resources in the lower Santa Ynez River and to prevent the waste and unreasonable use of water are summarized as follows:

SWRCB Order WR 2019-0148

- *During Below Normal, Dry, and Critical Dry water years (October 1 – September 30), releases shall be made in accordance with the requirements of the NMFS 2000 Biological Opinion as set forth above.*

- *During Above Normal and Wet water years, the following minimum flow requirements must be maintained at Hwy 154 and Alisal Bridges:*
  - *48 cfs from February 15 to April 14 for spawning*
  - *20 cfs from February 15 to June 1 for incubation and rearing*
  - *25 cfs from June 2 to June 9 for emigration, with ramping to 10 cfs by June 30*
  - *10 cfs from June 30 to October 1 for rearing and maintenance of resident fish*
  - *5 cfs from October 1 to February 15 for resident fish*

- *For purposes of SWRCB Order WR 2019-0148, water year classifications are as follows:*
  - *Wet is when Cachuma Reservoir inflow is greater than 117,842 AF;*
  - *Above Normal is when Reservoir inflow is less than or equal to 117,842 AF or greater than 33,707 AF;*
  - *Below Normal is when Reservoir inflow is less than or equal to 33,707 AF or greater than 15,366 AF;*
  - *Dry is when Reservoir inflow is less than or equal to 15,366 AF or greater than 4,550 AF*
  - *Critical Dry is when Reservoir inflow is less than or equal to 4,550 AF*

For the month of December, Cachuma Project water releases for fish were 193.7 AF to Hilton Creek and 187.0 AF to the outlet works, for a total of 380.7 AF. As of the end of **December 2022**, a total of approximately **49,653.3 AF** of Cachuma Project water had been released under regulatory requirements for the protection of fish and fish habitat below Bradbury Dam since the year after the 2011 spill.

CA-2. State Water Project (SWP) and Central Coast Water Authority (CCWA) Updates.

As previously reported, the 2022 SWP Table A allocation for SWP Contractors was only 5 percent, which translated to 35 AF for ID No.1's share of Table A supplies through CCWA. The District also holds approximately 181 AF of prior years carryover in San Luis Reservoir. **By Notice to the SWP Contractors dated December 1, 2022, the California Department of Water Resources (DWR) has announced an initial 2023 SWP Table A Allocation of 5 percent, along with a provisional allocation of additional SWP supplies to certain Contractors needing to ensure human health and safety needs. Given current hydrologic conditions and resulting storage increases in Lake Oroville , DWR is likely to increase the 2023 SWP Table A Allocation.**

As reflected in the Agenda for the January 12, 2023 meeting of the CCWA Operating Committee, CCWA remains engaged in a variety of matters relating to the SWP, including but not limited to: SWP supplies and changed hydrologic conditions; SWP operations; the 2023 Supplemental Water Purchase Program; the Aquaterra Water Bank proposal; and water quality challenges and plans to mitigate future water quality issues. CCWA also remains engaged it the pending litigation against the Santa Barbara County Flood Control and Water Conservation District. The next regular meeting of the CCWA Board of Directors is scheduled for January 26, 2023.

— BUREAU OF —
RECLAMATION

Historical Archive and Report Database

Lake Cachuma Daily Operations

Run Date: 1/3/2023

December 2022

DAY	ELEV	STORAGE ACRE-FEET IN LAKE	CHANGE	COMPUTED* INFLOW AF.	CCWA INFLOW AF.	PRECIP ON RES. SURF. AF.	RELEASE - AF. TUNNEL	HILTON CREEK	OUTLET	SPILLWAY	EVAPORATION AF.	INCH	PRECIP INCHES
	692.72	61,113											
1	692.68	61,055	-58	-11.0	0.5	1.2	33.9	5.2	6.0	0.6	2.4	0.030	0.01
2	692.68	61,055	0	14.0	1.5	25.2	24.8	5.6	6.0	0.6	4.0	0.050	0.21
3	692.69	61,069	14	13.0	0.0	40.8	24.6	5.9	7.0	0.6	2.4	0.030	0.34
4	692.69	61,069	0	2.0	0.0	32.4	20.3	5.9	6.0	0.6	2.4	0.030	0.27
5	692.67	61,040	-29	3.0	0.0	4.8	20.0	6.0	6.0	0.6	4.0	0.050	0.04
6	692.64	60,997	-43	-4.0	0.0	1.2	20.3	6.0	6.0	0.6	7.1	0.090	0.01
7	692.61	60,954	-43	-5.0	0.0	0.0	20.6	6.2	6.0	0.6	4.0	0.050	0.00
8	692.58	60,911	-43	-8.0	0.0	0.0	19.6	6.1	6.0	0.6	2.4	0.030	0.00
9	692.57	60,896	-15	21.0	0.0	0.0	20.4	6.3	6.0	0.6	2.4	0.030	0.00
10	692.55	60,868	-28	4.0	0.0	0.0	16.2	6.2	6.0	0.6	3.2	0.040	0.00
11	692.88	61,345	477	189.0	0.0	317.9	17.2	6.2	6.0	0.6	0.0	0.000	2.64
12	693.11	61,679	334	317.0	0.0	53.2	17.0	6.2	6.0	0.6	5.4	0.080	0.44
13	693.09	61,636	-43	-8.0	0.0	0.0	17.9	6.3	6.0	0.6	4.0	0.050	0.00
14	693.08	61,621	-15	20.0	0.0	1.2	18.9	6.3	6.0	0.6	4.0	0.050	0.01
15	693.07	61,607	-14	19.0	0.0	0.0	17.4	6.4	6.0	0.6	2.4	0.030	0.00
16	693.06	61,607	0	33.0	0.0	0.0	17.5	6.3	6.0	0.6	2.4	0.030	0.00
17	693.04	61,578	-29	6.0	0.0	0.0	17.7	6.4	6.0	0.6	4.0	0.050	0.00
18	693.01	61,534	-44	-10.0	0.0	0.0	18.3	6.3	6.0	0.6	3.2	0.040	0.00
19	692.97	61,476	-58	-23.0	0.0	0.0	18.7	6.4	6.0	0.6	3.2	0.040	0.00
20	692.98	61,490	14	24.0	24.8	0.0	17.8	6.3	6.0	0.6	4.0	0.050	0.00
21	692.99	61,505	15	13.0	38.1	0.0	19.4	6.4	6.0	0.6	4.0	0.050	0.00
22	692.99	61,505	0	-2.0	38.2	0.0	19.3	6.4	6.0	0.6	4.0	0.050	0.00
23	692.97	61,476	-29	-1.0	6.8	1.2	20.0	6.5	6.0	0.6	3.2	0.040	0.01
24	692.95	61,447	-29	5.0	0.0	0.0	19.4	6.5	6.0	0.6	1.6	0.020	0.00
25	692.95	61,447	0	38.0	0.0	0.0	20.3	6.5	6.0	0.6	4.8	0.060	0.00
26	692.93	61,418	-29	10.0	0.0	0.0	20.7	6.4	6.0	0.6	5.6	0.070	0.00
27	692.92	61,403	-15	21.0	0.0	0.0	19.1	6.5	6.0	0.6	4.0	0.050	0.00
28	693.00	61,519	116	-39.0	34.7	156.9	20.1	6.5	6.0	0.6	3.2	0.040	1.30
29	693.00	61,519	0	23.0	12.9	1.2	20.1	6.5	6.0	0.6	4.0	0.050	0.01
30	693.00	61,519	0	16.0	14.6	3.6	21.1	6.5	6.0	0.6	0.0	0.000	0.03
31	693.01	61,534	15	28.0	19.7	2.4	19.7	6.5	6.0	0.6	2.4	0.030	0.02
TOTALS			421	708.0	191.8	643.2	618.3	193.7	187.0	18.6	104.7	1.310	5.34
AVERAGE		61,348											

Comments: *Computed inflow is the sum of change in storage, releases and evaporation minus precip on the reservoir surface and ccwa inflow.
Indicated outlet release includes leakage from outlet valves and spillway gates.
Data based on a 24 hour period ending 0800.

— BUREAU OF —
RECLAMATION

Historical Archive and Report Database

Lake Cachuma Daily Operations

Run Date: 1/13/2023

January 2023

DAY	ELEV	STORAGE IN LAKE	ACRE-FEET CHANGE	COMPUTED* INFLOW AF.	CCWA INFLOW AF.	PRECIP ON RES. SURF. AF.	RELEASE - AF. TUNNEL	HILTON CREEK	OUTLET	SPILLWAY	EVAPORATION AF.	EVAPORATION INCH	PRECIP INCHES
	693.01	61,534											
1	693.41	62,115	581	419.0	20.6	177.3	20.2	6.5	6.0	0.6	2.4	0.030	1.46
2	693.58	62,361	246	279.0	2.5	1.2	20.1	6.5	5.0	0.6	4.7	0.060	0.01
3	693.62	62,419	58	89.0	2.5	1.2	20.4	6.5	6.0	0.6	1.6	0.020	0.01
4	693.65	62,464	45	79.0	2.5	0.0	19.3	6.6	6.0	0.6	4.0	0.050	0.00
5	694.55	63,791	1,327	875.0	2.5	483.4	20.9	6.5	6.0	0.6	0.0	0.000	3.91
6	697.92	68,911	5,120	5,138.0	2.5	19.4	21.2	6.7	6.0	0.6	5.9	0.070	0.15
7	699.02	70,634	1,723	1,761.0	2.5	0.0	21.5	6.9	9.0	0.6	3.4	0.040	0.00
8	699.48	71,361	727	866.0	2.5	2.6	21.9	6.6	108.0	0.6	6.9	0.080	0.02
9	700.02	72,221	860	742.0	2.6	247.4	22.2	6.9	102.0	0.6	0.0	0.000	1.86
10	732.37	136,434	64,213	62,951.0	2.4	1,301.7	24.2	7.6	10.0	0.6	0.0	0.000	6.49
11	741.04	158,549	22,115	22,125.0	0.0	24.7	24.1	0.0	10.0	0.6	0.0	0.000	0.11
12	742.89	163,601	5,052	5,311.0	0.0	0.0	17.7	0.0	235.0	0.6	6.0	0.040	0.00
TOTALS			**102,067**	**100,635.0**	**43.1**	**2,258.9**	**253.7**	**67.3**	**509.0**	**7.2**	**34.9**	**0.390**	**14.02**
AVERAGE		**87,905**											

Comments: *Computed inflow is the sum of change in storage, releases and evaporation minus precip on the reservoir surface and ccwa inflow.
Indicated outlet release includes leakage from outlet valves and spillway gates.
Data based on a 24 hour period ending 0800.

Santa Barbara County - Flood Control District

130 East Victoria Street, Santa Barbara CA 93101 - 805.568.3440 - www.countyofsb.org/pwd

Rainfall and Reservoir Summary

Updated 8am: 1/13/2023 **Water Year: 2023** **Storm Number: NA**

Notes: Daily rainfall amounts are recorded as of 8am for the previous 24 hours. Rainfall units are expressed in inches.
All data on this page are from automated sensors, are preliminary, and subject to verification.
*Each Water Year (WY) runs from Sept 1 through Aug 31 and is designated by the calendar year in which it ends
County Real-Time Rainfall and Reservoir Website link: ➢ http://www.countyofsb.org/hydrology

Rainfall	ID	24 hrs	Storm 0day(s)	Month	Year*	% to Date	% of Year*	AI
Buellton (Fire Stn)	*233*	0.00	0.00	9.61	16.17	254%	99%	
Cachuma Dam (USBR)	*332*	0.01	0.00	12.47	19.16	258%	98%	
Carpinteria (Fire Stn)	*208*	0.00	0.00	7.60	12.52	187%	74%	
Cuyama (Fire Stn)	*436*	0.01	0.00	4.02	7.15	245%	94%	
Figueroa Mtn. (USFS Stn)	*421*	0.00	0.00	11.51	20.74	250%	98%	4.4
Gibraltar Dam (City Facility)	*230*	0.01	0.00	21.60	32.12	327%	123%	3.2
Goleta (Fire Stn-Los Carneros)	*440*	0.00	0.00	7.88	14.10	192%	77%	
Lompoc (City Hall)	*439*	0.00	0.00	9.51	18.33	326%	127%	3.6
Los Alamos (Fire Stn)	*204*	0.00	0.00	8.82	15.98	280%	105%	
San Marcos Pass (USFS Stn)	*212*	0.00	0.00	26.03	43.58	323%	130%	
Santa Barbara (County Bldg)	*234*	0.00	0.00	11.58	18.38	262%	101%	
Santa Maria (City Pub.Works)	*380*	0.00	0.00	6.30	13.15	253%	99%	
Santa Ynez (Fire Stn /Airport)	*218*	0.01	0.00	10.48	17.10	282%	110%	
Sisquoc (Fire Stn)	*256*	0.01	0.00	6.96	12.95	223%	87%	

County-wide percentage of "Normal-to-Date" rainfall : 262%

County-wide percentage of "Normal Water-Year" rainfall : 102%

County-wide percentage of "Normal Water-Year" rainfall calculated assuming no more rain through Aug. 31, 2023 (End of WY2023).

AI (Antecedent Index / Soil Wetness)
6.0 and below = Wet (min. = 2.5)
6.1 - 9.0 = Moderate
9.1 and above = Dry (max. = 12.5)

Reservoirs

Reservoir Elevations referenced to NGVD-29.
**Cachuma is full and subject to spilling at elevation 750 ft.
However, the lake is surcharged to 753 ft. for fish release water.
(Cachuma water storage is based on Dec 2013 capacity revision)

Click on Site for Real-Time Readings	Spillway Elev. (ft)	Current Elev. (ft)	Max. Storage (ac-ft)	Current Storage (ac-ft)	Current Capacity (%)	Storage Change Mo.(ac-ft)	Storage Change Year*(ac-ft)
Gibraltar Reservoir	1,400.00	1,399.42	4,693	4,564	97.3%	2,552	3,264
Cachuma Reservoir	753.**	744.11	192,978	166,540	86.3%	105,331	95,870
Jameson Reservoir	2,224.00	2,224.34	4,848	4,890	100.9%	1,963	2,064
Twitchell Reservoir	651.50	606.90	194,971	72,737	37.3%	72,737	72,737

Previous Rainfall and Reservoir Summaries

California Irrigation Management Information System (CIMIS)

CIMIS Daily Report

Rendered in ENGLISH Units.
Thursday, December 1, 2022 - Monday, January 2, 2023
Printed on Tuesday, January 3, 2023

Santa Ynez - Central Coast Valleys - Station 64

Date	ETo (in)	Precip (in)	Sol Rad (Ly/day)	Avg Vap Pres (mBars)	Max Air Temp (°F)	Min Air Temp (°F)	Avg Air Temp (°F)	Max Rel Hum (%)	Min Rel Hum (%)	Avg Rel Hum (%)	Dew Point (°F)	Avg Wind Speed (mph)	Wind Run (miles)	Avg Soil Temp (°F)
12/1/2022	0.03	0.10	111	11.7	59.5	49.0	53.1	100	57	85	48.7	2.7	65.8	59.9
12/2/2022	0.00	0.08 H	56	14.6 Y	62.1	51.7 Y	56.7	100	81	93 Y	54.6 Y	2.0	48.1	60.1
12/3/2022	0.01	0.07 H	101	16.7 Y	63.9	56.2 Y	59.5 Y	100	83	96 Y	58.4 Y	2.8	66.3	60.3
12/4/2022	0.03	0.06	145	14.9 Y	65.2	51.4	57.2	100	61	93 Y	55.3 Y	2.4	56.7	60.9
12/5/2022	0.07	0.03	275	11.7	62.1	45.3	53.4	100	54	84	48.7	3.3	80.1	61.2
12/6/2022	0.06	0.03	259	10.3	62.9	39.0	50.4	100	46	83	45.4	2.0	49.2	61.0
12/7/2022	0.05	0.02 H	253	8.8	61.8	36.1	45.1	100	53	87	41.3	1.7	41.4	60.6
12/8/2022	0.04	0.02	213	9.0	60.0	34.2	44.4	100	62	91	41.9	1.8	44.0	59.8
12/9/2022	0.06	0.02	269	10.3	65.8	36.1	48.9	100	55	88	45.4	2.5	60.0	59.2
12/10/2022	0.02	0.02	134	13.4	60.9	45.7	54.0	100	79	94	52.3	4.8	115.8	59.0
12/11/2022	0.05	0.04 H	228	11.0	58.7	38.0	49.6	100	57	91	47.0	2.9	70.5	58.6
12/12/2022	0.06	0.04	263	9.0	57.8	36.2	46.6	100	58	83	41.7	3.4	81.1	58.8
12/13/2022	0.06	0.07 H	290	7.1	59.8	28.9	41.5	100	41	80	35.6	1.8	43.6	58.2
12/14/2022	0.06	2.22 H	274	7.9	62.4	28.2	42.8	100	46	84	38.4	1.9	44.5	57.4
12/15/2022	0.03	0.00	171	9.2	59.2	33.4	45.8	100	62	88	42.5	1.7	40.9	56.8
12/16/2022	0.05	0.00	247	8.6	67.2	35.6	47.2	100	31	78	40.6	1.7	40.7	56.6
12/17/2022	0.03	0.00	177	7.2	63.3	30.1	41.5	100	32	81	36.0	1.5	35.1	56.5
12/18/2022	0.06	0.00	288	7.0	65.0	27.1	42.0	100	33	78	35.5	2.0	47.7	55.9
12/19/2022	0.06	0.00	281	7.7	65.5	26.8	42.8	100	40	82	37.8	1.8	43.9	55.4
12/20/2022	0.06	0.00	268	8.7	65.5	31.7	45.1	100	48	85	41.0	2.3	54.7	55.1
12/21/2022	0.07	0.00	272	8.5	71.5	32.6	46.8	100	37	78	40.4	2.1	49.8	55.0
12/22/2022	0.04	0.00	195	9.4	68.1	33.7	47.9	100	45	83	42.9	1.9	44.9	55.1
12/23/2022	0.05	0.00	238	12.0	66.0	43.1	51.0	100	66	94	49.3	2.3	54.7	55.2
12/24/2022	0.06	0.00	276	10.7	74.6	40.0	51.8	100	39	81	46.3	2.1	51.2	55.8
12/25/2022	0.07	0.00	281	9.2	82.4 Y	34.2	52.4	100	23	69	42.4	1.7	41.1	56.3
12/26/2022	0.04	0.00	177	10.8	72.6	38.0	52.4	100	46	81	46.7	2.0	47.6	56.4
12/27/2022	0.00	1.21	26	13.6 Y	55.7	48.6	53.0	100	91	99 Y	52.8 Y	1.9	45.5	56.4
12/28/2022	0.06	0.09	276	12.1	67.0	45.3	54.4	100	43	84	49.6	2.5	60.0	56.4
12/29/2022	0.00	0.01	52	13.2 Y	58.4	48.3	53.3	100	76	95 Y	51.9 Y	2.0	49.1	56.6
12/30/2022	0.02	0.04	117	15.9 R	64.5	53.9 Y	57.8 Y	100	85	– R	– I	2.3	54.8	56.8
12/31/2022	0.06	1.20	52	7.1	60.2	51.0 Y	57.4 Y	100	1	44 Y	35.9 Y	3.5	83.7	57.5
Tots/Avgs	1.36	5.37	202	10.6	64.2	39.7	49.9	100	53	84	44.9	2.3	55.2	57.7

Santa Ynez - Central Coast Valleys - Station 64

Date	ETo (in)	Precip (in)	Sol Rad (Ly/day)	Avg Vap Pres (mBars)	Max Air Temp (°F)	Min Air Temp (°F)	Avg Air Temp (°F)	Max Rel Hum (%)	Min Rel Hum (%)	Avg Rel Hum (%)	Dew Point (°F)	Avg Wind Speed (mph)	Wind Run (miles)	Avg Soil Temp (°F)
1/1/2023	0.09 H	0.07	195	0.1 R	58.2	43.8	52.1	2 H	1 H	– R	– I	5.0	119.7	57.7
1/2/2023	0.06	0.00	53	1.5 Y	53.7	38.1	46.9	68 H	1 H	14 Y	-0.1 Y	4.0	96.0	57.4
Tots/Avgs	0.15	0.07	124	0.8	56.0	41.0	49.5	35	1	14	-0.1	4.5	107.9	57.6

Flag Legend		
A - Historical Average	I - Ignore	R - Far out of normal range
C or N - Not Collected	M - Missing Data	S - Not in service
H - Hourly Missing or Flagged Data	Q - Related Sensor Missing	Y - Moderately out of range
Conversion Factors		

CENTRAL COAST WATER AUTHORITY

MEMORANDUM

TO: Ray Stokes, Executive Director
Dessi Mladenova, Controller

January 13, 2023

FROM: Christine Forsyth, Administrative Assistant

SUBJECT: REVISED Monthly Water Deliveries

[Note: This Revised Delivery Report for the Month of December 2022 Reflects a Change in allocated water between Goleta and La Cumbre only. Please disregard the previous December report]

According to the CCWA revenue meters at each turnout, the following deliveries were made during the month of December 2022:

Project Participant	Delivery Amount (acre-feet)
Chorro	152.02
López	0.00
Shandon	0.00
Guadalupe	0.26
Santa Maria	0.00
Golden State Water Co.	0.00
Vandenberg	0.00
Buellton	0.00
Solvang	0.00
Santa Ynez ID#1	0.00
Bradbury	222.50
TOTAL	**374.78**

In order to reconcile these deliveries with the DWR revenue meter, which read 379 acre-feet, the following delivery amounts should be used for billing purposes:

Project Participant	Delivery Amount (acre-feet)
Chorro	**156**
López	**0**
Shandon	**0**
Guadalupe	**0**
Santa Maria	**0***
Golden State Water Co	**0***
Vandenberg	**0**
Buellton	**0**
Solvang	**0**
Santa Ynez ID#1	**0**
Bradbury	**223**
TOTAL	**379**

***Golden State Water Company delivered 0 acre-feet into its system through the Santa Maria turnout. This delivery is recorded by providing a credit of 0 acre-feet to the City of Santa Maria and a charge in the same amount to the Golden State Water Company.**

Notes: Santa Ynez ID#1 water usage is divided into 0 acre-feet of Table A water and 0 acre-feet of exchange water.

The exchange water is allocated as follows

Project Participant	Exchange Amount (acre-feet)
Goleta	0
Santa Barbara	0
Montecito	0
Carpinteria	0
TOTAL	**0**

Bradbury Deliveries into Lake Cachuma are allocated as follows:

Project Participant	Delivery Amount (acre-feet)
Carpinteria	0
Goleta	210
La Cumbre	0
Montecito	0
Morehart	13
Santa Barbara	0
Raytheon	0
TOTAL	**223**

cc: Tom Bunosky, GWD
Mike Babb, Golden State WC
Rebecca Bjork, City of Santa Barbara
Janet Gingras, COMB
Craig Kesler, San Luis Obispo County
Paeter Garcia, Santa Ynez RWCD ID#1
Shad Springer, City of Santa Maria
Shannon Sweeney, City of Guadalupe
Robert MacDonald, Carpinteria Valley WD
Mike Alvarado, La Cumbre Mutual WC
Pernell Rush, Vandenberg AFB
Nick Turner, Montecito WD
Jose Acosta, City of Solvang
Rose Hess, City of Buellton

REVIEW AND APPROVAL OF DELIVERY RECORDS AND ASSOCIATED CALCULATIONS

John Brady
Deputy Director, Operations and Engineering
Central Coast Water Authority

A REGULAR MEETING OF THE OPERATING COMMITTEE of the CENTRAL COAST WATER AUTHORITY

will be held at 9:00 a.m., on Thursday, January 12, 2023

via URL: https://meetings.ringcentral.com/j/1498082164
or via telephone by dialing 1 (623) 404-9000 and entering code 149 808 2164 #

In response to the spread of the COVID-19 virus, Governor Newsom declared a state of emergency which directly impacts the ability of legislative bodies and the public to meet safely in person. To help minimize the potential spread of the COVID-19 virus, the CCWA Board of Directors shall consider whether to hold this public meeting telephonically pursuant to the requirements of Government Code section 54953(e), as amended by Assembly Bill 361 (2021). The CCWA Board of Directors and public will participate in this meeting by video call or telephone.

Public Comment on agenda items may occur via video call or telephonically, or by submission to the Board Secretary via email at lfw@ccwa.com no later than 8:00 a.m. on the day of the meeting. In your email, please specify (1) the meeting date and agenda item (number and title) on which you are providing a comment and (2) that you would like your comment read into the record during the meeting. If you would like your comment read into the record during the meeting (as either general public comment or on a specific agenda item), please limit your comments to no more than 250 words.

Every effort will be made to read comments into the record, but some comments may not be read due to time limitations. Please also note that if you submit a written comment and do not specify that you would like this comment read into the record during the meeting, your comment will be forwarded to Board members for their consideration.

Pursuant to Government Code section 54957.5, non-exempt public records that relate to open session agenda items and are distributed to a majority of the Board less than seventy-two (72) hours prior to the meeting will be available on the CCWA internet web site, accessible at https://www.ccwa.com.

I. Call to Order and Roll Call

II. * Resolution No. 23-01 Resolution of the Operating Committee of the Central Coast Water Authority Authorizing Remote Teleconference Meetings Under the Ralph M. Brown Act
Staff Recommendation: Approve Resolution No. 23-01 Resolution of the Operating Committee of the Central Coast Water Authority Authorizing Remote Teleconference Meetings Under the Ralph M. Brown Act

III. Public Comment – (Any member of the public may address the Committee relating to any matter within the Committee's jurisdiction. Individual Speakers may be limited to five minutes; all speakers to a total of fifteen minutes.)

IV. * Consent Calendar
A. Minutes of the October 13, 2022 Operating Committee Meeting
Staff Recommendation: Approve Consent Calendar.

V. Executive Director's Report
A. Operations Update
Staff Recommendation: Informational item only.
B. Water Supply Situation Report
Staff Recommendation: Informational item only.
C. 2023 Supplemental Water Purchase Program
Staff Recommendation: Informational item only.
* D. Ocean Well Desalination Presentation
Staff Recommendation: Informational item only.
E. Update on the Aquaterra Water Bank
Staff Recommendation: Informational item only.

Continued

* Indicates attachment of document to agenda packet

255 Industrial Way
Buellton, CA 93427
(805) 688-2292
Fax (805) 686-4700
www.ccwa.com

✱ F. Cost Allocation of Nipomo and Tank 5 Dosing Facilities
Staff Recommendation: That the Operating Committee recommend to the CCWA Board of Directors that the costs of the Nipomo and Tank 5 chemical dosing facilities be allocated 50% to the Water Treatment Plant subject to the Regional Water Treatment Plant Allocation and the Santa Ynez Exchange Agreement adjustments and 50% to the financial reaches in which the dosing facilities are located.

✱ G. FY 2023/24 Budget Preparation Schedule
Staff Recommendation: Informational item only.

VI. Reports from Committee Members for Information Only

VII. Date of Next Regular Meeting: March 9, 2023

VIII. Adjournment

THIS ITEM APPEARS ON

BOARD MEETINGS (/BOARD-MEETINGS)

JAN
26
2023

Board Meeting

will be held at 9:00 a.m., on Thursday, Januaury 26, 2023

at 255 Industrial Way, Buellton, California 93427

WATER MAIN EXTENSION AGREEMENT

This Water Main Extension Agreement ("Agreement") is made by and between the Santa Ynez River Water Conservation District, Improvement District No.1 ("District") and _____("Applicant") on _____, 20__ ("Effective Date") at Santa Ynez, California, with reference to the following facts and intentions. The District and Applicant may be referred to herein individually as a "Party" and collectively as the "Parties."

A. The District owns and operates a water distribution system (collectively "District System") for reasonable and beneficial use by the District and its customers located within portions of the Santa Ynez Valley, County of Santa Barbara, State of California;

B. Applicant owns certain real property located in the Santa Ynez Valley, County of Santa Barbara, State of California, commonly known as Assessor's Parcel Number _____, and more particularly described in the legal description attached as Exhibit A, which is incorporated by this reference ("Property");

C. Applicant is proposing to develop the Property, generally consisting of _____ ("Project");

D. On or about _____, 20__ Applicant submitted an application ("Application") requesting the District to approve a water main extension ("Main Extension") in order to provide water service to the Property; and,

E. After design and construction of the Main Extension, Applicant agrees to offer to dedicate the Main Extension to the District and the District agrees to accept Applicant's offer of dedication pursuant to the terms and conditions of this Agreement.

NOW THEREFORE, the Parties agree as follows:

1. Water Main Extension.

1.1 Compliance. Applicant shall comply with the District's Rules and Regulations and procedures related to main extensions including, but not limited to, the Application and the District's main extension procedures.

1.2 Design and Construction. The Main Extension shall be designed and constructed by the Applicant in accordance with the District's standards and specifications and shall include all facilities necessary to provide the requested water service to the Property including, but not limited to, a main extension and valve(s), service connection(s), fire hydrant(s), and other appurtenances as shown on the engineering plans and contract documents to be approved by the District in its sole and absolute discretion ("Contract Documents"). Construction of the Main Extension shall be performed by a California licensed contractor qualified to perform such work and hired by Applicant subject to prior approval by the District, which approval shall not be unreasonably withheld. Unless expressly identified in any construction contract awarded by Applicant, no other contractor(s), sub-contractor(s), or sub-consultant(s) shall be authorized to perform any work related to the Main Extension without the prior approval by the District, which approval shall not be unreasonably withheld. Construction of the Main Extension shall be in conformance with the Contract Documents, except modifications, if any, that are reviewed and

approved in writing by the District. Applicant shall furnish the District with one (1) complete set of duplicate originals and two (2) copies of approved as-built Contract Documents. The as-built Contract Documents must be in editable electronic format and must include horizontal and vertical locations of all lines, in State Plane Coordinates.

1.3 Permits. Applicant represents and warrants that the design and construction of the Main Extension shall comply with all local, state, and federal laws, regulations, and orders. Applicant, at its sole cost and expense, shall obtain all permits and approvals from such governmental agencies having jurisdiction as necessary for performance of the activities related to this Agreement prior to construction.

1.4 Environmental Analysis. Applicant represents and warrants that the design and construction of the Main Extension shall comply with all applicable environmental laws, including, but not limited to, the California Environmental Quality Act (CEQA). Applicant, at its sole cost and expense, shall ensure compliance with all applicable environmental laws and shall provide copies of all environmental documents related to the Main Extension to the District as they are finalized and approved.

1.5 Right-of-Ways and Easements. The Main Extension shall be constructed within existing right-of-ways and easements for beneficial use by the District prior to the District accepting an offer of dedication ("Offer of Dedication") from the Applicant and prior to the District commencing water service to the Property. If any portion of the Main Extension is not constructed in an existing right-of-way or easement for beneficial use by the District, Applicant shall obtain for the benefit of the District, a grant of easement prior to the District's acceptance of the Offer of Dedication. The grant of easement shall be in a form satisfactory to the District in its sole and absolute discretion.

Each new grant of easement that is required by this Section 1.5 shall be accompanied by a preliminary title report from a title insurance company dated within fourteen (14) days prior to the date that the easement(s) is granted and delivered to the District. For each easement(s) granted to the District, Applicant shall provide to the District, for each parcel affected by the easement(s), proof of written subordination by any person or entity holding a deed of trust on the affected parcel. Upon granting of the new easement to the District, Applicant immediately shall record each easement in the official records of the Santa Barbara County Clerk-Recorder Division, and conformed proof of such recording shall be provided to the District. The requirements of this Section shall be undertaken at Applicant's sole cost and expense, and shall be conditions precedent to, and must be satisfied in full to the District's satisfaction in its sole and absolute discretion prior to the commencement of any work related to the Main Extension.

2. Term. The term of this Agreement shall commence on the Effective Date and continue until one (1) year after the completion date specified in the Notice of Completion (defined below).

3. Applicant's Performance. The design, planning, permitting, construction, testing, and any necessary maintenance and repair of the Main Extension prior to the District's acceptance of the Offer of Dedication, shall be performed by Applicant at its sole cost and expense with construction to be completed within _____ (__) months ("Target Completion Date") from the Effective Date regardless whether Applicant proceeds with the Project or other development of the Property.

4. Design and Construction Standards. All design and construction of the Main Extension shall be undertaken by Applicant in accordance with District's standards and specifications and

shall also comply with all requirements of the Central Coast Regional Water Quality Control Board, the State Water Resources Control Board, Division of Drinking Water, and the County of Santa Barbara. All of the construction and engineering specifications and plans, including the underlying design calculations, for the Main Extension shall be submitted to the District for its written approval, in its sole and absolute discretion, prior to Applicant's award of any construction contract and prior to the commencement of any construction of the Main Extension. Applicant shall incorporate the District's written comments and revisions into the Contract Documents. The Contract Documents submitted to the District for review shall be in a size and scale acceptable to the District. Each set of Contract Documents must include: Title Sheet, Construction Notes, Plan View, Profiles, Detail, Hydraulic Modeling, and Grading Sheets, including cut and fill calculations for the proposed water system facilities. All work shall be subject to field inspection and approval by the District in its sole and absolute discretion. The District shall not be liable or responsible for errors, omissions, or changes required by site conditions or conflicts that may arise during construction or deviation from the District-approved Contact Documents.

5. Letter of Credit or Performance Bond. Prior to the start of any construction of the Main Extension, Applicant shall furnish the District with a letter of credit or performance bond conditioned upon Applicant completing construction by the Target Completion Date and in accordance with the Contract Documents as approved by the District, the District's Rules and Regulations, and this Agreement. The letter of credit or performance bond shall be in a form approved by the District and issued in an amount equal to at least the contract amount for the construction of the Main Extension or an Engineer's Cost Estimate for the entirety of the construction to be performed, which amount must be approved by the District. The letter of credit or performance bond shall be released one (1) year after the completion date specified in the Notice of Completion (defined below).

6. Indemnification. Applicant shall hold harmless, defend, and indemnify the District, and its elected officials, officers, employees, contractors, consultants, agents, and representatives from any and all liabilities, losses, costs, expenses, claims, suits, actions, damages, and claims of damages caused by or arising out of the Project, the Main Extension, or any of the activities under this Agreement whether by Applicant, or its owners, officers, managers, employees, contractors, subcontractors, consultants, agents, or representatives, including, but not limited to, activies relating to design, planning, permitting, construction, testing, maintenance, or repair of the Main Extension, except to the extent any liabilities, losses, costs, expenses, claims, suits, actions, damages, or claims of damages are caused by the District's sole negligence or willful misconduct. Applicant shall cause to be inserted into any construction contract(s), for the work to be performed under this Agreement, an indemnification clause substantially similar to the one in this Section 6 and for the benefit of the District.

7. Insurance. Prior to and at all times during which any construction of the Main Extension is being carried out under this Agreement, Applicant shall require its consultants, engineers, and contractor(s) to procure and maintain in full force and effect, the following insurance coverages, with certificates of insurance provided to the District:

7.1. Commercial General Liability. Commercial general liability insurance for bodily injury (including death), personal injury, property damage, owned and non-owned equipment, blanket contractual liability, completed operations, explosion, collapse, underground excavation, and removal of lateral support covering the contractor's activities under this Agreement, which coverage shall be at least as broad as Insurance Services Office (ISO) Occurrence Form CG

0001, and with a limit in an amount of not less than One Million Dollars ($1,000,000). If insurance with a general aggregate limit or products-completed operations aggregate limit is used, either the general aggregate limit shall apply separately (with the ISO CG 2503, or ISO CG 2504, or insurer's equivalent endorsement provided to the District) or the general aggregate limit and products-completed operations aggregate limit shall be twice the required occurrence limit.

7.2. Workers' Compensation and Employer's Liability Insurance. Workers' compensation insurance covering employees in accordance with statutory requirements, and employer's liability insurance with limits of not less than One Million Dollars ($1,000,000) each accident, One Million Dollars ($1,000,000) policy limit, and One Million Dollars ($1,000,000) each employee.

7.3. Automobile Liability. Automobile liability insurance for bodily injury and property damage, which coverage shall be at least as broad as ISO Business Auto Coverage (Form CA 0001), covering Symbol 1 (any auto), and with a limit in an amount of not less than One Million Dollars ($1,000,000) each accident.

7.4. Builder's Risk. Builder's Risk insurance shall be of the "all risk" type, shall be written in completed value form, and shall protect the contractor and the District against risks of damage to buildings, structures, and materials and equipment. The amount of such insurance shall be not less than the insurable value of the work at completion. The policy shall provide for losses to be payable to the contractor and the District as their interests may appear. The policy shall contain a provision that in the event of payment for any loss under the coverage provided, the insurance company shall have no rights of recovery against the contractor or the District. The policy shall insure against all risks of direct physical loss or damage to property from any external cause including flood and earthquake.

7.5. General Provisions. The commercial general liability and automobile liability policies shall contain, or be endorsed to contain, the following provisions: (1) the District, its elected officials, officers, agents, and employees shall be named as additional insureds; (2) the insurance shall be primary with respect to the District, its elected officials, officers, agents, and employees, and any insurance, self-insurance, or other coverage maintained by the District, its elected officials, officers, agents, and employees shall not contribute to it; (3) any failure to comply with the reporting or other provisions of the policies, including breaches and warranties, shall not affect coverage provided to the District, its elected officials, officers, agents, and employees; and (4) the insurance shall apply separately to each insured against whom the claim is made or suit is brought, except with respect to the limits of the insurer's liability. Each insurance policy shall state, or be endorsed to state, that coverage shall not be canceled by the insurance carrier, except after thirty (30) days prior written notice has been given to the District in accordance with the standard ISO Accord Form. Thirty (30) days written notice shall be provided to the District prior to the non-renewal of any policy or policies required by this Agreement. All insurance coverages, as initially provided and as modified or changed, shall be subject to reasonable approval by the District. Any deductible or self-insured retention must be declared to and approved by the District. Upon demand of the District, certified copies of the required insurance policies and receipts for payment of premiums for all policies shall be made available for inspection by the District. The insurance coverages required under this Agreement shall not limit the indemnification obligations of the Applicant under this Agreement, and the failure to maintain the insurance coverages required above shall constitute a material breach of this Agreement.

8. District Costs and Expenses. Concurrent with Applicant's submission of the Application to the District, Applicant deposited with the District three thousand five hundred dollars ($3,500.00) as an initial amount estimated by the District to be the District's costs and expenses in connection with its review, approval, inspection, and general administration activities under this Agreement. These District-related costs and expenses may include, but are not limited to, plan checking, engineering review, legal review, survey work and review, inspections, as-built plans review, administrative time, and miscellaneous costs as determined by the District. Upon completion of all work under this Agreement, and upon final approval and acceptance of the Main Extension by the District in its sole and absolute discretion, the District shall furnish Applicant with a complete written accounting of all of the District's costs and expenses incurred under this Agreement. If the actual costs incurred by the District are in excess of the initial deposit amount, the District will bill Applicant for such excess which shall be due and payable to the District prior to the District's acceptance of the Offer of Dedication. If the actual costs incurred by the District are less than the initial deposit amount, the District shall refund such excess to Applicant, provided that Applicant is in compliance with the terms and conditions of this Agreement.

9. Construction.

9.1. Requirements. Applicant's construction of the Main Extension shall be in accordance with the Contract Documents as approved by the District in accordance with this Agreement. When Applicant is ready to commence construction of the Main Extension, Applicant shall notify the Distict of the commencement date, providing at least seven (7) days prior written notice to the District. A pre-construction conference shall be scheduled at least three (3) business days prior to the commencement of any construction, where Applicant, the District, and/or the Parties' respective designees shall have the opportunity to attend. Prior to the commencement of any construction work, the District will undertake the shutdown and/or isolation of the existing water water line(s) and water service facilities, as determined by the District, and thereafter the District shall provide notice to Applicant that work may commence on the Main Extension. At not time shall Applicant or Applicant's contractor(s), subcontractor(s), representatives, or agents operate the District's valves, hydrants, or other components of the District's existing water service facilities.

9.2. District Access and Inspection. Throughout the construction activities for the Man Extension, Applicant shall at all times provide the District with full and free access to inspect all work in progress and as completed. Inspections are for the sole benefit of the District and do not relieve the Applicant or Applicant's contractor(s) of any responsibility for the quality of work or damages to or loss of any work prior to acceptance by the District. Inspection of materials and work shall be at the District's sole and absolute direction. Applicant shall notify the District in writing at least two (2) business days in advance of the time required for inspection. Any work or water system facilities covered without District inspection shall be completely uncovered for inspection by the District at Applicant's expense.

10. Dedication. Promptly upon completion of construction of the Main Extension, Applicant shall record or cause to be recorded a Notice of Completion in the manner, form, and time required by the California Civil Code, and shall furnish the District with a conformed copy of the recorded Notice of Completion (or the original thereof as endorsed and filed by the County Recorder). Not less than thirty-five (35) days and not more than seventy (70) days after the recording of said Notice, Applicant shall furnish to the District evidence that no claim of lien or stop notice has been recorded against the Main Extension, or if any lien or notice has been recorded, evidence that

any claim has been satisfied or bonded against, which evidence may include a lien guarantee from a title insurance company. Upon satisfaction of the above requirements, Applicant shall offer to dedicate the constructed Main Extension to the District on a form approved by the District.

11. Guaranty.

11.1. Requirements. Applicant guarantees that the entire work and facilities constructed by Applicant shall fully meet and satisfy all requirements of this Agreement as to the quality of workmanship and materials used in undertaking the work and facilities. Applicant agrees to make, at its own expense, any repairs or replacements made necessary by defects in materials or workmanship that become evident within one (1) year after the completion date specified in the Notice of Completion and to restore to full compliance with the requirements of this Agreement any part of the work or facilities which during the one-year period is found to be deficient with respect to any provision of this Agreement.

11.2. Failure to Comply. Applicant shall make all repairs and replacements promptly upon the receipt of a written demand by the District. If Applicant fails to make such repairs and replacements promptly, the District may perform the work and Applicant and shall be liable to the District for the full costs and expenses incurred by the District.

12. Connection of Other Properties. Nothing in this Agreement shall be construed or constructed to preclude the District from allowing properties other than those described in this Agreement from connecting to the Main Extension.

13. Water Service.

13.1 General. Upon acceptance of the Offer of Dedication by the District and upon the complete processing of a Water Serive Application for the Property, the District will make water service available to the Property pursuant to the District's Rules and Regulations.

13.2 Capital Facilities Charges. In addition to any costs and expenses incurred by Applicant under this Agreement, Applicant shall be responsible for paying to the District all applicable Capital Facilities Charges and other fees and charges for any requested water service to the Property in accordance with the District's Rules and Regulations and policies as applicable to all of the District's customers.

14. General Provisions.

14.1. Notices. In order to be effective, all notices, approvals, acceptances, requests, demands, and other communications required or permitted under this Agreement (collectively, a "Notice") shall be in writing and shall be delivered, either in person, via confirmed electronic mail, or by mailing the same by United States mail (postage prepaid, registered or certified, return receipt requested) or by Federal Express or other similar overnight delivery service, to the Party to whom the Notice is directed at the address of such Party as follows:

To District: Santa Ynez River Water Conservation District,
Improvement District No.1
Attn: General Manager
P.O. Box 157
Santa Ynez, California 93460

With a copy to: Gary M. Kvistad
Brownstein Hyatt Farber Schreck, LLP
2021 Anacapa Street, Second Floor
Santa Barbara, California 93101

To Applicant: _____
_____
_____
_____

Any Notice given by mail shall be deemed delivered two (2) business days after such mailing date, and any Notice given by overnight delivery service shall be deemed delivered one (1) business day after the dispatch date. Either Party may change its address by giving the other Party written notice of its new address.

14.2. Successors and Assigns. This Agreement shall be binding on and shall inure to the benefit of the Parties and their respective heirs, successors, and assigns. Nothing in this Agreement, express or implied, is intended to confer on any person other than the Parties or their respective heirs, successors and assigns, any rights, remedies, obligations, or liabilities under or by reason of this Agreement.

14.3. Assignability. This Agreement shall not be assignable by Applicant without the prior written consent of the District, which shall have the sole discretion to consent or not to consent to any proposed assignment. Any attempted assignment without the prior written consent of the District shall be void.

14.4. Waiver. No waiver by either Party of any provision of this Agreement shall be effective unless explicitly stated in writing and executed by the Party so waiving. Except as provided in the preceding sentence, no action taken pursuant to this Agreement, including, without limitation, any investigation by or on behalf of either Party, shall be deemed to constitute a waiver by the Party taking such action regarding compliance with any representations, warranties, covenants, or provisions of this Agreement. The waiver by either Party of a breach of any provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach. No waiver of any of the provisions of this Agreement shall be deemed, or shall constitute, a waiver of any other provision, whether or not similar, nor shall any waiver constitute a continuing waiver.

14.5. Headings. The section headings contained in this Agreement are for convenience and reference only and shall not affect the meaning or interpretation of this Agreement.

14.6. Severability. If any term, provision, covenant, or condition of this Agreement shall be or become illegal, null, void, or against public policy, or shall be held by any court of competent jurisdiction to be illegal, null, void, or against policy, the remaining provisions of this Agreement shall remain in full force and effect, and shall not be affected, impaired, or invalidated. The term, provision, covenant, or condition that is so invalidated, voided, or held to be unenforceable, shall be modified or changed by the Parties to the extent possible to carry out the intentions and directives set forth in this Agreement.

14.7. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which shall constitute one and the same instrument.

14.8. Governing Law. This Agreement shall be governed by, and interpreted in accordance with, the laws of the State of California, with Superior Court venue proper only in the County of Santa Barbara, State of California.

14.9. Parties in Interest. Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any persons other than the Parties to it and their respective successors and assigns, nor is anything in this Agreement intended to relieve or discharge the obligation or liability of any third persons to either Party to this Agreement, nor shall any provision give any third persons any right of subrogation or action against either Party to this Agreement.

14.10. Attorney and Consultant Fees. If any legal proceeding (lawsuit, arbitration, etc.), including but not limited to an action for injunctive and/or declaratory relief, is brought to enforce or interpret the provisions of this Agreement, the prevailing Party shall be entitled to recover actual attorneys' and consultants' fees and costs, which may be determined by the court in the same action or in a separate action brought for that purpose. The attorneys' and consultants' fees award shall be made as to fully reimburse for all attorneys' fees, paralegal fees, consultants' fees, and costs and expenses actually incurred in good faith, regardless of the size of the judgment, it being the intention of the Parties to fully compensate for all attorneys' fees, paralegal fees, consultants' fees, and costs and expenses paid or incurred in good faith.

14.11. Good Faith. The Parties agree to exercise their best efforts and good faith to effectuate all the terms and conditions of this Agreement and to execute such further instruments and documents as are necessary or appropriate to effectuate all of the terms and conditions of this Agreement.

14.12. Construction. The provisions of this Agreement should be liberally construed to effectuate its purposes. The language of all parts of this Agreement shall be construed simply according to its plain meaning and shall not be construed for or against either Party, as each Party has participated in the drafting of this document and had the opportunity to have their legal counsel review it.

14.13. Several Obligations. Except where specifically stated in this Agreement to be otherwise, the duties, obligations, and liabilities of the Parties are intended to be several and not joint or collective. Nothing contained in this Agreement shall be construed to create an association, trust, partnership, or joint venture or impose a trust or partnership duty, obligation, or liability on or with regard to either Party. Each Party shall be individually and severally liable for its own obligations under this Agreement.

14.14. Authority. The individuals executing this Agreement represent and warrant that they have the authority to enter into this Agreement and to perform all acts required by this Agreement, and that the consent, approval, or execution of or by any third party is not required to legally bind either Party to the terms and conditions of this Agreement.

14.15. Entire Agreement. This Agreement contains the entire understanding and agreement of the Parties with regard to the specific subject matter of this Agreement, and

supersedes all prior agreements and understandings, oral and written, between the Parties. This Agreement may be altered, amended, or modified only by an instrument in writing, executed by the Parties to this Agreement and by no other means. Each Party waives its future right to claim, contest, or assert that this Agreement was modified, canceled, superseded, or changed by any oral agreement, course of conduct, waiver, or estoppel.

IN WITNESS WHEREOF, the Parties hereto have entered this Agreement as of the Effective Date set forth above.

Santa Ynez River Water Conservation District, Improvement District No.1

By: _____
Paeter E. Garcia, General Manager

Attest:

By: _____
Mary Martone, Secretary

Applicant: _____

By: _____
_____, _____
(Name) (Title)

HOLLINGSWORTH
WATER LINE EXTENSION PLAN

2905 BRAMADERO RD.
LOS OLIVOS, CA. 93441
APN: 135-330-003

EASEMENT LEGEND

1 GENERAL NOTE: CONTRACTOR SHALL STAKE THE UTILITY EASEMENT IN ORDER TO VERIFY PROPER WATERLINE PLACEMENT WITHIN THE EASEMENT.

- A — 42' WIDE EASEMENT FOR WATER MAINS AND APPURTENANCES WITH INGRESS AND EGRESS PER INST. NO. 89-067541 O.R.
- B — C/L 10' WIDE EASEMENT FOR PUBLIC UTILITIES TO P.G. & E. PER INST. NO. 91-030200 O.R.
- C — 42' WIDE EASEMENT FOR GENERAL ROAD, EQUESTRIAN AND HIKING, PUBLIC UTILITIES AND OTHER PURPOSES PER INST. NO. 91-034735 O.R.
- D — C/L 20' WIDE EASEMENT FOR PRIVATE EQUESTRIAN AND HIKING TRAIL PURPOSES PER INST. NO. 92-018395 O.R.
- E — C/L 10' EASEMENT FOR PRIVATE UTILITIES AND PUBLIC UTILITIES PER INST. NO. 92-036649 O.R.
- F — EASEMENTS FOR GENERAL ROAD, PUBLIC AND PRIVATE UTILITIES, EQUESTRIAN AND HIKING TRAILS AND INCIDENTAL PURPOSES PER R/S BOOK 143, PAGES 90 THROUGH 92
- G — EASEMENTS FOR GENERAL ROAD, HIKING AND EQUESTRIAN TRAILS, UTILITIES AND MAINTENANCE PER INST. NO. 92-104210 O.R.
- H — 34' WIDE EASEMENT FOR WATER MAINS AND APPURTENANCES WITH INGRESS AND EGRESS TO THE S.Y.R.W.C.D. PER INST. NO. 93-022897 O.R.
- I — C/L 10' WIDE EASEMENT FOR PRIVATE EQUESTRIAN AND HIKING TRAIL PURPOSES PER INST. NO. 93-047371 O.R.
- J — EASEMENT FOR PRIVATE ROAD AND UTILITIES PER INST. NO. 92-58952 O.R.
- K — EASEMENT FOR INGRESS, EGRESS, ACCESS, ROADWAY & PUBLIC UTILITIES PER INSTRUMENT NO. 99-94409 O.R.

WATERLINE CALCULATIONS

WATER DEMAND WAS CALCULATED BY ARCHITECT EVANS JONES DATED OCTOBER 26, 2021. THE DEMAND WAS USED TO DETERMINE THE PRESSURE CHANGE ALONG THE PIPE. THE POTENTIAL FUTURE ADU IS INCLUDED IN THIS CALCULATION AS WELL AS THE PROPOSED FUTURE MAIN RESIDENCE. THE FULL DEMAND CALCULATIONS ARE SHOWN ON THIS SHEET.

TOTAL DEMAND:

MAIN RESIDENCE	= 49 GPM
ADU	= 44 GPM
FIRE DEMAND	= 500 GPM
MAX DEMAND	= 500 GPM

1.	DESIGN FLOW RATE (PER ARCHITECT & FIRE):	500 GPM
2.	HEADLOSS AT END OF PIPE:	6.7 FT (2.9 PSI)
3.	ASSUMED STATIC PRESSURE @ CONNECTION:	100 PSI
4.	ESTIMATED RESIDUAL PRESSURE AT OUTLET: CHECK: PVC CL200 RATED PIPE PRESSURE	102.9 PSI 200 PSI, (OK)

$$h = \frac{10.44 L Q^{1.85}}{C^{1.85} d^{4.87}}$$

Using Hazen-Williams	
E1, connection, inv	831.3 ft
P1, static pressure (assumed)	100.0 psi
E2, outlet	817.3 ft
E3 total elev. loss, hz (increase)	14.0 ft
L, length	580 ft
Q, design	500 gpm
d, pipe diameter	8 in
C (Hazen-Williams coeffiecent PVC)	150
headloss due to flow, hf	-2.3 ft
minor losses, hm (assumed)	-5.0 ft
TDH, hz+hf+hm	6.7 ft
Total dynamic head (increase)	2.9 psi
P2, residual pressure	102.9 psi
V=Q/A	3.19 ft/s

THE PRESSURE WILL BE 2.9 PSI HIGHER AT THE END OF THE EXTENSION. PRESSURE IS ADEQUATE FOR DEMAND NEEDS AND WILL NOT EXCEED MAXIMUM PIPE PRESSURE RATINGS.

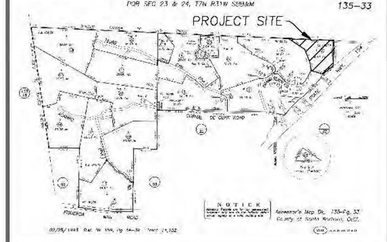
SITE PLAN
SCALE: 1"=60'

VICINITY MAP

N.T.S.

ASSESSORS PARCEL MAP

N.T.S.



PROJECT DATA

PROJECT ADDRESS:	2905 BRAMADERO RD. LOS OLIVOS, CA 93441
CLIENT INFORMATION:	JEANNE HOLLINGSWORTH P.O. BOX 731 / 2945 ALTA ST. LOS OLIVOS, CA 93441
PROPOSED WORK:	WATER MAIN EXTENSION TO OWNER'S PROPERTY LINE FROM EXISTING WATER MAIN IN BRAMADERO ROAD THROUGH PRIVATE ROAD AND PUBLIC UTILITIES EASEMENT.

CONSULTANTS

PLANNER:	BRETT JONES JONES LAND USE PLANNING, LLC P.O. BOX 847 / 2922 GRAND AVE. SUITE J LOS OLIVOS, CA 93441 BRETT@JONESLANDUSE.COM (805) 688-4974
ARCHITECT:	TONY CANO AGAVE DESIGN GROUP, INC. P.O. BOX 101 BUELLTON, CA TONYCANO@AGAVEDESIGN.NET (805) 268-2374

GRADING STATISTICS

CUT	170	CY
FILL	150	CY
TOTAL GRADED AREA	1,160	SF
	0.03	ACRES

EARTHWORK QUANTITIES ARE RAW VOLUMETRIC ESTIMATES PERTAINING TO TRENCHING FOR PERMITTING ONLY. EARTHWORK VOLUMES ARE CALCULATED FROM THE EXISTING GROUND SURFACE TO THE TRENCH BOTTOM FOR THE PROJECT LENGTH. CONTRACTOR SHALL PERFORM INDEPENDENT EARTHWORK ANALYSIS FOR PRICING OR PAY PURPOSES. QUANTITIES ABOVE DO NOT INCLUDE CLEARING, GRUBBING, SUBSIDENCE, SHRINKAGE OR EXPANSION FACTORS OR OVEREXCAVATION QUANTITIES. EARTHWORK QUANTITIES ARE INTENDED TO BALANCE ONSITE.

TITLE SHEET

811 Know what's below. Call before you dig.

COAST ENGINEERING & SURVEY, INC.
785 HIGH STREET
SAN LUIS OBISPO, CA. 93401
PH: (805) 439-1920

REV	DATE	BY	DESCRIPTION
1	12/12/22	DEA	SYRWCD-ID1 COMMENT REVISIONS

SCALES
1" = 20' (H)
1" = 4' (V)

WARNING
1 Inch
0" 60"
IF THIS SCALE DOES NOT EQUAL 1", THEN DRAWING IS NOT TO SCALE

DRAWN DEA
CHECKED LML

REGISTERED PROFESSIONAL ENGINEER LYDIA M. LYNCH 80 CIVIL STATE OF CALIFORNIA

DESIGN ENGINEER
SIGNATURE NAME DATE

PROJECT MANAGER
SIGNATURE NAME DATE

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT
WATER FACILITIES REVIEWED
75756
GENERAL MANAGER DATE

TITLE SHEET
2905 BRAMADERO RD
LOS OLIVOS, CA 93441
APN: 135-330-003

PROJECT NO. 22007

SHEET C1 OF 4

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY CONSTRUCTION AND SAFETY ORDERS
2. ALL WORK TO BE IN CONFORMANCE WITH SYRWCD ID1 WATERWORKS STANDARDS AND CONSTRUCTION SPECIFICATIONS. 1
3. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES WITH FACILITIES IN THE CONSTRUCTION AREA A MINIMUM OF 48 HRS PRIOR TO COMMENCING CONSTRUCTION. CALL UNDERGROUND SERVICE ALERT (USA) AT 1-800-422-4133 .
4. THE TERM "DISTRICT MANAGER" SHALL MEAN THE GENERAL MANAGER OF THE SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, IMPROVEMENT DISTRICT NO. 1, OR AUTHORIZED AGENT.
5. COMMENCEMENT OF CONSTRUCTION SHALL NOT BEGIN UNTIL SUCH TIME THAT THE DISTRICT HAS SIGNED ALL PLANS. ALL REQUIRED EASEMENTS HAVE BEEN ACQUIRED AND RECORDED AND ALL CONSTRUCTION PERMITS AND/OR WRITTEN APPROVALS HAVE BEEN OBTAINED THROUGH THE APPROPRIATE AGENCIES. A "NOTICE TO PROCEED" MAY BE REQUIRED.
6. ALL BARRICADES, TRAFFIC CONTROL & WARNING SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE PERMITTING REQUIREMENTS.
7. CONTRACTOR SHALL VERIFY WATER, SEWER AND STORM DRAIN FLOW LINE ELEVATIONS WITHIN THE PROJECT AREA PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DISTRICT AND THE APPLICANT'S PROJECT ENGINEER OF ANY POTENTIAL CONFLICTS BETWEEN EXISTING FACILITIES AND THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.
8. ONCE POTHOLING LOG AND EASEMENT STAKING IS COMPLETE, CONTRACTOR AND PROJECT ENGINEER TO PROPOSE FINALIZED ALIGNMENT FOR DISTRICT APPROVAL. ONLY 22.5 DEGREE BENDS TO BE USED. !
9. CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH, MATERIAL & SIZE OF EXISTING WATER LINES AT POINTS OF PROPOSED CONNECTION. IF PIPE DATA IS MISREPRESENTED ON PLANS THE APPLICANT'S PROJECT ENGINEER SHALL BE NOTIFIED IMMEDIATELY AND NO CONNECTION SHALL BE MADE TO THE WATER SYSTEM AT THAT POINT UNTIL THE CONTRACTOR HAS RECEIVED APPROVAL FROM THE APPLICANT'S PROJECT ENGINEER AND THE DISTRICT.
10. WATER MAINS, FIRE HYDRANTS, AND SERVICE CONNECTIONS SHALL BE INSTALLED AS SHOWN ON THE PLANS UNLESS OTHERWISE APPROVED IN WRITING BY THE APPLICANT'S PROJECT ENGINEER AND APPROVED BY THE DISTRICT. WATER MAINS SHALL BE INSTALLED AFTER SEWER LINES AND SHALL MEET THE MINIMUM HORIZONTAL AND VERTICAL SEPARATION AS SPECIFIED IN THE DISTRICT'S STANDARDS AND SPECIFICATIONS, STD. DETAIL 8.14.
11. ALL FITTINGS TO BE RESTRAINED. 1
12. A COMPLETE SET OF APPROVED PLANS SHALL BE KEPT AND MAINTAINED ON SITE BY THE CONTRACTOR AT ALL TIMES DURING CONSTRUCTION AS REQUIRED BY THE DISTRICT. UPON COMPLETION OF THE CONSTRUCTION, THE APPLICANT'S PROJECT ENGINEER SHALL SUBMIT A COMPLETE SET OF MYLAR "RECORD DRAWINGS" SHOWING THE ACTUAL CONSTRUCTION THAT HAS BEEN PERFORMED. THE WORDS "RECORD DRAWINGS" SHALL BE PRINTED ON EACH SHEET.
13. A CONTRACTOR POSSESSING A VALID CLASS "A" OR OTHER APPROPRIATE CLASS AS REQUIRED BY THE STATE OF CALIFORNIA CONTRACTORS' LICENSE BOARD SHALL DO ALL WORK PERTAINING TO WATER FACILITIES CONSTRUCTION.
14. ALL MATERIAL SHALL CONFORM TO THE LATEST AWWA AND ASTM SPECIFICATIONS AND NSF STANDARDS 60 AND 61.
15. ALL TRENCHES SHALL BE BACKFILLED IN ACCORDANCE WITH THESE WATER WORKS STANDARDS AND CONSTRUCTION SPECIFICATIONS.
16. ALL PAVING AND REPAVING DONE IN CONJUNCTION WITH WATER FACILITIES CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE GOVERNING AGENCY.
17. DURING CONSTRUCTION, A TRACER WIRE SHALL BE INSTALLED ALONG THE TOP OF ALL WATER MAINS AND BROUGHT TO THE FINISHED SURFACE AT EACH VALVE BOX, SERVICE CONNECTION ANGLE STOP, AND BLOW-OFF.
18. A FOUR MIL BLUE PLASTIC TAPE MARKED "CAUTION-BURIED POTABLE WATER LINES" SHALL BE INSTALLED 2-FEET ABOVE THE TOP OF CONSTRUCTED POTABLE WATER MAINS.
19. ALL WATER SYSTEM IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT DISTRICT STANDARDS AND SPECIFICATIONS.
20. MINIMUM COVER OF WATER MAINS IS 36-INCHES. MINIMUM COVER OF WATER SERVICE LATERALS IS 30-INCHES.
21. ALL NEWLY INSTALLED LINES SHALL BE DISINFECTED AND TESTED FOR BACTERIA BY A LABORATORY SPECIFIED BY THE DISTRICT. ALL WATER LINE IMPROVEMENTS AND EXTENSIONS SHALL THEN BE PRESSURE TESTED PER THE DISTRICT'S WATER WORKS STANDARDS AND CONSTRUCTION SPECIFICATIONS. THE ORDER IN WHICH THE BACTERIA AND PRESSURE TESTS ARE PERFORMED WILL BE DETERMINED ON A CASE-BY-CASE BASIS AND MUST BE APPROVED BY A DISTRICT REPRESENTATIVE. SEE SECTION 5.18 FOR DISINFECTION PROCEDURE.
22. A VALVE SHALL BE INSTALLED IN THE CLOSED POSITION AT THE CONNECTION POINT TO THE EXISTING DISTRICT WATER SYSTEM. THIS VALVE SHALL REMAIN CLOSED THROUGHOUT CONSTRUCTION AND DURING THE DISINFECTION PROCESS.
23. CONTRACTOR SHALL SUBMIT IN WRITING TO THE DISTRICT ALL PROPOSED SHUTDOWNS OF EXISTING IN-SERVICE WATER MAINS WHEN MAKING THE CONNECTION TO THE NEW WATER MAIN. THE CONTRACTOR SHALL NOTIFY THE DISTRICT A MINIMUM OF 10 WORKING DAYS PRIOR TO THE PROPOSED DATE THE SERVICE WILL NEED TO BE SHUTDOWN. THE DISTRICT SHALL DETERMINE THE ACTUAL DATE OF ANY AND ALL SHUTDOWNS.
24. THE CONTRACTOR SHALL NOT OPERATE ANY DISTRICT VALVES, INITIATE ANY WATER MAIN SHUT DOWN OR START UP, NOR TIE OVER ANY TEMPORARY WATER SERVICE CONNECTIONS. SUCH WORK SHALL ONLY BE CONDUCTED BY DISTRICT PERSONNEL.

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT CONSTRUCTION GENERAL NOTES:

INSPECTION:

- ALL WORK AND MATERIALS ARE SUBJECT TO INSPECTION BY THE DISTRICT. INSPECTION OF MATERIALS AND WORK SHALL BE AS REQUIRED TO MEET THESE SPECIFICATIONS AND PER THE DISTRICT'S GENERAL MANAGER. THE DISTRICT'S INSPECTOR SHALL BE NOTIFIED 48 HOURS IN ADVANCE PRIOR TO THE TIME INSPECTION IS REQUIRED. WORK AND WATER IMPROVEMENTS COVERED WITHOUT DISTRICT INSPECTION SHALL BE COMPLETELY UNCOVERED FOR INSPECTION AT THE CONTRACTOR'S EXPENSE.

MATERIAL STORAGE:

- ALL PIPE AND PIPE APPURTENANCES SHALL BE KEPT IN A SAFE STORAGE AREA WHERE THEY CAN BE PROTECTED FROM HEAT, DIRT, WEATHER, OR OTHER DETRIMENTAL FACTORS. PIPE SHALL BE STORE IN SUCH A WAY AS TO NOT CREATE A LOAD ON THE PIPE THAT MAY CAUSE BENDING, CRACKING OR OTHER DAMAGE.
- THE ENDS OF STORED PIPE MATERIALS SHALL BE COVERED TO PREVENT THE ENTRY OF RODENTS AND INSECTS.
- IN ACCORDANCE WITH AWWA STANDARDS, PVC AND HDPE PIPE SHALL NOT BE EXPOSED FOR EXTENDED PERIODS TO DIRECT SUNLIGHT. IF THE DISTRICT'S INSPECTOR SUSPECTS THE DEGRADATION OF THE PLASTIC MATERIALS HAS OCCURRED DUE TO EXPOSURE TO ULTRA-VIOLET LIGHT, A SAMPLE OF MATERIAL SHALL BE TAKEN AND SUBMITTED FOR TESTING TO A DISTRICT-APPROVED TESTING LABORATORY, AT THE CONTRACTOR'S EXPENSE. (CERTIFIED TEST REPORTS SHALL BE FURNISHED DIRECTLY TO THE DISTRICT.) IF MATERIAL DEGRADATION IS CONFIRMED BY THIS TESTING, ALL MATERIAL ASSOCIATED WITH THE SAMPLE SHALL BE REMOVED FROM THE PROJECT, AND ADDITIONAL TESTING OF MATERIALS, MAY BE ORDERED.

TRENCH EXCAVATIONS:

- NO WORKER SHALL ENTER A TRENCH THAT IS 5' OR MORE IN DEPTH UNLESS A CONTRACTOR-SUBMITTED WORKER PROTECTION PLAN IS ON FILE WITH THE DISTRICT AND AN OSHA CERTIFIED "COMPETENT" PERSON HAS CONFIRMED THAT THE BRACING AND SHORING HAVE BEEN PROPERLY INSTALLED AND OTHER REQUIREMENTS OF THE WORKER PROTECTION PLAN HAVE BEEN MET. THE CONTRACTOR'S WORKER PROTECTION PLAN SHALL BE AT LEAST AS EFFECTIVE AS THAT REQUIRED BY THE CONSTRUCTION SAFETY ORDERS OF THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY. IF THE PLAN VARIES FROM THE SHORING SYSTEMS STANDARDS ESTABLISHED BY SAID SAFETY ORDERS THE PLAN SHALL BE PREPARED BY A REGISTERED CIVIL OR STRUCTURAL ENGINEER.
- TRENCHES SHALL BE EXCAVATED TO LINE AND GRADE AS SHOWN ON THE PLANS. MATERIAL EXCAVATED FROM THE TRENCHES SHALL BE PLACED IN SUCH A WAY AS TO NOT ENDANGER THE HEALTH AND SAFETY OF THE WORKERS OR THE PUBLIC.
- DEWATERING - THE CONTRACTOR SHALL REMOVE WATER THAT ACCUMULATES IN THE EXCAVATION DURING THE PROGRESS OF THE WORK SO WORK CAN BE DONE IN A SUBSTANTIALLY DRY TRENCH. TRENCHES OR OTHER EXCAVATIONS SHALL BE KEPT FREE FROM WATER WHILE THE PIPE OR STRUCTURES ARE BEING INSTALLED, WHILE CONCRETE IS SETTING, AND UNTIL BACKFILL HAS PROGRESSED TO A SUFFICIENT HEIGHT TO PREVENT POSSIBLE FLOATATION OR MOVEMENT OF THE PIPE.
- WATER SHALL BE DISPOSED OF IN SUCH A MANNER AS TO NOT CAUSE INJURY OR DAMAGE TO THE PUBLIC, PRIVATE PROPERTY OR BE A THREAT TO PUBLIC HEALTH AND IN CONFORMANCE WITH NPDES REQUIREMENTS. IT SHALL BE THE RESPONSIBLY OF THE CONTRACTOR TO PROCURE PERMITS NEEDED TO DISCHARGE TO STREETS, STREAMS AND DRAINAGES.
- ALL LOOSE MATERIAL SHALL BE REMOVED FROM THE BOTTOM OF THE TRENCH BEFORE PLACEMENT OF ANY BEDDING MATERIAL. IF MATERIAL IN THE BOTTOM OF THE TRENCH IS DEEMED UNSUITABLE FOR PROPER PIPE SUPPORT, THE UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH PEA GRAVEL OR OTHER APPROVED FILL.
- NO TRENCH IN THE TRAVELED WAY SHALL REMAIN OPEN OVERNIGHT WITHOUT BACKFILL OR STEEL PLATE COVERS. ALL TRENCHING OPERATIONS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY, CONSTRUCTION SAFETY ORDERS.

GENERAL REQUIREMENTS OF CONTRACTOR

1. CONTRACTOR SHALL MAINTAIN A COMPLETE AND ACCURATE RECORD OF ALL CHANGES OF CONSTRUCTION FROM THAT SHOWN IN THESE PLANS AND SPECIFICATIONS FOR THE PURPOSE OF PROVIDING A BASIS FOR CONSTRUCTION RECORD DRAWINGS. NO CHANGES SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER AND THE AGENCY HAVING JURISDICTION. UPON COMPLETION OF THE PROJECT, CONTRACTOR SHALL DELIVER THIS RECORD OF ALL CONSTRUCTION CHANGES TO THE ENGINEER ALONG WITH A LETTER WHICH DECLARES THAT OTHER THAN THESE NOTED CHANGES "THE PROJECT WAS CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS."

CAUTION: THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THESE PLANS MUST BE APPROVED IN WRITING BY THE PREPARER.

2. CONTRACTOR SHALL PROMPTLY NOTIFY THE ENGINEER AND THE AGENCY HAVING JURISDICTION BY TELEPHONE AND IN WRITING UPON DISCOVERY OF, AND BEFORE DISTURBING, ANY PHYSICAL CONDITIONS DIFFERING FROM THOSE REPRESENTED BY APPROVED PLANS AND SPECIFICATIONS.

3. CONTRACTOR AGREES THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONALS HARMLESS FROM ALL LIABILITY AND CLAIMS, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONALS.

4. CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR PROTECTION OF PUBLIC AND PRIVATE PROPERTY IN THE VICINITY OF THE JOB SITE AND FURTHER AGREES TO, AT CONTRACTOR'S EXPENSE, REPAIR OR REPLACE TO ORIGINAL CONDITION ALL EXISTING IMPROVEMENTS WITHIN OR IN THE VICINITY OF THE JOB SITE WHICH ARE NOT DESIGNATED FOR REMOVAL AND WHICH ARE DAMAGED OR REMOVED AS A RESULT OF CONTRACTOR'S OPERATIONS.

5. EXISTING BURIED CONDUITS AND STRUCTURES KNOWN TO THE ENGINEER ARE SHOWN ON THESE PLANS. HOWEVER, ALL SUCH CONDUITS AND STRUCTURES MAY NOT BE SHOWN AND THE LOCATIONS OF THOSE SHOWN ARE APPROXIMATE ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE PREPARER OF THE PLANS. ELECTRICAL CONDUITS AND WIRING WHICH EXIST BETWEEN STREET AND TRAFFIC LIGHTS ARE NOT SHOWN ON THESE PLANS.

CONTRACTOR SHALL INDEPENDENTLY VERIFY THE PRESENCE OF BURIED CONDUITS AND STRUCTURES, BOTH ACTIVE AND ABANDONED-IN-PLACE AND, BEFORE COMMENCING WORK, CONTRACTOR SHALL DETERMINE THE EXACT LOCATION INCLUDING DEPTHS OF ALL EXISTING UNDERGROUND UTILITIES, CONDUITS AND STRUCTURES, INCLUDING SERVICE CONNECTIONS, WHICH MAY AFFECT OR BE AFFECTED BY HIS OPERATIONS. CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, CONDUITS AND STRUCTURES.

UPON ENCOUNTERING EXISTING BURIED CONDUITS OR STRUCTURES NOT SHOWN OR LOCATED DIFFERENTLY THAN SHOWN ON THE PLANS, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND THE OWNER OF THE CONDUIT OR STRUCTURE BY TELEPHONE AND IN WRITING. IF SUCH CONDUIT OR STRUCTURE AFFECTS OR IS AFFECTED BY THE WORK, CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION AND DIRECTION BEFORE PROCEEDING WITH THE WORK, EXCEPTING THAT IN AN EMERGENCY AFFECTING SAFETY OF LIFE, WORK OR ADJACENT PROPERTY, CONTRACTOR SHALL ACT AT ONCE WITHOUT INSTRUCTIONS TO PREVENT INJURY OR LOSS.

6. SECTION 4215.5 THROUGH 4217 OF THE GOVERNMENT CODE OF THE STATE OF CALIFORNIA REQUIRES THAT, TWO WORKING DAYS PRIOR TO COMMENCING ANY EXCAVATION, "UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA" BE NOTIFIED BY PHONE, TOLL FREE 1-800-422-4133, FOR THE ASSIGNMENT OF AN INQUIRY IDENTIFICATION NUMBER.

NO EXCAVATION SHALL COMMENCE UNLESS THE CONTRACTOR HAS OBTAINED THE INQUIRY IDENTIFICATION NUMBER AND EACH UTILITY OR OTHER OWNER OF SUBSURFACE FACILITY HAS LOCATED AND PHYSICALLY MARKED THEIR SUBSURFACE FACILITIES IN THE AREA OF WORK.

BEFORE COMMENCING EXCAVATION, CONTRACTOR SHALL CONTACT THE COUNTY ROAD PERMITS OFFICE AND EACH UTILITY COMPANY OR OTHER OWNER OF SUBSURFACE FACILITIES WITHIN THE WORK SITE, SHALL VERIFY WHETHER OR NOT A REPRESENTATIVE WILL BE PRESENT BEFORE AND/OR DURING EXCAVATION, AND SHALL DETERMINE SITE-SPECIFIC REQUIREMENTS FOR EXCAVATION.

CONTRACTOR IS RESPONSIBLE FOR PRESERVATION AND/OR PERPETUATION OF ALL EXISTING MONUMENTS WHICH CONTROL SUBDIVISIONS, TRACTS, BOUNDARIES, EASEMENTS, STREETS, HIGHWAYS OR OTHER RIGHTS-OF-WAY, OR WHICH PROVIDE SURVEY CONTROL WHICH WILL BE DISTURBED OR REMOVED DUE TO CONTRACTOR'S WORK. PRIOR TO DISTURBANCE OR REMOVAL OF EXISTING MONUMENTS, CONTRACTOR SHALL CONTRACT WITH LICENSED LAND SURVEYOR TO RESET MONUMENTS OR PROVIDE PERMANENT WITNESS MONUMENTS AND FILE THE REQUIRED DOCUMENTATION WITH THE COUNTY SURVEYOR PURSUANT TO BUSINESS AND PROFESSIONS CODE SECTION 8771.

TRENCHING AND BACKFILL NOTES:

1. ALL TRENCHING, BEDDING AND BACKFILL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE PLANS INCLUDING THE PIPE TRENCH DETAIL AND WITH THE PROJECT-SPECIFIC AND APPLICABLE STANDARD REQUIREMENTS OF THE COUNTY PUBLIC WORKS DEPARTMENT, INCLUDING ROADS DIVISION STANDARD DETAILS 1-020, 1-030 AND 1-040.

FOR ANY CONFLICT BETWEEN THESE PLANS AND THE REQUIREMENTS OF THE COUNTY PUBLIC WORKS DEPARTMENT, THE MORE STRINGENT PROVISIONS SHALL GOVERN.

2. WATER ENCOUNTERED IN TRENCH OR STRUCTURE EXCAVATION SHALL BE REMOVED BY THE CONTRACTOR TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER TO PROVIDE DRY CONDITIONS DURING CONSTRUCTION OF PIPE OR STRUCTURE.

3. TRENCH OR STRUCTURE EXCAVATION SUBGRADE SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF BEDDING MATERIAL OR FORMS.

WET OR UNSTABLE SOIL ENCOUNTERED IN THE BOTTOM OF THE EXCAVATION AND DEEMED BY THE GEOTECHNICAL ENGINEER TO BE INCAPABLE OF PROPERLY SUPPORTING THE PIPE OR STRUCTURE BEING CONSTRUCTED, SHALL BE REMOVED TO THE DEPTH RECOMMENDED BY THE GEOTECHNICAL ENGINEER AND THE EXCAVATION BACKFILLED TO THE BOTTOM OF THE PIPE OR STRUCTURE GRADE WITH SUITABLE MATERIAL RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

4. BEDDING AND BACKFILL MATERIAL SHALL BE TESTED FOR COMPLIANCE WITH APPLICABLE REQUIREMENTS BY THE GEOTECHNICAL ENGINEER.

5. BEDDING AND PIPE ZONE BACKFILL MATERIAL SHALL BE COMPACTED TO NOT LESS THAN 95% OF MAXIMUM DENSITY. OWNER TO PROVIDE COPIES OF ALL COMPACTION TESTS TO DISTRICT. 1

TRENCH BACKFILL INCLUDING THE UPPER 9" BELOW THE BASE OR SUB-BASE COURSE IN PAVED AND OTHER TRAFFIC AREAS AND THE UPPER 6" BELOW THE CONCRETE OR SAND COURSE IN WALKWAY AREAS SHALL BE COMPACTED TO NOT LESS THAN 95% OF MAXIMUM DENSITY.

BACKFILL COMPACTION SHALL BE TESTED FOR COMPLIANCE WITH THESE REQUIREMENTS IN ACCORDANCE WITH A.S.T.M. STANDARD D-1557, LATEST REVISION, AND REPORTED BY THE GEOTECHNICAL ENGINEER.

COUNTY OF SANTA BARBARA REQUIRES TRENCH BACKFILL WITHIN PUBLIC ROAD RIGHT-OF-WAY TO BE 1-SACK CEMENT SLURRY BEGINNING 6 INCHES ABOVE TOP OF PIPE. THIS MAY CONFLICT WITH PIPE ZONE DIMENSION REQUIRED BY OWNER OF PIPELINE; CONTRACTOR SHALL CONFIRM LIMITS OF PIPE ZONE AND TRENCH ZONE AND RESOLVE ANY CONFLICTS IN ADVANCE OF CONSTRUCTION.

6. COMPACTION BY FLOODING OR JETTING IS NOT PERMITTED .

7. CLASS I OR CLASS II (TRENCH) BACKFILL SHALL NOT BE PLACED UNTIL BEDDING AND INITIAL (PIPE ZONE) BACKFILL HAVE BEEN OBSERVED, TESTED AND APPROVED.

8. ALL WORK INVOLVING EXCAVATION INCLUDING THAT FOR WATER, SEWER, STORM DRAIN AND UTILITY CONDUITS AND ALL SERVICE CONNECTIONS AND METER BOXES (NOT PERMITTED IN DRIVEWAYS) SHALL BE COMPLETED AND OBSERVED AND APPROVED BY THE AGENCY HAVING JURISDICTION AND THE STRUCTURAL BACKFILL OBSERVED AND TESTED FOR COMPACTION AND APPROVED BEFORE AGGREGATE BASE, PAVING AND OTHER PERMANENT SURFACE CONSTRUCTION MAY COMMENCE.

9. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH APPLICABLE HEALTH AND SAFETY LAWS, ORDINANCES, REGULATIONS, RULES, AND STANDARDS INCLUDING ALL REQUIREMENTS OF THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY AND OF CAL-OSHA.

10. CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN SUCH SHEETING, SHORING, BRACING, AND/OR OTHER PROTECTION AS IS NECESSARY TO PREVENT FAILURE OF TEMPORARY EXCAVATIONS AND EMBANKMENTS AND TO PREVENT DAMAGE TO EXISTING IMPROVEMENTS, TEMPORARY IMPROVEMENTS, AND PARTIALLY COMPLETED PORTIONS OF THE WORK. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SUFFICIENCY OF SUCH SUPPORTS AND/OR OTHER PROTECTION.

11. BEFORE BEGINNING WORK, CONTRACTOR SHALL DETERMINE OR VERIFY THE LOCATION AND FLOWLINE ELEVATION OF ALL EXISTING WATER, SEWER, AND DRAINAGE STRUCTURES AND/OR CONDUITS TO BE JOINED BY NEW CONSTRUCTION.

BEFORE BEGINNING WORK, CONTRACTOR SHALL DETERMINE OR VERIFY THE LOCATION AND DEPTH OF ALL EXISTING STRUCTURES AND/OR CONDUITS WHICH CROSS OR OTHERWISE MAY CONFLICT WITH NEW CONSTRUCTION.

12. CONTRACTOR SHALL REVIEW THE GEOTECHNICAL REPORT(S) AND THE PROJECT WORK AREA AND VICINITY AND SHALL FAMILIARIZE HIMSELF WITH THE WORK AREA CONDITIONS.

CONTRACTOR SHALL MAKE HIS OWN DEDUCTIONS AND CONCLUSIONS AS TO HOW EXISTING SURFACE AND SUB-SURFACE CONDITIONS WILL AFFECT OR BE AFFECTED BY HIS CONSTRUCTION OPERATIONS, INCLUDING THE NATURE OF MATERIALS TO BE EXCAVATED, THE DEGREE OF DIFFICULTY ASSOCIATED WITH MAKING AND MAINTAINING THE REQUIRED EXCAVATIONS, AND THE DEGREE OF DIFFICULTY WHICH MAY ARISE FROM SUBSURFACE CONDITIONS INCLUDING GROUNDWATER, AND SHALL ACCEPT FULL RESPONSIBILITY THEREFOR.

13. FREQUENCY OF TESTING TO BE AS FOLLOWS: SIEVE ANALYSIS, R-VALUE, AND SAND EQUIVALENT, 1 MINIMUM TEST PER MATERIAL SOURCE, AND COMPACTION TESTING EVERY 200 FEET ALONG EVERY LIFT. 1

NOT FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION

SCALES
1" = 20' (H)
1" = 4' (V)

WARNING
1 Inch
0' 1'
IF THIS SCALE DOES NOT EQUAL 1", THEN DRAWING IS NOT TO SCALE

N

DRAWN DEA
CHECKED LML

REGISTERED PROFESSIONAL ENGINEER
LYDIA M. LYNCH
No. 90544
CIVIL
STATE OF CALIFORNIA

DESIGN ENGINEER
SIGNATURE NAME DATE

PROJECT MANAGER
SIGNATURE NAME DATE

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT
WATER FACILITIES REVIEWED

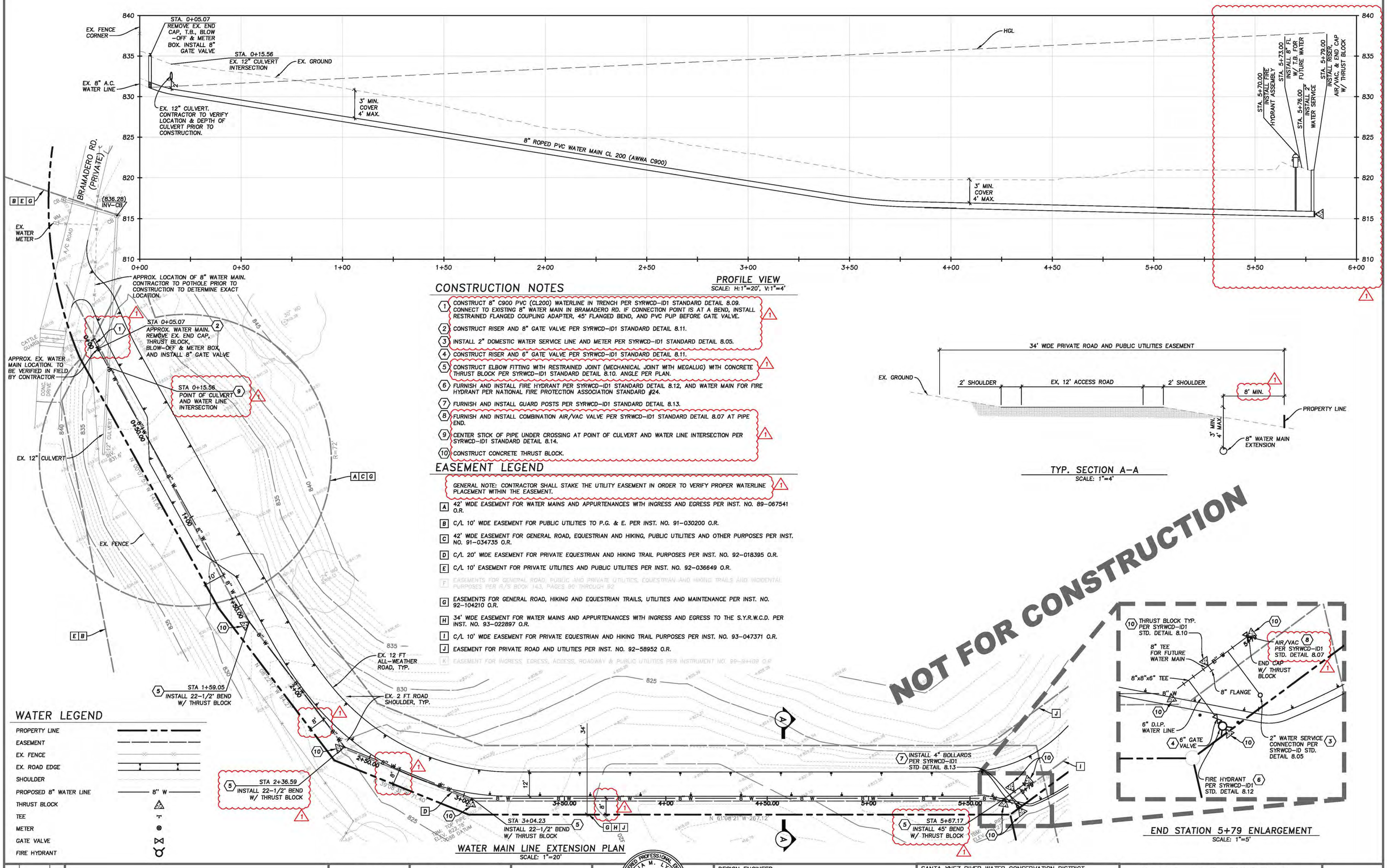
75756
GENERAL MANAGER DATE

GENERAL NOTES

2905 BRAMADERO RD
LOS OLIVOS, CA 93441
APN: 135-330-003

PROJECT NO.
22007

SHEET C2 OF 4



REV	DATE	BY	DESCRIPTION

SCALES
1" = 20' (H)
1" = 4' (V)

WARNING
1 Inch
0' 20'
IF THIS SCALE DOES NOT EQUAL 1" THEN DRAWING IS NOT TO SCALE

N

DRAWN DEA
CHECKED LML

REGISTERED PROFESSIONAL ENGINEER LYDIA M. LYNCH No. 90644 CIVIL STATE OF CALIFORNIA

DESIGN ENGINEER
SIGNATURE NAME DATE
PROJECT MANAGER
SIGNATURE NAME DATE

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT
WATER FACILITIES REVIEWED
75756
GENERAL MANAGER DATE

PLAN AND PROFILE
2905 BRAMADERO RD
LOS OLIVOS, CA 93441
APN: 135-330-003

PROJECT NO. 22007

SHEET C3 OF 4

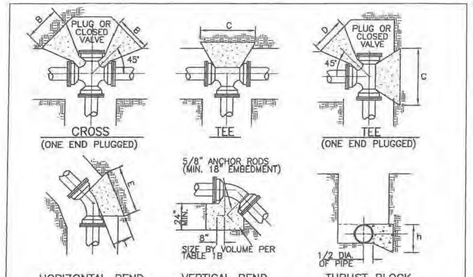


TABLE 1A

PIPE SIZE (IN.)	CROSSES, TEES, ENDS AND VALVES DIMENSIONS ARE IN FEET				90 & 45 DEGREE HORIZ. BENDS DIMENSIONS ARE IN FEET	
	h	B	C	D	90°	45°
4	2.00	1.75	1.75	2.00	2.75	2.00
6	2.50	2.00	3.00	3.50	5.00	2.75
8	3.00	3.00	4.25	5.00	7.25	4.00

BLOCK SIZED BASED ON 200 PSI WATER PRESSURE AND 1000 PSF SOIL BEARING PRESSURE

TABLE 1B

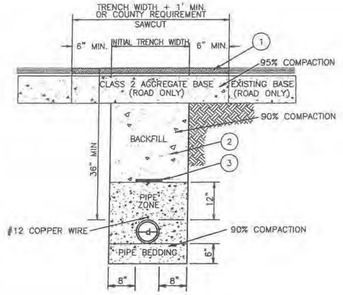
PIPE SIZE (IN.)	22 1/2 & 11 1/4 DEGREE HORIZONTAL BENDS DIMENSIONS ARE IN FEET			
	T	h	22 1/2°	11 1/4°
4	2.50	2.00	1.75	1.75
6	2.50	2.00	1.75	1.75
8	3.00	2.00	2.50	1.75

BLOCK SIZED BASED ON 200 PSI WATER PRESSURE AND 1000 PSF SOIL BEARING PRESSURE

NOTES:

1. BEARING AREA OF THRUST BLOCKS SHALL BE DETERMINED USING 200 PSI WORKING PRESSURE AND 1000 PSF SOIL BEARING PRESSURE EXCEPT AS APPROVED BY THE DISTRICT.
2. CONCRETE MIX SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 2500 PSI
3. CONCRETE THRUST BLOCKS SHALL BE INSTALLED TO THE DIMENSIONS & CONFIGURATIONS AS SHOWN.
4. CONCRETE THRUST BLOCKS SHALL BE POURED SOLIDLY AGAINST FIRM UNDISTURBED NATIVE SOIL.
5. CONCRETE POURED AGAINST THE PIPE FITTING SHALL NOT EXTEND BEYOND THE JOINTS.
6. FITTING SHALL BE WRAPPED WITH 3 MIL PLASTIC BEFORE POURING CONCRETE.
7. WOOD FORMS SHALL BE USED FOR FORMING BLOCKS EXCEPT ON BEARING FACE OF BLOCK.
8. IF THRUST BLOCKS ARE SIZED BY ENGINEER USING A DIFFERENT EARTH BEARING PRESSURE, DIMENSIONS OF THRUST BLOCKS SHALL BE SHOWN ON THE PLANS.
9. THRUST BLOCKS ON VERTICAL BENDS ARE PROHIBITED.
10. THRUST RESTRAINT FOR ALL OTHER PIPE AND FITTING CONFIGURATIONS SHALL BE DESIGNED BY PROJECT ENGINEER.
11. THE ABOVE VALUES IN TABLES 1A AND 1B FOR SIZE OF THRUST BLOCK ARE BASED ON A WATER PRESSURE OF 200 PSI AND EARTH BEARING PRESSURE OF 1000 PSF. A HIGHER VALUE FOR SOIL BEARING PRESSURE MAY BE USED, WHEN THE PROJECT ENGINEER SUBMITS TO THE DISTRICT A REPORT STAMPED BY A LICENSED ENGINEER PROVIDING A HIGHER SOIL BEARING PRESSURE THAN 1000 PSF DETERMINED FOR THE NATIVE SOILS AT THE PROJECT SITE.

APPROVED GENERAL MANAGER	11/15/07 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1 KB	9/24/07	CONCRETE THRUST BLOCKS	8.10
REVISION	DATE		

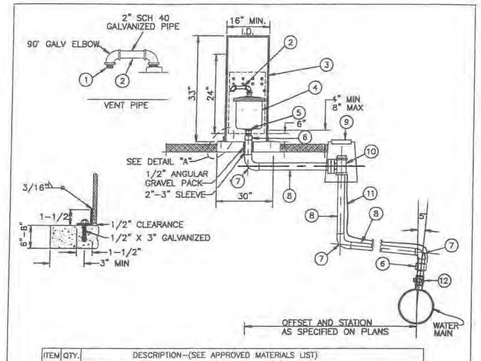


ITEM	QTY.	DESCRIPTION–(SEE APPROVED MATERIALS LIST)
1	VAR	ASPHALT SHALL BE REPLACED AS PER PLAN
2	VAR	SLURRY REQUIRED UNDER ASPHALT ROADWAY
3	VAR	WARNING TAPE – METALLIC MARKED "BURIED WATER"

NOTES

1. WHERE PIPE IS NOT LOCATED IN THE COUNTY OR STATE RIGHT OF WAY, ASPHALT AND BASE REPLACEMENT SHALL MATCH EXISTING.
2. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS-BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.
3. SLURRY, IF USED, SHALL BE MAXIMUM 1-SACK. SLURRY REQUIRED FOR BACKFILL UNDER COUNTY ROAD R/W ONLY.
4. COMPACTION AS DETAILED OR AS OTHERWISE REQUIRED.

APPROVED GENERAL MANAGER	11/15/07 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1 YM	4/18/00	TYPICAL UTILITY TRENCH	8.09
2 KB	9/24/07		
REVISION	DATE		

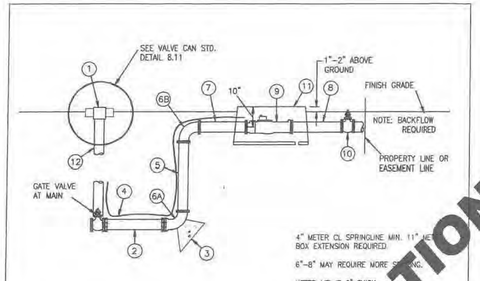


ITEM	QTY.	DESCRIPTION–(SEE APPROVED MATERIALS LIST)
1	1	VENT CAP, STAINLESS MESH
2	1	VENT PIPE PER DETAIL
3	1	16" MIN. ID #10 GAUGE STEEL PIPE, FABRICATED COVER, FACTORY EPOXY COATED
4	1	1"–2" COMBINATION AIR RELEASE–AIR/VAC VALVE
5	1	NIPPLE, BRONZE OR BRASS
6	1	2" FEMALE ADAPTER SCHEDULE 80
7	3	1"–2" 90° ELBOW SCHEDULE 80 PVC SLIP BY SLIP
8	VAR	1"–2" SCHEDULE 80 PVC
9	1	VALVE BOX – TRAFFIC–RATED (BROOKS 3RT) IN TRAFFIC AREAS
10	1	1" ANGLE STOP. 1"x1", I.P.S. x I.P.S.
11	VAR	TRACER WIRE REQUIRED TIE ONTO EXISTING WIRE OR SADDLE IF NO WIRE.
12	1	1"–2" CORPORATION STOP IPT

NOTES

1. CANS 1" OR 2"
2. CAN SECURED IN CONCRETE WITH 1/2" BOLTS AND NUTS.
3. PROTECTIVE 3' POST IN TRAFFIC AREA'S.
4. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS-BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.
5. WHERE NO CURB EXISTS, PROTECT WITH GUARD POSTS
6. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
7. LOCATE VALVE IN ROW OR DISTRICT EASEMENT.

APPROVED GENERAL MANAGER	11/15/07 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1 YM	4/18/00	1"–2" COMBINATION AIR AND VACUUM VALVE	8.07
2 KB	9/24/07		
REVISION	DATE		

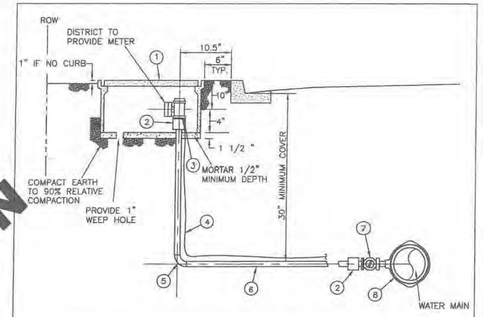


ITEM	QTY.	DESCRIPTION–(SEE APPROVED MATERIALS LIST)
1	1	VALVE BOX
2	VAR	4", 6", 8" P.V.C. C–900 OR DUCTILE IRON
3	2	CONCRETE THRUST BLOCK
4	VAR	TRACER WIRE REQUIRED TIE ONTO EXISTING WIRE OR SADDLE IF NO WIRE.
5	VAR	DUCTILE IRON SPOOL FLG. X FLG.
6A	2	DUCTILE IRON 90° BEND M.J. X FLG.
6B	1	DUCTILE IRON 90° BEND FLG. X FLG.
7	VAR	DUCTILE SPOOL FLG. X FLG. 3x THE DIAMETER IN LENGTH. (EXAMPLE: 4", SERVICE = 4"x12" SPOOL)
8	1	DUCTILE SPOOL FLG. X FLG. 5x THE DIAMETER IN LENGTH. (EXAMPLE: 4", SERVICE = 4"x20" SPOOL)
9	1	METER PROVIDED BY DISTRICT
10	1	CUSTOMER GATE VALVE
11	1	METER BOX
12	1	8" SDR 35 P.V.C. [illegible] VARIES"

NOTE

1. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
2. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS-BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.

APPROVED GENERAL MANAGER	11/15/07 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1 KB	9/24/07	4", 6", 8" WATER SERVICE CONNECTION	8.06
REVISION	DATE		

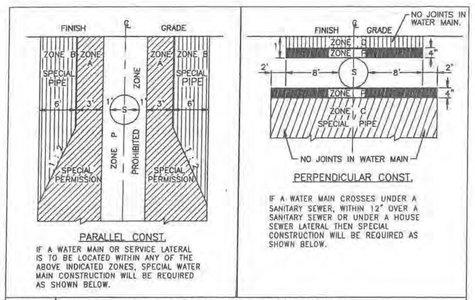


ITEM	QTY.	DESCRIPTION–(SEE APPROVED MATERIALS LIST)
1	1	STANDARD METER BOX "TRAFFIC" OR "NON TRAFFIC" RATED
2	2	2" FEMALE ADAPTOR, PVC, SCHED 80
3	1	2" ANGLE METER STOP THREAD X METER FLANGE, BRASS NIPPLE.
4	VAR	TRACER WIRE REQUIRED TIE ONTO EXISTING WIRE OR SADDLE IF NO WIRE.
5	1	2" SLIP BY SLIP SCHEDULE 80 90° ANGLE POINT OR BEND
6	VAR	2" SCHEDULE 80 PVC. ONLY HEAVY BODY GRAY P.V.C. GLUE + CURE 24 HRS.
7	1	2" CORP. MIP THREAD x MIP THREAD
8	1	SERVICE SADDLE INSTALLED

NOTES

1. SIZE SERVICE AS INDICATED ON PROJECT PLANS.
2. PIPE THREADS SHALL BE CLEAN AND SHARP AND WATER TIGHT SEALED WITH APPROVED JOINT COMPOUND.
3. CUSTOMER BALL VALVE SHALL BE LOCATED DIRECTLY AFTER THE METER AND BEFORE THE BACK FLOW PREVENTER DEVICE WHERE SUCH DEVICES ARE REQUIRED.
4. ALL SCHEDULE 80 SHALL BE LAID STRAIGHT AND AT RIGHT ANGLES TO THE WATER MAIN
5. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
6. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS–BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.

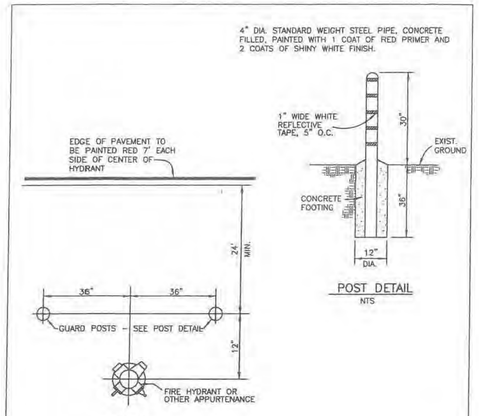
APPROVED GENERAL MANAGER	11/15/07 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1 YM	4/18/00	2" WATER SERVICE CONNECTION	8.05
2 KB	9/24/07		
REVISION	DATE		



ZONE	WATER CONSTRUCTION REQUIREMENTS
A	NO WATER MAINS PARALLEL TO SEWERS SHALL BE CONSTRUCTED WITHOUT DISTRICT APPROVAL.
B	A WATER MAIN PLACED PARALLEL TO A SANITARY SEWER SHALL BE CONSTRUCTED OF: DIPPED AND WRAPPED QUARTER INCH THICK WELDED STEEL PIPE, DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING, CLASS 200 PRESSURE RATED PVC WATER PIPE (DR–14 PER AWWA C–900) OR EQUIVALENT OR REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE, PER AWWA C300–97 OR C302–99 OR C303–95.
C	A WATER MAIN CROSSING A SANITARY SEWER SHALL HAVE NO JOINTS WITHIN 10' FROM EITHER SIDE OF THE WATER MAIN IN THIS ZONE AND SHALL BE CONSTRUCTED OF: DIPPED AND WRAPPED QUARTER INCH THICK WELDED STEEL PIPE, DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING, CLASS 200 PRESSURE RATED PVC WATER PIPE (DR–14 PER AWWA C–900) OR EQUIVALENT OR REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE, PER AWWA C300–97 OR C302–99 OR C303–95.
D	A WATER MAIN CROSSING A SANITARY SEWER SHALL HAVE NO JOINTS WITHIN EIGHT FEET FROM EITHER SIDE OF THE SANITARY SEWER AND SHALL BE CONSTRUCTED OF: DIPPED AND WRAPPED QUARTER INCH THICK WELDED STEEL PIPE, DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING, OR CLASS 200 PRESSURE RATED PVC WATER PIPE (DR–14 PER AWWA C–900) OR EQUIVALENT.
P	PROHIBITED ZONE PER SECTION 64630(E) (2) CALIFORNIA CODE OF REGULATIONS, TITLE 22.
S	INDICATES SEWER OR HOUSE LATERAL.

REFER TO DEPARTMENT OF HEALTH SERVICES (DHS) GUIDANCE MEMO #2003–02 FOR FURTHER DETAILS.

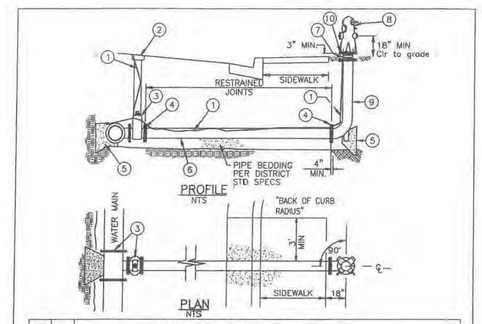
APPROVED GENERAL MANAGER	11/15/07 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1 KB	9/24/07	SANITARY PROTECTION FOR WATER MAINS FROM SEWERS	8.14
REVISION	DATE		



NOTES:

1. GUARD POSTS SHALL BE INSTALLED PLUMB
2. CONCRETE SHALL BE PLACED AGAINST FIRM UNDISTURBED NATIVE SOIL AND SHALL BE THOROUGHLY CONSOLIDATED.
3. CONCRETE SHALL HAVE 28 DAY COMPRESSIVE STRENGTH OF 2500 PSI.

APPROVED GENERAL MANAGER	11/15/07 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1 KB	9/24/07	GUARD POSTS	8.13
REVISION	DATE		

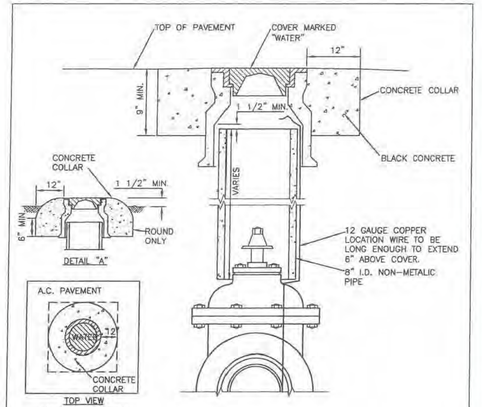


ITEM	QTY.	DESCRIPTION–(SEE APPROVED MATERIALS LIST)
1	VAR	COATED COPPER TRACER WIRE, #12 AWG, ATTACH ALONG TOP OF PIPE – LOOP UP THE OUTSIDE OF RISER PIPE
2	1	VALVE BOX
3	1	TEE OR TAPPING SLEEVE WITH 6" FL X M.J. GATE VALVE
4	1	RESTRAINED M.J. JOINT
5	2	CONCRETE THRUST BLOCKS
6	VAR	6" DIAMETER PIPE PER SPECIFICATION (DUCTILE IRON)
7	1	6 HOLE DRILL– BREAKAWAY SPOOL
8	1	WET BARREL FIRE HYDRANT
9	1	6" DUCTILE IRON BURY WITH 90° BEND M.J. x FL W/ POLY WRAP (LENGTHS VARY)
10	1	NUTS AND BOLTS SHALL BE STANDARD HEX HEAD AND MACHINED PER ASTM A325. THREADS SHALL BE COATED WITH AN APPROVED ANTI–SEIZE COMPOUND. ALL EXPOSED STEEL PARTS SHALL BE COATED WITH AN APPROVED COATING. BREAKAWAY BOLTS SHALL BE INSTALLED TIPS POINTING DOWN.

NOTES

1. WRAP ALL DUCTILE IRON AND CAST IRON MATERIALS WITH 6 MIL POLYETHYLENE SHEETS.
2. IF HYDRANT IS NOT PROTECTED BY CURB, GUARD POSTS SHALL BE PLACED TO PROTECT HYDRANT.
3. FIRE HYDRANT SHALL BE INSTALLED PLUMB.
4. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
5. ALL M.J. AND FLANGE NUT AND BOLTS SHALL BE COATED WITH NO–OX–IDE BOLT GREASE AND POLY WRAPPED.
6. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS–BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.
7. WHERE A SIDEWALK IS PRESENT, LOCATION OF HYDRANT SHALL BE RESTRICTED BY EASEMENT OR RIGHT–OF–WAY.

APPROVED GENERAL MANAGER	11/15/07 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1 KB	9/24/07	FIRE HYDRANT	8.12
REVISION	DATE		



NOTES:

1. VALVE BOXES SET IN ROAD SHOULDERS, FIELDS, ETC. SHALL BE AS SHOWN ON DETAIL "A". (ROUND ONLY)
2. LID SHALL BE MARKED "WATER".
3. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
4. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS–BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.

APPROVED GENERAL MANAGER	11/15/07 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1 KB	9/24/07	ADJUSTABLE VALVE BOX	8.11
REVISION	DATE		

NOT FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION

SCALES
1" = 20' (H)
1" = 4' (V)

WARNING
1 Inch
0" 1"
IF THIS SCALE DOES NOT EQUAL 1", THEN DRAWING IS NOT TO SCALE

N/A

DRAWN DEA
CHECKED LML

REGISTERED PROFESSIONAL ENGINEER LYDIA M. LINCER No. 90044 CIVIL STATE OF CALIFORNIA

DESIGN ENGINEER
SIGNATURE NAME DATE

PROJECT MANAGER
SIGNATURE NAME DATE

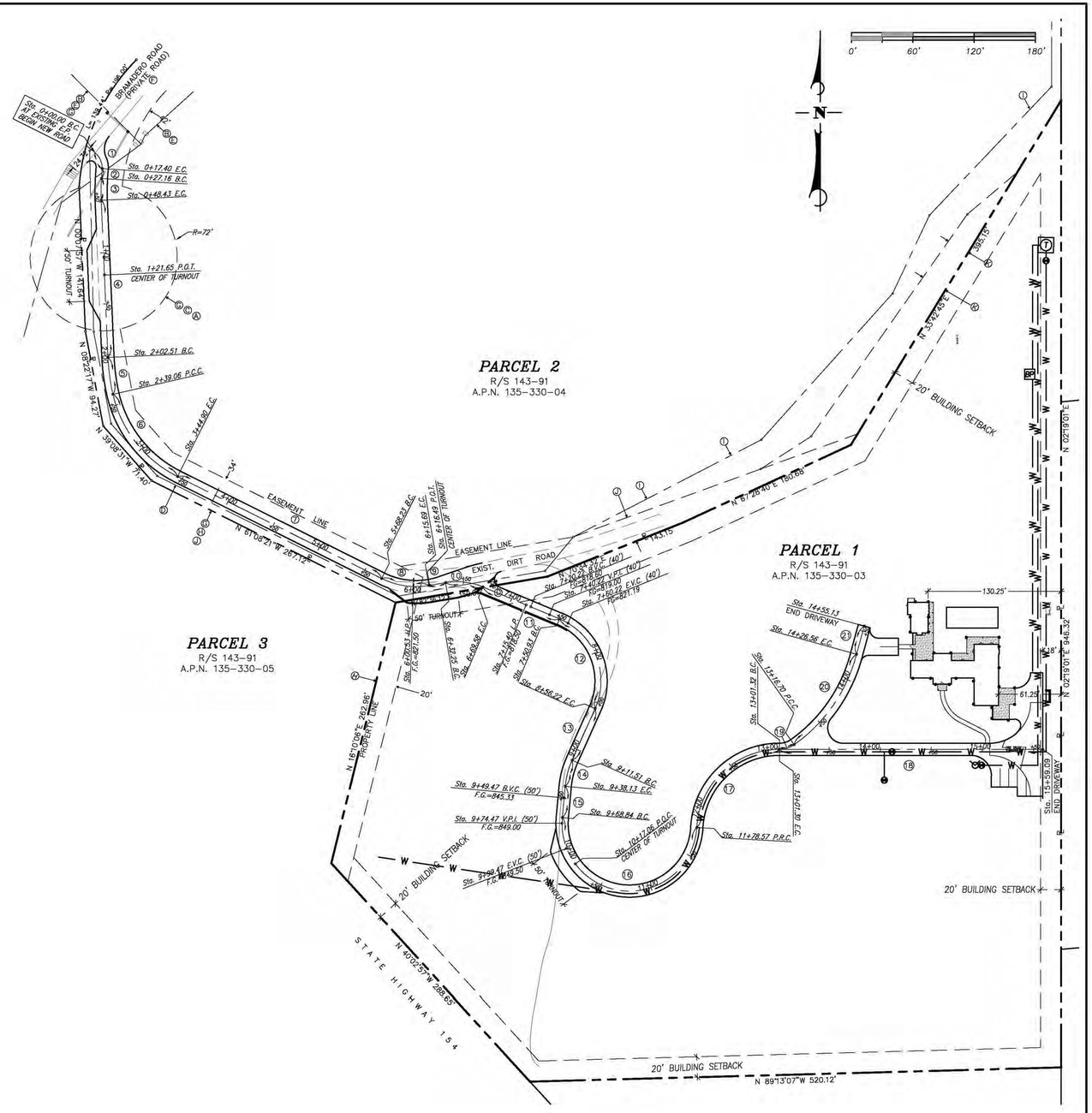
SANTA YNEZ RIVER WATER CONSERVATION DISTRICT
WATER FACILITIES REVIEWED
75756
GENERAL MANAGER DATE

DETAILS

2905 BRAMADERO RD
LOS OLIVOS, CA 93441
APN: 135–330–003

PROJECT NO. 22007

SHEET C4 OF 4



HORIZONTAL CONTROL PLAN

1" = 60'

SOILS ENGINEER'S GRADING RECOMMENDATIONS: per COAST VALLEY TESTING, INC. FOUNDATION EXPLORATION ORDER NUMBER 54059, DATED 15 JULY, 2010

GRADING RECOMMENDATIONS:

01. THE AREA TO BE GRADED SHALL BE CLEARED OF ALL SURFACE VEGETATION, INCLUDING ROOTS AND ROOT STRUCTURES.
02. WITHIN THE PROPOSED BUILDING AREA AND FOR A MINIMUM DISTANCE OF 5.0 FEET BEYOND THE EXTERIOR PERIMETERS OF THE PROPOSED STRUCTURE, THE EXISTING LOOSE SURFACE SOILS SHALL BE REMOVED TO A DEPTH OF 30 INCHES OR 18 INCHES BELOW THE BOTTOM OF THE PROPOSED FOOTINGS WHICHEVER IS DEEPER.
03. THE SOILS ENGINEER SHALL INSPECT AND APPROVE THE EXPOSED CAVITY.
04. UPON APPROVAL, THE EXPOSED CAVITY SHALL BE SCARIFIED AN ADDITIONAL 6 INCHES, MOISTENED OR DRIED TO NEAR OPTIMUM MOISTURE CONTENT AND COMPACTED TO A MINIMUM OF 90 PERCENT RELATIVE COMPACTION, AS TESTED AND CERTIFIED BY THE SOIL ENGINEER.
05. THE COMPACTION STANDARD SHALL BE THE ASTM D 1557-91 METHOD OF COMPACTION.
06. THE REMOVED SOIL, IF FREE OF DELETERIOUS MATERIAL MAY THEN BE REPLACED IN LIFTS NOT TO EXCEED 6 INCHES IN DEPTH, MOISTENED OR DRIED TO NEAR OPTIMUM MOISTURE CONTENT AND COMPACTED TO A MINIMUM OF 90 PERCENT RELATIVE COMPACTION, UP TO FINAL GRADE, AS TESTED AND CERTIFIED BY THE SOILS ENGINEER.
07. IN AREAS WHERE FILL IS TO BE PLACED OUTSIDE THE BUILDING AREA AND THE EXISTING SLOPE IS LESS THAN 10 PERCENT, THE TOP 1.0 FOOT OF EXISTING SURFACE SOILS, SHALL BE COMPACTED TO A MINIMUM OF 90 PERCENT RELATIVE COMPACTION, PRIOR TO FILL PLACEMENT. IF THE EXISTING SLOPE IS STEEPER THAN 10 PERCENT, KEYS AND BENCHES WILL BE REQUIRED PRIOR TO FILL PLACEMENT. KEYS AND BENCHES SHALL BE A MINIMUM OF 10.0 FEET WIDE AND 36 INCHES DEEP AND SHALL BEAR INTO FIRM ORIGINAL GROUND THROUGHOUT THE BOTTOM OF THE KEYS AND BENCHES, AS CERTIFIED BY THE SOILS ENGINEER, PRIOR TO FILL PLACEMENT. IT SHOULD BE NOTED THAT IF FILL IS TO BE PLACED IN THE EXISTING DRIVEWAY / RANCH ROAD AREAS THE KEYS AND BENCHES SHALL EXTEND THROUGH ANY PREVIOUS PLACED FILL SUCH THAT THE KEYING AND BENCHES BEAR ENTIRELY ON FIRM UNDISTURBED NATIVE SOIL. SUBSEQUENT FILL MAY THEN BE PLACED IN LIFTS NOT TO EXCEED 6 INCHES IN DEPTH, MOISTENED OR DRIED TO NEAR OPTIMUM MOISTURE CONTENT AND COMPACTED TO A MINIMUM OF 90 PERCENT RELATIVE COMPACTION, AS TESTED AND CERTIFIED BY THE SOIL ENGINEER.
08. IN DRIVEWAYS AND PARKING LOTS THE TOP 1.0 FEET OF SUB GRADE SOILS SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT RELATIVE COMPACTION, AS TESTED AND CERTIFIED BY THE SOILS ENGINEER.
09. IN PATIO AREAS AND WALKWAYS, THE TOP 1.0 FOOT OF SUB GRADE SOILS SHALL BE COMPACTED TO A MINIMUM OF 90 PERCENT RELATIVE COMPACTION, AS TESTED AND CERTIFIED BY THE SOILS ENGINEER.
10. POSITIVE DRAINAGE SHALL BE PROVIDED AWAY FROM THE PROPOSED STRUCTURE (5 PERCENT MINIMUM FOR 10.0 FEET).
11. MANUFACTURED SLOPES (CUT AND/OR FILL) SHALL NOT EXCEED 2 HORIZONTAL TO 1 VERTICAL.

RETAINING WALLS:

01. RETAINING WALL FOOTINGS SHALL BEAR INTO FIRM UNDISTURBED NATIVE SOIL OR FIRM COMPACTED CERTIFIED FILL, AS INSPECTED AND APPROVED BY THE SOILS ENGINEER PRIOR TO PLACEMENT OF REBAR OR FORMWORK.
02. THE FOLLOWING EQUIVALENT FLUID PRESSURES ARE APPLICABLE FOR RETAINING WALL DESIGN (LEVEL BACKFILL-FULLY DRAINED CONDITION).

* ACTIVE EARTH PRESSURE	Pa =	35	Pcf (YIELDING NON-CONSTRAINED)
* ACTIVE EARTH PRESSURE	Par =	52	Pcf (NON YIELDING / FULLY CONSTRAINED) AT REST
PASSIVE PRESSURE	Pp =	350	Pcf
FRICTION FACTOR	Ff =	0.35	
MAXIMUM TOE PRESSURE	Mtp =	2500	Psf

* FOR SLOPING BACKFILL ADD 1 Pcf TO THE ACTIVE CASE AND 1.5 Pcf TO THE AT REST CASE FOR EACH 2 DEGREES OF SLOPE INCLINATION.

03. RETAINING WALL BACKFILL SHALL BE PRE-MOISTENED TO AT/OR NEAR OPTIMUM MOISTURE CONTENT, PLACED IN LIFTS NOT TO EXCEED 6 INCHES IN DEPTH AND COMPACTED TO A MINIMUM OF 90 PERCENT RELATIVE COMPACTION, AS TESTED AND CERTIFIED BY THE SOIL ENGINEER.

DRIVEWAY:

01. IN GENERAL, THE GRADING RECOMMENDATIONS CONTAINED HEREIN, ARE APPLICABLE FOR DRIVEWAY CONSTRUCTION. AT THE TIME OF THIS EXPLORATION THE GRADING PLAN FOR THE DRIVEWAY HAD NOT BEEN FULLY DEVELOPED. FOR UNPAVED DRIVEWAY AREAS A MINIMUM OF 6 INCHES OF CLASS II AGGREGATE BASE UNDERLAIN BY 1.0 FOOT OF COMPACTED SUB GRADE SOIL (95 PERCENT MINIMUM) IS SUFFICIENT TO SUPPORT A 20 TON FIRE TRUCK.
02. WHERE PAVING IS TO BE PLACED (ASPHALT/CONCRETE OR CONCRETE), ADDITIONAL SUB GRADE PREPARATION (IE DEEPENED SUB GRADE SECTION), WILL LIKELY BE REQUIRED TO PROTECT THE ASPHALT/CONCRETE OR CONCRETE FROM DAMAGE ASSOCIATED WITH POSSIBLE SUB GRADE SETTLEMENT ESPECIALLY IN LOW AREAS (IE DRAINAGE COURSE CROSSING) AND THE OUTSIDE EDGES (IE FILL SECTION), OF THE EXISTING CUT/FILL DRIVEWAY. THESE AREAS, IF REQUIRED, SHOULD BE ADDRESSED BY THE SOILS ENGINEER DURING ROUGH GRADING OPERATIONS. IN ADDITION, IT IS RECOMMENDED THAT SUB GRADE PREPARATIONS SHOULD EXTEND A MINIMUM OF 2.0 FEET BEYOND THE PROPOSED PAVING LIMITS, AND THAT 2.0 FOOT WIDE (MINIMUM) SHOULDERS BE PROVIDED FOR DRIVEWAY SECTIONS ADJACENT TO DESCENDING SLOPES.

FOUNDATION RECOMMENDATIONS:

01. ALL FOOTINGS SHALL BE CONTINUOUS.
02. ALL EXTERIOR FOOTINGS SHALL EXTEND A MINIMUM OF 21 INCHES BELOW OUTSIDE YARD GRADE, WHILE INTERIOR FOOTINGS SHALL EXTEND A MINIMUM OF 12 INCHES BELOW THE CONCRETE SLAB SAND BLANKET.
03. THIS OFFICE SHALL BE NOTIFIED TO INSPECT AND APPROVE ALL FOOTING EXCAVATIONS PRIOR TO PLACING FORMWORK, OR REINFORCING STEEL.
04. ALL CONTINUOUS FOOTINGS SHALL BE REINFORCED WITH A MINIMUM OF 2-#5 HORIZONTAL REBAR PLACED 1 IN THE TOP AND 1 IN THE BOTTOM OF THE FOOTING.
05. CONCRETE SLABS ON GRADE SHALL BE A MINIMUM 4 INCHES THICK AND SHALL BE REINFORCED WITH A MINIMUM OF #3 REBAR AT 18 INCHES ON CENTER, EACH WAY (PLACED AT MID-DEPTH) AND SHALL BE UNDERLAIN WITH A 4 INCH SAND OR GRAVEL BLANKET, IN WHICH AN IMPERVIOUS MEMBRANE IS EMBEDDED.
06. ALL UTILITY TRENCH BACKFILL ENTERING OR UNDER STRUCTURAL ELEMENT (STRUCTURES PATIOS, DRIVEWAY ETC.), SHALL BE COMPACTED TO A MINIMUM OF 90 PERCENT RELATIVE COMPACTION, AS TESTED AND CERTIFIED BY THE SOIL ENGINEER.
07. IF TILE OR OTHER BRITTLE SURFACING IS TO BE PLACED OVER CONCRETE SLABS A "SLIP SHEET" IS RECOMMENDED TO REDUCE THE POTENTIAL FOR REFLECTIVE CRACKING.
08. THE CONCRETE SLAB ON GRADE SHALL BE DOWELED INTO ALL FOOTINGS (EXCLUDING EXTERIOR SLABS), USING #3 REBAR DOWELS AT 18 INCHES ON CENTER, EMBEDDED 24 INCHES INTO THE FOOTING AND BENT 36 INCHES INTO THE SLAB.
09. CONCRETE SHALL BE PLACED AT A MAXIMUM SLUMP OF 4 1/2 INCHES. SHRINKAGE/CONTROL JOINTS SHALL BE PLACED AT INTERVALS NOT TO EXCEED 10.0 FEET ON CENTER IN ANY DIRECTION.
10. ALL FOOTING EXCAVATIONS AND SLAB ON GRADE SUB GRADE SOILS SHALL BE KEPT MOIST TO VERY MOIST UNTIL CONCRETE IS PLACED.
11. POSITIVE DRAINAGE SHALL BE PROVIDED AWAY FROM THE PROPOSED STRUCTURE (5 PERCENT MINIMUM FOR 10.0 FEET).
12. THE FINISHED STRUCTURE SHALL BE FITTED WITH RAIN GUTTERS AND DOWN SPOUTS THAT EFFECTIVELY COLLECT AND DISCHARGE ALL ROOF RAIN WATER RUN-OFF A MINIMUM 10.0 FEET AWAY FROM THE STRUCTURE.
13. BASED UPON COMPLIANCE WITH THE ABOVE RECOMMENDATIONS A MAXIMUM SAFE SOIL BEARING VALUE OF 2000 Psf MAY BE ASSUMED WITH A ONE-THIRD INCREASE WHEN CONSIDERING WIND OR SEISMIC MOVEMENT.
14. COMPLIANCE WITH THE ABOVE RECOMMENDATIONS WILL REDUCE THE POTENTIAL FOR TOTAL SETTLEMENT OF 1 INCH AND A DIFFERENTIAL SETTLEMENT TO 3/4 OF AN INCH IN 30.0 FEET.

SWIMMING POOL:

01. THE POOL SHALL BE DESIGNED FOR EXPANSIVE SOIL CONDITIONS.
02. THE SOILS ENGINEER SHALL INSPECT AND APPROVE THE POOL EXCAVATION, PRIOR TO PLACEMENT OF REBAR OR FORMWORK.
03. THE POOL SHALL BE FITTED WITH A HYDROSTATIC RELIEF VALVE.
04. A FLEXIBLE JOINT SHALL BE PROVIDED BETWEEN THE POOL DECK AND POOL COPING. ALL JOINTS SHALL BE SEALED WITH A WATER PROOF SEALANT.
05. CONCRETE POOL DECKS SHALL BE A MINIMUM OF 4 INCHES THICK, SHALL BE REINFORCED WITH A MINIMUM OF #3 REBAR AT 24 INCHES ON CENTER EACH WAY, PLACED AT MID DEPTH AND SHALL BE UNDERLAIN WITH A 4 INCH SAND OR BASE COURSE BLANKET.
06. THE TOP 1.0 FOOT OF SLAB ON GRADE SUB GRADE SOILS SHALL BE COMPACTED TO A MINIMUM OF 90 PERCENT RELATIVE COMPACTION, AS TESTED AND CERTIFIED BY THE SOILS ENGINEER.
07. THE COMPACTION STANDARD SHALL BE THE ASTM D 1557-91 METHOD OF COMPACTION.
08. IF TILE OR OTHER BRITTLE SURFACING IS TO BE PLACED OVER CONCRETE SLABS A "SLIP SHEET" IS RECOMMENDED TO REDUCE THE POTENTIAL FOR REFLECTIVE CRACKING.
09. CONCRETE SHALL BE PLACED AT A MAXIMUM SLUMP OF 4 1/2 INCHES. SHRINKAGE/CONTROL JOINTS SHALL BE PLACED AT INTERVALS NOT TO EXCEED 10.0 FEET ON CENTER IN ANY DIRECTION.

ROAD CENTERLINE LAYOUT DATA

NO.	Δ / BEARING	R	L	T
1	55°24'05"	18.00'	17.40'	9.45'
2	N 05°57'36" E		9.76'	
3	06°05'33"	200.00'	21.27'	10.64'
4	N 00°07'57" W		154.08'	
5	10°28'21"	200.00'	36.56'	18.33'
6	50°32'03"	120.00'	105.84'	56.64'
7	N 61°08'21" W		223.33'	
8	36°15'27"	75.00'	47.46'	24.56'
9	N 82°36'12" E		16.56'	
10	32°24'34"	66.00'	37.33'	19.18'
11	S 64°59'14" E		81.35'	
12	91°24'09"	66.00'	105.29'	67.64'
13	S 26°24'55" W		55.29'	
14	18°49'38"	81.00'	26.62'	13.43'
15	S 07°35'17" W	131.00'	91.94'	47.95'
16	182°04'46"	66.00'	209.74'	3636.59'
17	86°48'30"	81.00'	122.72'	76.61'
18	S 87°40'59" E		257.79'	
19	35°15'03"	25.00'	15.38'	7.94'
20	40°21'02"	156.00'	109.86'	57.32'
21	N 17°45'22" E		28.57'	

EASEMENT LEGEND

- (A) 42' WIDE EASEMENT FOR WATER MAINS AND APPURTENANCES WITH INGRESS AND EGRESS PER INST. NO. 89-067541 O.R.
- (B) C/L 10' WIDE EASEMENT FOR PUBLIC UTILITIES TO P.G. & E. PER INST. NO. 91-030200 O.R.
- (C) 42' WIDE EASEMENT FOR GENERAL ROAD, EQUESTRIAN AND HIKING, PUBLIC UTILITIES AND OTHER PURPOSES PER INST. NO. 91-034735 O.R.
- (D) C/L 20' WIDE EASEMENT FOR PRIVATE EQUESTRIAN AND HIKING TRAIL PURPOSES PER INST. NO. 92-018395 O.R.
- (E) C/L 10' EASEMENT FOR PRIVATE UTILITIES AND PUBLIC UTILITIES PER INST. NO. 92-036649 O.R.
- (F) EASEMENTS FOR GENERAL ROAD, PUBLIC AND PRIVATE UTILITIES, EUESTRIAN AND HIKING TRAILS AND INCIDENTAL PURPOSES PER R/S BOOK 143, PAGES 90 THROUGH 92
- (G) EASEMENTS FOR GENERAL ROAD, HIKING AND EQUESTRIAN TRAILS, UTILITIES AND MAINTENANCE PER INST. NO. 92-104210 O.R.
- (H) 34' WIDE EASEMENT FOR WATER MAINS AND APPURTENANCES WITH INGRESS AND EGRESS TO THE S.Y.R.W.C.D. PER INST. NO. 93-022897 O.R.
- (I) C/L 10' WIDE EASEMENT FOR PRIVATE EQUESTRIAN AND HIKING TRAIL PURPOSES PER INST. NO. 93-047371 O.R.
- (J) EASEMENT FOR PRIVATE ROAD AND UTILITIES PER INST. NO. 92-58952 O.R.
- (K) EASEMENT FOR INGRESS, EGRESS, ACCESS, ROADWAY & PUBLIC UTILITIES PER INSTRUMENT NO. 99-94409 O.R.

LEGEND

A/C, AC	ASPHALT	INV	PIPE INVERT ELEVATION
B.C.	BEGIN CURVE	L.F.	LINEAL FEET
B.V.C.	BEGIN VERTICAL CURVE	L.P.	LOW POINT
C, CONC.	CONCRETE	MIN.	MINIMUM
(E), EXIST.	EXISTING	P.C.C.	POINT OF CONTINUING CURVE
E.C.	END CURVE	P.	PROPERTY LINE
E.P.	EDGE OF PAVEMENT	P.O.C.	POINT ON CURVE
E.V.C.	END VERTICAL CURVE	P.O.T.	POINT ON TANGENT
FF	FINISHED FLOOR ELEVATION	P.R.C.	POINT OF REVERSING CURVE
FG	FINISHED GROUND ELEVATION	P.V.I.	POINT OF VERTICAL INTERSECTION
FL	FLOW LINE	SD	STORMDRAIN
FS	FINISHED SURFACE ELEVATION	SHLDR	SHOULDER
H.P.	HIGH POINT	TG	TOP OF GRATE

10GRD-00000-00139

HORIZONTAL CONTROL PLAN and GRADING RECOMMENDATIONS

DATE	REVISIONS
23 SEPT 2010	RESPONSE TO FIRST PLANCHECK

REVIEWED BY: _____

REVIEWED BY: _____

FOR INFORMATIONAL PURPOSES ONLY

DRAWN BY:

DESIGNER:

DATE: 28 SEPT 2010

SCALE: 1" = 60'

GRADING PLAN for PARCEL 1 of RANCHO CUERNO LARGO A.P.N. 135-330-03

SHEET NO. CE-02

FILE NO.

F:\SJGCE\DRAWINGS\10-06-100 Schaffer\Package for New Owner_082321\CE-02.dwg Aug 23, 2021 - 7:17pm

— BUREAU OF —
RECLAMATION

Historical Archive and Report Database

Lake Cachuma Daily Operations

Run Date: 1/3/2023

December 2022

DAY	ELEV	STORAGE ACRE-FEET IN LAKE	CHANGE	COMPUTED* INFLOW AF.	CCWA INFLOW AF.	PRECIP ON RES. SURF. AF.	RELEASE - AF. TUNNEL	HILTON CREEK	OUTLET	SPILLWAY	EVAPORATION AF.	EVAPORATION INCH	PRECIP INCHES
	692.72	61,113											
1	692.68	61,055	-58	-11.0	0.5	1.2	33.9	5.2	6.0	0.6	2.4	0.030	0.01
2	692.68	61,055	0	14.0	1.5	25.2	24.8	5.6	6.0	0.6	4.0	0.050	0.21
3	692.69	61,069	14	13.0	0.0	40.8	24.6	5.9	7.0	0.6	2.4	0.030	0.34
4	692.69	61,069	0	2.0	0.0	32.4	20.3	5.9	6.0	0.6	2.4	0.030	0.27
5	692.67	61,040	-29	3.0	0.0	4.8	20.0	6.0	6.0	0.6	4.0	0.050	0.04
6	692.64	60,997	-43	-4.0	0.0	1.2	20.3	6.0	6.0	0.6	7.1	0.090	0.01
7	692.61	60,954	-43	-5.0	0.0	0.0	20.6	6.2	6.0	0.6	4.0	0.050	0.00
8	692.58	60,911	-43	-8.0	0.0	0.0	19.6	6.1	6.0	0.6	2.4	0.030	0.00
9	692.57	60,896	-15	21.0	0.0	0.0	20.4	6.3	6.0	0.6	2.4	0.030	0.00
10	692.55	60,868	-28	4.0	0.0	0.0	16.2	6.2	6.0	0.6	3.2	0.040	0.00
11	692.88	61,345	477	189.0	0.0	317.9	17.2	6.2	6.0	0.6	0.0	0.000	2.64
12	693.11	61,679	334	317.0	0.0	53.2	17.0	6.2	6.0	0.6	6.4	0.080	0.44
13	693.09	61,636	-43	-8.0	0.0	0.0	17.9	6.3	6.0	0.6	4.0	0.050	0.00
14	693.08	61,621	-15	20.0	0.0	1.2	18.9	6.3	6.0	0.6	4.0	0.050	0.01
15	693.07	61,607	-14	19.0	0.0	0.0	17.4	6.4	6.0	0.6	2.4	0.030	0.00
16	693.06	61,607	0	33.0	0.0	0.0	17.5	6.3	6.0	0.6	2.4	0.030	0.00
17	693.04	61,578	-29	6.0	0.0	0.0	17.7	6.4	6.0	0.6	4.0	0.050	0.00
18	693.01	61,534	-44	-10.0	0.0	0.0	18.3	6.3	6.0	0.6	3.2	0.040	0.00
19	692.97	61,476	-58	-23.0	0.0	0.0	18.7	6.4	6.0	0.6	3.2	0.040	0.00
20	692.98	61,490	14	24.0	24.8	0.0	17.8	6.3	6.0	0.6	4.0	0.050	0.00
21	692.99	61,505	15	13.0	38.1	0.0	19.4	6.4	6.0	0.6	4.0	0.050	0.00
22	692.99	61,505	0	-2.0	38.2	0.0	19.3	6.4	6.0	0.6	4.0	0.050	0.00
23	692.97	61,476	-29	-1.0	6.8	1.2	20.0	6.5	6.0	0.6	3.2	0.040	0.01
24	692.95	61,447	-29	5.0	0.0	0.0	19.4	6.5	6.0	0.6	1.6	0.020	0.00
25	692.95	61,447	0	38.0	0.0	0.0	20.3	6.5	6.0	0.6	4.8	0.060	0.00
26	692.93	61,418	-29	10.0	0.0	0.0	20.7	6.4	6.0	0.6	5.6	0.070	0.00
27	692.92	61,403	-15	21.0	0.0	0.0	19.1	6.5	6.0	0.6	4.0	0.050	0.00
28	693.00	61,519	116	-39.0	34.7	156.9	20.1	6.5	6.0	0.6	3.2	0.040	1.30
29	693.00	61,519	0	23.0	12.9	1.2	20.1	6.5	6.0	0.6	4.0	0.050	0.01
30	693.00	61,519	0	16.0	14.6	3.6	21.1	6.5	6.0	0.6	0.0	0.000	0.03
31	693.01	61,534	15	28.0	19.7	2.4	19.7	6.5	6.0	0.6	2.4	0.030	0.02
TOTALS			**421**	**708.0**	**191.8**	**643.2**	**618.3**	**193.7**	**187.0**	**18.6**	**104.7**	**1.310**	**5.34**
AVERAGE		**61,348**											

Comments: *Computed inflow is the sum of change in storage, releases and evaporation minus precip on the reservoir surface and ccwa inflow.
Indicated outlet release includes leakage from outlet valves and spillway gates.
Data based on a 24 hour period ending 0800.

— BUREAU OF —
RECLAMATION

Historical Archive and Report Database

Lake Cachuma Daily Operations

Run Date: 1/13/2023

January 2023

DAY	ELEV	STORAGE ACRE-FEET IN LAKE	CHANGE	COMPUTED* INFLOW AF.	CCWA INFLOW AF.	PRECIP ON RES. SURF. AF.	RELEASE - AF. TUNNEL	HILTON CREEK	OUTLET	SPILLWAY	EVAPORATION AF.	EVAPORATION INCH	PRECIP INCHES
	693.01	61,534											
1	693.41	62,115	581	419.0	20.6	177.3	20.2	6.5	6.0	0.6	2.4	0.030	1.46
2	693.58	62,361	246	279.0	2.5	1.2	20.1	6.5	5.0	0.6	4.7	0.060	0.01
3	693.62	62,419	58	89.0	2.5	1.2	20.4	6.5	6.0	0.6	1.6	0.020	0.01
4	693.65	62,464	45	79.0	2.5	0.0	19.3	6.6	6.0	0.6	4.0	0.050	0.00
5	694.55	63,791	1,327	875.0	2.5	483.4	20.9	6.5	6.0	0.6	0.0	0.000	3.91
6	697.92	68,911	5,120	5,138.0	2.5	19.4	21.2	6.7	6.0	0.6	5.9	0.070	0.15
7	699.02	70,634	1,723	1,761.0	2.5	0.0	21.5	6.9	9.0	0.6	3.4	0.040	0.00
8	699.48	71,361	727	866.0	2.5	2.6	21.9	6.6	108.0	0.6	6.9	0.080	0.02
9	700.02	72,221	860	742.0	2.6	247.4	22.2	6.9	102.0	0.6	0.0	0.000	1.86
10	732.37	136,434	64,213	62,951.0	2.4	1,301.7	24.2	7.6	10.0	0.6	0.0	0.000	6.49
11	741.04	158,549	22,115	22,125.0	0.0	24.7	24.1	0.0	10.0	0.6	0.0	0.000	0.11
12	742.89	163,601	5,052	5,311.0	0.0	0.0	17.7	0.0	235.0	0.6	6.0	0.040	0.00
TOTALS			**102,067**	**100,635.0**	**43.1**	**2,258.9**	**253.7**	**67.3**	**509.0**	**7.2**	**34.9**	**0.390**	**14.02**
AVERAGE		**87,905**											

Comments: *Computed inflow is the sum of change in storage, releases and evaporation minus precip on the reservoir surface and ccwa inflow.
Indicated outlet release includes leakage from outlet valves and spillway gates.
Data based on a 24 hour period ending 0800.

Santa Barbara County - Flood Control District

130 East Victoria Street, Santa Barbara CA 93101 - 805.568.3440 - www.countyofsb.org/pwd

Rainfall and Reservoir Summary

Updated 8am: 1/13/2023 **Water Year: 2023** **Storm Number: NA**

Notes: Daily rainfall amounts are recorded as of 8am for the previous 24 hours. Rainfall units are expressed in inches. All data on this page are from automated sensors, are preliminary, and subject to verification.
*Each Water Year (WY) runs from Sept 1 through Aug 31 and is designated by the calendar year in which it ends
County Real-Time Rainfall and Reservoir Website link: ➢ http://www.countyofsb.org/hydrology

Rainfall	ID	24 hrs	Storm 0day(s)	Month	Year*	% to Date	% of Year*	AI
Buellton (Fire Stn)	*233*	0.00	0.00	9.61	16.17	254%	99%	
Cachuma Dam (USBR)	*332*	0.01	0.00	12.47	19.16	258%	98%	
Carpinteria (Fire Stn)	*208*	0.00	0.00	7.60	12.52	187%	74%	
Cuyama (Fire Stn)	*436*	0.01	0.00	4.02	7.15	245%	94%	
Figueroa Mtn. (USFS Stn)	*421*	0.00	0.00	11.51	20.74	250%	98%	4.4
Gibraltar Dam (City Facility)	*230*	0.01	0.00	21.60	32.12	327%	123%	3.2
Goleta (Fire Stn-Los Carneros)	*440*	0.00	0.00	7.88	14.10	192%	77%	
Lompoc (City Hall)	*439*	0.00	0.00	9.51	18.33	326%	127%	3.6
Los Alamos (Fire Stn)	*204*	0.00	0.00	8.82	15.98	280%	105%	
San Marcos Pass (USFS Stn)	*212*	0.00	0.00	26.03	43.58	323%	130%	
Santa Barbara (County Bldg)	*234*	0.00	0.00	11.58	18.38	262%	101%	
Santa Maria (City Pub.Works)	*380*	0.00	0.00	6.30	13.15	253%	99%	
Santa Ynez (Fire Stn /Airport)	*218*	0.01	0.00	10.48	17.10	282%	110%	
Sisquoc (Fire Stn)	*256*	0.01	0.00	6.96	12.95	223%	87%	

County-wide percentage of "Normal-to-Date" rainfall : 262%

County-wide percentage of "Normal Water-Year" rainfall : 102%

County-wide percentage of "Normal Water-Year" rainfall calculated assuming no more rain through Aug. 31, 2023 (End of WY2023).

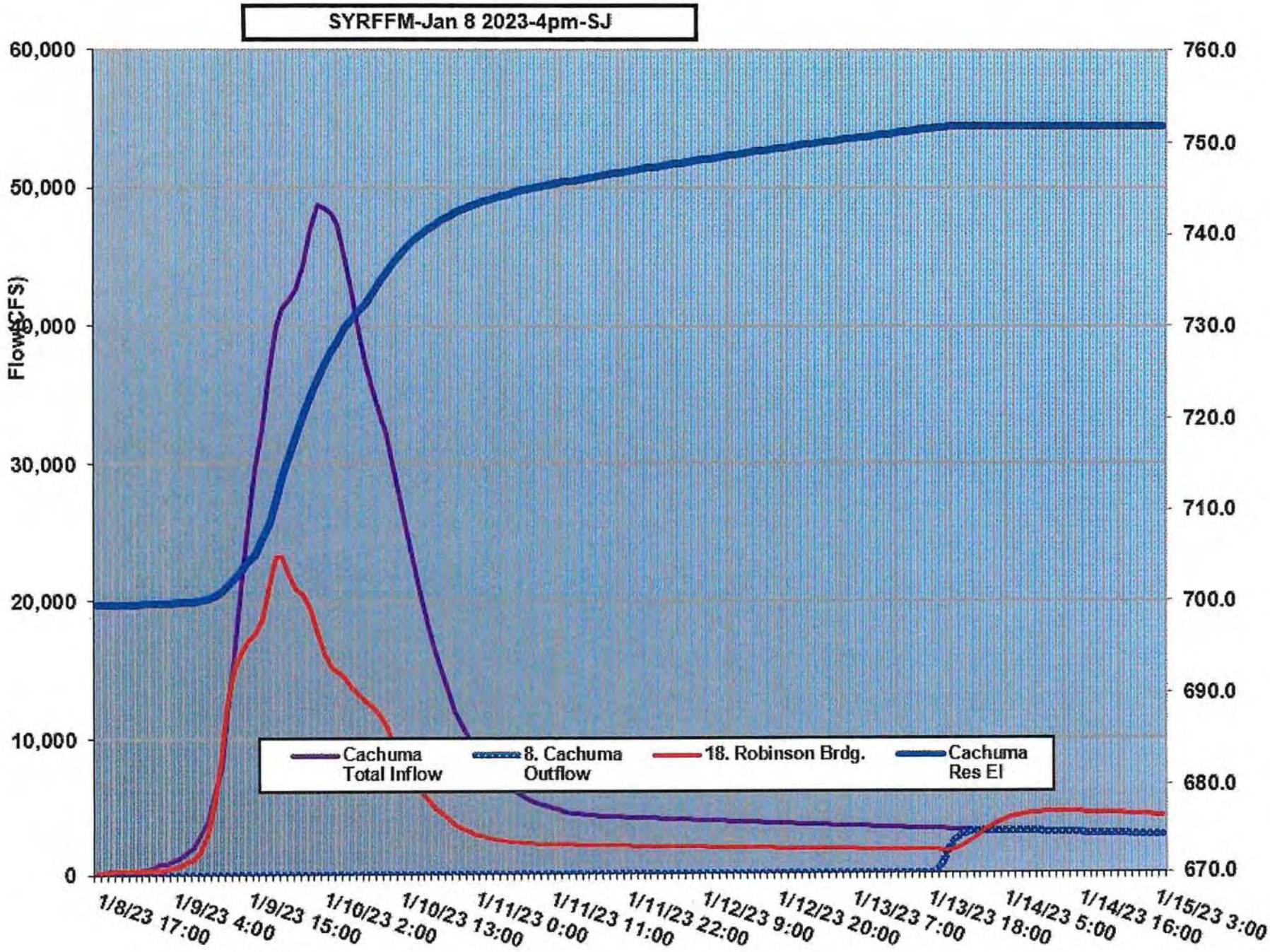
AI (Antecedent Index / Soil Wetness)
6.0 and below = Wet (min. = 2.5)
6.1 - 9.0 = Moderate
9.1 and above = Dry (max. = 12.5)

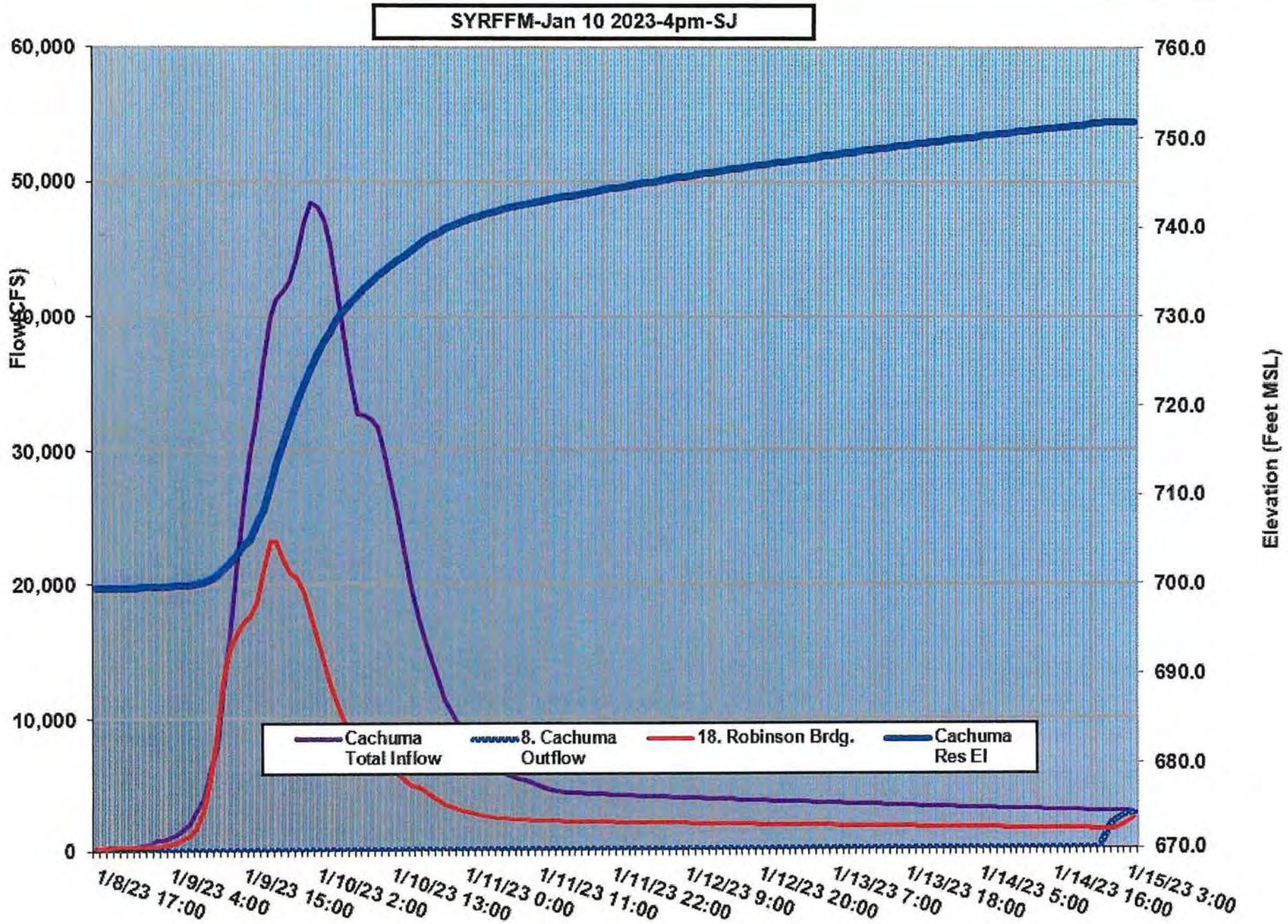
Reservoirs

Reservoir Elevations referenced to NGVD-29.
**Cachuma is full and subject to spilling at elevation 750 ft.
However, the lake is surcharged to 753 ft. for fish release water.
(Cachuma water storage is based on Dec 2013 capacity revision)

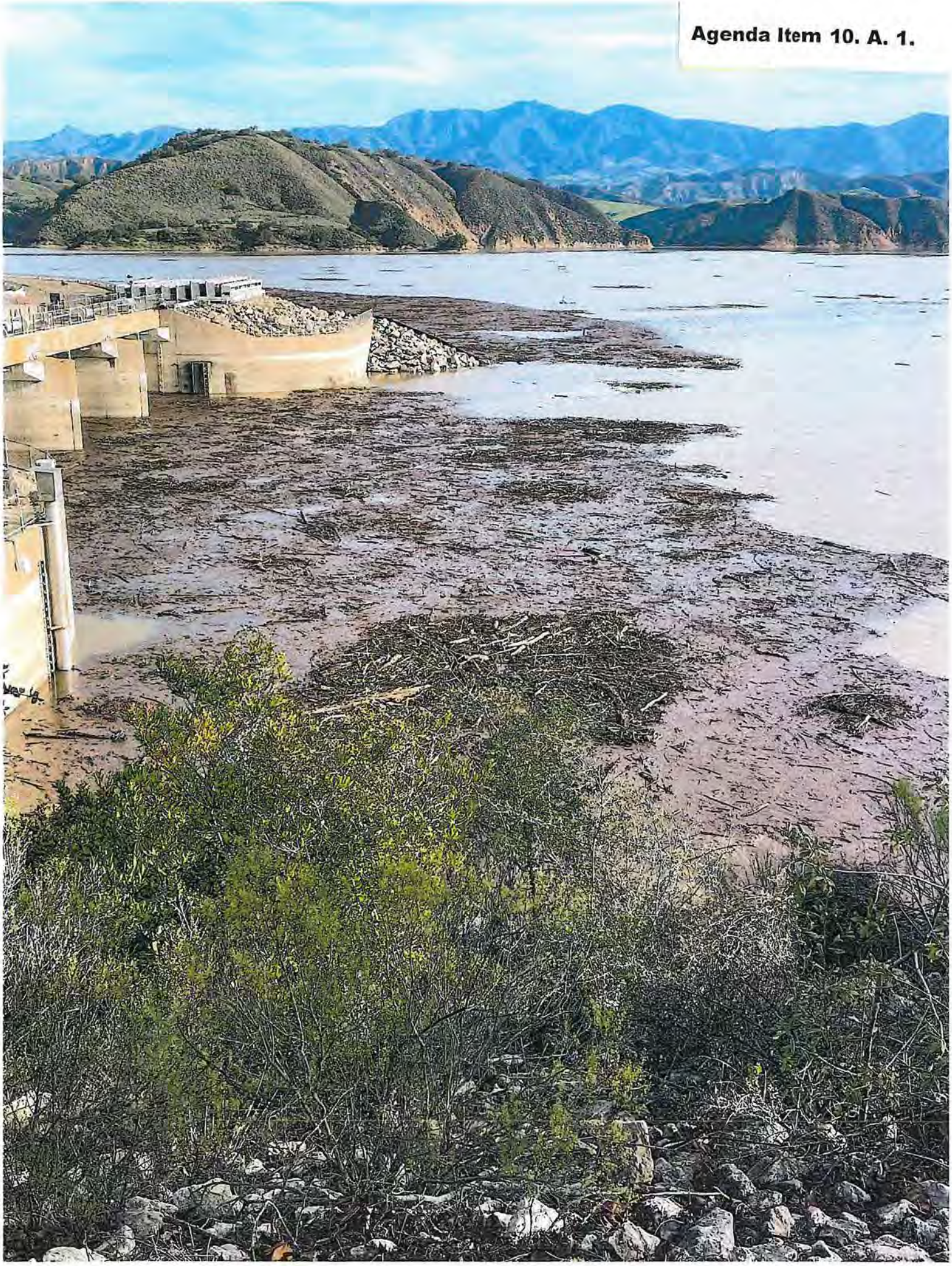
Click on Site for Real-Time Readings	Spillway Elev. (ft)	Current Elev. (ft)	Max. Storage (ac-ft)	Current Storage (ac-ft)	Current Capacity (%)	Storage Change Mo.(ac-ft)	Storage Change Year*(ac-ft)
Gibraltar Reservoir	1,400.00	1,399.42	4,693	4,564	97.3%	2,552	3,264
Cachuma Reservoir	753.**	744.11	192,978	166,540	86.3%	105,331	95,870
Jameson Reservoir	2,224.00	2,224.34	4,848	4,890	100.9%	1,963	2,064
Twitchell Reservoir	651.50	606.90	194,971	72,737	37.3%	72,737	72,737

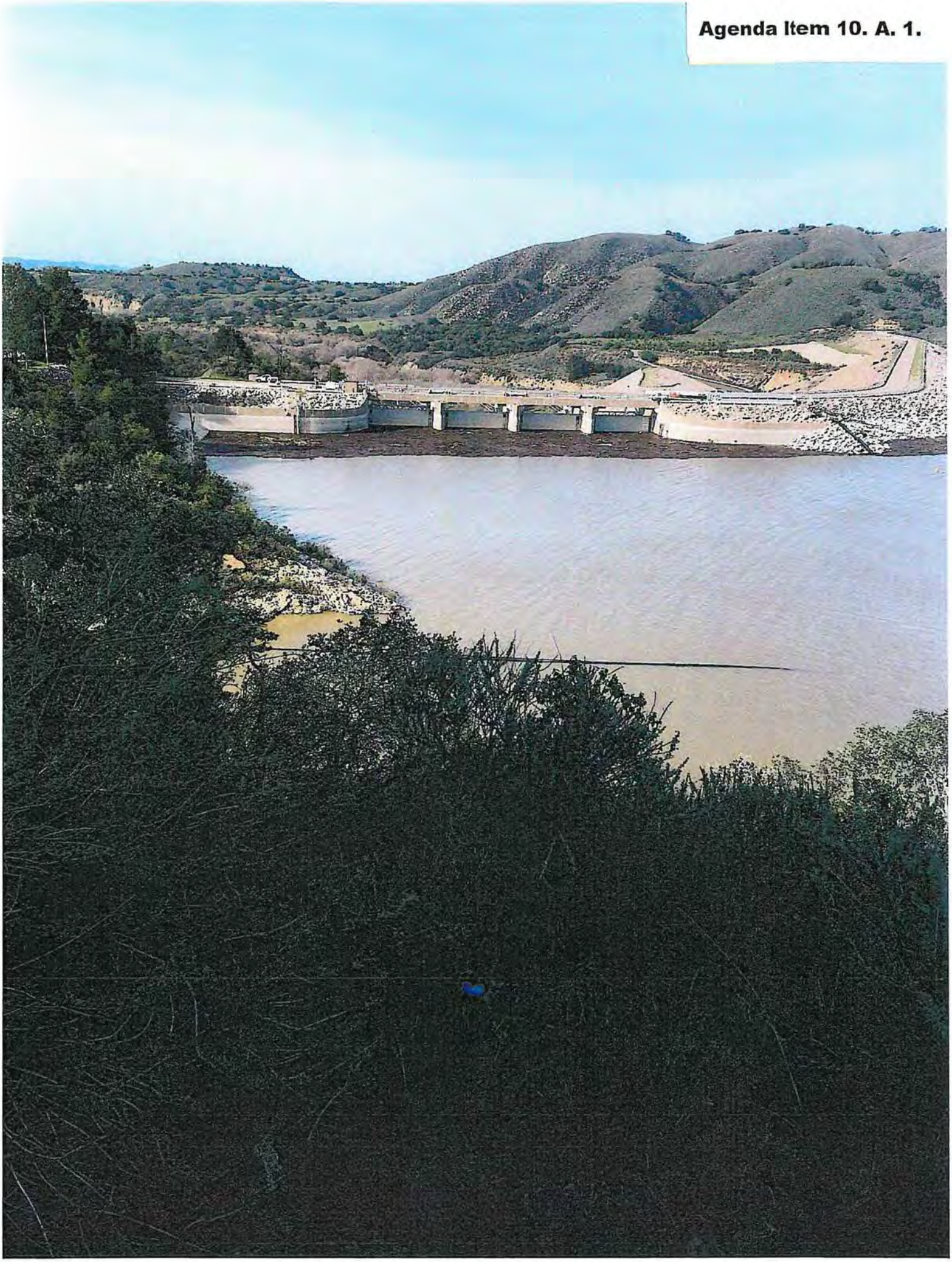
Previous Rainfall and Reservoir Summaries


SYRFFM-Jan 8 2023-4pm-SJ
Flow (CFS)
Elevation (Feet MSL)
60,000
50,000
40,000
30,000
20,000
10,000
0
760.0
750.0
740.0
730.0
720.0
710.0
700.0
690.0
680.0
670.0
Cachuma Total Inflow
8. Cachuma Outflow
18. Robinson Brdg.
Cachuma Res El
1/8/23 17:00
1/9/23 4:00
1/9/23 15:00
1/10/23 2:00
1/10/23 13:00
1/11/23 0:00
1/11/23 11:00
1/11/23 22:00
1/12/23 9:00
1/12/23 20:00
1/13/23 7:00
1/13/23 18:00
1/14/23 5:00
1/14/23 16:00
1/15/23 3:00


SYRFFM-Jan 10 2023-4pm-SJ
Flow (CFS)
Elevation (Feet MSL)
60,000
50,000
40,000
30,000
20,000
10,000
0
760.0
750.0
740.0
730.0
720.0
710.0
700.0
690.0
680.0
670.0
Cachuma Total Inflow
8. Cachuma Outflow
18. Robinson Brdg.
Cachuma Res El
1/8/23 17:00
1/9/23 4:00
1/9/23 15:00
1/10/23 2:00
1/10/23 13:00
1/11/23 0:00
1/11/23 11:00
1/11/23 22:00
1/12/23 9:00
1/12/23 20:00
1/13/23 7:00
1/13/23 18:00
1/14/23 5:00
1/14/23 16:00
1/15/23 3:00

Agenda Item 10. A. 1.





County Executive Office
105 E. Anapamu St. Santa Barbara CA 93101

one COUNTY one FUTURE

PRESS RELEASE

January 12, 2023
5:30 p.m.

Contact:
Joint Information Center
Phone: 805-696-1188
EOCPIOStaff@countyofsb.org

PREPARATIONS UNDERWAY FOR INCOMING STORM SYSTEM

Residents asked to take steps now to be ready for more rain

(SANTA BARBARA COUNTY, Calif.) – Now is the time to prepare for the next storm system heading our way. With the current dry weather, public safety officials are asking Santa Barbara County residents to prepare for this weekend's rain and potential impacts.

The National Weather Service is advising that scattered showers will move into the area Friday afternoon. Rain will become moderately heavy Saturday afternoon over Santa Barbara County with forecast rain rates of 0.5" per hour. The National Weather Service expects additional rain starting Sunday evening through Tuesday. Early rainfall estimates show total combined rain amounts of 1.5-3" along the coast and valleys with up to 5" in the mountains. In addition to the rain, the storms will also bring moderate wind, high surf, minor coastal flooding and additional beach erosion. While the upcoming storm systems are forecast to be less significant and evacuations are not expected at this time, it remains imperative for all community members to prepare for potential storm impacts and changing conditions.

Work is actively underway to clear debris basins and prepare creeks and waterways following the Jan. 9-10, 2023 storm. At this time, several local roads are still closed, including Highway 154, due to rock and debris flows. Crews are working around the clock to clear roads. The storm left several roads impassable and there are expected to be further impacts with the coming storm. Residents should prepare for additional impacts from the incoming storm.

Before rain arrives, take steps to ready yourself, your family and your property for the storm.

- Ensure your vehicles have adequate fuel.
- Have plenty of food and water on hand in case you cannot leave home for several days.
- Keep cell phones charged.
- Utilize sandbags to prevent flooding impacts around your property.
    - Click here for a list of sandbag filling locations in Santa Barbara County.
- Additional storm readiness information can be found on ReadySBC.org

Please be cautious while driving on wet and potentially hazardous roadways. Loose and falling rocks, minor landslides, flooded or damaged roadways, down trees and power lines are ongoing hazards across the County that are actively being mitigated by public safety agencies. Check with CHP and CalTrans for the latest road closure information.

Unplanned power outages are possible. Beaches, Bluffs and the Harbor area may be impacted by dangerous surf, winds and flooding.

During the storm:

- **If you feel unsafe during the rainfall, shelter in place in your home by gathering your family and pets in the inner most room of your house, preferably on the top floor if you live in a multi-story home.**
- Do not attempt to drive while it is dark or raining as roads may be damaged and your car may be swept away by moving water or debris.
- Cliffs and bluffs are considered dangerous due to the high surf and storm surge. In addition, stay away from decks or patios on bluffs. Under no circumstances, cross safety fencing.
- Strong winds are also expected, which can cause debris to fall onto roadways and power outages.

REGISTER TO RECEIVE READYSBC ALERTS: If you haven't registered for emergency alerts, please do so at ReadySBC.org. Click on the red icon to register to receive emergency alerts via text, phone call, and email.

To access the Santa Barbara County 2023 January Winter Storm Incident Map, visit www.ReadySBC.org.

RECOVERY RESOURCES: The County is working to gather resources for community members impacted by the January 2023 winter storm event. In the coming days, this webpage will be a source of information, including links for wellness counseling support, housing assistance, information to aid in rebuilding, permitting, hazardous material clean-up, loss of business or employment, and other topics.

- Cleanup Kits: Red Cross is offering Clean-Up Kits from 9 a.m. to 5 p.m. through Monday, Jan. 16 at 2707 State Street in the rear parking lot. The kits are free and include a bucket, shovel, wet mop, broom, squeegee, cleaner, gloves along with other supplies.
- Debris Management Resources, can be found on ReadySBC.

For updated and detailed information, please visit ReadySBC.org or call Santa Barbara County's Emergency Call Center at (833) 688-5551 or 211.

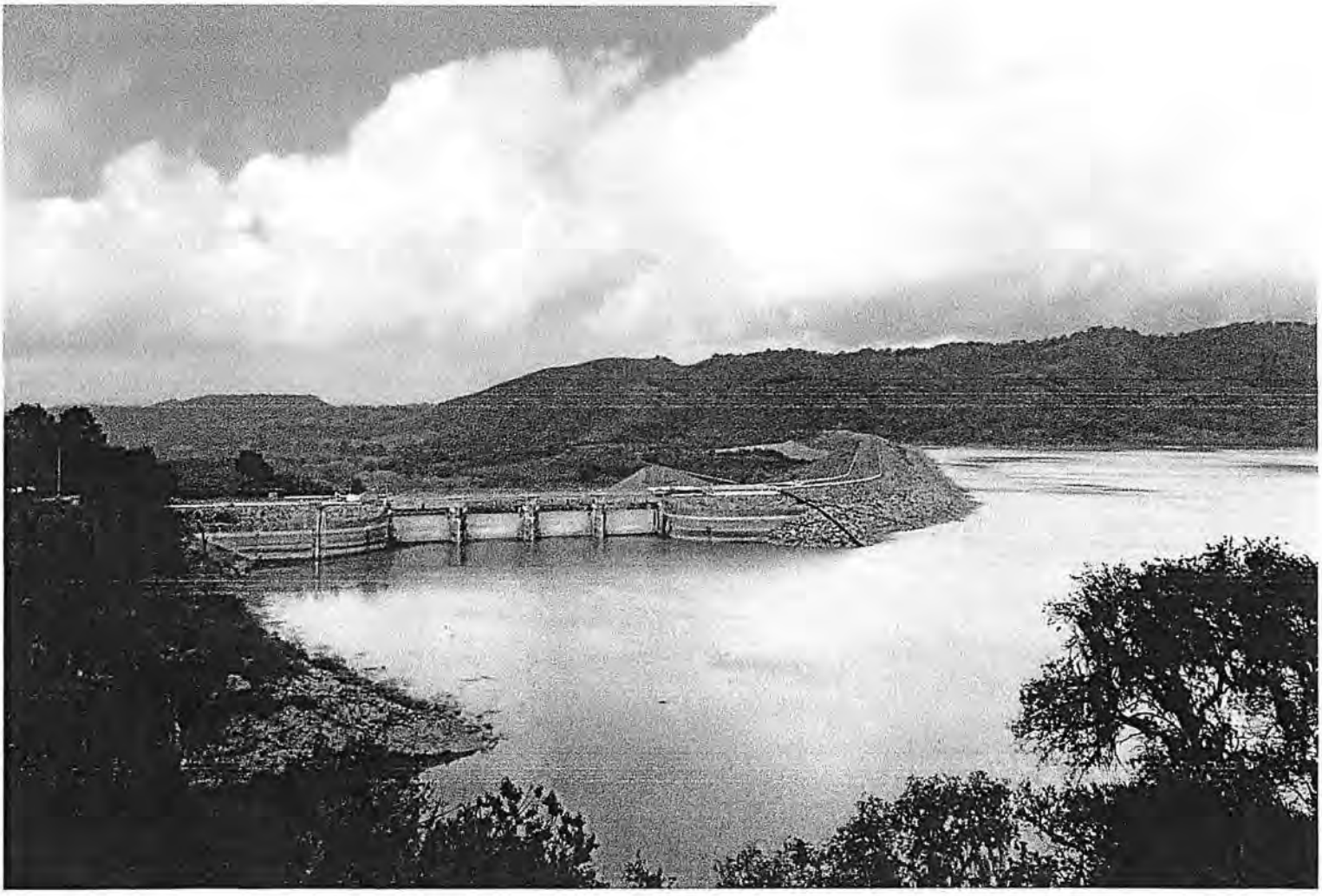
-###-

NOOZHAWK
THE FRESHEST NEWS IN SANTA BARBARA COUNTY

Lake Cachuma Expected to Fill and Spill in Wake of Major Storms

Lake level continued to rise at the rate of about one foot per hour on Tuesday

by **Tom Bolton, Noozhawk Executive Editor**
January 10, 2023 | 11:35 am



Lake Cachuma is expected to fill and spill over Bradbury Dam, above, by this weekend, according to county officials. The lake level has come up 34 feet in the last day. (Peter Hartmann / Noozhawk photo)

Swelled by heavy runoff from recent large storms, Lake Cachuma is expected to fill and spill by this weekend, according to Santa Barbara County officials.

The lake level continued to rise at the rate of about one foot per hour on Tuesday, and by 7 p.m. was at 78% of capacity, and about 15 feet below spill level, according to the county **Public Works Department**.

"We'll still be getting inflows to the lake for the next few days," an obviously happy Matt Young, manager of the county Water Agency, told Noozhawk.

"Just in the last day, it's come up 34 feet, which is pretty unbelievable."

Young estimated the lake will reach capacity and begin sending water over Bradbury Dam Friday night or Saturday.

The last time Cachuma spilled was in 2011.

The boat launch at Lake Cachuma is nearly back in the water, and will be soon as the lake level continues to rise. Officials expect the lake to fill and spill by the weekend. (Peter Hartmann / Noozhawk photo)

The change in fortunes for Cachuma — and the other upstream reservoirs on the Santa Ynez River, Jameson Lake and Gibraltar Reservoir — is good news for the county's water supply.

As of early December, Cachuma was at only about 30% of capacity, and water agencies that rely on it were told they would receive no new water allocations from the reservoir this year, Young said.

That will all be revisited and undoubtedly change once Cachuma fills.

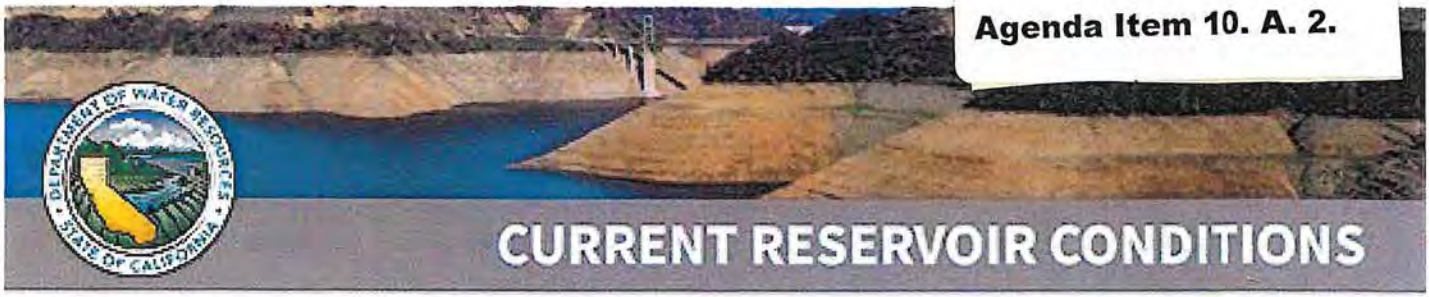
It's also likely local water agencies will receive larger allocations of State Water due to the heavy snowpack in the Sierra Nevada, which will help fill Northern California reservoirs.

More water flowing over the dam at Cachuma also is good news for communities downstream along the Santa Ynez River. The increased flows will help recharge depleted groundwater basins in the Santa Ynez and Lompoc valleys.

However, Young stressed that groundwater basins throughout the county have been drawn down and stressed by pumping during the recent drought, and will need several years of good rainfall to fully recover.

More rain is forecast for the county over the weekend, although nothing of the magnitude of the most recent storm.

Lake Cachuma in the Santa Ynez Valley is rapidly rising, and is expected to fill and spill by the weekend, according to Santa Barbara County officials. (Peter Hartmann / Noozhawk photo)

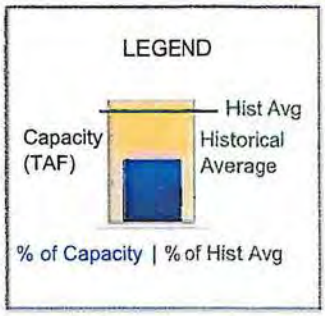


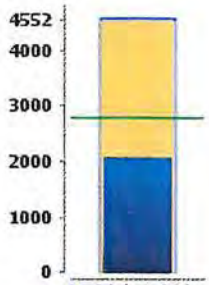
CURRENT RESERVOIR CONDITIONS

CALIFORNIA MAJOR WATER SUPPLY RESERVOIRS

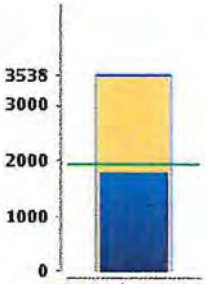
CURRENT CONDITIONS

Midnight - January 12, 2023

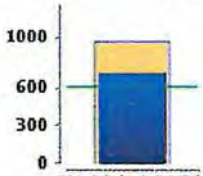




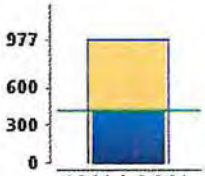
45% | 74%
Shasta



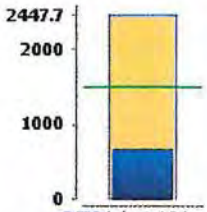
51% | 93%
Oroville



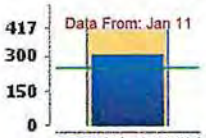
74% | 117%
New Bullards Bar



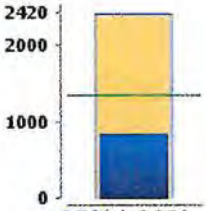
42% | 99%
Folsom



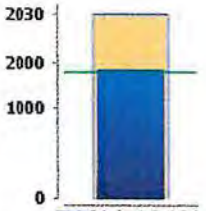
27% | 44%
Trinity



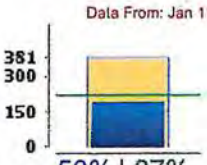
73% | 122%
Camanche



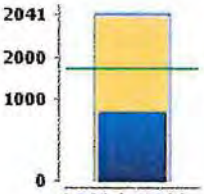
35% | 62%
New Melones



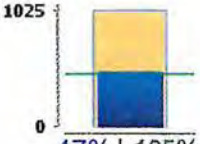
70% | 101%
Don Pedro



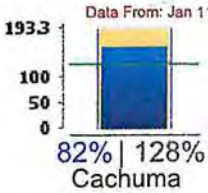
50% | 87%
Sonoma



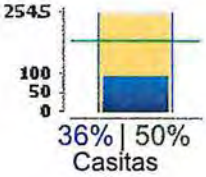
42% | 62%
San Luis



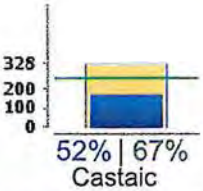
47% | 105%
McClure



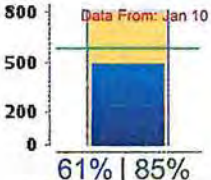
82% | 128%
Cachuma



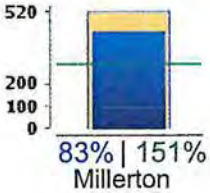
36% | 50%
Casitas



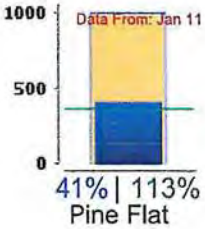
52% | 67%
Castaic



61% | 85%
Diamond Valley



83% | 151%
Millerton



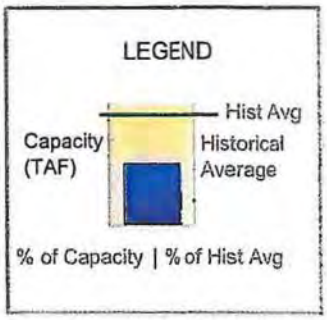
41% | 113%
Pine Flat

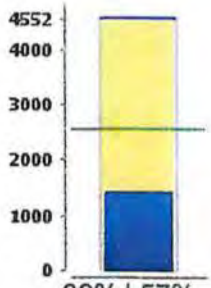
Updated 01/13/2023 11:48 AM

CALIFORNIA MAJOR WATER SUPPLY RESERVOIRS

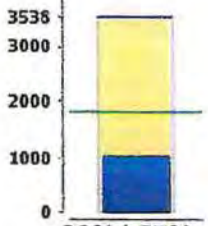
Midnight - December 14, 2022

CURRENT CONDITIONS

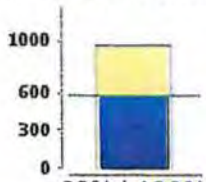




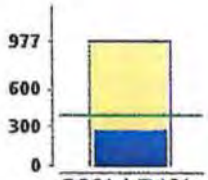
32% | 57%
Shasta



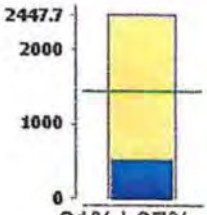
29% | 57%
Oroville



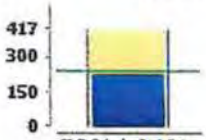
60% | 100%
New Bullards Bar



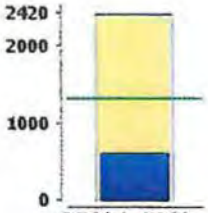
28% | 71%
Folsom



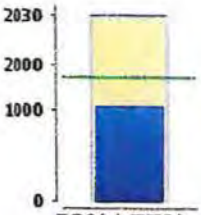
21% | 37%
Trinity



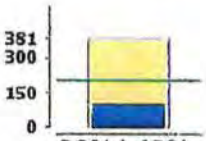
53% | 91%
Camanche



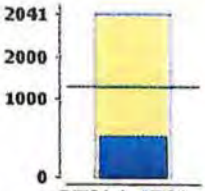
25% | 46%
New Melones



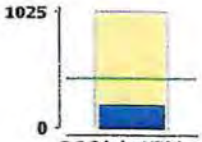
52% | 77%
Don Pedro



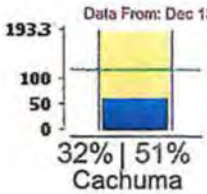
26% | 49%
Sonoma



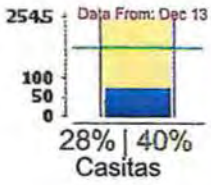
27% | 47%
San Luis



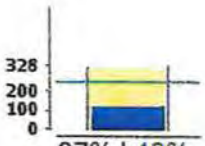
20% | 47%
McClure



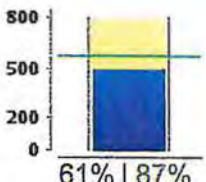
32% | 51%
Cachuma



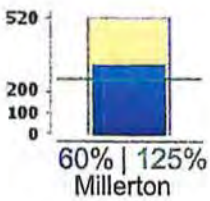
28% | 40%
Casitas



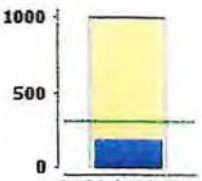
37% | 49%
Castaic



61% | 87%
Diamond Valley



60% | 125%
Millerton



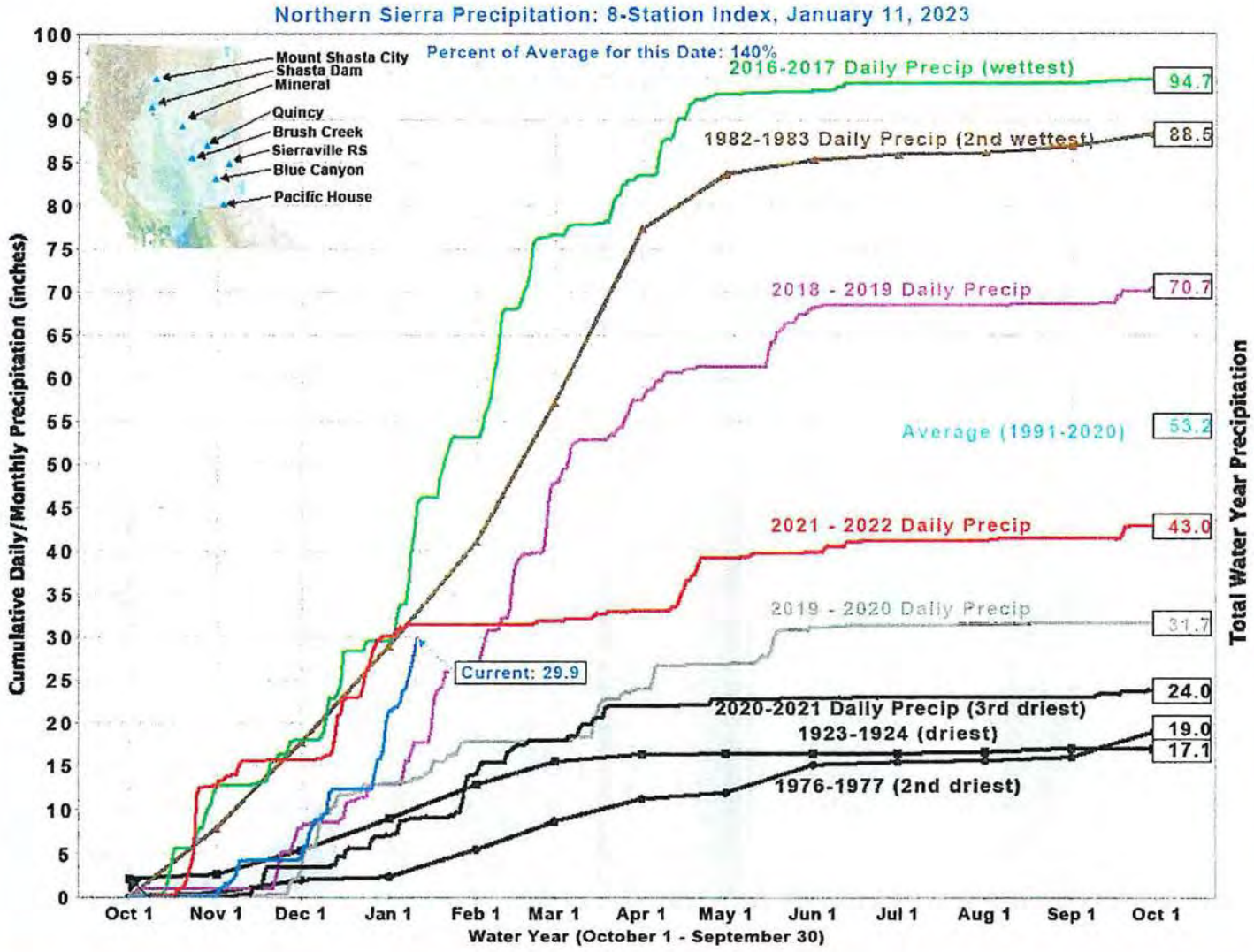
20% | 62%
Pine Flat

Updated 12/15/2022 11:18 AM

CCWA Operating Committee

January 12, 2023

Water Supply Situation Report

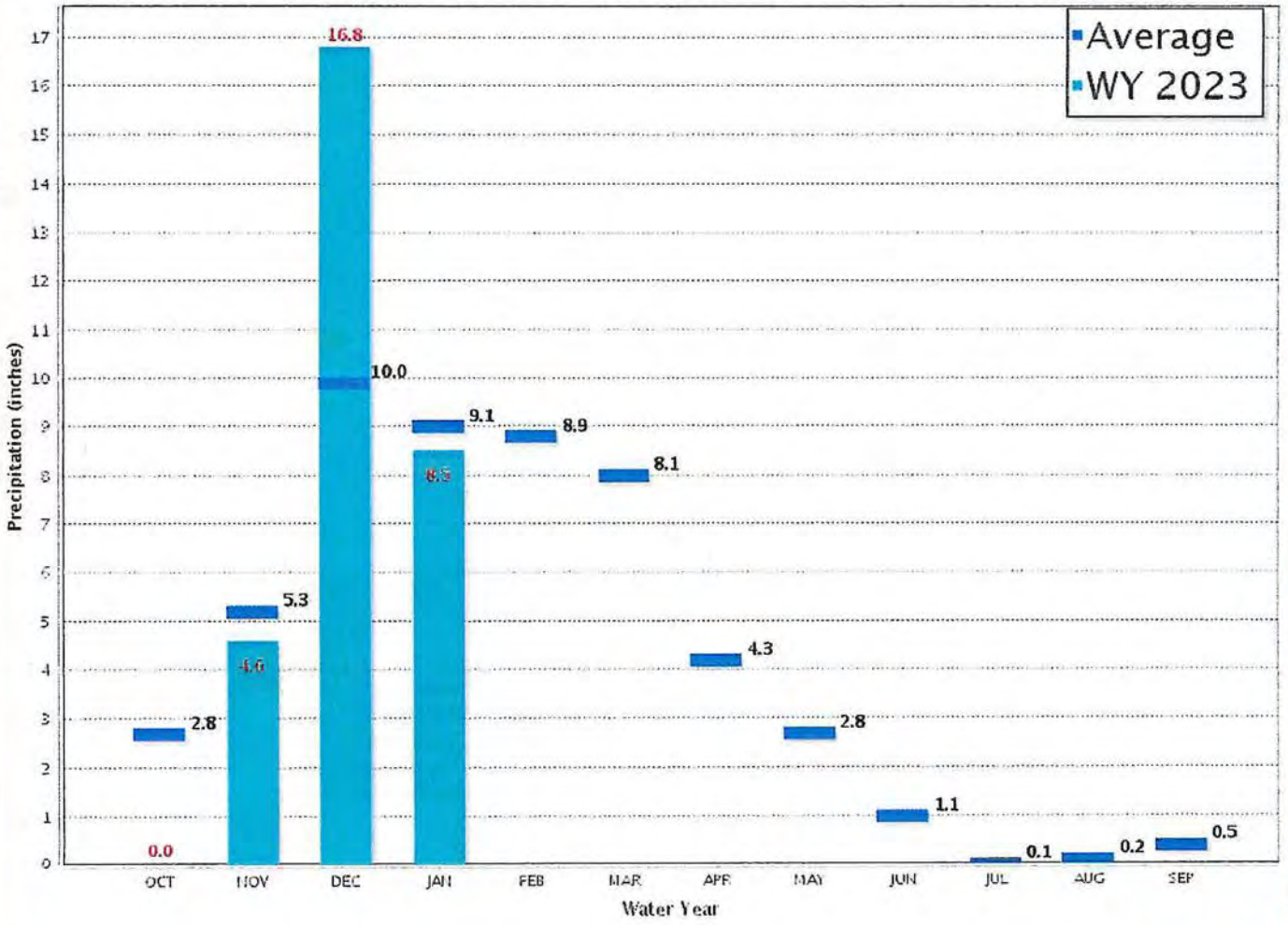

Northern Sierra Precipitation: 8-Station Index, January 11, 2023
Percent of Average for this Date: 140%
Mount Shasta City
Shasta Dam
Mineral
Quincy
Brush Creek
Sierraville RS
Blue Canyon
Pacific House
2016-2017 Daily Precip (wettest)
94.7
1982-1983 Daily Precip (2nd wettest)
88.5
2018 - 2019 Daily Precip
70.7
Average (1991-2020)
53.2
2021 - 2022 Daily Precip
43.0
2019 - 2020 Daily Precip
31.7
Current: 29.9
24.0
2020-2021 Daily Precip (3rd driest)
19.0
1923-1924 (driest)
17.1
1976-1977 (2nd driest)
Cumulative Daily/Monthly Precipitation (inches)
Total Water Year Precipitation
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1
Water Year (October 1 - September 30)

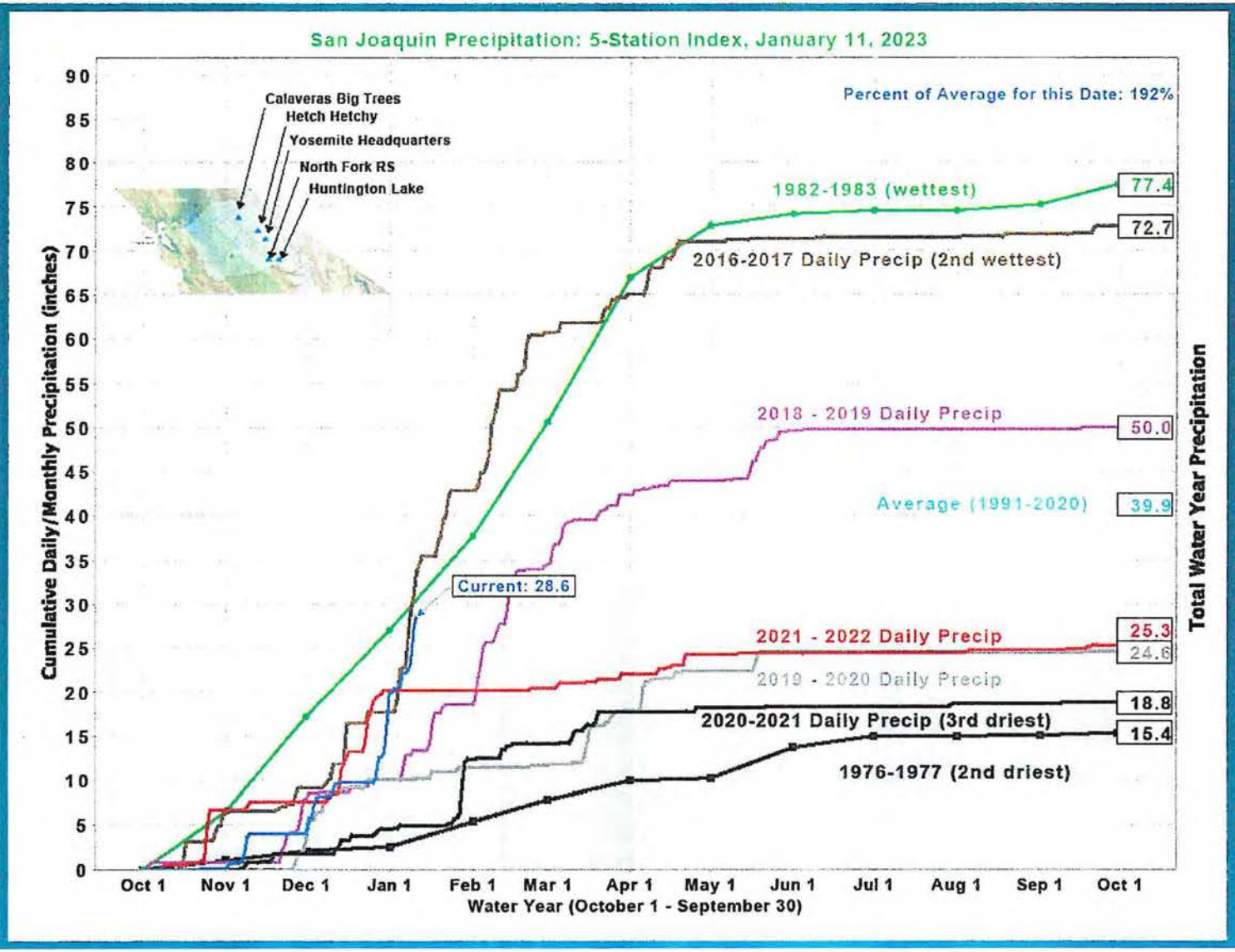
Northern Sierra 8-Station

Precipitation Index for Water Year 2023 - Updated on January 11, 2023 02:48 PM

Note: Monthly totals may not add up to seasonal total because of rounding

Water Year Monthly totals are calculated based on Daily precipitation data from 12am to 12am PST



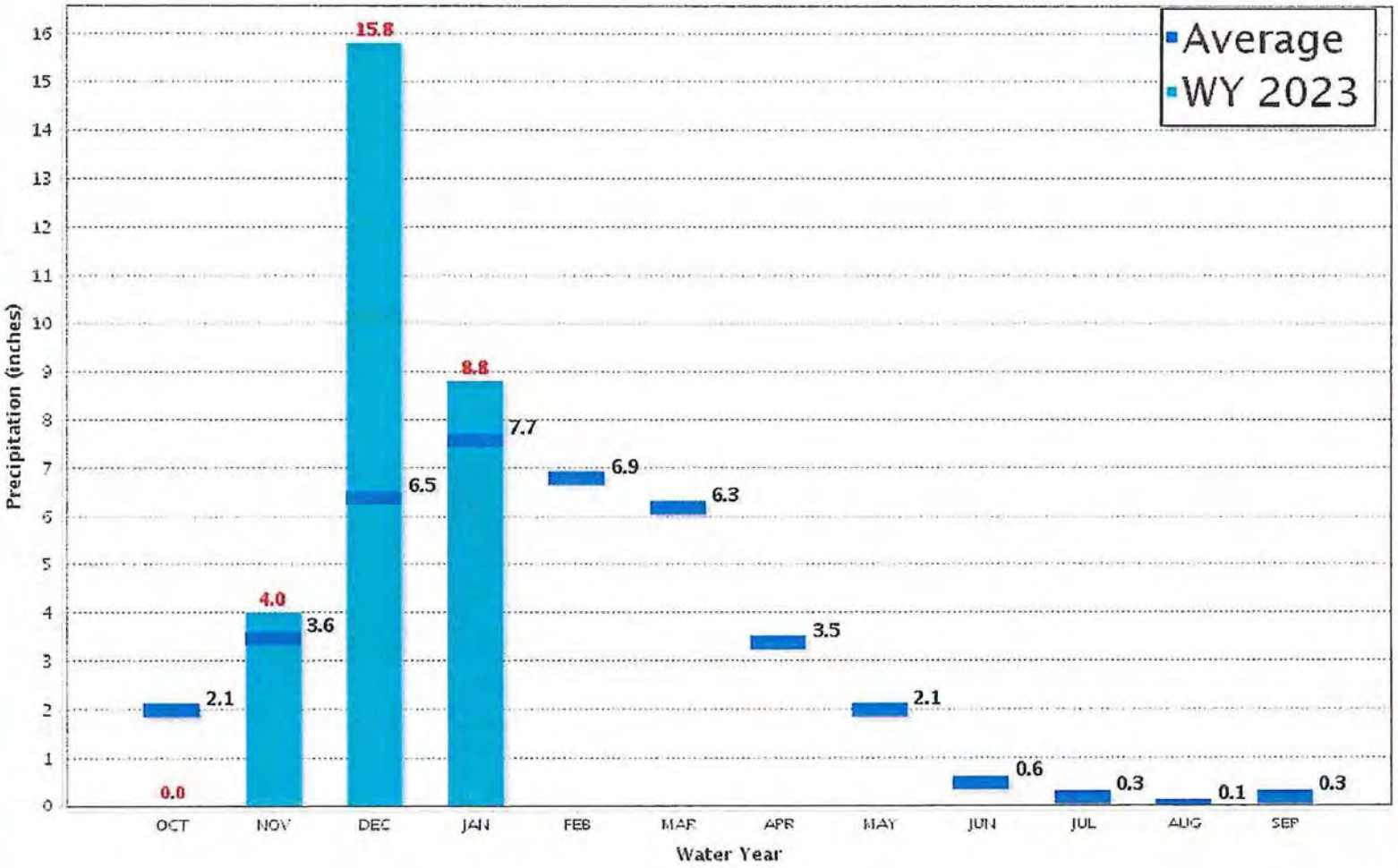

San Joaquin Precipitation: 5-Station Index, January 11, 2023
Calaveras Big Trees
Hetch Hetchy
Yosemite Headquarters
North Fork RS
Huntington Lake
Percent of Average for this Date: 192%
1982-1983 (wettest)
77.4
72.7
2016-2017 Daily Precip (2nd wettest)
2018 - 2019 Daily Precip
50.0
Average (1991-2020)
39.9
Current: 28.6
2021 - 2022 Daily Precip
25.3
24.6
2019 - 2020 Daily Precip
18.8
2020-2021 Daily Precip (3rd driest)
15.4
1976-1977 (2nd driest)
Cumulative Daily/Monthly Precipitation (inches)
Total Water Year Precipitation
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1
Water Year (October 1 - September 30)

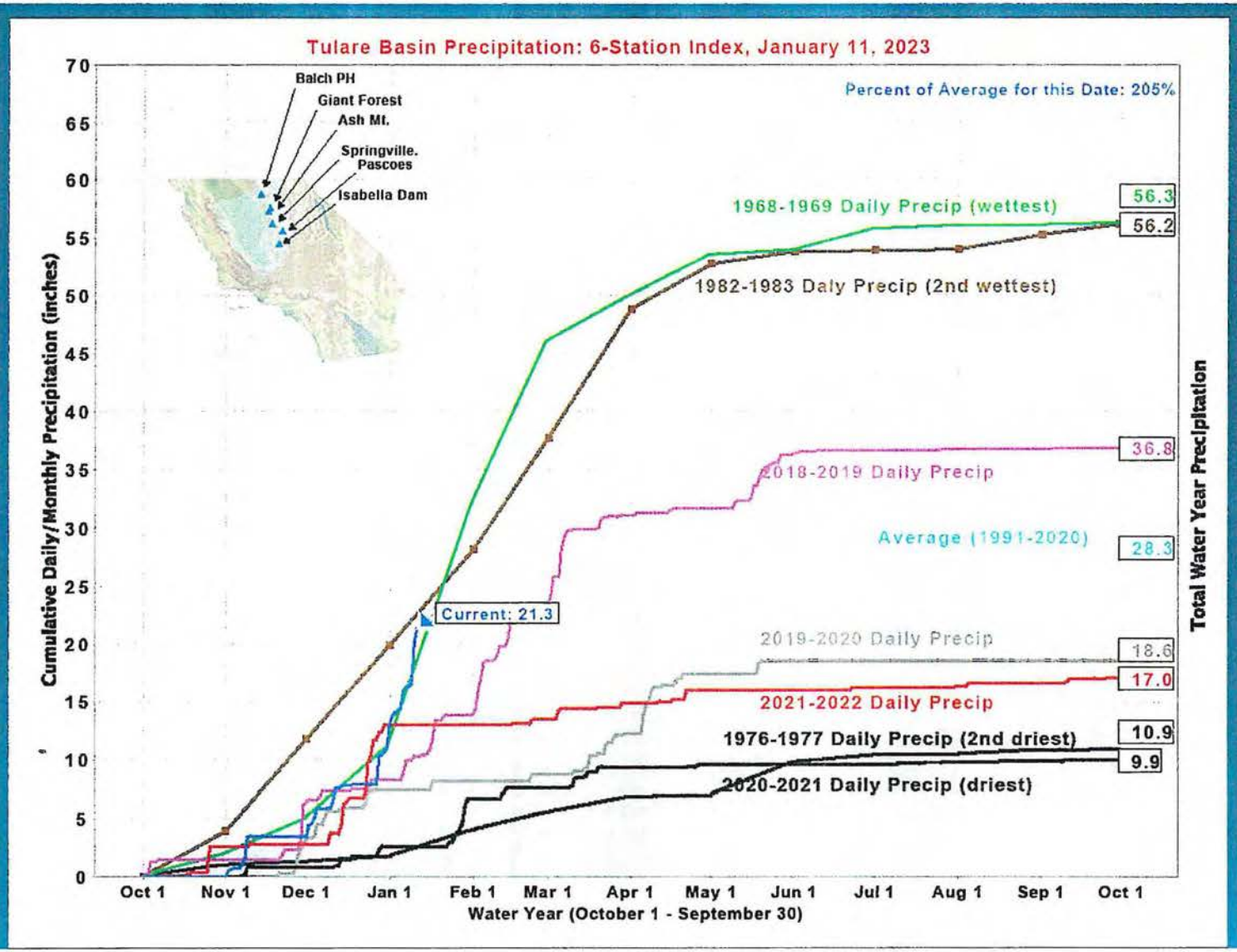
San Joaquin 5-Station

Precipitation Index for Water Year 2023 - Updated on January 11, 2023 02:48 PM

Note: Monthly totals may not add up to seasonal total because of rounding

Water Year Monthly totals are calculated based on Daily precipitation data from 12am to 12am PST



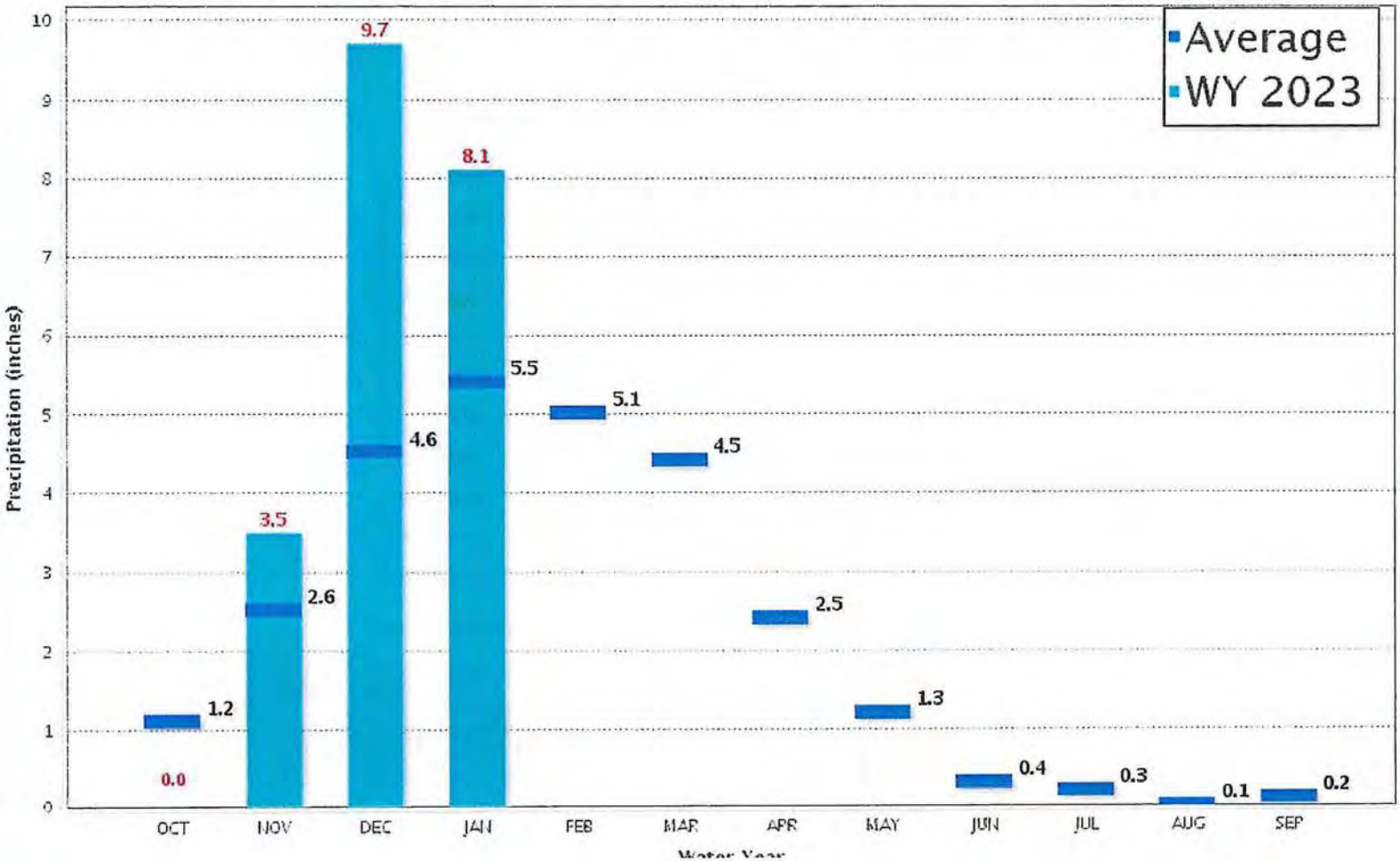

Tulare Basin Precipitation: 6-Station Index, January 11, 2023
Balch PH
Giant Forest
Ash Mt.
Springville.
Pascoes
Isabella Dam
Percent of Average for this Date: 205%
1968-1969 Daily Precip (wettest)
56.3
56.2
1982-1983 Daily Precip (2nd wettest)
36.8
2018-2019 Daily Precip
Average (1991-2020)
28.3
Current: 21.3
2019-2020 Daily Precip
18.6
17.0
2021-2022 Daily Precip
1976-1977 Daily Precip (2nd driest)
10.9
9.9
2020-2021 Daily Precip (driest)
Cumulative Daily/Monthly Precipitation (inches)
Total Water Year Precipitation
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1
Water Year (October 1 - September 30)

Tulare Basin 6-Station

Precipitation Index for Water Year 2023 - Updated on January 11, 2023 02:48 PM

Note: Monthly totals may not add up to seasonal total because of rounding

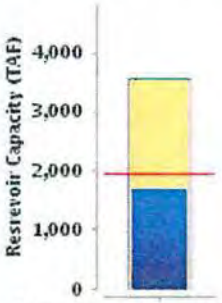
Water Year Monthly totals are calculated based on Daily precipitation data from 12am to 12am PST



CURRENT RESERVOIR CONDITONS

Lake Oroville Conditions

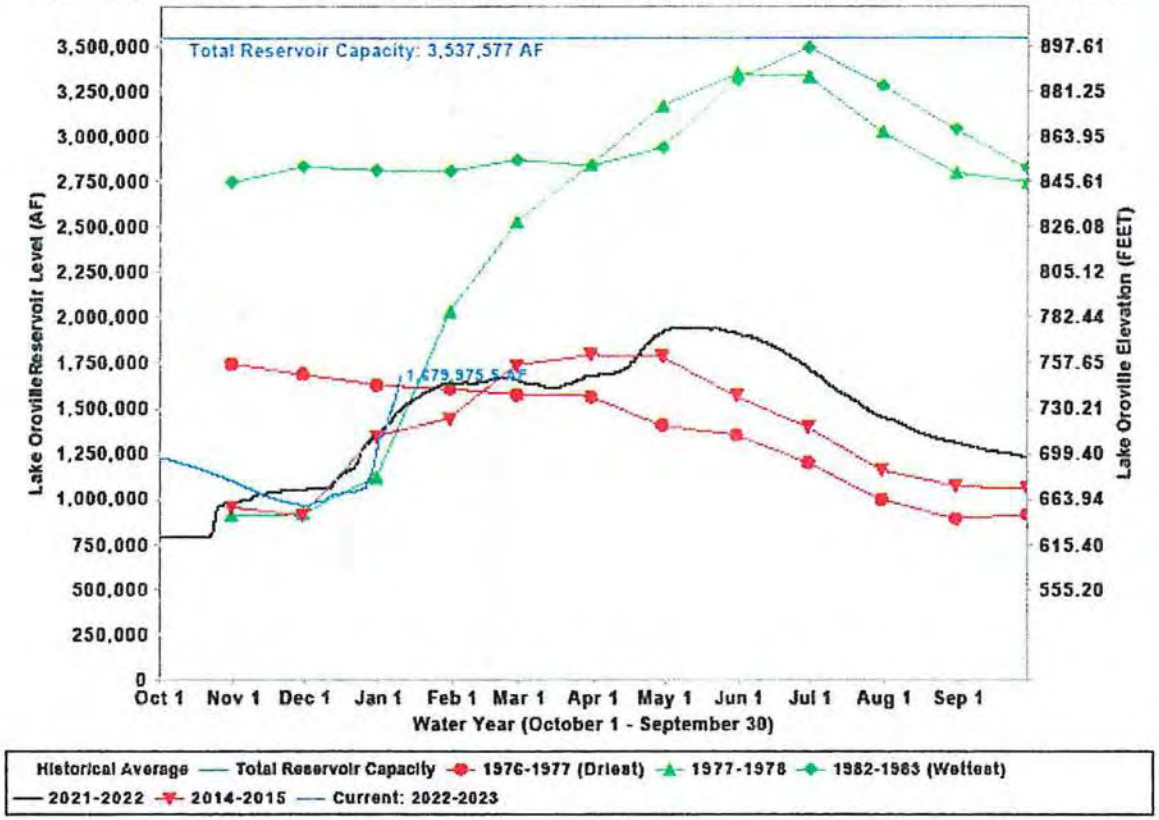
(as of Midnight - January 10, 2023)



Current Level: 1,679,975.5 AF

47% (Total Capacity) | 88% (Historical Avg.)

Lake Oroville Levels: Various Past Water Years and Current Water Year, Ending At Midnight January 10, 2023



Data Updated 01/11/2023 02:48 PM

January 2023 Winter Storm Update: DWR Officials Warn There's More to Come

Published: January 12, 2023

SACRAMENTO, Calif. – The California Department of Water Resources (DWR) continues to respond to the statewide impacts from a series of severe storms that have inundated the state since late December.

The latest atmospheric river produced heavy precipitation in Central and Southern California leading to extremely high flows on many rivers and streams. More precipitation is forecasted to continue over Northern California through the weekend resulting in renewed elevated levels in rivers on the North Coast. Central and Southern California are getting a break from precipitation for a couple of days, with yet another round of storms forecasted to return by Friday through the weekend.

The timing between storms is important for river levels to come down between rises, but DWR officials warn that more areas will become susceptible to flooding with each successive storm.

Flood management systems across the State are being constantly monitored by the State-Federal Flood Operations Center and are operating pursuant to flood management needs and requirements based on forecast conditions as they develop.

Flood-fight materials and equipment have been positioned at 49 locations statewide to support state and local response. Flood-fight specialists are being deployed as needed to help local agencies assess critical locations along leveed segments of the flood control system.

"We'll keep working with our local partners that have requested materials and crews to support their flood fights as these response efforts continue," said Jeremy Arrich, Manager of DWR's Division of Flood Management. "The Cosumnes River in Sacramento County has been an area we've been highlighting. The flood fight measures that we put in place, working with the local partners, have held through the storms this week. We'll continue looking at that system and monitoring how those flood fight measures are performing."

DWR is managing the State Water Project (SWP) this week to capture as much water from these storm systems as possible while meeting environmental requirements. The State Water Project's largest reservoir, Lake Oroville, is now at 1.3 million acre-feet and climbing, but over 2 million more acre-feet of water is still needed to fill the lake due to the extreme drought conditions over the last few years.

"These storms have not ended the drought," said Molly White, Water Operations Manager for the State Water Project. "Major reservoir storage remains below average, and conditions could turn dry again this winter, offsetting recent rain and snow."

Follow DWR's Twitter account for current updates and flood safety tips. For latest reservoir conditions, visit CDEC.

WEATHER NEWS | Published January 13, 2023 9:12am EST

Another onslaught of atmospheric river storms to pummel California through the weekend

A series of powerful atmospheric river storms have so far claimed the lives of at least 18 people, which is more than wildfires over the past two years combined.

By Steven Yablonski , Brian Donegan

Source FOX Weather

California to feel effects of next atmospheric river statewide

More significant and impactful storms will slam into California Saturday and early next week. The upcoming storms will be weaker than those from the past week. Flooding is still expected, although not to the level that has been observed.

SAN FRANCISCO – Another barrage of atmospheric rivers will slam into California starting Friday, with a series of storms continuing to hit the West Coast through the weekend and into early next week.

The Golden State caught a break Thursday from the onslaught of deadly atmospheric river storms that have greatly helped the ongoing drought situation but have battered California with heavy rain, high winds, flooding and mudslides.

California Gov. Gavin Newsom's office said Tuesday the storms claimed the lives of at least 17 people, which is more than wildfires over the past two years combined.

But the death toll climbed to at least 18 on Wednesday when a 43-year-old woman was found dead in her vehicle that became submerged in floodwaters north of San Francisco one day earlier, according to the Sonoma County Sheriff's Office.

HOW TO WATCH FOX WEATHER

A car that was smashed by a landslide lies mud-bound on a closed road on Jan. 11, 2023, near Fillmore, California.
(David McNew / Getty Images)

Another weekend washout in California

California faces more wet weather from Friday into the weekend.

There will also be a dangerous situation unfolding along the West Coast beaches, as large waves will pound the coastline as the next storm moves into the region.

PLAN, PREPARE, PROTECT: HOW TO BEST COVER YOUR PROPERTY AGAINST FLOODS

A lone person walks near driftwood storm debris washed up in front of the Santa Cruz Beach Boardwalk amusement park on Jan. 11, 2023, in Santa Cruz, California.

(Mario Tama / Getty Images)

The FOX Forecast Center said the highest waves, between 30 and 35 feet, will crash ashore along the Oregon coast. That will create hazardous conditions, with beaches becoming inundated as the water surges into ordinarily dry areas.

Significant beach erosion is expected, and water might also damage some of the coastal infrastructure.

Parade of atmospheric rivers eroding away California coasts

Patrick Barnard, Research Geologist at USGS, talks about how the parade of atmospheric rivers is having an effect on the California coastline.

In Northern California, waves between 20 and 25 feet are predicted, and 10- to 20-foot waves will roll into Southern California. Dangerous surf conditions are the primary concern in those areas.

There will be a renewed flood threat in California on Saturday as another atmospheric river sends tropical moisture toward the state. This storm will be more powerful than the one slamming into the West Coast on Friday, but it will be quick-hitting with impacts gradually subsiding on Sunday.

DRAMATIC IMAGES SHOW DEVASTATION FROM ONSLAUGHT OF ATMOSPHERIC RIVERS SLAMMING CALIFORNIA

An overview of the series of storms headed to California into early next week.
(FOX Weather)

Strong wind gusts up to 40 mph are expected to accompany Saturday's atmospheric river storm. These high winds will likely topple trees still standing in the saturated soil, as well as trigger more power outages.

STATE OF REDWOODS REMAINS UNCERTAIN AFTER HISTORIC STORMS IN CALIFORNIA

Scattered showers are expected to linger into Sunday, but conditions should gradually improve as the day progresses. However, another powerful storm will push into California at the start of the workweek.

In general, from the combination of these storms into early next week, between 2 and 4 inches of additional rain is predicted across the lower elevations of California, while 4 to 8 inches could fall at the higher elevations of the state's coastal ranges.

Expected rain totals over the next seven days.
(FOX Weather)

Atmospheric river storms make dent in California's drought

The latest drought numbers were released Thursday morning, and the news is good for California.

WHAT CALIFORNIA'S EXCESSIVE SNOW MEANS FOR SPRING AND THE MEGADROUGHT

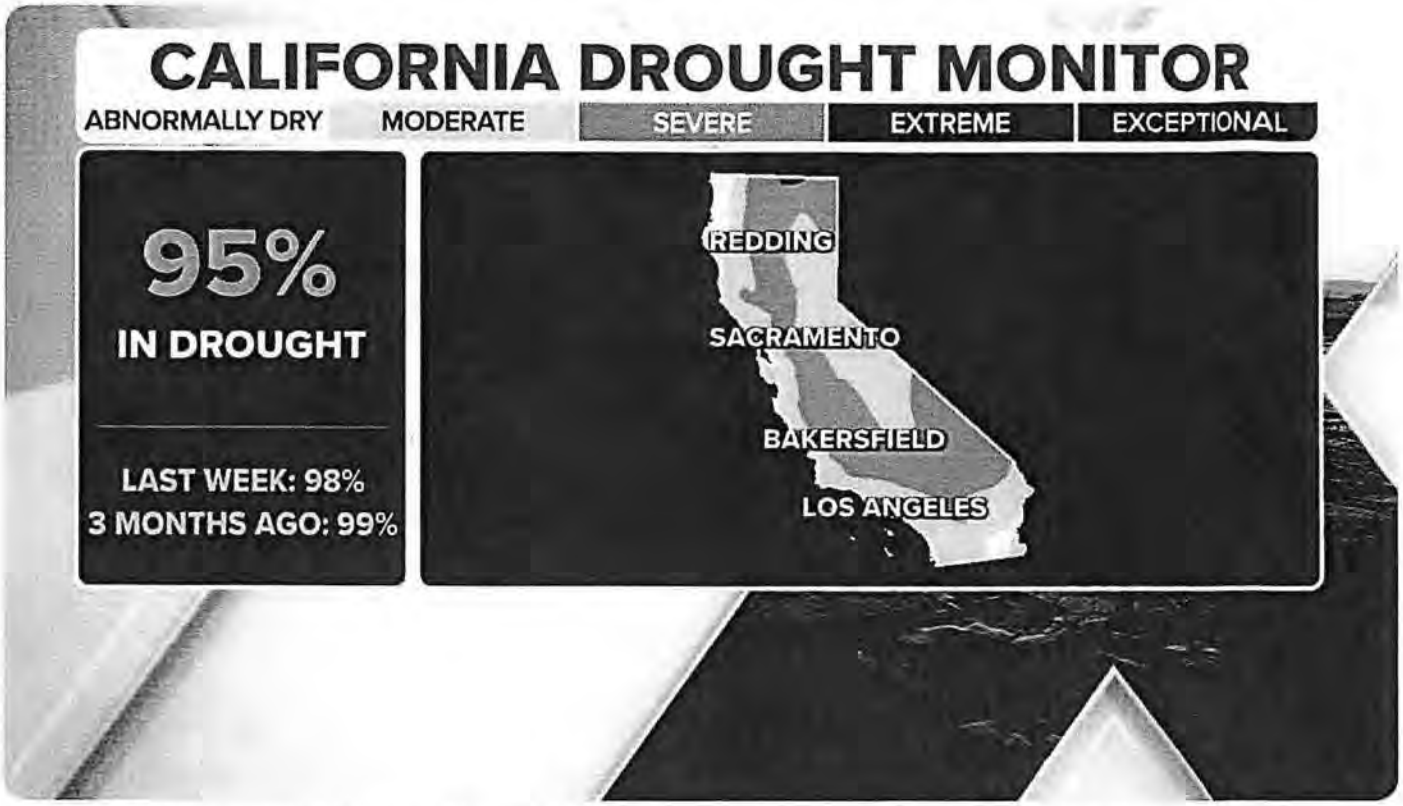
California sees massive reduction in extreme drought following atmospheric river storms

Rich Tinker, U.S. Drought Monitor Author at NOAA, discusses the latest drought monitor, which shows a massive reduction in extreme drought in CA following multiple atmospheric river storms.

"We now have seen a massive reduction in the extreme drought, right where we need it in the Central Valley where we have critical crops that are being grown," FOX Weather meteorologist Britta Merwin said. "A lot of farmers, a lot of industry here have been hit hard by the drought, so to see the short-term reduction, it is a major silver lining."

Nearly the entire state is now out of the extreme and exceptional drought categories, with less than 1% of California remaining in extreme drought.

About 95% of the state is still experiencing some category of drought conditions, according to the latest information from the U.S. Drought Monitor. But that's still an improvement over last week when drought covered 98% of the state.



The latest U.S. Drought Monitor shows 95% of California remains in drought, but that's an improvement over last week's 98% drought coverage in the state.
(FOX Weather)

"It's that reduction in extreme drought that is just purely amazing," Merwin said. "If we rewind to before Christmas Eve, we had almost 40% of the state under exceptional and extreme drought; all of that was in the Central Valley."

Rich Tinker, the U.S. Drought Monitor author with the National Oceanic and Atmospheric Administration, said he was optimistic about the drought situation but was cautious.

"The reservoirs, of course, is the big issue for most of what goes on in most of California, and water management is pretty heavy," he said. "So, it takes a long time for reservoirs to deplete, and it also takes a while for them to refill. So, we're doing considerably better. We're still not even up to what's normal for this time of year, however."

So, while Californians may be breathing a sigh of relief, some scientists say it may be too soon to celebrate.

"At this point in time, we still have another four or five months in our snow season and in our typical rainy season," said Andrew Schwartz, lead scientist at the Central Sierra Snow Lab. "That means that while

we're kind of scoring the touchdown in the first quarter of the game. Right now, we still have three-quarters left, and there's a lot that can happen."

'EXTRA WINTER'S WORTH OF PRECIPITATION' NEEDED TO BUST CALIFORNIA DROUGHT, SCIENTIST SAYS

West storms set California up for healthy winter snowpack: Berkeley scientist

Lead Scientist and Manager at the UC Berkeley Central Sierra Snow Laboratory Andrew Schwartz tells FOX Weather snowpack levels are off to promising start as storms frequently move through the West.

So, how much precipitation is needed to continue to make dents in the drought?

"At this point in time, we realistically need about an extra winter's worth of precipitation," Schwartz said. "So it's not going to happen in one year. At minimum, we're probably looking at three to four of above average before we can really talk about getting out of the drought."

Tags **FLOOD** **CALIFORNIA** **WEST** **NORTHWEST** **EXTREME WEATHER** **OREGON** **WASHINGTON**

Paeter Garcia

From: Maven <maven@mavensnotebook.com>
Sent: Thursday, January 12, 2023 9:05 AM
To: Paeter Garcia
Subject: Deadly, record-setting storms are about to get an encore; Snowpack outpacing highest year on record; Storms proving beneficial for forests; and more ...

MAVEN'S NOTEBOOK

CALIFORNIA WATER, VERBATIM.

DAILY DIGEST

CALIFORNIA WATER NEWS FROM AROUND THE STATE

In California water news today ...

- 'A very significant emergency': California's deadly, record-setting storms are about to get an encore
- California storms: Reservoirs are filling quickly, boosting water supplies after years of drought
- Is California's drought over? Here's what you need to know about rain, snow, reservoirs and drought.
- California snowpack outpacing highest year on record
- Calif. flushed 95% of incoming Delta water to Pacific Ocean during Monday's massive storm
- Why can't we store all the rainwater from the storms?
- What excess rain means for California's burn scars

- Torrential rains wreaking havoc on California communities proving beneficial for state's forests
- One thing the California storms are good for: vineyards
- Congressman Valadao requests Newsom, Biden waive pumping restrictions and prioritize water storage
- Congressman LaMalfa introduces the 'Protect Our Water Rights' Act
- NEW LETTER: Harder demands in-person public hearings on latest delta tunnel report
- In extraordinary move, California mulls crackdown on Los Angeles' water draws at Mono Lake
- Something fishy is happening inside the ears of Delta smelt
- Weekend storm headed to Tahoe could dump multiple feet of snow
- Grants, collaboration between agencies results in river channel open to fish
- 3 more atmospheric rivers headed for Sonoma County. What's driving the storm train?
- Flooding may turn Monterey peninsula into an 'island' as water cuts off roads, sheriff warns
- California braces for fourth year of drought as groundwater drilling frenzy ensues
- Madera farmers push back on tighter pumping restrictions, county agrees to keep status quo
- Indian Wells Valley Water District to hold public hearing to discuss proposed rate increases
- Metropolitan advances project to deliver new water supplies to communities hit hardest by drought
- As planet warms, water risks abound
- And more ...

Click here to read today's Daily Digest.

Did you know ... ?

CAL MATTERS

ENVIRONMENT

Is California's drought over? Here's what you need to know about rain, snow, reservoirs and drought

BY ALASTAIR BLAND
JANUARY 12, 2023

Sean de Guzman of the California Department of Water Resources conducts the first snow survey of the 2023 season at Phillips Station in the Sierra Nevada Mountains on Jan. 3. Photo by Kenneth James, California Department of Water Resources

Listen to this article

IN SUMMARY

A dozen days of wet and wild weather haven't ended the drought, and won't cure the driest period in the West in the past 1,200 years.

The year 2023 began with a historic bang — record precipitation and disastrous flooding throughout much of California. Parched watersheds soaked up the first rains, but soon became waterlogged. Runoff accelerated. Sodden hillsides collapsed. Rural levees burst and rivers spilled their banks. Towns went underwater. People died.

Meanwhile, the Pacific Ocean continued to whip up more atmospheric rivers and "bomb cyclones," and one after another, these intense storms pummeled California. Abruptly, a state emerging from the dust of three painfully dry years was inundated with more water than it knew what to do with.

But the wet and wild weather over the past dozen days won't end **the drought**, at least not yet, and it won't undo the **driest period in the West in the past 1,200 years.**

About 71% of California was experiencing "severe" drought on Wednesday, dropping to 46% today, according to the **National Integrated Drought Information System**. That designation is based on a long list of complex metrics, including soil moisture, water shortages, levels of streams and lakes, snow cover and runoff. The storms also come at a time when scientists are predicting a long-term shift toward a warmer, drier climate.

With at least two more storms approaching California over the next week, we look at what all this means for drought conditions and water supply.

Sorry, the drought isn't over

In some places, it might feel like the drought is history. Take San Francisco. Its water supply — **Hetch Hetchy Reservoir**, in the Sierra Nevada — is 80% full, the ground is saturated and near-record rainfall has occurred in recent days.

"Drought is in the eye of the beholder," said Jeffrey Mount, senior fellow at the Public Policy Institute of California. "If you're in San Francisco, and you rely on surface storage from Hetch Hetchy, this is great … But if you're in a small town in the San Joaquin Valley, where massive pumping of groundwater has dried out your well, it will take successive years of rain like this to make a difference."

The American River at Discovery Park in Sacramento was flooded on Jan. 9, 2023. A series of strong rainstorms has inundated the region since New Year's Eve. Photo by Miguel Gutierrez Jr., CalMatters

The San Joaquin Valley's groundwater basins, where thousands of wells have run dry, are just one example of drought impacts that can take years to reverse. California's aquatic ecosystems are another. Drought has harmed a variety of fish species, and it will take years for them to rebound. Some, like Delta smelt and winter-run Chinook salmon, are endangered and, faced with an array of human-induced stressors, probably never will recover.

Determining when a drought begins and ends is tricky. While many experts refer to California's 2013-2016 drought, as though it had a clear beginning and an end, others, like Mount, feel that particular drought hasn't yet ended — the current drought is just an extension of it.

After all, **most years** in the past 15 have produced an underwhelming amount of rainfall. Since the big water year of 2006, only three — 2011, 2017 and 2019 — have been notably wet. Many climate experts believe California's predominant weather pattern in the future will be one of steady drought conditions broken periodically by very wet interludes.

"This might well be just another case of a wet year followed by a string of dry ones," Mount said.

Reservoir levels rising

Water is rapidly flowing into the state's **reservoirs**.

Lake Oroville — the largest reservoir of the State Water Project, with a capacity of 3.5 million acre feet — was 28% full in early December and now is just shy of 50%. That's an increase of 700,000 acre-feet, and experts predict it could rise by almost 500,000 more before February. (Each acre-foot is enough to support two or three families for a year.) Still, Oroville and most of the state's other major reservoirs remain mostly empty.

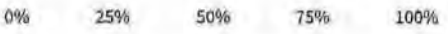
Major Reservoir Levels

More on how drought is impacting California.

- This graphic, updated daily, compares the water level of the below state-managed reservoirs to that day's average since 1990.

SHASTA

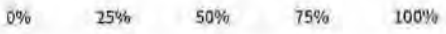
4.6M acre-feet capacity



Current reservoir level is **74.3%** of historical average for today.

OROVILLE

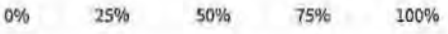
3.5M acre-feet capacity



Current reservoir level is **93.2%** of historical average for today.

TRINITY

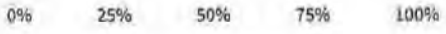
2.4M acre-feet capacity



Current reservoir level is **45.7%** of historical average for today.

NEW MELONES

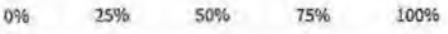
2.4M acre-feet capacity



Current reservoir level is **63.2%** of historical average for today.

SAN LUIS

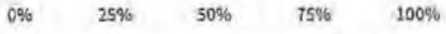
2M acre-feet capacity



Current reservoir level is **61.8%** of historical average for today.

DON PEDRO

2M acre-feet capacity



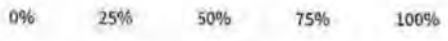
Current reservoir level is **104.9%** of historical average for today.

MCCLURE

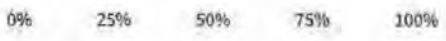
1M acre-feet capacity

PINE FLAT

1M acre-feet capacity



Current reservoir level is **100.7%** of historical average for today.



Current reservoir level is **114.2%** of historical average for today.

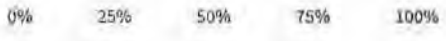
FOLSOM

977K acre-feet capacity

Current reservoir level is **97.5%** of historical average for today.

MILLERTON

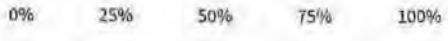
521K acre-feet capacity



Current reservoir level is **151.3%** of historical average for today.

CASTAIC LAKE

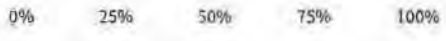
325K acre-feet capacity



Current reservoir level is **71.0%** of historical average for today.

PERRIS

131K acre-feet capacity



Current reservoir level is **340.4%** of historical average for today.

Source: CA Department of Water Resources

While a single very rainy season could refill even the largest of California's reservoirs, the same cannot be said of the Colorado River's huge reservoirs. Lake Mead and Lake Powell, which hold 50 million acre-feet combined, have been declining for decades. Seven states and 40 million people — **almost half of them** in

California — draw from these reservoirs, and even several wet winters in a row will not come close to refilling them.

Among the many problems with this onslaught is that so much rain has fallen in such a short time. This doesn't just damage structures and harm people; it also makes it challenging to store the water. In any rain event, much of the water will fall downstream of any dam, making it difficult or impossible to capture.

But even the torrents of water entering the reservoir system cannot necessarily all be retained in storage. That's because allowing reservoirs to fill so early in the year would create flood risks later in the winter.

To avoid this, the outflow gates in some dams are being opened wider to let water out faster and prevent overflow.

This strategy is especially necessary at smaller reservoirs, like Folsom Lake. Outflow through the dam was running somewhere in the ballpark of 1,000 cubic feet per second in early December, said Michael Anderson, a climatologist with the Department of Water Resources. Recently, he said, state reservoir operators were releasing roughly 30,000 cubic feet per second from the dam. Most of this water eventually flows to the ocean. It may seem like water wasted, but it also could mean a city saved.

Not quite record rainfall

By the numbers, this blast of wet weather has been stunning, if not necessarily record-breaking. The San Francisco Bay Area has taken a heavy pounding. About the day this wet spell started, on Dec. 31, a near-record 5.46 inches of rain fell in downtown San Francisco, missing the 1994 one-day record by a tenth of an inch. Between Dec. 26 and Jan. 9, more than a foot of rain fell in San Francisco. That's more than half of the city's long-term water year average of 22 inches. In the East Bay's Tilden Regional Park, **17 inches** of rain fell in about the same span.

In Beverly Hills, the recent storms have delivered **11 inches of rain**, bringing the Los Angeles County city to about 16 inches for the season. The Sacramento International Airport has received 7 inches of rain since Dec. 27 and as of Jan. 10 was at about **208% of normal** for this date. Locations near Santa Barbara recently recorded up to 15 inches in a day, according to Anderson. In San Diego County, **4.5 inches** have fallen since the end of December. And in the Russian River watershed — at a particularly rainy mountaintop weather station called Venado — **23 inches** of rain fell between Dec. 27 and Jan. 11.

Regrettably, this rainfall has done little to help water supplies, for most of it has flowed into storm drains and either right into the ocean or into rivers that lead to it.

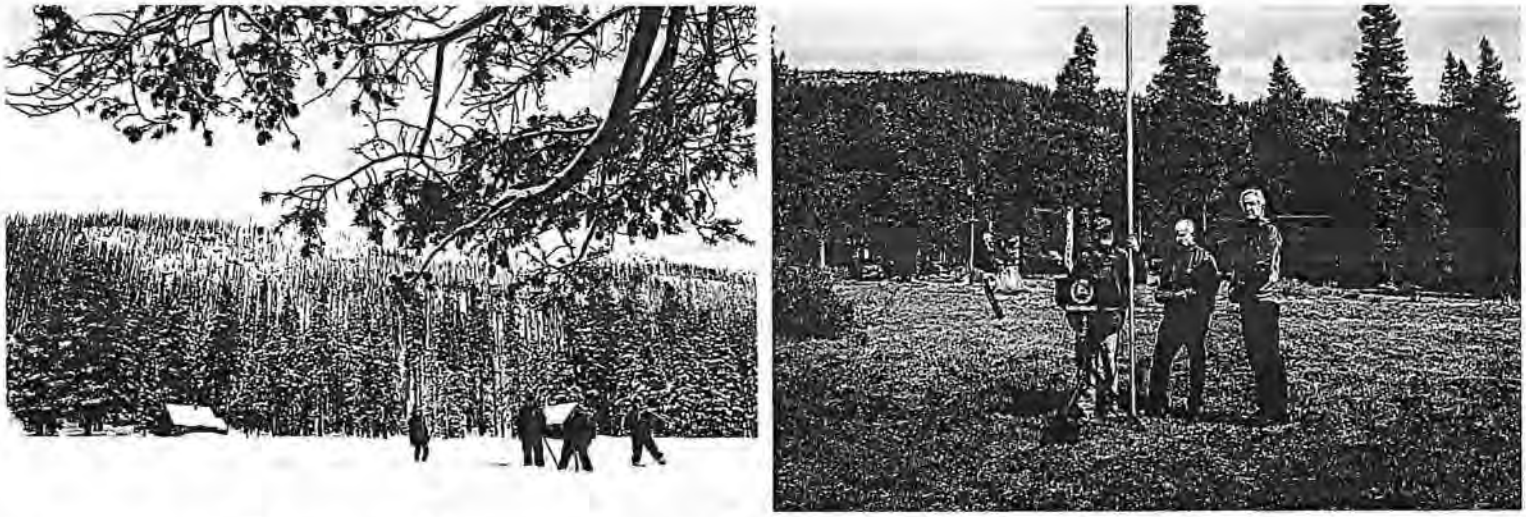
The recent storms have highlighted the need to design and build **stormwater systems** capable of capturing runoff for landscape irrigation or even treated and used as drinking water. Such systems are expensive and take years to build. **Santa Monica** is one city that already captures urban runoff and treats it.

Even sinking urban runoff into the ground via rain gardens and bioswales is a better option than letting it escape to sea. Unfortunately, much existing infrastructure, like concrete flood control channels, is designed to usher stormwater quickly off the landscape.

Double the snowpack

The storms of late December and January have dramatically buffed up California's snowpack in the Sierra Nevada. It's now at more than 200% of average for this date, and slightly more than 100% of the amount that usually falls during the entire winter season.

In the last few days, freezing elevations have been quite low – about 5,000 feet. "Which means we're accumulating a lot more snow," Anderson said. He added that "automated sensors are registering what they would consider a full season's snowpack, about what we would expect on April 1."



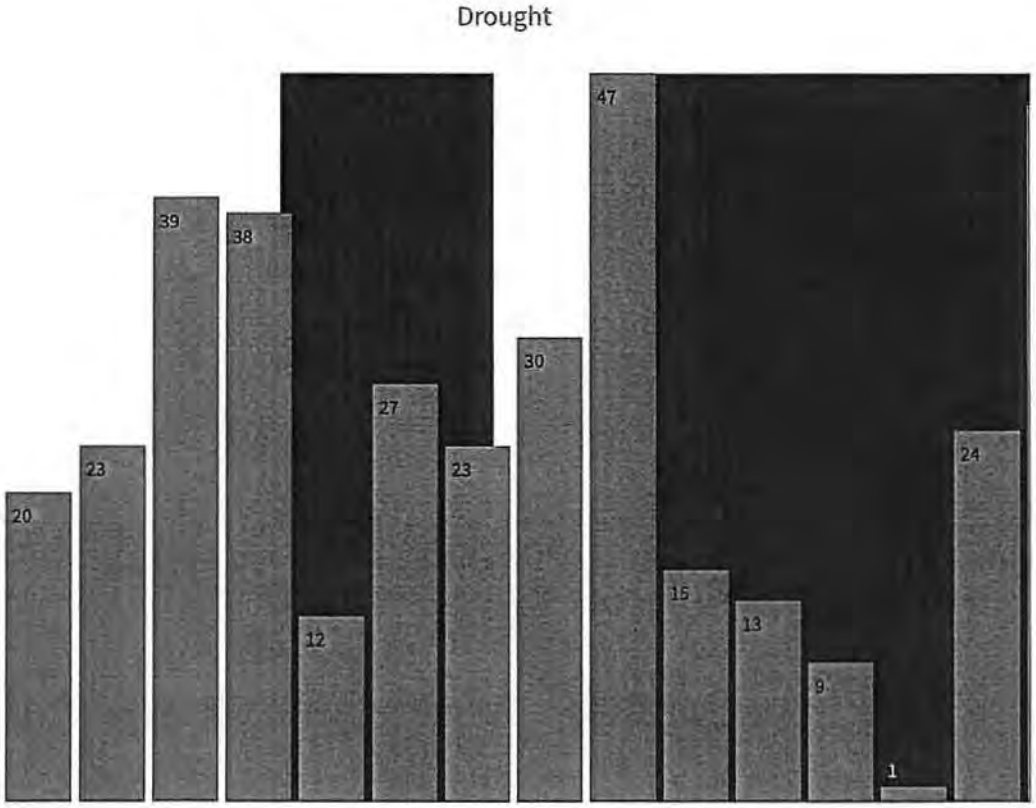
Snow and no snow: The photo on the left shows ample snowpack in the Sierra Nevada on Jan. 3, 2023. The photo on the right shows barren ground at the same spot at Phillip's Station on April 1, 2015, when ex-Gov. Jerry Brown attended the state's snow survey. Photos by the California Department of Water Resources

That's great news for much of California. This snowpack is an important natural storage system because when it melts, it feeds the **State Water Project**, which provides water to 27 million people and 750,000 acres of farmland. It fills reservoirs and keeps rivers icy cold – conditions required by spawning salmon. But climate change is disrupting this cycle. **Snowpack averages have been declining at an alarming rate**

in recent years, either melting early in the season or not falling at all, and **research** suggests a **future of frequent "low-to-no-snow" years**.

Annual snow water content on April 1 in inches

More on how drought is impacting California.



Source: CA Department of Water Resources

The average measurement this year across the state as of April 1, 2022 was **10 inches, 38%** of normal.

Skiers are overjoyed. According to the **Mammoth Mountain ski resort**, "the latest storm delivered 6 to 7.5 feet of snow in the last few days. Mammoth season total snowfall is 328" at Main Lodge and 441" at the summit — the most snow in the country!" Tahoe's **Northstar Resort** has received 69 inches in the last week, with a base depth of 128 inches and a season total of 280 inches.

But snow is a fickle resource, and Anderson cautioned that, with a shift toward warmer weather — or, worse, high-altitude rainfall — this powdery blessing could soon melt away. That, he said, would create "flood management concerns as that snow melts, especially if it melts too quickly."

MORE ON WATER

How can California boost its water supply?

From capturing stormwater runoff to transforming agriculture, here are some ways for drought-prone California to get more water.

by Rachel Becker NOVEMBER 7, 2022

Snow falling: As climate warms, overhauling California water projections gains urgency

The Sierra Nevada hasn't provided nearly as much water as predicted. Now the state is struggling to overhaul its snow runoff forecasts.

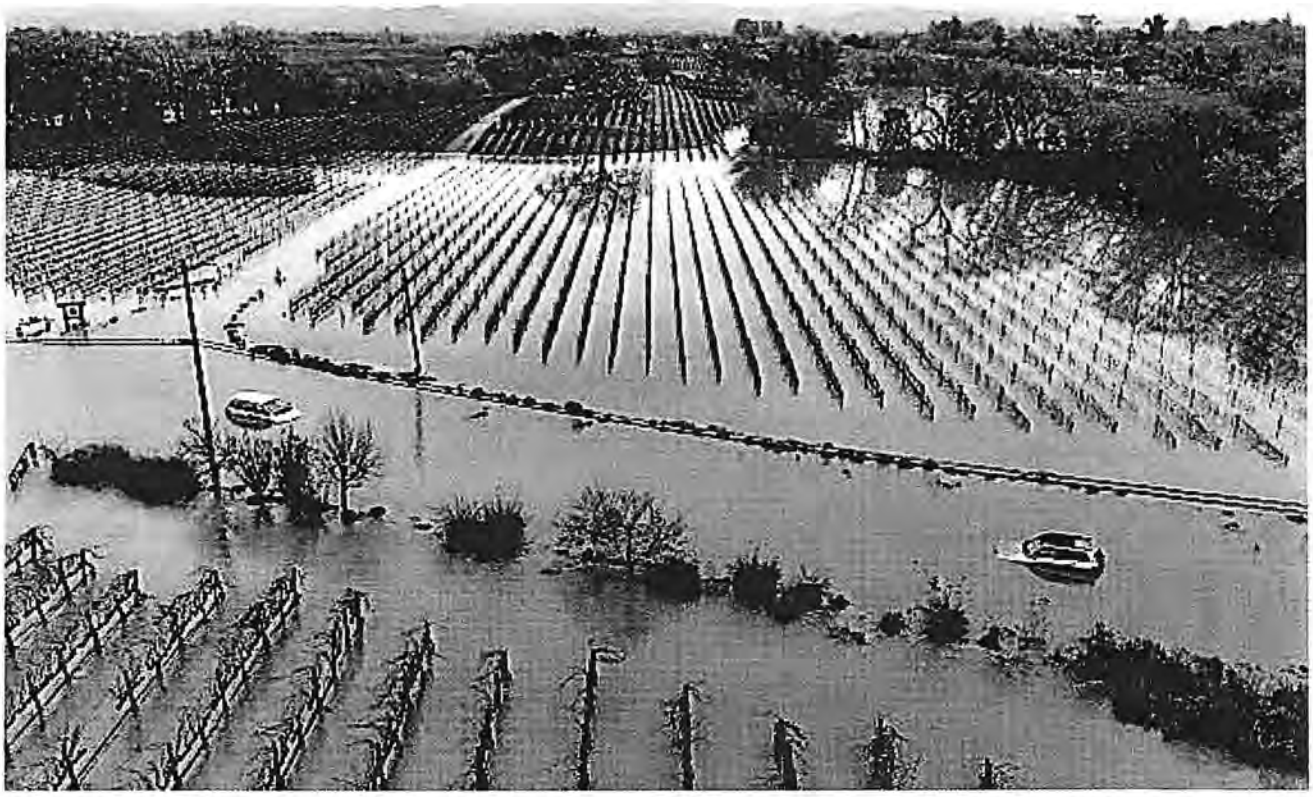
by Rachel Becker FEBRUARY 23, 2022

WEATHER

Why California Is Being Deluged by Atmospheric Rivers

California has been hit by repeated storms fueled by torrents of moisture called atmospheric rivers that will only intensify in a warming climate

By Robin Meadows on January 11, 2023



In an aerial view, cars are submerged in floodwater after heavy rain moved through the area on January 9, 2023, in Windsor, Calif. The San Francisco Bay Area was drenched by powerful atmospheric river events that brought high winds and flooding rains. Credit: Justin Sullivan/Getty Images

Although these storms deliver much of the West's precipitation, they also cause most of the region's flooding, with associated economic damages as high as $1 billion a year.

This winter's spate of storms has killed more than a dozen people in California and has put tens of thousands more under evacuation orders and watches. Rain on December 31, 2022, reached 5.5 inches in downtown San Francisco and flooded all six lanes of Highway 101 in the city of South San Francisco. On January 8 heavy rains and 70-mile-per-hour winds knocked out power for more than 345,000 people in the state's capital of Sacramento.

More atmospheric rivers are predicted in the coming days, raising fears of flash floods across California—and of catastrophic mud and debris flows where recent wildfires have created 21 burn scars around the state. Its governor Gavin Newsom declared a state of emergency on January 4, and the White House issued a presidential emergency declaration for California on January 8.

To learn more about why these storms are hitting California, as well as their potential dangers and benefits, *Scientific American* spoke with extreme weather expert Katerina Gonzales, who studied atmospheric rivers as a graduate student at Stanford University and is now a postdoctoral associate at the University of Minnesota.

[*An edited transcript of the interview follows.*]

Weather forecasters didn't expect such a wet winter in California. Why was that the case?

Often we try to use El Niño and La Niña—large climate patterns in the Pacific Ocean—as proxies for the forecast. The simple narrative is that El Niño is wet, and La Niña is dry. This is the third year of La Niña, and expectations were set up by the first two years, when winters were not very wet.

Why didn't the forecast hold up this year?

The simple narrative is not necessarily true. Northern California is on the cusp of the wet-dry pattern. It's kind of a crapshoot: it could go either way. El Niño and La Niña can tip the scales

storm track more toward Northern California, and it now favors atmospheric-river landfalls on this part of the coast.

The atmospheric rivers are coming in a row, and they are really strong and really wet. This convergence is the heart of the matter. It's unusual that there are so many storms and that they are super juicy.

Mountains usually wring the water out of atmospheric rivers. But a lot of the moisture from last week's storms in California made it to Minnesota, dropping a foot and a half of snow. There's so much moisture in the system; it's anomalous that there's so much.

What are the impacts of this parade of atmospheric rivers?

The first storms saturated the soil—it's soaked like a sponge, holding all the water it can—and any more will just run off. Rivers, creeks and reservoirs are also fuller, so we can get flooding.

The silver lining is the snowpack. It's January, so it's cold, and it's mostly snowing in the mountains, building up the snowpack. There are feet and feet of new snow. If this was March, it would be warmer, and we'd get rain on snow. That would melt the snowpack, decreasing our stored water and causing flooding.

California is three years into a drought. Is it over?

We're still in drought. The snowpack and reservoirs are good, so for surface storage, we're doing great. But the aquifers are still depleted. The groundwater has to be recharged, and that takes a long time. We can't rely on atmospheric rivers to save us. California has wet and dry extremes—that's our current reality and our future. We should prepare.

How is climate change affecting atmospheric rivers? And how can California prepare?

Atmospheric rivers are becoming more intense with climate change because they're holding

just a preview.

ABOUT THE AUTHOR(S)

Robin Meadows is an independent science journalist in the San Francisco Bay Area. She covers water, climate resilience and environmental policy. Her work has also appeared in *bioGraphic, Chemical & Engineering News, High Country News*, KneeDeep Times and elsewhere. Follow her on Twitter @noka_oi Follow Robin Meadows on Twitter

Recent Articles by Robin Meadows

Walling Off One Coastal Area Can Flood Another

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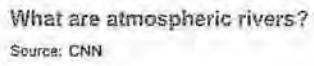
Harsh Droughts Can Actually Start over Oceans

'A very significant emergency': California's deadly, record-setting storms are about to get an encore

By Nouran Salahieh, Holly Yan and Monica Garrett, CNN

Updated 10:46 PM EST, Wed January 11, 2023



(CNN) — The historic storms devastating much of California have turned entire neighborhoods into lakes, unleashed sewage into floodwater and killed at least 18 people.

And there's more to come. About 5 million people were under flood watches Wednesday as yet another atmospheric river is bringing more rain to California.

RELATED GALLERY
California's flooding, in pictures

"The state has been experiencing drought for the last four years, and now we have storm upon storm," California Lt. Gov. Eleni Kounalakis said Wednesday.

"We've had six storms in the last two weeks. This is the kind of weather you would get in a year and we compressed it just into two weeks."

It had already been "one of the deadliest disasters in the history of our state," Brian Ferguson, California Governor's Office of Emergency Services spokesman said Wednesday before the 18th death was reported.

"Yesterday, we had perhaps more air rescues than we've ever had on any other single day in the state's history," Ferguson said, adding that the Golden State is not out of the woods yet.

"While there is a bit of a break today, we continue to see additional storms prepared to come onshore in the next two days," he said. "We're continued to be concerned about our streams, our culverts and some of the areas that are prone to mudslides, particularly along our central coast."

The flood watches Wednesday are primarily in Northern and Central California, including Sacramento, the North Bay and Redding. That barely leaves enough time for residents in flood-ravaged neighborhoods to assess the devastation before the next storm.

"It's just brown water everywhere. And it's just rushing through – it was going fast," Fenton Grove resident Caitlin Clancy said.

"We had a canoe strapped up, that we thought if we needed to, we could canoe out. But it was moving too fast."

KEYT

A man kayaks through a neighborhood Tuesday in Santa Barbara, California.

The onslaught of recent storms came from a parade of atmospheric rivers – long, narrow regions in the atmosphere that can carry moisture thousands of miles.

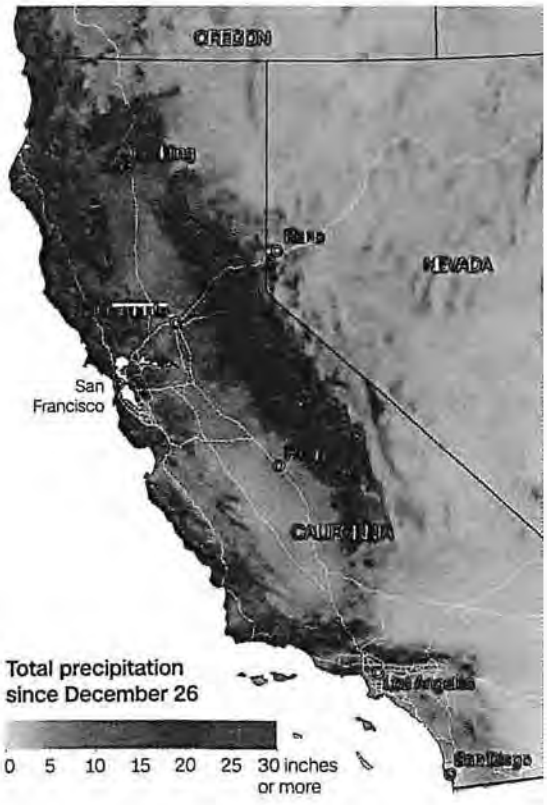
"We have had five atmospheric rivers come into California over two weeks," Kounalakis said.

"Everything is wet. Everything is saturated. Everything is at a breaking point, and there is more rain coming."

In fact, four more atmospheric rivers are expected to hit California in the next 10 days.

California deluged with precipitation since late December

Since the atmospheric river events began affecting the West coast on Dec. 26, large swaths of coastal California have seen more than 25 inches of rain, with isolated areas receiving 40 inches or more. In the high elevations of the Sierra Nevada mountains, a lot of this precipitation is falling as snow.



Note: Precipitation totals are from 7 a.m. Dec. 26 to 7 a.m. Jan. 11 (ET)

Source: National Weather Service

Graphic: Renée Rigdon, CNN

What to expect with this next wave

Josh Edleson/AFP/Getty images

Residents scramble to collect belongings Wednesday before floodwater rises in Merced, California.

Here's what's in store as another round of ferocious weather barrels down on the West Coast:

• The heaviest rain over the next seven days is expected in northern parts of California, where the National Weather Service predicts an additional 5 to 10 inches. On Wednesday, Northern California got a radar-estimated 1-2 inches of rain, with some higher elevations getting around 3 inches.

• The rain shifted north Wednesday afternoon, giving Central California a brief pause. There's a slight risk – level 2 of 4 – for excessive rainfall Thursday for the northwest coast, and a marginal risk – level 1 of 4 – along the Pacific Northwest coast.

RELATED ARTICLE
Thousands of Californians under evacuation orders as flood threats continue and death toll of recent storms climbs to 17

• Precipitation pushed inland to the Sierra Nevada Wednesday afternoon, dumping more snow. Snow was still falling Wednesday evening.

Another round of atmospheric moisture is expected to come onshore Friday, but less severe than earlier ones. A slight risk for excessive rainfall has been issued for the northwest coast of the state, with a marginal risk south, including the hard-hit Bay Area and San Luis Obispo.

A 5-year-old boy swept away is still missing

Rescue crews in San Luis Obispo County are scrambling to find 5-year-old Kyle Doan, who was swept away from a truck near the Salinas River Monday morning.

SLO County Sheriff

Kyle Doan, 5, was last seen Monday in San Miguel, San Luis Obispo County.

National Guard members arrived Wednesday to help with the search, and more will be arriving Thursday, the San Luis Obispo County Sheriff's Office said in a tweet Wednesday.

The sheriff's office earlier urged the public to leave the search operation to the professionals to avoid the risk of volunteers needing to be rescued themselves.

'It's backbreaking labor'

RELATED VIDEO
'More rain, more flood, more mud': California resident describes heartbreaking impact of storm

As another storm looms, many residents are still grappling with devastation to their communities.

Rachel Oliviera used a shovel to try to push out some of the floodwater and thick mud enveloping her Felton Grove home.

"It's backbreaking labor," Oliviera said, visibly emotional.

But she was more concerned about her neighbors, whose homes were also covered in thick mud.

"A lot of us that live here in the neighborhood are elderly, and can't actually physically do the cleanup."

Smashed cars, destroyed homes and gushing sewage

In the Los Angeles neighborhood of Chatsworth, several people had to be rescued after a sinkhole swallowed two vehicles Tuesday. In Malibu, a massive boulder came crashing down, shutting down a key roadway.

In parts of Santa Barbara County, "the storm caused flows through the sewer system to exceed capacity, resulting in the release of sewage from the system to the street," County Supervising Environmental Health Specialist Jason Johnston said Monday evening.

The local health department warned the water could increase the risk of illnesses.

Another sinkhole was reported Monday in Santa Barbara County's Santa Maria, where 20 homes were evacuated, CNN affiliate KEYT reported.

"The storms hit us like a water balloon exploding and just dropped water down through our rivers and creeks. So it's been this excessive amount of flooding – it's been the cycles over and over again," Santa Cruz County spokesman Jason Hoppin told CNN.

Hoppin said 131 homes in the county received significant damage, but could be salvaged, while five others are not salvageable.

Trees have been toppling, claiming lives and causing property destruction and roadway obstructions. Sacramento

officials estimate that about 1,000 trees have fallen since New Year's Eve, Sacramento Department of Public Works spokeswoman Gabby Miller told CNN on Wednesday, adding that staff and crews have been working around the clock on cleanup.

In San Francisco, the public works department has logged about 1,300 tree-related incidents, which include downed trees, but also just limbs and branches, according to Rachel Gordon, director of policy and communications at San Francisco Public Works.

Parks that are home to some of the state's iconic redwoods haven't been spared, according to California State Parks spokesperson Adeline Yee.

"At Redwood National and State Parks and Big Basin Redwood State Park, we've seen some downed trees that are blocking roads and trails," Yee said. "At this time, most of the trees that have come down are not the old-growth redwoods."

In the state park system, 54 park units were closed as of Wednesday morning, and 38 were partially closed.

The recent atmospheric river storm system also has left dozens of state travel routes inoperable, and at least 40 are closed, according to Caltrans spokesman Will Arnold.

"Caltrans has activated our 12 Emergency Operations Centers throughout the state and more than 4,000 crews are running 24/7 maintenance patrols for road hazards like downed trees, flooded roads, mudslides/rockslides," Arnold said.

The storms have claimed 18 lives

The recent storms turned fatal after trees crashed onto homes and cars, rocks and mud cascaded down hillsides and floodwater rapidly rose.

At least 18 people have died in California storms in just the past two weeks. The latest victim was a 43-year-old woman, whose body was recovered Wednesday from inside a vehicle that had been washed into a flooded Sonoma County vineyard, officials said. Divers found the vehicle submergd in 8 to 10 feet of water.

"That's more than we've lost in the last two years of wildfires," the lieutenant governor said. "So this is a very significant emergency."

RELATED ARTICLE
5 years after a deadly mudslide, Montecito residents are urged to evacuate

Rebekah Rohde, 40, and Steven Sorensen, 61, were both found "with trees on top of their tents" over the weekend, the Sacramento County Coroner said. Both were unhoused, according to the release.

In the San Joaquin Valley, a tree fell on a pickup truck on State Route 99 in Visalia on Tuesday, killing the driver. A motorcyclist also died after crashing into the tree, the California Highway Patrol said.

Another driver died after entering a flooded roadway in Avila Beach Monday, the San Luis Obispo County Sheriff's Office said.

"It only takes six inches of water to lose control of a car to be knocked over. In 12 inches, cars start floating away," Kounalakis said this week.

"You've heard that creeks that have risen 14 feet just in the last day and in certain areas we've had over a foot of rain – just in the last 48 hours. So it is unbelievable."

Josh Edelson/AFP/Getty Images

Rescue crews help stranded residents Tuesday in Merced, California.

Several areas across the state have registered 50% to 70% of their average annual rainfall just since the parade of atmospheric river events began to impact the state on December 26, according to the National Weather Service. Oakland got 69% of its annual average, Santa Barbara 64%, Stockton 60%, and downtown San Francisco 59%.

Downtown San Francisco, Oakland and Santa Barbara have each gotten more than a foot of rain, according to the NWS.

Though none of the coming storms are expected to individually be as impactful as the most recent ones, the cumulative effect could be significant in a state where much of the soil is already too saturated to absorb any more rain.

And the state's ongoing drought has parched the landscape so much, the soil struggles to absorb the incoming rainfall – which can lead to dangerous flash flooding.

Scientists have warned the climate crisis is having a significant effect on California's weather, increasing the swings between extreme drought and extreme rain.

CNN's Camila Bernal, Stella Chan, Joe Sutton, Angela Fritz, Derrick Hinds, Taylor Ward, Robert Shackelford and Cheri Mossburg contributed to this report.

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The Washington Post
Democracy Dies in Darkness

Maps and charts show the awful impact of the California storms

By Dan Stillman
January 11, 2023 at 6:00 a.m. EST

A parade of storms known as atmospheric rivers has dumped massive amounts of rain and snow on California since late December. The storms have produced deadly flooding, crippling snow, dangerous mudslides, severe thunderstorms and tornadoes.

Here are five images that help demonstrate the breadth and power of the storms — part of a weather pattern that could continue for another week or more.

An atmospheric river event for the ages

Atmospheric rivers funnel extreme amounts of moisture over the oceans into narrow bands of clouds. As these clouds are transported over land, they can produce many hours of intense rain and snow.

Precipitable water is an indicator of how much moisture there is in the atmosphere. Higher values of precipitable water correspond to greater potential for heavy rain or snow. The animation of precipitable water forecast above, which spans Jan. 9 to 23, shows the parade of multiple atmospheric rivers lashing California with repeated rounds of heavy rain and snow.

The darkest shades of red and brown represent precipitable water values 200 to 250 percent of normal.

The awe of a bomb cyclone

As is often the case, the worst weather Mother Nature has to offer can often be beautiful when viewed from high above. In this view captured by the National Oceanic and Atmospheric Administration's GOES-18 weather satellite, the low-pressure center of last week's "bomb cyclone" can be seen spinning over the Pacific Ocean as it approaches the West Coast from Jan. 3 to 4.

The bomb cyclone, which is a rapidly intensifying storm whose central pressure drops at least 24 millibars in 24 hours, was one of a series of powerful storms that has repeatedly thrust atmospheric rivers into California in recent weeks. It was only a few weeks ago that a different bomb cyclone developed along the Arctic front, blasting much of the country with extreme cold and some areas with blizzard conditions.

Historic rainfall hammers California

The atmospheric rivers have deluged California with copious amounts of rain. In just the past two days, ending at 4 a.m. Tuesday, areas of higher terrain in Ventura and Santa Barbara counties have seen more than 16 inches of rain. The 12.37 inches of rain in San Francisco between Dec. 26 and Jan. 9 qualifies as the third-wettest 15-day period since 1849, according to Bay Area meteorologist Jan Null.

During this period, Sacramento recorded more than 8 inches of rain, and Los Angeles registered more than 4 inches.

The extreme rainfall, which is expected to continue until the expected end of the pattern around Jan. 20, has caused widespread and severe flooding, road closures and mudslides. While the unrelenting rain is wreaking havoc in the short term, it is combining with snow to help put a significant dent in the drought that has long plagued the region.

Surging snowpack across the Sierra Nevada

Snowpack across much of the central and southern portions of the Sierra Nevada is now 200 to 300 percent of normal for the date, as shown in the map above. In some locations the snowpack has already exceeded the April 1 average. (April 1 is typically around the time the snowpack is at its deepest.)

The growing snowpack is helping to ease California's years-long drought. The most recent U.S. Drought Monitor, released Jan. 5, upgraded central to southern portions of the state from the most severe level, D4 (exceptional drought), to D3 (extreme drought). Additional rain and snow in the next week or so could further ease drought conditions across California.

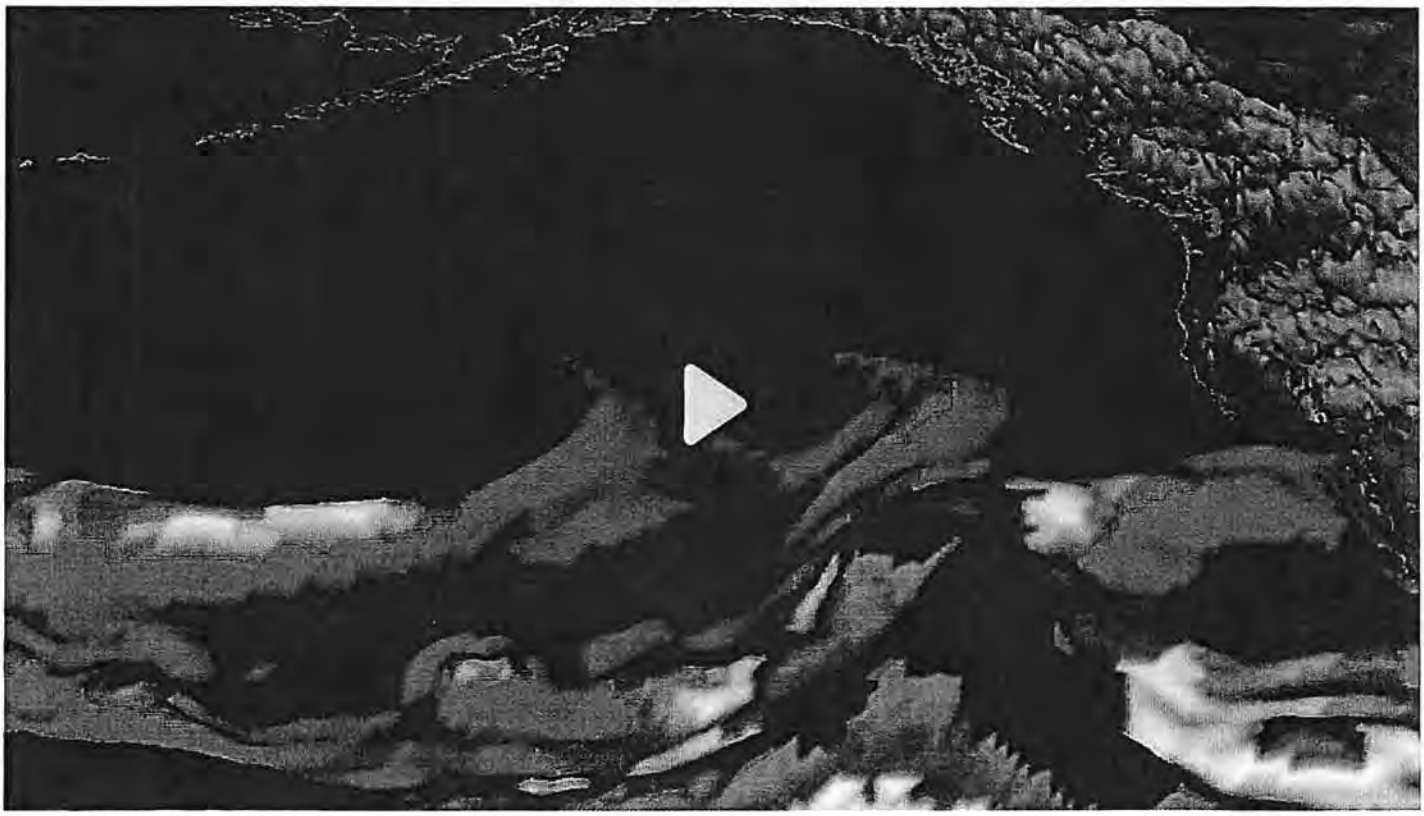
Raging rivers rise out of their banks

After multiple years of drought, too much rain falling too fast has pushed multiple rivers beyond flood stage. One of the more extreme forecasts is for the Salinas River. The visual above shows that where the river runs near Spreckels in Monterey County, the water level is expected to reach or exceed 30 feet, which is about seven feet above flood stage.

The effects of heavy rain and flooding have been catastrophic, and at least 17 deaths have been attributed to the storms since late December. Rivers that were recently, currently or soon expected to be above flood stage as of Tuesday afternoon include the Russian River, the Salinas River, the Carmel River, the Santa Ynez River and Bear Creek, according to the California Nevada River Forecast Center.

‘A very significant emergency’: California’s deadly, record-setting storms are about to get an encore

By Nouran Salahieh, Holly Yan and Monica Garrett, CNN
Updated 2:34 PM EST, Wed January 11, 2023



Video Ad Feedback

What are atmospheric rivers?

00:51 - Source: CNN

(CNN) — The historic storms devastating much of California have turned entire neighborhoods into lakes, unleashed sewage into floodwater and killed at least 17 people.

And there's more to come. About 5 million people are under flood watches Wednesday as yet another atmospheric river is bringing more rain to California.

RELATED GALLERY

California's flooding, in pictures

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KEYT

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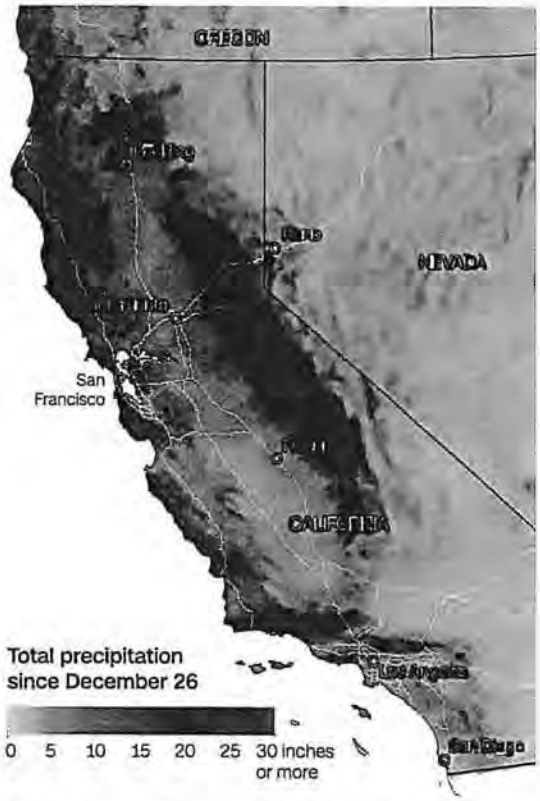

Note: Precipitation totals are from 7 a.m. Dec. 26 to 7 a.m. Jan. 11 (ET)

Source: National Weather Service

Graphic: Renée Rigdon, CNN

What to expect with this next wave

Josh Edleson/AFP/Getty Images

Residents scramble to collect belongings Wednesday before floodwater rises in Merced, California.

Here's what's in store as another round of ferocious weather barrels down on the West Coast:

• Parts of the Central and Northern California coast are getting deluged again with heavy rain Wednesday. The downpours are expected to intensify and exceed half an inch of rain per hour by the afternoon, according to the Weather Prediction Center.

RELATED ARTICLE
Thousands of Californians under evacuation orders as flood threats continue and death toll of recent storms climbs to 17

• Rainfall totals through early Wednesday afternoon could range from 1 to 3 inches. The highest accumulations are expected in the North Bay and Santa Cruz Mountains, and more flooding could occur.

• The rain will shift north to coastal Oregon and Washington starting Wednesday afternoon, giving Central California a brief pause in the rain.

• Precipitation will also push inland to the Sierra Nevada Wednesday afternoon, dumping up to 10 inches of snow.

• The heaviest rain over the next seven days is expected in northern parts of California, where the National Weather Service predicts an additional 5 to 10 inches.

A 5-year-old boy swept away is still missing

Rescue crews in San Luis Obispo County are scrambling to find 5-year-old Kyle Doan, who was swept away from a truck near the Salinas River Monday morning.

SLO County Sheriff

Kyle Doan, 5, was last seen Monday in San Miguel, San Luis Obispo County.

Search efforts resumed Tuesday after they were suspended Monday due to weather conditions being too hazardous for first responders, the San Luis Obispo County Sheriff's Office said.

"The conditions, however, remain extremely dangerous," the sheriff's office said Tuesday. "The water level is high and continues to be fast-moving."

The sheriff's office urged the public to leave the search operation to the professionals to avoid the risk of volunteers needing to be rescued themselves.

'It's backbreaking labor'

RELATED VIDEO
'More rain, more flood, more mud': California resident describes heartbreaking impact of storm

As another storm looms, many residents are still grappling with devastation to their communities.

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Scott Safechuck
@SBCFireInfo · **Follow**

Damage to road and catchment basin in the Orcutt area. There are assessment teams surveying the entire County for damage assessments.

Watch on Twitter

7:52 AM · Jan 10, 2023

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The storms have claimed 17 lives

The recent storms turned fatal after trees crashed onto homes and cars, rocks and mud cascaded down hillsides and floodwater rapidly rose.

At least 17 people have died in California storms in just the past two weeks.

"That's more than we've lost in the last two years of wildfires," the lieutenant governor said. "So this is a very significant emergency."

RELATED ARTICLE
5 years after a deadly mudslide, Montecito residents are urged to evacuate

Rebekah Rohde, 40, and Steven Sorensen, 61, were both found "with trees on top of their tents" over the weekend, the Sacramento County Coroner said. Both were unhoused, according to the release.

In the San Joaquin Valley, a tree fell on a pickup truck on State Route 99 in Visalia on Tuesday, killing the driver. A motorcyclist also died after crashing into the tree, the California Highway Patrol said.

Another driver died after entering a flooded roadway in Avila Beach Monday, the San Luis Obispo County Sheriff's Office said.

"It only takes six inches of water to lose control of a car to be knocked over. In 12 inches, cars start floating away," Kounalakis said this week.

"You've heard that creeks that have risen 14 feet just in the last day and in certain areas we've had over a foot of rain –

"You've heard that creeks that have risen 14 feet just in the last day and in certain areas we've had over a foot of rain just in the last 48 hours. So it is unbelievable."

Extreme weather and the climate crisis

Josh Edelson/AFP/Getty Images

Rescue crews help stranded residents Tuesday in Merced, California.

Though none of the coming storms are expected to individually be as impactful as the most recent ones, the cumulative effect could be significant in a state where much of the soil is already too saturated to absorb any more rain.

And the state's ongoing drought has parched the landscape so much, the soil struggles to absorb the incoming rainfall – which can lead to dangerous flash flooding.

Scientists have warned the climate crisis is having a significant effect on California's weather, increasing the swings between extreme drought and extreme rain.

CNN's Camila Bernal, Stella Chan, Joe Sutton, Angela Fritz, Derrick Hinds, Taylor Ward and Robert Shackelford contributed to this report.

San Jose Inside (https://www.sanjoseinside.com)

NEWS

Latest Storms Are Filling Reservoirs, But Most Remain Below Capacity

*By **Eli Walsh, Bay City News** / January 10, 2023*

0

Uvas Reservoir west of Morgan Hill. File Photo by Tarmo Hannula

Many of California's water reservoirs have been at least partially replenished by the winter storms that have doused Northern California in recent weeks, according to state and local water data.

Most of the state's largest reservoirs, including Lake Oroville, the San Luis Reservoir and Lake Sonoma remain below their historical averages for early January, sitting at around 40 percent of their total capacity.

Those levels are up significantly from one month ago, however, when many reservoirs sat at between 20 and 30 percent of their capacities, according to data from the California Department of Water Resources.

Statewide, California's reservoir storage is at roughly 78 percent of its annual average for Jan. 8, according to the most recent data.

"While these storms have been great, we still, from a water supply standpoint, (are) below average and we'd like to see that storage picture improved," John Yarbrough, assistant deputy director of the State Water Project, said Monday in a briefing on the state's weather forecasts and water supply.

But while the larger reservoirs remain below their historical averages, the recent storms have pushed some smaller reservoirs in the Bay Area beyond their standard capacities.

The Almaden Reservoir, Uvas Reservoir and Coyote Lake, all in Santa Clara County, are all above 100 percent of their respective capacities, according to Santa Clara Valley Water.

The Lexington Reservoir and Chesbro Reservoir are also above 75 percent of their capacities. The elevations of all five reservoirs have increased by at least 10 feet over the last two weeks.

Water Resources Director Karla Nemeth said Monday that even with all the rain in Northern California over the last two weeks, state water officials won't know its effect on drought conditions until later this year. For now, the state remains under a drought emergency designation.

"As our traditionally wet season progresses and we have a better understanding of what's going to happen with all of that snowpack and we have a better understanding of what's happening in different parts of the state relative to water supply availability, that's how we'll start to emerge out of a drought emergency," she said.

Santa Ynez River Valley Groundwater Basin

(https://sgmaagency.specialdistrict.org/)

THIS ITEM APPEARS ON

EMA GSA COMMITTEE MEETINGS (/EMA-GSA-COMMITTEE-MEETINGS)

JAN
26
2023

EMA GSA Committee Regular Meeting, 6:30 pm

Paeter Garcia

From: Mary Martone
Sent: Tuesday, August 9, 2022 10:01 AM
To: Paeter Garcia
Subject: FW: Chumash Indians - Follow Up on Easements
Attachments: 591 040Y14 Termination of Easement.pdf

From: Steven Tanaka <StevenT@wallacegroup.us>
Sent: Tuesday, August 9, 2022 9:50 AM
To: general@syrwd.org
Subject: Chumash Indians - Follow Up on Easements

Please forward this message to Paeter Garcia.

Hi Paeter, hope you are well. I am reaching out to you, because the Tribe is continuing to work on items related to the Cultural Center, and part of their work involves the abandonment of an old county road right of way (Tyndall) on the 6.9 acre property, as well as an ID1 water line easement. The Tribe was trying to finalize the road right of way abandonment with the County, but records show the ID1 easement on this property still exists.

The attached document is the Bureau of Indian Affairs (BIA) concurrence on the various documents, and this include a host of items, including some new easements as well and some abandonments, and this includes the 10-foot wide easement that traverses the 6.9 acre property where the cultural center now resides.

My question for you, is that the Tribe is in the process of finalizing abandonment of the Tyndall right of way, but for some reason there is no record of the abandonment of the 10-foot wide easement on the 6.9 acre parcel. This process of preparing the easement abandonment documents took place about 10 years ago, and all of us involved (including me) are not clear what happened and why the ID1 easement may still be active. We believe that a final step was needed by ID1 and Tribe to formalize the easement abandonment, then ID1 was to record the easement abandonment with the County.....but I honestly am not sure.

I am wondering if you could let me know what information you have on this particular easement on the 6.9 acre property, and assist us with finalizing the abandonment process. I thought I would send this information to you first, so that you can gather your thoughts on this matter before we talk. Please reach out to me when you have a chance and we can discuss this further. Best way to reach me is my cell, 805 441 2293. Thank you!

Steven G. Tanaka, PE C49779
Principal Civil Engineer
WALLACE GROUP | DEDICATION TO SERVICE®
T 805 597-7161| M 805 441-2293
612 Clarion Ct, San Luis Obispo, CA 93401

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Res. No.: _____
Date Rec'd. 6/18/13
Initials NCR

RESOLUTION #927

SCA-SZ-01-13

WHEREAS: The Santa Ynez Band of Chumash Mission Indians (Tribe) is a federally-recognized Indian Tribe exercising powers of self-government over the residents and lands of the Santa Ynez Indian Reservation according to the Tribe's Articles of Organization, as amended, which has been approved by the authorized representative of the Secretary of the Interior pursuant to Section 16 of the Indian Reorganization Act (25 U.S.C. 476 et seq.); and

WHEREAS: The General Council is the governing body of the Tribe, pursuant to Article IV, Section 1 of the Tribe's Articles of Organization; and

WHEREAS: The General Council has approved various water main improvements as part of the Santa Ynez River Water Conservation District, Improvement District No. 1 (ID1) water system on Reservation, and as part of that approval has granted the Business Committee the authority to take the necessary steps to accomplish this; and

WHEREAS: The Tribe and ID1 agree that certain ID1 water mains were required to be abandoned as part of the Chumash Casino and Hotel development and construction, thus necessitating abandonment of certain easements, and that new water mains constructed on Reservation will require granting of easements for said water mains; and

WHEREAS: In order for said utilities to be installed, the utility company must obtain easements across the reservation property; and

WHEREAS: New water main facilities have been constructed, and the Tribe and ID1 now desire to finalize the granting of easements to ID1 for ID1 water mains and to abandon existing water main easements no longer required; and

WHEREAS: The Tribe has constructed and installed said new water main utilities as a condition of water service to the Reservation and Chumash Casino and Hotel project, and therefore in those circumstances agrees to waive damages and the construction related stipulations pertinent to the application; and

WHEREAS: The Tribe may further choose to submit an Application for a Right-of-Way to the Bureau of Indian Affairs on behalf of the utility companies in order to expedite the processing of the application.

THEREFORE BE IT RESOLVED BY the Business Committee of the Santa Ynez Band of Chumash Indians that the necessary easements be granted to ID1 for installation of utilities to service the Chumash Casino and Hotel, and the Reservation in general, as described in the legal descriptions to be attached to the relevant applications.

BE IT FURTHER RESOLVED BY of the Business Committee of the Santa Ynez Band of Chumash Indians that the Tribe requests that the necessary abandonments be approved by ID1.

BE IT FURTHER RESOLVED BY the Business Committee of the Santa Ynez Band of Chumash Indians, that the Business Committee requests the Bureau of Indian Affairs to expedite the processing and approval of these applications for the above granted easements and abandonments.

CERTIFICATION

This is to certify that the foregoing resolution was adopted by the Santa Ynez Business Committee at a duly called meeting of the Tribal Business Committee on April 10, 2013 by a vote of 4 in FAVOR, 0 OPPOSED, and 0 ABSTAINING.

Vincent Armenta, Chairman

Richard Gomez, Vice Chairman

Kenneth Kahn, Secretary-Treasurer

David Dominguez, Committee Member

Gary Pace, Committee Member

Exhibit A
Abandonment of Waterline Easements
1922/OR/823, 83-64484 O.R., AND 1964/OR/417
Legal Description

The easement granted to the Santa Ynez River Water Conservation District, recorded April 27, 1962 in Book 1922 of Official Records at page 823 in the Office of the County Recorder of the County of Santa Barbara, State of California.

The easement granted to the Santa Ynez River Water Conservation District, Improvement District No. 1, recorded December 2, 1983 as Instrument No. 83-64484 of Official Records in the Office of the County Recorder of the County of Santa Barbara, State of California.

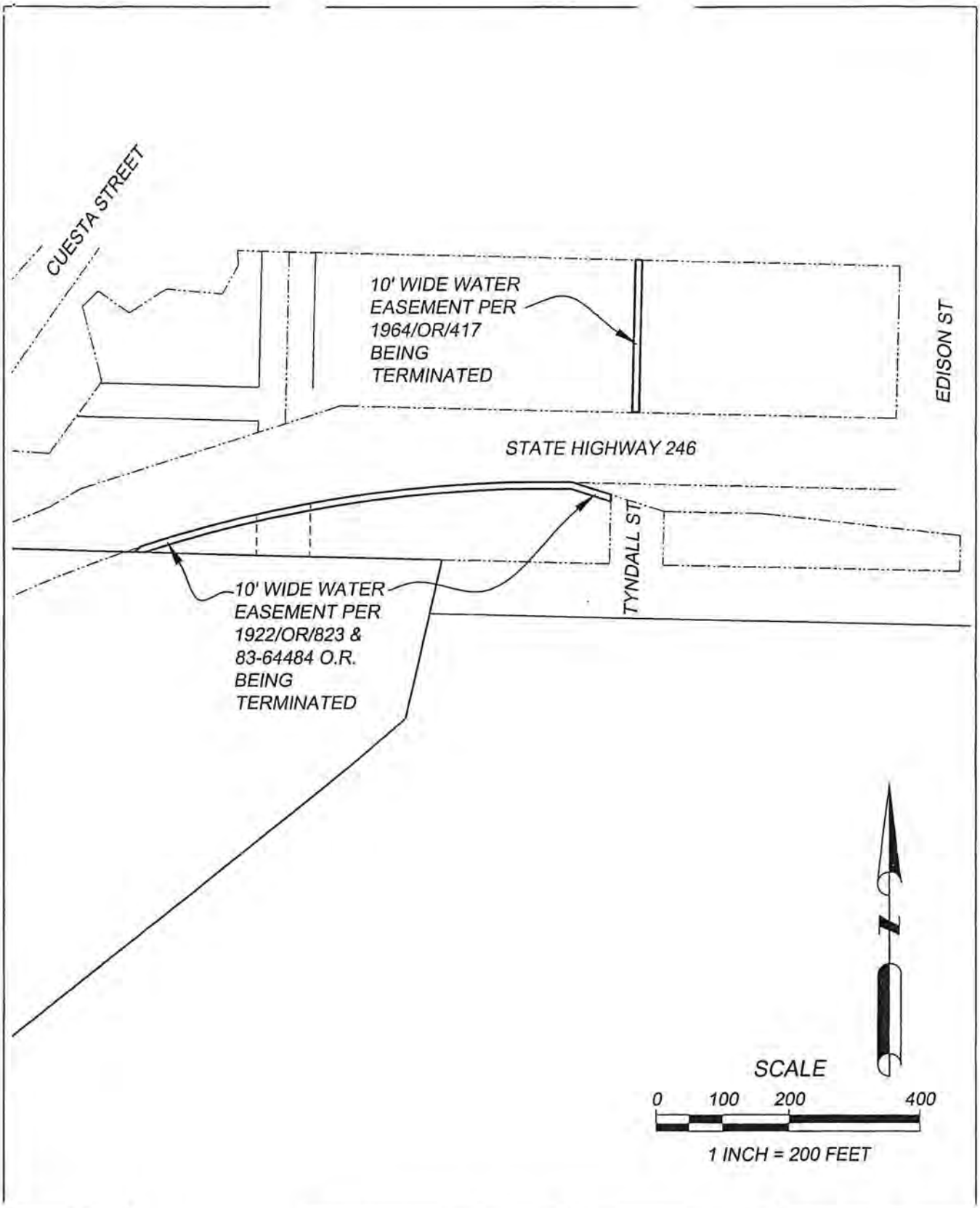
The easement granted to the Santa Ynez River Water Conservation District, recorded in Book 1964 of Official Records at page 417 in the Office of the County Recorder of the County of Santa Barbara, State of California.

The above described piece of land is graphically shown on Exhibit "B" attached hereto and made a part hereof.

George Marchenko 5-7-13

George Marchenko LS 6964 Date

Abandon X3.doc



WALLACE GROUP
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F 805 544-4294
www.wallacegroup.us

Legal Description Exhibit
Abandonment of Waterline Easements
Adjacent to Santa Ynez Indian Reservation,
County of Santa Barbara, CA

JOB No. : 375-47
DWG: ABND-MOONY
DRAWN BY: GM
DATE : NOV 2011
Sheet 1 of 1

49973

DEED OF EASEMENT

Ellis G. Minner and Edith M. Minner

AS Grantor s, hereby grant to the SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, a public corporation, Santa Barbara County, State of California, as Grantee, the following easement in the County of Santa Barbara, State of California, to wit:

> That portion of the property described in Exhibit "A" hereto attached and by reference incorperated herein, owned by the undersigned.

TO HAVE AND TO HOLD said easement for the purpose of acquiring, completing, constructing, reconstructing, repairing, maintaining, and operating water mains, hydrants, valves and appurtenances for said District, together with the right of ingress and egress therefor, subject to the following conditions:

1. Upon completion by Grantee of any installation, construction, reconstruction, repair or replacement of any or all of said facilities, Grantee shall restore as near as possible the surface of the ground to the condition in which the same was prior to said installation, construction, reconstruction, repair or replacement.

2. Grantee shall hold Grantor free and harmless from any claims for damage to persons or property of any nature whatsoever arising from Grantee's use of said property herein granted.

3. Grantee shall pay to Grantor the reasonable value of any and all crops necessarily destroyed by Grantee's use of said premises.

4. Grantor shall retain the right to use the surface of said easement, provided that such use by Grantor shall not interfere with Grantee's use thereof; and further provided that no permanent structure of any kind, other than roads, fences, pipelines, pole lines and similar appurtenances, shall be built upon said easement by Grantor.

5. Grantee shall lay all water mains below the surface of the ground, and when crossing tillable land, said water main shall have a minimum ground cover of at least (30) thirty inches.

6. Grantee's right of ingress and egress shall be limited to the ten (10) foot ~~twenty (20) foot~~ easement, wherever practicable; and whenever other means of ingress and egress are necessary for Grantee's use of said easement, such right of ingress and egress shall be limited to those entrances to, and those routes across, the Grantor's premises which may be designated from time to time by the Grantor as a reasonable means of such ingress and egress.

7. All fences, pole lines, pipe lines and similar inprovements of the Grabtor shall be left in place by the Grantee, to the greatest extent possible, and whenever any damage is caused by Grantee to such improvements of the Grantor, the same shall be promptly repaired or replaced by the Grantee.

8. If Grantee exercises its right of ingress and egress to the Grantor's premises by meann of said ~~twenty (20) foot~~ ten (10) foot easement, Grantee shall install and maintain suitable access gates in the fences of said Grantor, wherever the same intersect the aforesaid easement.

IN WITNESS WHEREOF, the Grantor S ha ve executed this instrument this 26 th day of October A.D., 1962.

Ellis H. Minner

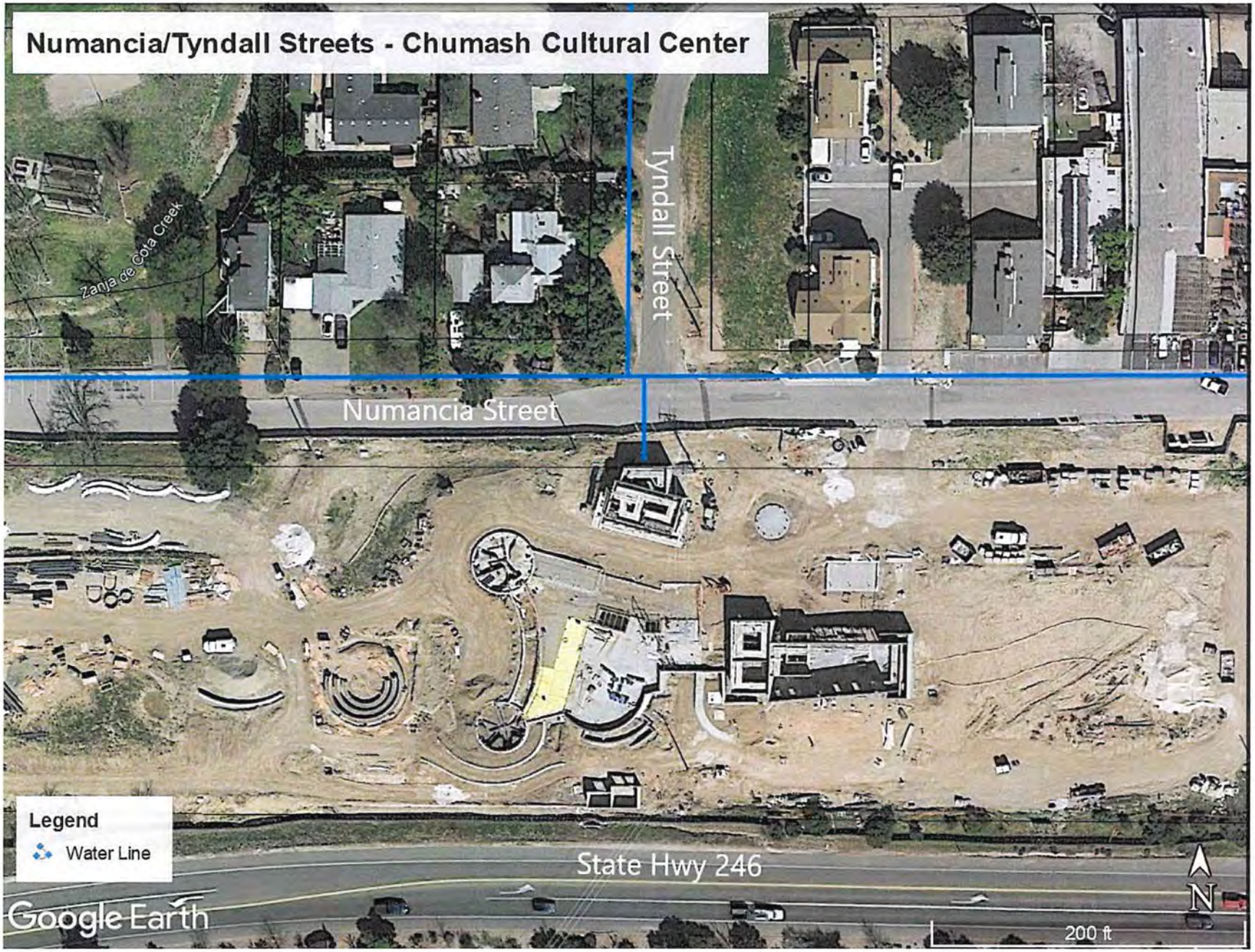
Edith M. Minner

WITNESS:

Cecil L Black

E X H I B I T
Easement sy-6

The esterly 10.00 feet of the westerly half of Tyndall Street (since abandoned) in the town of SANTA YNEZ filed October 13, 1882 in Book B Miscellaneous Records, page 441, Santa Barbara County Recorder's office, said easterly 10.00 feet extending from the southerly line of Numancia Street to the center of the alley between Numancia and Valley Streets.


Numancia/Tyndall Streets - Chumash Cultural Center
Tyndall Street
Zanja de Cota Creek
Numancia Street
Legend
Water Line
State Hwy 246
Google Earth
N
200 ft

EPA/635/R-22/191a
External Review Draft
www.epa.gov/iris

IRIS Toxicological Review of Hexavalent Chromium [Cr(VI)]

[CASRN 18540-29-9]

October 2022

Integrated Risk Information System
Center for Public Health and Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Washington, DC

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CONTENTS

TABLES

FIGURES

ABBREVIATIONS

ADAF	age-dependent adjustment factors
ADME	absorption, distribution, metabolism, and excretion
AIC	Akaike's information criterion
ALT	alanine aminotransferase
ALP	alkaline phosphatase
Asc	ascorbate
AST	aspartate aminotransferase
ATSDR	Agency for Toxic Substances and Disease Registry
BAL	bronchoalveolar lavage
BALF	bronchoalveolar lavage fluid
BMD	benchmark dose
BMDL	benchmark dose lower confidence limit
BMDS	Benchmark Dose Software
BMI	body mass index
BMR	benchmark response
BMDC	bone marrow-derived stem cell
BW	body weight
CA	chromosomal aberration
CASRN	Chemical Abstracts Service Registry Number
CHO	Chinese hamster ovary (cell line cells)
CPHEA	Center for Public Health and Environmental Assessment
CL	confidence limit
CNS	central nervous system
Cr(III)	trivalent chromium
Cr(IV)	tetravalent chromium
Cr(V)	pentavalent chromium
Cr(VI)	hexavalent chromium
DAF	dosimetric adjustment factor
DLCO	diffusing capacity of carbon monoxide
DNA	deoxyribonucleic acid
ELF	epithelial lining fluid
EPA	Environmental Protection Agency
ER	extra risk
FDA	Food and Drug Administration
FEV1.0	forced expiratory volume of 1 second
FVC	forced vital capacity
GD	gestation day
GGT	γ-glutamyl transferase
GI	gastrointestinal
GLP	good laboratory practices
GSD	geometric standard deviation
GSH	glutathione
GST	glutathione-S-transferase
Hgb	hemoglobin
HEC	human equivalent concentration
HED	human equivalent dose
HERO	Health and Environmental Research Online
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
LC_{50}	median lethal concentration
LD_{50}	median lethal dose
LDH	lactate dehydrogenase
LOAEL	lowest-observed-adverse-effect level
MCH	mean cell hemoglobin
MCHC	mean cell hemoglobin concentration
MCV	mean cell volume
MEF	maximal expiratory flow
MMAD	mas median aerodynamic diameter
MN	micronuclei
MOA	mode of action
MTD	maximum tolerated dose
CPHEA	Center for Public Health and Environmental Assessment NCI National Cancer Institute
NOAEL	no-observed-adverse-effect level
NTP	National Toxicology Program
NZW	New Zealand White (rabbit breed)
ORD	Office of Research and Development
OSHA	Occupational Safety and Health Administration
PBPK	physiologically based pharmacokinetic
PDC	potassium dichromate
PND	postnatal day
POD	point of departure
$POD_{[ADJ]}$	duration-adjusted POD
$POD_{[HED]}$	human equivalent dose POD
$POD_{[HEC]}$	human equivalent concentration POD
RBC	red blood cell, also known as erythrocyte
RD	relative deviation
RfC	inhalation reference concentration
RfD	oral reference dose
RDDR	regional deposited dose ratio
RNA	ribonucleic acid
SCE	sister chromatid exchange
SD	standard deviation
SDH	sorbitol dehydrogenase
SE	standard error
SDD	sodium dichromate dihydrate
PK	pharmacokinetics
TSCATS	Toxic Substances Control Act Test Submissions

TWA	time-weighted average
UF	uncertainty factor
UF_A	animal-to-human uncertainty factor
UF_H	human variation uncertainty factor
UF_L	LOAEL-to-NOAEL uncertainty factor
UF_S	subchronic-to-chronic uncertainty factor
UF_D	database uncertainty factor
WOS	Web of Science

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EXECUTIVE SUMMARY

Summary of Occurrence and Health Effects

Chromium is a ubiquitous element present in soil, water, air, and food that can originate from both natural and anthropogenic sources. This toxicological review restricts its focus to hexavalent chromium compounds, which are a group of substances that contain chromium in the hexavalent (+6) oxidation state, denoted as Cr(VI). Cr(VI) compounds have many industrial applications, including pigment manufacturing, corrosion inhibition and metal finishing. Because many Cr(VI) compounds are water soluble, they are highly mobile in soil and may contaminate drinking water. Cr(VI) may be emitted into air by industries using Cr(VI) compounds, and by various other sources such as the burning of fossil fuels.

The systematic review (see Appendix A for methods) conducted to support this assessment evaluated all cancer outcomes, and noncancer effects for the following potential target systems: respiratory, gastrointestinal (GI) tract, hepatic, hematologic, immune, reproductive, and developmental. For cancer and nasal effects via the inhalation route (which are well established), the systematic review focused on data that may inform the quantitative dose-response analysis.

Evidence indicates that Cr(VI) is likely to cause GI tract, liver, developmental, and lower respiratory toxicity in humans. Evidence suggests that Cr(VI) may cause male reproductive effects, immune effects, and hematologic toxicity in humans. Evidence is inadequate to assess whether Cr(VI) causes female reproductive toxicity in humans. Organ/system-specific reference values were derived for GI tract, liver, developmental, hematological, lower respiratory, and nasal effects. The overall chronic RfD is 9×10^{-4} mg/kg-d, and the overall chronic RfC is 1×10^{-5} mg/m^3.

For cancer via the oral route of exposure, Cr(VI) is *likely to be carcinogenic* to the human GI tract. Because a mutagenic mode-of-action (MOA) for Cr(VI) carcinogenicity is "sufficiently supported in (laboratory) animals" and "relevant to humans," EPA used a linear low dose extrapolation from the POD in accordance with *Guidelines for Carcinogen Risk Assessment* (U.S. EPA, 2005a). Furthermore, in the absence of chemical-specific data to evaluate differences in age-specific susceptibility, increased early-life susceptibility to Cr(VI) is assumed and EPA applied ADAFs in accordance with the *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (U.S. EPA, 2005b). The total lifetime oral slope factor (OSF) for Cr(VI) is 0.5 (per mg/kg-d).

For cancer via the inhalation route of exposure, quantitative exposure-response data were evaluated, and an inhalation unit risk (IUR) was developed for human lung cancer. Similar to the oral route of exposure, linear low dose extrapolation and application of ADAFs were performed for the inhalation route of exposure. The total lifetime IUR for Cr(VI) is 2×10^{-2} (per µg Cr(VI)/m^3).

ES.1 EVIDENCE FOR HAZARDS OTHER THAN CANCER: ORAL EXPOSURE

The evidence indicates that Cr(VI) is likely to cause gastrointestinal (GI) tract, hepatic, and developmental toxicity in humans following oral ingestion (see Sections 3.2.2, 3.2.4, 3.2.9). The determination that evidence indicates that Cr(VI) is likely to cause GI toxicity in humans was based on toxicology studies in rodents reporting histological effects in the GI tract. For the determination of hepatic toxicity, toxicology studies in rodents reported histological effects in the liver and serum indicators of hepatotoxicity. The determination for developmental effects was based on the observation of decreased offspring growth across most animal studies. For the hazards listed above, mechanistic evidence supported the human relevance of the effects observed in animals.

The evidence suggests that Cr(VI) may cause immune, hematologic, and male reproductive toxicity in humans (see Sections 3.2.5, 3.2.6, 3.2.7). Male reproductive effects on sperm parameters and testosterone were observed in both human and animal studies, however most studies were considered *low* confidence, and effects were inconsistent among the *high* confidence rodent studies. For hematological effects, *high* confidence studies in rodents reported changes in hematological parameters that suggested a pattern consistent with regenerative microcytic hypochromic anemia, but the confidence in this judgment was diminished due to uncertainty regarding the apparent transient nature of the effects. The conclusion for immune effects was primarily based on coherent evidence of effects on 1) ex vivo WBC function across human and animal studies, 2) antibody responses to T cell-dependent antigen measured in animals, and 3) reduction in host resistance to bacterial infection reported in animal studies; however, confidence in the evidence was reduced due to primarily *low* confidence studies reporting findings that were often inconsistent across studies.

The evidence is inadequate to assess whether Cr(VI) causes female reproductive toxicity in humans (see Section 3.2.8). Although an association with female reproductive toxicity was demonstrated in a single *low* confidence epidemiology study and a series of *low* confidence animal toxicology studies, effects were not observed in *medium* or *high* confidence studies aside from a moderate decrease in maternal body weight.

ES.1.1. Oral Reference Dose (RfD)

Hyperplasia in the small intestine of female B6C3F1 mice was selected as the basis for the overall chronic RfD of 9×10^{-4} mg/kg-d. A LOAEL analysis was used to derive an organ/system-specific point of departure (POD) for GI tract effects. Human equivalent doses (HEDs) were calculated using PBPK modeling to account for species differences and human variability in detoxification of Cr(VI) in the stomach. A composite uncertainty factor of 100 was applied. This uncertainty factor incorporated: an interspecies uncertainty (UF_A) of 3 to account for animal-to-human extrapolation (pharmacodynamic differences); an intraspecies uncertainty (UF_H) of 3 to account for variation in susceptibility across the human population, and the possibility that the available data may not be representative of individuals who are most susceptible to the effects; and

a LOAEL-to-NOAEL uncertainty (UF_L) of 10 to account for extrapolation from the LOAEL. The remaining uncertainty factors were equal to 1.

The confidence in the overall chronic RfD is high. The RfD is based on a *high* confidence chronic 2-year drinking water study by NTP (2008) that exposed rats and mice of both sexes to Cr(VI) as sodium dichromate dihydrate (see Section 3.2.2). Multiple *high* confidence subchronic studies also support these data, and mechanistic studies support the involvement of oxidative stress in Cr(VI)-induced cytotoxicity in a variety of tissues, including the GI tract. The organ/system-specific RfD for the liver (hepatic system) is also supportive of the GI tract RfD, because the GI tract and liver are exposed on first-pass following oral ingestion (so both should get the highest internal dose). While the human database for Cr(VI) induced GI toxicity was *indeterminate*, this did not warrant changing the overall confidence from *high*. Organ/system-specific RfDs (osRfDs) are listed in Table ES-1.

Table ES-1. Organ/system-specific RfDs and overall RfD for Cr(VI)

Hazard	Basis	osRfD mg/kg-d	Study exposure description	Confidence
Gastrointestinal system (GI tract)	Hyperplasia in small intestine of female mice	9×10^{-4}	Chronic drinking water	High
Hepatic system	Chronic inflammation in female rats	7×10^{-4}	Chronic drinking water	High
Developmental toxicity	Decreased F1 offspring postnatal growth	0.07	Continuous breeding	Low
Hematological toxicity	Decreased Hgb (male rats)	0.01	Subchronic drinking water	High
Overall RfD	**GI tract effects**	9×10^{-4}	**Chronic drinking water**	**High**

The osRfD for hepatic effects was based on chronic inflammation in female F344 rats reported in NTP (2008). An osRfD of 7×10^{-4} mg/kg-d was derived using a LOAEL analysis. Human equivalent doses (HEDs) were calculated using pharmacokinetic modeling to account for species differences and human variability in detoxification of Cr(VI) in the stomach. A composite uncertainty factor of 100 was applied. This uncertainty factor incorporated: an interspecies uncertainty (UF_A) of 3 to account for animal-to-human extrapolation (pharmacodynamic differences); an intraspecies uncertainty (UF_H) of 3 to account for variation in susceptibility across the human population, and the possibility that the available data may not be representative of individuals who are most susceptible to the effects; and a LOAEL-to-NOAEL uncertainty (UF_L) of 10 to account for extrapolation from the LOAEL. The remaining uncertainty factors were equal to 1. There is high confidence in this osRfD. It is based on a *high* confidence chronic study in rats and

there are other subchronic data and mechanistic evidence to support the liver endpoints (see Section 3.2.4).

The osRfD for developmental toxicity was based on decreased F1 offspring postnatal growth from the continuous breeding study in BALBC mice (NTP, 1997). The osRfD was 0.07 mg/kg-d and was based on extrapolation from a NOAEL. A human equivalent dose (HED) was calculated using PBPK modeling to account for species differences and human variability in detoxification of Cr(VI) in the stomach. A composite uncertainty factor of 10 was applied. This uncertainty factor incorporated: an interspecies uncertainty (UF_A) of 3 to account for animal-to-human extrapolation (pharmacodynamic differences); an intraspecies uncertainty (UF_H) of 3 to account for variation in susceptibility across the human population, and the possibility that the available data may not be representative of individuals who are most susceptible to the effects. The remaining uncertainty factors were equal to 1. There is low confidence in this osRfD. While it is based on a *high* confidence continuous breeding study and similar effects on decreased offspring growth observed in multiple other studies (see Section 3.2.9), this effect only occurred in high dose groups where other toxicological effects (as indicated by the lower points of departure in Table ES-2) may be occurring. Lower confidence in this osRfD was assigned due to the possibility that other toxicities could be affecting the animals in the high dose groups where developmental effects were observed.

The osRfD for hematological toxicity was based on decreased Hgb in male F344 rats at 22 days reported in NTP (2008). Hematological effects were observed to have the highest magnitude at short time periods, and ameliorate over time. As a result, short-term/low-dose data from NTP (2008) were used, and a subchronic-to-chronic uncertainty factor was not applied. An osRfD of 0.01 mg/kg-d was derived using BMD analysis and PBPK modeling. A composite uncertainty factor of 10 was applied. This uncertainty factor incorporated: an interspecies uncertainty (UF_A) of 3 to account for animal-to-human extrapolation (pharmacodynamic differences); an intraspecies uncertainty (UF_H) of 3 to account for variation in susceptibility across the human population, and the possibility that the available data may not be representative of individuals who are most susceptible to the effects. There is high confidence in this osRfD. It is based on a *high* confidence study in rats and there are other subchronic data and mechanistic evidence to support the endpoint (see Section 3.2.5).

Table ES-2. Summary of reference dose (RfD) derivation

Critical effect	Point of departure mg/kg-d	UF	Candidat Value (mg/kg-d)	osRfD (mg/kg-d)
GI TRACT TOXICITY				
Mice (M) diffuse epithelial hyperplasia of duodenum[a] (NTP, 2008)	$BMDL_{10\%ER\text{-}HED}$: 0.0443	10	4.43×10^{-3}	9×10^{-4}

Critical effect	Point of departure mg/kg-d	UF	Candidat Value (mg/kg-d)	osRfD (mg/kg-d)
Mice (F) diffuse epithelial hyperplasia of duodenum[a] (NTP, 2008)	$LOAEL_{HED}$: 0.0911	100	9.11×10^{-4}	
HEPATIC TOXICITY				
Rat (M) liver ALT (12 months) (NTP, 2008)	$BMDL_{1SD-HED}$: 0.204	10	0.0204	
Rat (M) liver ALT (3 months) (NTP, 2008)	$NOAEL_{HED}$: 0.191	30	6.37×10^{-3}	
Rat (M) liver ALT (90 days) (NTP, 2007)	$LOAEL_{HED}$: 0.203	300	6.77×10^{-4}	
Rat (F) liver ALT (90 days) (NTP, 2007)	$LOAEL_{HED}$: 0.190	300	6.33×10^{-4}	**7×10^{-4}**
Rat (F) liver chronic inflammation (2 years) (NTP, 2008)	$LOAEL_{HED}$: 0.0669	100	6.69×10^{-4}	
Mouse (F) liver chronic inflammation (2 years) (NTP, 2008)	$BMDL_{10\%ER\ HED}$: 0.182	10	0.0182	
Rat (F) liver fatty change (2 years) (NTP, 2008)	$NOAEL_{HED}$: 0.0669	10	6.69×10^{-3}	
DEVELOPMENTAL TOXICITY				
Mouse (F) Decreased F1 postnatal growth (NTP, 1997)	$NOAEL_{HED}$: 0.700	10	0.0700	**0.07**
HEMATOLOGICAL TOXICITY				
Rat (M) decreased Hgb (22 days) (NTP, 2008)	$BMDL_{1SD\ HED}$: 0.126	10	0.0126	**0.01**

[a]Duodenum: the most proximal subsection of the small intestine, immediately distal to the stomach.

ES.2 EVIDENCE FOR HAZARDS OTHER THAN CANCER: INHALATION EXPOSURE

As stated in the Cr(VI) IRIS Assessment Protocol (Appendix A), EPA did not re-evaluate the qualitative evidence for an association between inhalation Cr(VI) exposure and nasal effects. Based on EPA's 1998 evaluation of the literature and the determination that the effects of Cr(VI) on the nasal cavity have been well established [e.g., OSHA (2006) and U.S. EPA (2014c)], hazard identification was not performed for nasal effects. Rather, the review of the evidence for nasal effects focused on identifying studies that might improve the quantitative dose-response analysis for this outcome.

EPA evaluated qualitative evidence for an association between inhalation Cr(VI) exposure and lower respiratory toxicity. EPA determined that Cr(VI) is likely to cause lower respiratory toxicity, based on evidence in six *medium* confidence animal studies examining lung cellular responses and/or histopathology. Because histopathological and cellular changes occurred

together, and in combination with serum biomarkers indicating an inflammatory response, these were considered indicators of adverse responses. The human evidence for Cr(VI)-induced lower respiratory effects is limited in terms of number and confidence of studies. However, three of the available five studies provide some indication of exposure-related decrements in lung function assessed using spirometry. Mechanistic evidence supports the respiratory tract effects observed in animals.

ES-2.2 Inhalation Reference Concentration (RfC)

The overall RfC was based on effects in the upper respiratory tract (ulceration of the nasal septum) reported by *medium* confidence studies. Effects of Cr(VI) on the nasal cavity have been well established to occur in humans, and this was also the most sensitive effect. It is considered protective of the other noncancer effects. Organ/system-specific RfCs are listed in Table ES-3.

Table ES-3. Organ/system-specific RfCs and overall RfC for Cr(VI)

Hazard	Basis	osRfC mg/m³	Study exposure description	Confidence
Respiratory (upper tract)	Ulcerated nasal septum in humans	1×10^{-5}	Occupational longitudinal study	Medium
Respiratory[a] (lower tract)	Lung cellular responses and histopathological changes in rats	1×10^{-4}	Subchronic study	Medium
Overall RfC	**Respiratory effects**	**1×10^{-5}**	**Occupational longitudinal study**	**Medium**

[a]Human equivalent concentrations were calculated using a dosimetric adjustment factor accounting for interspecies differences in particle deposition (the regional deposited dose ratio, or RDDR).

Effects in the nasal cavity included irritation/ulceration of the nasal mucosa or septum, perforation of the septum, and bleeding nasal septum. The osRfC (for upper respiratory tract) was derived using data of nasal septum ulceration in humans from Gibb et al. (2000a). LOAEL analyses were used to derive the upper respiratory tract related points of departure (POD). A composite uncertainty factor of 300 was applied. This uncertainty factor incorporated: an intraspecies uncertainty factor (UF_H) of 3 to account for variation in susceptibility across the human population and the possibility that the available data may not be representative of individuals who are most susceptible to the effect; a LOAEL-to-NOAEL uncertainty factor (UF_L) of 10 because this endpoint had a high incidence at the lowest concentration across multiple studies; and a subchronic-to-chronic uncertainty factor (UF_S) of 3 because data were not from chronic lifetime exposures (however the effects had a short onset time). A database uncertainty factor (UF_D) of 3 was applied because multi-generational inhalation studies were not available in animals, human prenatal studies were rated *low* confidence, and effects of Cr(VI) differ by route of exposure due to

pharmacokinetics[1] (thus, the oral database of multi-generational studies does not inform the quantitative analysis for the inhalation route).

For the lower respiratory tract, the osRfC was derived using data of lung cellular responses and histopathological changes in rats from Glaser et al. (1990). A LOAEL analysis was used to derive most organ/system-specific points of departure (PODs). Human equivalent concentrations were calculated using a dosimetric adjustment factor accounting for interspecies differences in particle deposition (the regional deposited dose ratio, or RDDR). A composite uncertainty factor of 1000 was applied to the LOAEL-derived PODs (BMD-derived bronchioalveolar hyperplasia had a composite UF was 300; see Section 4.2.4). The database uncertainty factor, UF_D, was 3 for the same reasons specified above for the nasal osRfC. A subchronic-to-chronic uncertainty factor, UF_S, of 3 was incorporated to account for the less-than-lifetime exposure. There was some indication in Glaser et al. (1990) that the effects were transient, and therefore a 10 was not applied; however, there is still uncertainty due to the lack of long-term data for continuous chronic exposure. An interspecies uncertainty factor, UF_A, of 3 was applied to account for residual uncertainty in the extrapolation from laboratory animals to humans (an inhalation dosimetry factor was used to estimate a human equivalent concentration from animal data, but some pharmacodynamic uncertainty remained). A LOAEL-to-NOAEL uncertainty factor, UF_L, of 3 was applied to LOAELs because characteristics of the lung histopathological and cellular responses supported a value less than 10. UF_L of 1 was applied when BMD modeling was used (bronchioalveolar hyperplasia). An intraspecies uncertainty factor, UF_H, of 10 was applied to account for variability and uncertainty in pharmacokinetic and pharmacodynamic susceptibility within the human population (source data were only available in male inbred rats). Table ES-4 summarizes the derivation of the osRfCs.

Table ES-4. Summary of reference concentration (RfC) derivation

Critical effect	Point of departure mg/m³	UF	Candidate value mg/m³	osRfC mg/m³
UPPER RESPIRATORY TRACT TOXICITY				
Ulceration of the nasal septum (Gibb et al., 2000a)	LOAEL: 3.4×10^{-3}	300	1.1×10^{-5}	1×10^{-5}
Nasal mucosal pathology (Cohen et al., 1974)	LOAEL: 9.5×10^{-4}	300	3.2×10^{-6}	
Ulceration of the nasal septum (Lindberg and Hedenstierna, 1983)	LOAEL: 6.6×10^{-4}	300	2.2×10^{-6}	
LOWER RESPIRATORY TRACT TOXICITY				
Histopathology: histiocytosis in rats (Glaser et al., 1990)	$LOAEL_{HEC}$: 0.133	1000	1.3×10^{-4}	1×10^{-4}

[1]Because Cr(VI) is detoxified in the gut on first-pass, it is possible that inhalation exposures may induce systemic effects not observed following ingestion.

Critical effect	Point of departure mg/m³	UF	Candidate value mg/m³	osRfC mg/m³
UPPER RESPIRATORY TRACT TOXICITY				
Histopathology: bronchioalveolar hyperplasia in rats (Glaser et al., 1990)	$BMDL_{1SD\text{-}HEC}$: 0.0413	300	1.4×10^{-4}	
Cell responses: LDH in BALF in rats (Glaser et al., 1990)	$LOAEL_{HEC}$: 0.133	1000	1.3×10^{-4}	
Cell responses: Albumin in BALF in rats (Glaser et al., 1990)	$LOAEL_{HEC}$: 0.170	1000	1.7×10^{-4}	
Cell responses: Total protein in BALF in rats (Glaser et al., 1990)	$LOAEL_{HEC}$: 0.133	1000	1.3×10^{-4}	

ES.3 EVIDENCE FOR HUMAN CARCINOGENICITY

Under EPA's Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), Cr(VI) is **likely to be carcinogenic** to humans by the oral route of exposure. The evidence of carcinogenicity to the GI tract from animal studies is *robust*, and the evidence of carcinogenicity from human studies is *slight*. There is strong supporting mechanistic evidence for Cr(VI) involvement in biological pathways contributing to carcinogenesis.

As noted in the Protocol (see Appendix A), this assessment maintains the previous determination that Cr(VI) is **carcinogenic to humans** by the inhalation route of exposure based on long-standing evidence of a causal relationship between inhalation of Cr(VI) and increased incidence of lung cancer in humans in occupational settings.

ES.4 QUANTITATIVE ESTIMATE OF CARCINOGENIC RISK: ORAL EXPOSURE

The animal database for cancer by oral exposure consisted of a high confidence chronic 2-year drinking water bioassay which found "clear evidence of carcinogenic activity" of Cr(VI) in male and female rats and mice (NTP, 2008). These results were based on increased incidences of squamous cell neoplasms in the oral cavity of rats, and increased incidences of neoplasms in the small intestine of mice. Using these data, benchmark dose (BMD) modeling was applied to derive points of departure (PODs) for small intestinal tumors in mice and oral tumors in rats (See Section 4.3). For mice, human equivalent doses (HEDs) were calculated using PBPK modeling to account for species differences in detoxification of Cr(VI) in the stomach because tumors occurred in the small intestine (after stomach reduction to Cr(III)). For rats, HEDs were calculated using $BW^{3/4}$ scaling in accordance with U.S. EPA (2011c), because tumors occurred in the oral cavity (prior to stomach reduction to Cr(III)). In the absence of an adequately developed theory or information to develop and characterize an oral portal-of-entry dosimetric adjustment factor, application of $BW^{3/4}$ scaling is recommended (U.S. EPA, 2011c, 2005a).

The lifetime oral cancer slope factor for humans is defined as the slope of the line from the lower 95% bound on the exposure at the POD to the control response (slope factor = $0.1/BMDL_{10}$). Using linear extrapolation from the $BMDL_{10}$, human equivalent oral slope factors were derived for each sex/species/tumor site combination and are listed in Table ES-5. The adult-based oral slope factor for Cr(VI) is 0.3 (per mg/kg-d), based on tumors of the small intestine of male and female mice.

Table ES-5. Summary of oral slope factor (OSF) derivation

Critical effect	Point of departure mg/kg-d	Human equivalent dose mg/kg-d	OSF[a] (per mg/kg-d)	Confidence
Adenomas or carcinomas in the mouse small intestine of male mice (NTP, 2008)	$BMDL_{10\%ER}$: 1.05	0.319[b]	0.313	High
Adenomas or carcinomas in the mouse small intestine of female mice (NTP, 2008)	$BMDL_{10\%ER}$: 1.03	0.316[b]	0.317	High
Squamous cell carcinoma or squamous cell papilloma in oral mucosa or tongue of male rats (NTP, 2008)	$BMDL_{10\%ER}$: 3.37	0.923[c]	0.108	High
Squamous cell carcinoma or squamous cell papilloma in oral mucosa or tongue of female rats (NTP, 2008)	$BMDL_{10\%ER}$: 2.70	0.645[c]	0.155	High
Adult-based OSF: 0.3 (mg/kg-d)$^{-1}$ (rounded from either 0.313 or 0.317) **Lifetime OSF for adenomas or carcinomas in the mouse small intestine, after application of the age-dependent adjustment factors: 0.5 (mg/kg-d)$^{-1}$ (see Section 4.3.4 for derivation)**				

[a]OSF prior to application of the age-dependent adjustment factors.
[b]Estimated by PBPK modeling.
[c]$BW^{3/4}$ scaling adjustment (administered dose multiplied by $(BW_A/BW_H)^{1/4}$, where BW_H = 80kg (human body weight) and BW_A (animal body weight) is set to a study-specific value.

Because a mutagenic MOA for Cr(VI) carcinogenicity (see Section 3.2.3) is "sufficiently supported in (laboratory) animals" and "relevant to humans," and as there are no chemical-specific data to evaluate the differences between adults and children, increased early-life susceptibility should be assumed. If there is early-life exposure, age-dependent adjustment factors (ADAFs) should be applied, as appropriate, in accordance with the EPA's *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (U.S. EPA, 2005b).

The total lifetime OSF for Cr(VI) is **0.5 (per mg/kg-d)**. Partial oral slope factors for different age groups are provided in Section 4.3.4.

ES.5 QUANTITATIVE ESTIMATE OF CARCINOGENIC RISK: INHALATION EXPOSURE

In 1998, the EPA IRIS Toxicological Review of Hexavalent Chromium classified Cr(VI) as a "known human carcinogen by the inhalation route of exposure" based on consistent evidence that inhaled Cr(VI) causes lung cancer in humans and supporting evidence of carcinogenicity in animals (U.S. EPA, 1998c). The same conclusion has since been reached by other authoritative federal and state health agencies and international organizations and the carcinogenicity of Cr(VI) is well established for inhalation exposures (TCEQ, 2014; IPCS, 2013; NIOSH, 2013; IARC, 2012; CalEPA, 2011; NTP, 2011; OSHA, 2006). As stated in the 2014 preliminary packages (U.S. EPA, 2014b, c) and the Systematic Review Protocol (Appendix A), the review of cancer by the inhalation route focused on data that may improve the quantitative exposure-response analysis conducted in EPA's 1998 IRIS assessment. An overview of the literature screening for exposure-response data is contained in Section 4.4.1.

The IUR was based on an occupational cohort by Gibb et al., (2020; 2015; 2000b) of chromate production workers at a facility in Baltimore, MD. Details of the cohort are contained in Section 4.4.

Because a mutagenic MOA for Cr(VI) carcinogenicity is "sufficiently supported in (laboratory) animals" and "relevant to humans," and as there are no chemical-specific data to evaluate the differences between adults and children, increased early-life susceptibility should be assumed. If there is early-life exposure, age-dependent adjustment factors (ADAFs) should be applied, as appropriate, in accordance with the EPA's *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (U.S. EPA, 2005b).

The total lifetime IUR for Cr(VI) is **2×10^{-2} (per µg Cr(VI)/m³)**. Partial unit risks for different age groups are provided in Section 4.4.4. Table ES-6 summarizes the derivation of the IUR.

Table ES-6. Summary of inhalation unit risk (IUR) derivation

Critical effect	Basis	IUR (µg Cr(VI)/m³)$^{-1}$	Study exposure description	Confidence
Cancer	Lung cancer (Gibb et al., 2020)	2×10^{-2}	Occupational cohort	High

ES.6 SUSCEPTIBLE POPULATIONS AND LIFE STAGES

Susceptible populations and life stages refers to groups of people who may be at increased risk for negative health consequences following chemical exposures due to factors such as life stage, genetics, race/ethnicity, sex, health status and disease, lifestyle factors, and other co-exposures. Populations susceptible to increased risks for negative health consequences of Cr(VI) exposure include:

- Individuals with preexisting health effects that overlap with those caused by Cr(VI) exposure may be at increased risk. Health conditions that may be exacerbated by Cr(VI) exposure include gastrointestinal diseases, liver diseases, respiratory diseases, and anemia.

- Individuals with chronically high stomach pH are expected to detoxify Cr(VI) less effectively, leading to increased uptake of Cr(VI) in the gastrointestinal tract following oral exposure. High stomach pH can be caused by a number of factors, such as low gastric acid (hypochlorhydria), usage of medications to treat gastroesophageal reflux disease (GERD), and population variability.

- Individuals with genetic polymorphisms conveying deficiencies in DNA repair capacity may have increased susceptibility to Cr(VI)-induced cancer.

- Carriers of a mutated cystic fibrosis transmembrane conductance regulator (CFTR) allele may be at higher risk of Cr(VI)-induced cancers of the gastrointestinal tract. Suppression of the CFTR gene was shown to enhance intestinal tumorigenesis in animal models. CFTR was shown to be inactivated in mice exposed to Cr(VI). Thus, individuals with an impaired CFTR due to genetics may suffer an even further reduction in CFTR expression levels following oral exposure to Cr(VI).

Life stages susceptible to increased risks for negative health consequences of Cr(VI) exposure include:

- The developmental life stage (in utero) is considered susceptible because Cr(VI) was determined to likely cause developmental toxicity in humans.

- Neonates, infants, and young toddlers less than 30 months old, which exhibit elevated stomach pH and therefore cannot effectively detoxify Cr(VI).

- Elderly populations (aged 65 and older) may be at higher risk because they exhibit some preexisting health conditions associated with aging that may be exacerbated by oral or inhalation exposure to Cr(VI). This includes conditions that cause elevated stomach pH.

ES.7 ORAL ABSORPTION UNCERTAINTIES AND ASSUMPTIONS APPLIED IN HAZARD IDENTIFICATION AND MODE-OF-ACTION ANALYSES

Even under controlled rodent pharmacokinetic studies, assessing the oral absorption and whole-body distribution of orally administered Cr(VI) at low doses involves uncertainty. Only the total chromium concentration, which includes the trivalent and hexavalent oxidation states, can be reliably measured in tissues in vivo, and most total chromium is likely to be Cr(III). Total chromium measured in tissues of animals orally exposed to Cr(VI) results from:

- Rapid cellular uptake of administered Cr(VI) that was absorbed into the body as Cr(VI), and subsequently reduced to Cr(III) within that tissue.

- Slow cellular uptake of Cr(III) that was absorbed into the body as Cr(III), formed from administered Cr(VI) that reduced to Cr(III) extracellularly and outside of systemic circulation (e.g., gastric juices).

- Slow cellular uptake of Cr(III) that was absorbed into the body as administered Cr(VI) and reduced by other components within systemic circulation (e.g., plasma, liver, red blood cells). For example, plasma can reduce Cr(VI) extracellularly, and the resulting Cr(III) absorbed into other tissues. RBCs can reduce Cr(VI) intracellularly, and the resulting Cr(III) can be released to systemic circulation (to be absorbed by other tissues) after RBCs are broken down.

- Background uptake and distribution of dietary and drinking water chromium (Cr(III) and/or Cr(VI)) not administered or controlled in the bioassay.

Additional details are provided in Section 3.1 (Pharmacokinetics) and Appendix C.1.

Elevated chromium concentrations in red blood cells (RBCs) is a strong indicator that Cr(VI) was absorbed in the GI tract unreduced and was not subsequently reduced by the liver during first-pass metabolism. Uptake and reduction of Cr(VI) by RBCs is rapid, and the resulting Cr(III) in red blood cells is bound to hemoglobin and/or diffuses out of the RBC slowly. Therefore, elevated RBC chromium persists longer relative to plasma chromium levels following systemic Cr(VI) absorption. Based on analyses of the RBC:plasma ratios of exposed and unexposed rodents from the NTP (2008, 2007) studies (see Appendix C.1.2), general assumptions were made when interpreting animal studies for hazard identification and MOA:

- At oral *ad libitum* doses below 1 mg/kg-d, Cr(VI) is absorbed by the GI tract, but most Cr(VI) absorbed by the GI tract is reduced to Cr(III) by the liver (and to a lesser extent, plasma and RBCs in the portal vein). At these low doses the GI tract and liver are exposed to Cr(VI), but exposure to other systems may be low and highly variable. There is high uncertainty as to whether other systemic tissues receive consistent exposure to Cr(VI) at these doses across all the studies. Therefore, inconsistent pharmacokinetic and toxicological results among studies for doses below 1 mg/kg-d are to be expected.

- At oral *ad libitum* doses greater than or equal to 1 mg/kg-d, Cr(VI) is absorbed by the GI tract, exceeds the reducing capacity of the liver, and is widely distributed to systemic tissues (e.g., kidney, lung, brain). Exposure to systemic tissues may still be highly variable, and there may be some inconsistencies in dose-response between studies.

- For oral gavage doses at any level, Cr(VI) is widely distributed to systemic tissues, and results in significantly higher internal doses than dietary and drinking water exposure. This is because the gavage route greatly condenses the timescale of an exposure, surpassing gastric reduction capacity (*ad libitum* exposures are distributed over a 24-hour period, whereas gavage occurs over a very short period).

- Injection studies (intravenous or intraperitoneal) will expose systemic tissues to significantly greater levels of Cr(VI) than oral gavage studies because there is not a first-pass effect (reduction of Cr(VI) in the stomach and liver). Following injection, there will also be (temporarily) more Cr(VI) available in the plasma prior to uptake to RBCs.

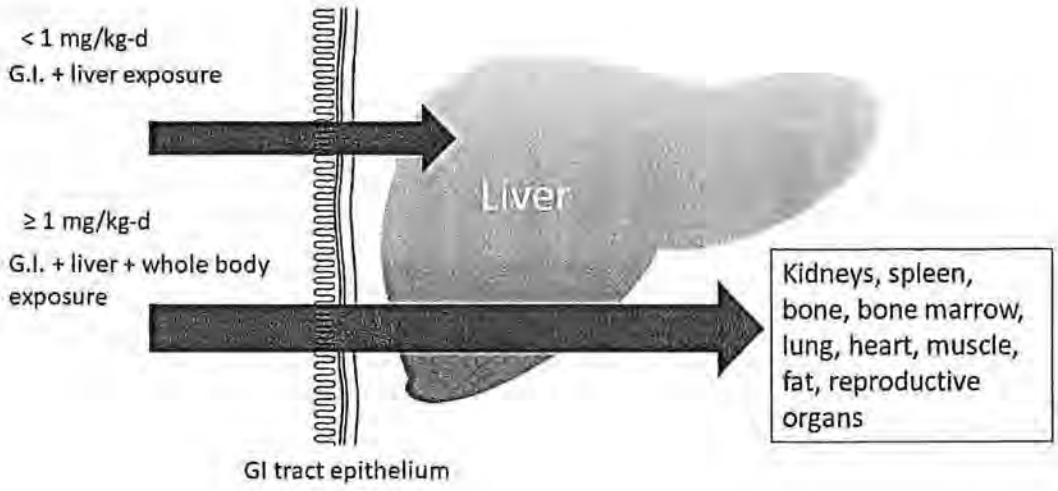

Figure ES-1. General assumptions regarding absorption and distribution of Cr(VI) ingested by rodents during *ad libitum* drinking water or dietary bioassays. At doses <1 mg/kg-d, it is assumed that Cr(VI) is absorbed by the small intestine, and most of the absorbed Cr(VI) is reduced by the liver. At doses ≥1 mg/kg-d, it is assumed that systemic absorption and distribution of Cr(VI) throughout the whole body will occur.

Despite uncertainties below 1 mg/kg-d, these assumptions were adequate for interpreting the current Cr(VI) database because most studies were conducted using doses greater than 1 mg/kg-d. The 1 mg/kg-d dose level was not used as a cutoff for the inclusion of data or to make inferences about low-dose extrapolation, but instead was used to generally evaluate the uncertainties of results. For studies in which the daily oral *ad libitum* dose was much greater than 1 mg/kg-d, there is higher certainty that Cr(VI) reaches target tissues. For studies in which the daily oral *ad libitum* doses were lower than 1 mg/kg-d, there is added uncertainty when analyzing data outside of the GI or liver, because it cannot be assumed that Cr(VI) reaches other target systemic tissues at high enough doses that can induce observable effects. In general, it can be assumed that ingested Cr(VI), even at low doses, will expose at least the surface GI epithelial cells if not the liver. For chronic exposure collection periods of the NTP (2008) distribution study (collection days 182 and 371, with 2-day washout period), liver chromium concentrations were significantly elevated at all dose groups (including <1 mg/kg-d) in rats and mice.

COACHELLA VALLEY WATER DISTRICT
Established in 1918 as a public agency

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December 19, 2022

VIA REGULATIONS.GOV:

U.S. Environmental Protection Agency
EPA Docket Center
EPA-HQ-ORD-2014-0313,
Mail Code 28221T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear U.S. Environmental Protection Agency:

Subject: Comment Letter – Draft IRIS Toxicological Assessment of Hexavalent Chromium [Cr(VI)]

The Coachella Valley Water District (CVWD) appreciates the opportunity to comment along with other stakeholders who may be affected by the Environmental Protection Agency's (EPA) Integrated Risk Information System (IRIS) recommendation to implement the proposed Draft IRIS Assessment of Hexavalent Chromium [Cr(VI)]. CVWD provides domestic water, wastewater, recycled water, irrigation/drainage, regional stormwater protection and groundwater management services to a population of about 270,000 throughout the Coachella Valley.

CVWD has reviewed the subject assessment and believe it does not reflect the findings of numerous peer reviewed studies, including those listed in the enclosure, that were completed following the 2008 National Toxicology Program (NTP) rodent study EPA has used to support the draft conclusions in the subject assessment. These more recent studies clearly support a cytotoxic mode of action (MOA) for Cr(VI) ingested by the rodents used in the NTP study rather than the EPA assumed mutagenic MOA. As such, these studies clearly support a threshold dose response rather than the assumed default linear dose response for Cr(VI) used in the assessment. These incorrect assumptions result in a presumed Cr(VI) ingestion risk, as illustrated by the estimated oral cancer slope factor included in the subject assessment, that is orders of magnitude greater than what is supported using the more recent toxicological studies.

We have included examples below of some key errors in the assessment for your consideration:

1. EPA incorrectly scored industry MOA studies low based on a belief that these studies did not use high enough Cr(VI) levels to induce the assumed mutagenic response even though the levels used in these MOA studies matched levels in studies EPA uses to support their assumed mutagenic MOA.

2. EPA incorrectly points to in vivo genotoxicity studies that inject Cr(VI) directly into rodent blood to support this mutagenic MOA assumption and discounts studies that show rodent Cr(VI) exposure through ingestion had no mutagenic response and then bases its' risk estimate on the NTP study that exposed rodents to Cr(VI) by ingestion, not injection.

3. EPA ignores clear evidence that a Cr(VI) level of 180 milligrams per liter (mg/L) or 180,000 micrograms per liter (ug/L) is at or near the maximum possible dose for rodents in drinking water studies because higher Cr(VI) doses reduces water consumption and causes stomach ulcers which introduces unacceptable confounding variables for these studies.

4. EPA incorrectly argues that total chromium (Cr) found in villi supports tumor formation in these cells rather than stem cells in the crypt attempting to explain away findings that show there is no correlation between tissue Cr levels and tumors and ignores the fact that rats had similar tissue Cr levels as mice but no similar tumors.

5. EPA did not use the fit for purpose process to evaluate a substantial number of more recent toxicological studies that would not support an assumed mutagenic MOA prior to discounting these studies.

Your consideration of the enclosed comments is appreciated. If you have any questions, please contact me at (760) 398-2651 extension 2286.

Sincerely,

Steve Bigley
Director of Environmental Services
Enclosure/1/as

RM: ms\Env\2022\December\CVWD Response Draft IRIS Tox Assessment of Cr(VI)
File: 0022.114.32.4

ENCLOSURE 1

Hexavalent Chromium Toxicology References

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U.S. Environmental Protection Agency
Office of Research and Development
Center for Public Health and Environmental Assessment
EPA Docket Center (ORD Docket) Mail Code: 28221T
1200 Pennsylvania Avenue NW
Washington, DC 20460

Re: **Docket ID No. EPA-HQ-ORD-2014-0313**
Comments on the Draft Integrated Risk Information System (IRIS) Toxicological Review of Hexavalent Chromium

The American Chemistry Council's (ACC) Hexavalent Chromium [Cr(VI)] Panel submits the following comments on EPA's Draft Integrated Risk Information System (IRIS) Toxicological Review of Hexavalent Chromium (Draft IRIS Assessment) as it relates to the oral carcinogenicity of Cr(VI). ACC and its members are committed to product stewardship, protection of human health and the environment, and the development of relevant scientific data and information to support sound science- and risk-based assessments and regulatory standards.

ACC appreciates the opportunity to submit comments on EPA's Draft IRIS Assessment of Cr(VI). As detailed below, the Draft IRIS Assessment contains a number of deficiencies and does not represent best available science. Moreover, it does not comport with EPA's Information Quality Act (IQA) Guidelines or Guidelines for Carcinogenic Risk Assessment because the Draft IRIS Assessment is not "accurate, reliable, and unbiased" and does not weigh the evidence properly in reaching conclusions about the human carcinogenic potential of Cr(VI) typical drinking water levels. Finally, it does not meet the scientific requirements of the Safe Drinking Water Act (SDWA) and should not be used as the basis for drinking water standards.

The Cr(VI) Panel sponsored a decade of state-of-the-art research building upon 2-year drinking water studies conducted by the National Toxicology Program (NTP) in 2008 that found very high levels of Cr(VI) in mice caused small intestine tumors. Those NTP studies could not predict how tumors occurred, how to extrapolate high dose observations to lower, naturally occurring levels in drinking water, or whether such high dose findings are of biological relevance to humans. Thus, research conducted since then was, among other things, specifically designed to examine the mode of action (MOA), meaning how Cr(VI) can cause cancer at the cellular level of an organism.

This decade of MOA research resulted in the publication of over 30 peer-reviewed studies in respected journals in the field of toxicology, such as *Toxicological Sciences* and *Environmental and Molecular Mutagenesis*, and provides critical information, including:

- data at more realistic dose levels,
- physiologically-based pharmacokinetic (PBPK) models that account for differences in gastrointestinal (GI) anatomy and physiology between rodents and humans, and
- refines risk assessment extrapolations from the high doses that caused cancer in rodents to environmentally-relevant exposures in humans.

Also noteworthy for consideration is that the recent research:

- Aligns with EPA Guidelines for Carcinogen Risk Assessment

  The MOA research provides the information and quantitative data that EPA prefers for cancer risk assessment in accordance with the Agency's Guidelines for Carcinogen Risk Assessment.

- Received awards from the Society for Toxicology

  We note that five of the scientific papers published as a result of the MOA research received awards for "Best Published Paper Advancing the Science of Risk Assessment" from the Society of Toxicology (SOT) Risk Assessment Specialty Section.

ToxStrategies, the technical experts that conducted the MOA research program, submitted separate comments to the docket (ToxStrategies Comments) which ACC fully endorses. We have several key concerns with the Draft IRIS Assessment (including concerns that are highlighted in more detail in the ToxStrategies Comments):

EPA's Draft IRIS Assessment is not consistent with other authoritative bodies that have considered the weight of evidence and concluded that threshold-based safety criteria are protective against both cancer and non-cancer health effects

EPA's Draft IRIS Assessment claims that a mutagenic mode of action is "sufficiently supported in (laboratory) animals" and "relevant to humans." This claim is not supported by the available research. In fact, several authoritative bodies that have considered the weight of evidence for Cr(VI) have concluded that tumors from oral exposure are threshold and have therefore used non-linear risk assessment approaches to derive safe exposure levels. Thus, the Draft IRIS Assessment is not aligned with other scientific and regulatory agencies across the world.

Each of these authoritative bodies found the weight of the evidence supported the conclusion of the MOA research that Cr(VI) does not operate by a mutagenic mode of action in the small intestine, and instead operates in the small intestine by a cytotoxic mode of action, and thus drinking water containing typical environmental levels of Cr(VI) would not be expected to cause the development of intestinal tumors in humans.

Specifically:

- **The World Health Organization (WHO)** – The WHO in 2020 finalized its background document recommending retaining the current WHO guideline value for total chromium of 50 parts per billion (ppb) (50,000 ppt) based on the "newer, high-quality data from chronic drinking water carcinogenicity studies."[1]
- **Health Canada** – In 2018, Health Canada issued a final maximum acceptable concentration of 50 ppb (50,000 ppt) for total chromium, concluding that the weight of evidence, including the peer-reviewed published MOA studies, supports a non-mutagenic, threshold MOA for hexavalent chromium-induced intestinal tumors.[2]
- **The Food Safety Commission of Japan** – Japan's Food Safety Commission concluded in 2019 that a threshold could be established for chromium in drinking water, and that currently available science would support a safe level in drinking water in the range of 30-60 parts per billion (30,000-60,000 ppt).[3]

Additionally, as noted in the ToxStrategies Comments, not only is EPA's linear no-threshold cancer slope factor approach inconsistent with the findings and conclusions of many other scientists and authoritative bodies, but it is also inconsistent with published PBPK models indicating that ~90% of Cr(VI) ingestion at environmental levels is reduced to trivalent chromium [Cr(III)] in the stomach, indicating that very little Cr(VI) enters the intestinal tract. As such, there is strong pharmacokinetic evidence against linear risk within typical environmental exposure levels (e.g., ≤100,000 ppt).

EPA's Draft IRIS Assessment would lead to an extremely low drinking water standard

As noted above, Health Canada and the WHO have set drinking water standards protective of cancer equivalent to 50,000 parts per trillion. In contrast, EPA's use of a linear no-threshold cancer slope factor would correspond to a drinking water value of 35 parts per trillion (0.035 parts per billion) in the EPA Regional Screening Level (RSL) tables. This is nearly 3,000 times lower than EPA's current drinking water standard (maximum contaminant level) of 100 parts per billion for total chromium, which assumes 100 percent Cr(VI) in the water. With average groundwater concentrations in the US ranging from 1-5 parts per billion, e.g. 1,000 – 5,000 parts

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[1] Chromium in drinking-water. Background document for development of WHO Guidelines for drinking-water quality. Geneva: World Health Organization; 2020 (WHO/HEP/ECH/WSH/2020.3 at 24). Microsoft Word - GDWQ.2ndEdit.Chromium.doc (who.int)

[2] Health Canada (2016). Guidelines for Canadian Drinking Water Quality: Guideline Technical Document — Chromium. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. (Catalogue No H144-36/2017E-PDF). https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-chromium.html

[3] Food Safety Commission of Japan, Hexavalent chromium (Contaminants), Food Safety, 2019, Volume 7, Issue 2, Pages 56-57, Released on J-STAGE June 28, 2019, Online ISSN 2187-8404 https://doi.org/10.14252/foodsafetyfscj.D-1900002; Hexavalent chromium (Contaminants) (jst.go.jp)

per trillion,[4] use of the EPA cancer slope factor approach would falsely imply that over half the water supplies in the US pose a risk to public health.

EPA's analysis fails to seriously consider the state-of-the-art MOA research and the plausibility of a non-mutagenic mode of action for Cr(VI)-induced tumors in the small intestine

EPA ignored evidence for thresholds in the NTP (2008) cancer bioassay

As noted in more detail in the ToxStrategies Comments, the EPA Guidelines for Carcinogen Risk Assessment state that the use of mode of action in the assessment of potential carcinogens "is a main focus" of the cancer guidelines.[5] As discussed therein, MOA analysis begins with clues from the chronic bioassays. The single tumor location in each species, the nonlinear dose-response, the late tumor onset, and high incidence of cytotoxicity-induced regenerative hyperplasia in the small intestine suggest that the tumors in the NTP bioassay were the result of a non-genotoxic MOA. The 2008 NTP cancer bioassay results provided initial evidence that the MOA for the observed tumors might be non-mutagenic. Furthermore, the clear evidence for intestinal diffuse epithelial hyperplasia in mice (but not rats) foretold the eventual tumor outcome in the NTP 2-year bioassay, e.g. evidence in mice but not rats. In the years since the NTP report, the targeted MOA research has provided significant support for a non-mutagenic MOA.

EPA inappropriately applied hazard identification design criteria to genotoxicity studies that were designed to examine the mode of action

In the years since the NTP bioassays were published, approximately 16 *in vivo* genotoxicity assays have been published that elucidate the mode of action of Cr(VI)-induced intestinal tumors in mice and oral tumors in rats. While EPA prioritized these studies for additional review, EPA scored all 16 *in vivo* genotoxicity assays as "low confidence." The Draft IRIS Assessment states that the low ratings were largely due to not using a maximum tolerated dose (MTD) and/or lack of toxicity in the target tissue, citing OECD guidelines.

As noted in the ToxStrategies Comments, this reflects a misunderstanding of risk assessment and use of genotoxicity data for informing MOA, as well as a misunderstanding of OECD guidelines along with their application in MOA studies. OECD test guidelines do not require induction of target tissue toxicity, and EPA has mistakenly stated this throughout the Draft IRIS Assessment. OECD guideline requirements for hazard assessment dose selection are testing to an MTD and evidence that the test article reaches the target tissue. When target tissue toxicity is observed, there is added evidence of target tissue exposure, but dosing is not intended to achieve target tissue toxicity per se. Thus, this factor should be eliminated as a basis for downgrading a study in EPA's scoring process.

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[4] Typical US water supplies contain low levels of naturally-occurring hexavalent chromium.

[5] U.S. EPA. 2005. Guidelines for carcinogen risk assessment, epa/630/p-03/001f. Risk Assessment Forum: US Environmental Protection Agency, Washington, DC.

Furthermore, as noted in the ToxStrategies Comments, testing to an MTD is important for hazard identification which is the focus of OECD guidelines, but is not the basis for dose selection for genotoxicity studies for MOA. In the case of Cr(VI), both *in vitro* and *in vivo* genotoxicity tests already demonstrate there is a genotoxicity hazard for Cr(VI) when tested to OECD guidelines involving high doses/concentrations in some cases only achieved using non-relevant routes of exposure (e.g., intraperitoneal injection). In contrast, genotoxicity studies for MOA are designed to examine whether the dose-response for genotoxicity corresponds to the dose-response of the tumors.

As also noted in the ToxStrategies Comments, the importance of distinguishing between genotoxicity studies for hazard identification and MOA analysis was discussed by EPA in its 2007 *Framework for Determining a Mutagenic Mode of Action for Carcinogenicity: Using EPA's 2005 Cancer Guidelines and Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (MOA Framework).[6] Although never finalized, the information in that document is still informative for how genotoxicity data should be evaluated for risk assessment. Therein, EPA states, "[f]or a mutagenic MOA, the key issue is whether the observed dose-response relationships of the initial mutagenic events correspond with the dose-response relationship for tumors."[7] Such an analysis requires using doses (and routes of exposure) relevant to those where tumors were observed.

The MOA Framework further states that "[d]ose-response data may also suggest that the chemical does not act by a mutagenic MOA. For example, if mutations occur only above doses that produce cytotoxicity or other impaired cellular functions, the observed mutations may be determined to be secondary to the other toxic effects. Similarly, since *in vivo* mutagenic activity would generally be expected at doses lower than those that result in tumors, the absence of mutagenicity at doses lower than those that cause cancer may suggest that mutagenicity is a secondary effect and, therefore, may suggest an MOA other than a mutagenic MOA."[8]

EPA inappropriately concluded that the concentrations used in several in vivo target tissue genotoxicity studies were too low to inform MOA

As noted in the ToxStrategies Comments, studies have shown that most genotoxic carcinogens induce genotoxicity at lower exposure levels than tumorigenicity, and that cases where this is not true implicate non-genotoxic MOAs.[9,10] Experts of the International Workshops on Genotoxicity

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[6] U.S. EPA. 2007. Framework for determining a mutagenic mode of action for carcinogenicity: Using EPA's 2005 cancer guidelines and supplemental guidance for assessing susceptibility from early-life exposure to carcinogens. US Environmental Protection Agency, Washington, DC. (EPA 120/R-07/002-A).

[7] Id. at Section 2.4.4.

[8] Id.

[9] Soeteman-Hernandez LG, Johnson GE, Slob W. 2015. Estimating the carcinogenic potency of chemicals from the in vivo micronucleus test. Mutagenesis.

[10] Thompson CM, Bichteler A, Rager JE, Suh M, Proctor DM, Haws LC, Harris MA. 2016. Comparison of in vivo genotoxic and carcinogenic potency to augment mode of action analysis: Case study with hexavalent chromium. Mutation Research/ Genetic Toxicology and Environmental Mutagenesis. 800-801:28-34.

Testing[11] have provided recommendations for the conduct of *in vivo* genotoxicity that conclude that such assays should ideally be conducted in tissues that: 1) have high cell turnover rate, 2) receive high doses of the parent compound or active metabolite, and 3) are a site of concern for carcinogenicity. In the case of oral exposure to Cr(VI), the oral cavity and duodenum with oral exposures meet these criteria.

Furthermore, as explained in the ToxStrategies Comments, the small intestine is one of the most proliferative tissues in the body, in part, because it is subject to physical and chemical insult from ingested material. Similarly, the oral mucosa is a highly proliferative tissue. As such, these tissues meet the criteria for genotoxicity tests to be conducted in tissues with high cell turnover.

EPA inappropriately concluded that the concentrations used in critical in vivo genotoxicity studies were not maximum tolerated doses, maximum feasible doses, or toxic to target tissue

As detailed in the ToxStrategies Comments, there is also evidence that the *in vivo* genotoxicity studies were conducted at or near MTDs. The 2007 NTP 90-day drinking water study reported overt toxicity in rodents exposed to 1000 mg/L sodium dichromate dihydrate (SDD; 350 ppm Cr(VI)). As such, 180 ppm Cr(VI) was selected as the MTD for the chronic bioassay. Considering that toxicity was observed in subchronic studies at 350 ppm Cr(VI), higher exposure to Cr(VI) causing frank gastrointestinal toxicity would not be suitable for assessing genotoxic potential. As such, the transgenic rodent (TGR) assay in Big Blue® rats exposed to 180 ppm Cr(VI) should be considered sufficient for assessing the potential for a mutagenic MOA in the oral mucosa.[12]

As discussed by ToxStrategies, OECD TG 488 allows for testing of exposure routes of most relevance for human exposure scenarios. Drinking water was considered the most relevant route of oral exposure to Cr(VI), consistent with the 2007 and 2008 NTP drinking water studies (i.e., NTP did not conduct gavage studies). Notably, rats exposed to 180 ppm Cr(VI) in the TGR assay consumed significantly less drinking water than control animals and exhibited significant decreases in bodyweight. As such, 180 ppm Cr(VI) is also likely near the maximum feasible dose by this route of exposure, and possibly MTD based on bodyweight reductions (even if due solely to reduced intake). As such, the TGR assay in Big Blue rats was conducted at sufficiently high enough concentrations to inform genotoxic risk by drinking water exposure.

Similar to rats, NTP selected 180 ppm Cr(VI) as the MTD for the chronic bioassay in female mice. Mice exposed to 180 ppm Cr(VI) exhibit significant reduction in water intake and

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[11] MacGregor JT, Frotschl R, White PA, Crump KS, Eastmond DA, Fukushima S, Guerard M, Hayashi M, Soeteman-Hernandez LG, Johnson GE et al. 2015. Iwgt report on quantitative approaches to genotoxicity risk assessment ii. Use of point-of-departure (pod) metrics in defining acceptable exposure limits and assessing human risk. Mutation Research/ Genetic Toxicology and Environmental Mutagenesis. 783:66-78.

[12] Thompson CM, Young RR, Suh M, Dinesdurage HR, Elbekai RH, Harris MA, Rohr AC, Proctor DM. 2015. Assessment of the mutagenic potential of Cr(VI) in the oral mucosa of big blue((r)) transgenic f344 rats. Environ Mol Mutagen. 56(7):621-628.

associated bodyweight reduction[13,14] indicating that 180 ppm Cr(VI) approaches MTD and maximal feasible doses via drinking water exposure. Moreover, 180 ppm Cr(VI) causes intestinal cytotoxicity and regenerative hyperplasia and changes in the crypt:villus ratio within 7 days of exposure.[15,16,17] Thompson et al. (2015) demonstrated increase in the number of enterocytes per crypt following only 7 days of exposure. As such, data indicate that 180 ppm Cr(VI) is toxic to the target tissue (i.e., intestine) in *in vivo* genotoxicity studies conducted in female mice exposed for 7 or more days.

Furthermore, as noted in the ToxStrategies Comments, although target tissue toxicity is not required for a valid genotoxicity study, the *in vivo* duodenal genotoxicity studies unequivocally induced intestinal toxicity. In the Draft IRIS Assessment, EPA indicates that Thompson et al. (2011) reported increased "duodenal hyperplasia" after 7 days of exposure. As such, EPA was aware that exposure up to 180 ppm Cr(VI) was toxic after 7 and 90 days of exposure.

Thus, EPA must reevaluate the genotoxicity studies with higher weighting based on ample evidence that several *in vivo* genotoxicity studies used concentrations high enough to inform the MOA based on target tissue toxicity, feasibility issues related to the palatability of Cr(VI) in drinking water, and at or near MTD values based on bodyweight reductions.

The Draft IRIS Assessment is not best available science and cannot be used to set regulatory standards under the Safe Drinking Water Act

The Draft IRIS Assessment must comport with Office of Management and Budget (OMB) and EPA IQA guidelines and must adhere to a rigorous standard of quality.[18] Congress enacted the Information Quality Act to "ensur[e,] and maximiz[e,] the quality, objectivity, utility and integrity of information … disseminated by Federal agencies" such as EPA.[19] The Draft IRIS

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[13] NTP. 2007. National toxicology program technical report on the toxicity studies of sodium dichromate dihydrate (CAS No. 7789-12-0) administered in drinking water to male and female f344/n rats and b6c3f1 mice and male balb/c and am3-c57bl/6 mice. NTP Toxicity Report Series Number 72, NIH Publication No 07-5964.

[14] Thompson CM, Proctor DM, Haws LC, Hebert CD, Grimes SD, Shertzer HG, Kopec AK, Hixon JG, Zacharewski TR, Harris MA. 2011. Investigation of the mode of action underlying the tumorigenic response induced in b6c3f1 mice exposed orally to hexavalent chromium. Toxicological Sciences. 123(1):58-70.

[15] O'Brien TJ, Ding H, Suh M, Thompson CM, Parsons BL, Harris MA, Winkelman WA, Wolf JC, Hixon JG, Schwartz AM et al. 2013. Assessment of k-ras mutant frequency and micronucleus incidence in the mouse duodenum following 90-days of exposure to cr(vi) in drinking water. Mutat Res. 754(1-2):15-21.

[16] Thompson et al 2011.

[17] Thompson CM, Wolf JC, Elbekai RH, Paranjpe MG, Seiter JM, Chappell MA, Tappero RV, Suh M, Proctor DM, Bichteler A et al. 2015. Duodenal crypt health following exposure to cr(vi): Micronucleus scoring, gamma-h2ax immunostaining, and synchrotron x-ray fluorescence microscopy. Mutation Research/ Genetic Toxicology and Environmental Mutagenesis. 789-790:61-66.

[18] OMB, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Government Agencies*, 67 Fed .Reg. 8452 (Feb. 22, 2002) (OMB IQA Guidelines); EPA, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency*, available at:https://www.epa.gov/sites/default/files/2020-02/documents/epa-info-quality-guidelines_pdf_version.pdf .

[19] Pub. L. No. 106-554. The Information Quality Act was developed as a supplement to the Paperwork Reduction Act, 44 U.S.C. §3501 et seq., which requires OMB, among other things, to "develop and oversee the implementation of policies, principles, standards, and guidelines to … apply to Federal agency dissemination of public information."

Assessment is "influential" scientific risk assessment information as defined by EPA's IQA Guidelines because it is a "[m]ajor work produc[t] undergoing peer review," and "will have ... a clear and substantial impact (i.e., potential change or effect) on important public policies or private sector decisions."[20] The Draft IRIS Assessment, therefore, must adhere to a rigorous standard of quality.[21] The substance of the information must be "accurate, reliable, and unbiased."[22] EPA must use the best available science and supporting studies, as well as "a 'weight-of-evidence' approach that considers all relevant information and its quality."[23]

Furthermore, EPA's Guidelines for Carcinogen Risk Assessment emphasize "a critical analysis of all the available information that is relevant to assessing the carcinogenic risk," rather than relying on default options as the starting point.[24] EPA's Guidelines also stress the importance of relying upon "common sense, reasonable applications of assumptions and policy, and transparency ... to avoid unrealistically high estimates."[25] "Otherwise, risk management decisions may be made on varying levels of conservatism, leading to misplaced risk priorities and potentially higher overall risks."[26]

With respect to MOA, EPA's Guidelines emphasize that "[w]eighing of the evidence includes addressing not only the likelihood of human carcinogen effects of the agent but also the conditions under which such effects may be expressed."[27] EPA should consider the possibility of other MOAs, noting that "different modes of action can operate in different dose ranges."[28] EPA should include "information on all of the modes of action ... to better understand how and when each mode acts, and which mode(s) may be of interest for exposure levels relevant to human exposures of interest."[29] EPA's Guidelines further state:

> A nonlinear approach should be selected when there are sufficient data to ascertain the mode of action and conclude that it is not linear at low doses and the agent does not demonstrate mutagenic activity or other activity consistent with linearity at low doses. Special attention is important when the data support a nonlinear mode of action but there is also a suggestion of mutagenicity. Depending on the strength of the suggestion of mutagenicity, the assessment may justify a conclusion that mutagenicity is not operative

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[20] EPA IQA Guidelines at 19-20; OMB IQA Guidelines at 8455.
[21] Quality includes objectivity, utility, and integrity.
[22] EPA IQA Guidelines at 22; OMB IQA Guidelines at 8453.
[23] EPA IQA Guidelines at 21. "In this approach, a well-developed, peer-reviewed study would generally be accorded greater weight than information from a less well-developed study that had not been peer-reviewed, but both studies would be considered." Id. at 26. The definition of best available science mirrors that articulated in *Chlorine Chemistry Council v. EPA*, 206 F.3d 1286 (D.C. Cir. 2000), referring to "the availability at the time an assessment is made." EPA IQA Guidelines at 23.
[24] Guidelines for Carcinogen Risk Assessment at 1-7.
[25] Id. at 5-2.
[26] Id. at 5-2 through 5-3.
[27] Id. at 1-12.
[28] Id. at 2-46.
[29] Id. at 2-47.

at low doses and focus on a nonlinear approach or alternatively, the assessment may use both linear and nonlinear approaches.[30]

EPA's Guidelines "emphasize the importance of weighing all the evidence in reaching conclusions about the human carcinogenic potential of agents."[31] Generally, no single study is dispositive. EPA must, therefore, use a cross-disciplinary approach in weighing the best available evidence, which includes available epidemiological data, animal data, mode of action, dosimetry and endpoint biology.

The SDWA requires that any determination to regulate a contaminant "be based on the best available public health information" using "the best available, peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices."[32] Unless the Draft IRIS Assessment is revised to correct the deficiencies identified above and in the ToxStrategies Comments and to comport with the requirements of the IQA and EPA's Guidelines, it will not meet the SDWA's scientific standards.

Conclusion

These comments only highlight some of the deficiencies of the Draft IRIS Assessment for hexavalent chromium. Please also see the detailed technical comments submitted to the docket by ToxStrategies. ACC urges EPA to:

- Reexamine the genotoxicity studies rated as "low confidence" due to EPA's unsupportable claims involving study design;
- Reevaluate the weight-of-evidence concerning the oral carcinogenicity of hexavalent chromium in light of the high-quality genotoxicity studies and other recent science published through the MOA research program; and
- Give appropriate consideration to alternative non-genotoxic modes of action and nonlinear risk assessment approaches, including reference dose based on precursor events, as done by other authoritative bodies.

Please let us know if you have any questions. Thank you for your consideration.

Sincerely,

Eileen Conneely

Eileen Conneely
Senior Director, Chemical Products & Technology

[30] Id. at 3-22 (emphasis in the original).
[31] Id. at 1-11.
[32] See 42 U.S.C. §§ 300g-1(b)(1)(B)(ii)(II), 300g-1(b)(3)(A).

American Water Works Association

Dedicated to the World's Most Important Resource™

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December 19, 2022

EPA Docket Center (ORD Docket)
Mail Code: 28221T
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460Washington, DC

FOR ELECTRONIC DELIVERY

RE: Draft IRIS Toxicological Review of Hexavalent Chromium, Docket No. EPA-HQ-ORD-2014-0313

Dear Sir or Madam,

The American Water Works Association (AWWA) appreciates the opportunity to comment on the "IRIS Toxicological Review of Hexavalent Chromium." This is a very important document for the U.S. Environmental Protection Agency's (EPA's) Safe Drinking Water Act (SDWA) program. AWWA has a specific interest in the toxicity of hexavalent chromium (Cr(VI)) when ingested orally. Water systems are charged with providing the communities they serve with safe and reliable drinking water service. In June 2020 EPA agreed in a settlement with Waterkeeper Alliance, LLC v EPA that was accepted by the U.S. District Court for the Southern District of New York, to consider proposing a primary drinking water standard based on the final IRIS Cr(VI) toxicological review.[1] The care with which EPA undertakes its work, including its preparation of this toxicological review must reflect the consequences of the analysis when it is applied by risk managers.

Observations on EPA Cancer Guidelines and Available Data

In reviewing the draft toxicological review, AWWA arrived at the following observations:

1. It is not clear that the draft analysis comports with established and current EPA policy guidance. EPA's Cancer Guidelines including supplemental memoranda direct agency staff to apply the agency's mode of action framework to determine the mutagenic mode of action for the chemical being analyzed through a weight-of-evidence evaluation. EPA did summarize a substantial body of data but ended that evaluation without demonstrating a mutagenic mode of action. Section 3.2.3.4 and Figure 3-16 do not present a basis to assert mutagenic toxicity when cytotoxicity could, and other researchers and regulatory agencies suggest is, the critical mode of action.

[1] Waterkeeper Alliance, LLC v EPA. 19 Civ. 899 (LJL) June 15, 2022.

AWWA comments to EPA in 2010 conveyed the concern that EPA was reviewing the toxicity of Cr(VI) with the *"**implicit** and critical assumption that mutagenicity / genotoxicity is the **primary mode of action** at dose of environmental concern."* [emphasis added][2] The current draft toxicological review continues to be constructed with this implicit assumption without a clear demonstration of the available evidence that this assumption is valid.

2. The data quality visualizations available through EPA's Health Assessment Workspace Collaborative (HAWC) referenced by the draft toxicological review illustrate EPA's reliance on studies that almost ubiquitously are "low-confidence" with respect to carcinogenicity via oral exposure."[3] The visualizations also succinctly summarize EPA's assessment of the studies underpinning its characterization. HAWC visualizations with regard to Cr (VI) mechanistic studies were either not prepared or are not available to the public.[4]

3. The review appears to systematically dismiss data collected and funded by "industry" as though the source of funding inherently made the data suspect. If federal agency analyses are to work under the construct that data is suspect based on who paid for the data, then the data that supports all of the major federal chemical approval programs are flawed. "Industry" funded data currently underpins pharmaceutical approval by the Food and Drug Administration, pesticide registration by EPA, and new chemical registration by EPA.

   In 2010 AWWA recommended that EPA consider research organized through ToxStrategies.[5] Now in 2022, the breadth of work undertaken through this collaborative research program is even more substantial.[6] This work has been received by peer-review journals, professional conference organizers, and relevant experts as being of high quality. Yet, it does not appear that the draft toxicological review seriously contemplates considering the import of this research portfolio.

Comparison with Health Canada Cr(VI) Toxicological Review

Comparison with analysis by Health Canada suggests that EPA's draft toxicological review is either flawed or overly conservative. The Health Canada analysis took advantage of the same research used to support EPA's draft toxicological review, yet Health Canada's analysis results in a maximum acceptable concentration (MAC) of 50 µg/L, a value more than at 1,400 times higher than the value generated by the draft EPA analysis. [7]

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[2] AWWA, Comment letter regarding "Draft Toxicological Review of Hexavalent Chromium: In Support of Summary Information on the Integrated Risk Information System (IRIS) (Docket ID. No. EPA-HQ-ORD-2010-0540). (November 18, 2010).

[3] EPA. Health Assessment Workspace Collaborative, Cr(VI) (2017)(Draft).

[4] EPA. Health Assessment Workspace Collaborative, Cr(VI) (mechanistic) (2018) at https://hawc.epa.gov/assessment/100500006/.

[5] AWWA, Comment letter regarding "Draft Toxicological Review of Hexavalent Chromium: In Support of Summary Information on the Integrated Risk Information System (IRIS) (Docket ID. No. EPA-HQ-ORD-2010-0540). (November 18, 2010).

[6] Toxstrategies. https://toxstrategies.com/publication-topic/hexavalent-chromium/. (Available 12/12/2022).

[7] Health Canada, Chromium in Drinking Water, March 2016. Available at https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-chromium-profile.html on April 9, 2019.

Importance of Cr(VI) Occurrence in Drinking Water

We know that Cr(VI) is present in drinking water at nanogram and microgram per liter concentrations. The draft toxicological review touches on Cr(VI) occurrence but does not adequately convey the importance of recognized occurrence to subsequent analysis. In the third cycle of the Unregulated Contaminant Monitoring Rule (UCMR3), 4,919 water systems participating in a nationally representative sample tested finished water for Cr(VI).[8] Ninety percent (n = 4,401) public water systems (PWSs) observed Cr(VI) at detectable levels (i.e., greater than 0.03 µg/L). Cr(VI) is present in both groundwaters and surface water; it is present in source waters used by systems of all sizes, but is a particularly relevant as a contaminant for small, groundwater systems. In most instances Cr(VI) occurrence is a product of the minerals water comes in contact with, not contamination from anthropogenic sources. Assuming EPA follows usual practice in calculating occurrence, the draft toxicological review EPA has provided for public review, would infer that that roughly 90% of the public water systems in the United States have Cr(VI) levels above the level of health concern (i.e., a drinking water health advisory level). A thorough review by the SAB is critical and particularly so given the potential implications for communities across the United States.

Reducing concentrations of Cr(VI) in potable water is challenging and expensive; communities treating to remove Cr(VI) should be those where there is a meaningful opportunity to protect human health. When PWSs must reduce Cr(VI) in source water, options are limited to (1) abandoning and removing sources (e.g., water wells), (2) treating with ion exchange, (3) reduction, oxidation, coagulation, filtration treatment, or (4) membrane treatment.[9] Abandonment/removal of available water sources is becoming less of an option as population migration and climate change increasingly tax available water supplies and development of new supplies is challenging (e.g., new wells in declining aquifers, inability to obtain permit approvals for surface water impoundments, cost of desalination, and public acceptance / policy challenges associated with potable reuse). Ion exchange and membrane treatment are very expensive treatment options with difficult to dispose waste streams.[10] As there is rarely attributable anthropogenic sources of Cr(VI) contamination the cost of new water supplies and water treatment are paid for through water rates.[11]

EPA is not considering Cr(VI) in ongoing drinking water standard formulation. EPA has a statutory duty to consider the management of co-occurring contaminants in setting primary standards.[12] Currently there is limited research available for EPA to utilize were it to add managing risk associated with Cr(VI) to its rulemaking analyses, raising the prospect of mistakes in risk management decision-making.

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[8] UCMR3 Fact Sheet: Searching for Emerging Contaminants in Drinking Water (pdf) (May 2012, EPA 815-F-12-002)
[9] California Waterboard, Division of Drinking Water. Request for External Scientific Peer Review of the Scientific Basis of Proposed Hexavalent Chromium Maximum Contaminant Level Best Available Technologies. August 10, 2021.
[10] Chad J. Seidel,Issam N. Najm,Nicole K. Blute,Christopher J. Corwin,XueyiNg Wu. National and California treatment costs to comply with potential hexavalent chromium MCLs. AWWA Journal. (June 2013, https://doi.org/10.5942/jawwa.2013.105.0080)
[11] John A. Izbicki, Michael Wright, Whitney A. Seymour, R. Blaine McCleskey, Miranda S. Fram, Kenneth Belitz, Bradley K. Esser. Cr(VI) occurrence and geochemistry in water from public-supply wells in California. Applied Geochemistry. https://doi.org/10.1016/j.apgeochem.2015.08.007)
[12] 42 U.S. Code § 300g–1(b)(3)(C)

Critical Question: Is this Toxicological Review Fit-to-Purpose?

The SAB review needs to answer the critical question of whether this toxicological review is fit for purpose. The SAB faces an unenviable task, reviewing over a few months more than 1,100 pages of analysis prepared by a team of almost 50 contributors over almost a decade. Moreover, EPA is asking for discrete answers to a list of 30 carefully prescribed questions. AWWA asks that the SAB answer two more important questions that underpin virtually every other charge question. Please provide (1) a prioritized list of critical errors and analytical gaps or shortfalls and (2) a prioritized list of corrective measures EPA should take so that the final toxicological review is fit for purpose.

AWWA is particularly concerned that the final toxicological review meets the needs of EPA's Office of Water. As currently drafted, the toxicological review implies a health concern for a concentration of Cr(VI) in water that is almost 3,000 times lower than the current total chromium maximum contaminant level and does so largely based on a single pair of animal studies where the lowest doses tested were nearly 300,000 times higher than the alleged level of concern in humans exposed via drinking water ingestion. AWWA has previously commented to EPA that a fit-for-purpose analysis was necessary.[13,14] The current draft does not demonstrate that EPA has given serious consideration to AWWA's prior request.

AWWA greatly appreciates the work of the SAB. While you are uncompensated volunteer experts, you serve as the only external peer review of this toxicological review, which will substantively inform EPA's final document. The SAB's work comes at a time when this document has not likely received adequate internal review. Currently EPA's limited staffing and resources for toxicological analysis are focused on other agency priorities, including statutory duties to revise processes under the Toxic Substances Control Act (TSCA), preparing analyses of the risk of a suite of per- and polyfluoroalkyl substances (PFAS), and supporting other administration priories and rulemakings. Across all of these program areas EPA is also plagued by the loss of senior scientists with years of practical experience in risk characterization. While there is not a record of internal agency review, only four federal agencies provided any comments on the draft toxicological review. Consequently, the SAB review may be the only focused, federal government-sponsored review this draft document receives.

[13] AWWA. Comment letter regarding « Availability of the Systematic Review Protocol for the Hexavalent Chromium (Cr(VI)) Integrated Risk Information System (IRIS) Assessment, Docket ID No. EPA–HQ–ORD–2014–0313 » (April 29, 2019).

[14] AWWA. Comment letter regarding "Assessment Materials for Hexavalent Chromium and Inorganic Arsenic Docket ID: EPA-HQ-ORD-2014-0313" (June 25, 2014).

AWWA appreciates the opportunity to offer comment on EPA's draft toxicology review, and we look forward to opportunities to engage as the analysis of the toxicology of Cr(VI) is brought to completion. If you have any questions regarding this correspondence or if AWWA can be of assistance in some other way, please contact Steve Via at svia@awwa.org or 202-326-6130.

Best regards,
ON BEHALF OF THE AMERICAN WATER WORKS ASSOCIATION

Signed Dec. 19, 2022

G. Tracy Mehan, III
Executive Director for Government Affairs

cc: John Morris, Hexavalent Chromium Review Panel Chair
Radhika Fox, EPA/OW
Wayne Cascio, EPA/ORD/CPHEA
Jennifer McLain, EPA/OW/OGWDW
Betsy Behl, EPA/OW/OST
Hanna Holsinger, EPA/OW/OGWDW
Suhair Shallal, EPA/SAB
Catherine Gibbons, EPA/ORD/CPHEA
Alan Sasso, EPA/ORD/CPHEA

Who is AWWA?

The American Water Works Association (AWWA) is an international, nonprofit, scientific and educational society dedicated to providing total water solutions assuring the effective management of water. Founded in 1881, the Association is the largest organization of water supply professionals in the world. Our membership includes more than 4,500 utilities that supply roughly 80 percent of the nation's drinking water and treat almost half of the nation's wastewater. Our 50,000-plus total membership represents the full spectrum of the water community: public water and wastewater systems, environmental advocates, scientists, academicians, and others who hold a genuine interest in water, our most important resource. AWWA unites the diverse water community to advance public health, safety, the economy, and the environment.

Comments on the Draft *IRIS Toxicological Review of Hexavalent Chromium [Cr(VI)]*

12/19/22

ToxStrategies

Innovative solutions
Sound science

Comments on the Draft *IRIS Toxicological Review of Hexavalent Chromium [Cr(VI)]*

12/19/22

PREPARED FOR:
American Chemistry Council
700 2nd Street NE
Washington, DC 20002

PREPARED BY:
ToxStrategies LLC
23501 Cinco Ranch Blvd
Suite B226
Katy, TX 77494

Table of Contents

List of Figures

List of Tables

Executive Summary

Following the peer-review of EPA's (2010) draft assessment on hexavalent chromium (Cr(VI)) (ERG 2011), it was our expectation that EPA would give careful consideration to new mode of action (MOA) research in preparing a revised risk assessment for Cr(VI). It was also anticipated that EPA would follow its 2005 *Guidelines for Carcinogen Risk Assessment* that clearly supports the use of MOA research over default risk assessment methods.

In contrast to the linear no-threshold approach in EPA's new draft assessment, there is a decade of research specifically designed to inform the MOA of the tumors observed in the 2-year cancer bioassay on Cr(VI) that supports nonlinearities in the oral carcinogenicity of Cr(VI), and therefore, threshold-based approaches for the risk assessment of Cr(VI) should have been evaluated thoroughly. This research was conducted at highly regarded contract research organizations (CROs) and published in some of the most respected journals in the field of toxicology that are affiliated with professional societies.[1] As shown herein, EPA's assessment is not consistent with other regulatory authorities and scientists who have reviewed the available data and concluded that threshold-based safety criteria are protective against both cancer and noncancer health effects of Cr(VI).

These comments focus primarily on the assessment of oral exposure to Cr(VI) in the External Review Draft of *IRIS Toxicological Review of Hexavalent Chromium [Cr(VI)]* (U.S. EPA 2022), which rely primarily on animal bioassay data, except where EPA has used worker data, to inform the oral assessment of Cr(VI). Regarding the oral carcinogenicity of Cr(VI), we do not dispute the findings in the NTP (2008) cancer bioassay; rather, these comments focus on EPA's assessment of the MOA evaluation and assessment. The comments are organized in three sections. Section 1 addresses EPA's six Draft Charge Questions. Section 2 contains line-item comments on EPA's draft assessment with reference to specific pages and line numbers. Section 3 contains comments on a series of stand-alone topics relevant to the assessment that serve as additional support to Sections 1 and 2.

At the outset of these comments, it is critical to understand the Cr(VI) concentrations used in the NTP (2008) cancer bioassay relative to typical Cr(VI) water concentrations to which humans are exposed. The maximum contaminant level (MCL; i.e., safe water concentration) for total chromium in water is 100,000 ppt (U.S. EPA, 1991). Notably, that value was based on a drinking-water study wherein rats were exposed to Cr(VI) (Mackenzie et al., 1958), and thus, the MCL was developed to be protective of exposure to Cr(VI) (https://www.epa.gov/sdwa/chromium-drinking-water). Based on water samples collected by EPA under the Unregulated Contaminant Monitoring Rule (UCMR3), Appendix C of U.S. EPA (2022) lists the 50th and 95th percentile Cr(VI) concentrations in large public water systems as 0.096 and 1.9 ppb, respectively, or ~100 and ~2000 ppt Cr(VI). By comparison, the lowest concentration of Cr(VI) in drinking water that caused

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[1] For example: the Society of Toxicology's *Toxicological Sciences* and the Environmental Mutagenesis and Genomics Society's *Environmental and Molecular Mutagenesis*.

cancer in mice was 20,000,000 ppt. The safe drinking-water concentration suggested in the U.S. EPA (2022) assessment is well below levels of Cr(VI) in the U.S. drinking-water supply, at 35 ppt. These concentrations are summarized in **Table 1** and **Figure 1** (below). Based on these comparisons, the U.S. EPA (2022) draft assessment therefore suggests that over half of the water samples collected in the U.S. contain Cr(VI) levels that pose a risk to public health. The comments herein highlight critical flaws in the U.S. EPA (2022) assessment that undermine this conclusion.

Table 1. Cr(VI) water concentrations to know

Cr(VI) Concentration, ppt (ppm)	Descriptor	Reference	~Fold >35 ppt
180,000,000 (180)	Highest concentration tested in the NTP (2008) cancer bioassay (tumors in mice & rats)	NTP (2008)	5,142,857
20,000,000 (20)	Lowest carcinogenic concentration in the NTP (2008) study (tumors in male mice only)	NTP (2008)	571,429
10,000,000 (10)	Second-lowest concentration in the NTP (2008) study (no tumor increases in rats or mice)	NTP (2008)	285,714
5,000,000 (5)	Lowest concentration in the NTP (2008) cancer bioassay (no tumor increases in rats or mice)	NTP (2008)	142,857
100,000 (0.1)	Current MCL (previous safe level)		2,857
2,000 (0.002)	95th Percentile concentration in large drinking-water sources in the US	UCMR3/ USEPA (2022)	57
100 (0.0001)	Median concentration in groundwater and drinking-water sources in the US (half the water sources exceed this level)	UCMR3/ USEPA (2022)	3
35 (0.000035)	This is the new concentration that EPA believes is safe	USEPA (2022)	NA

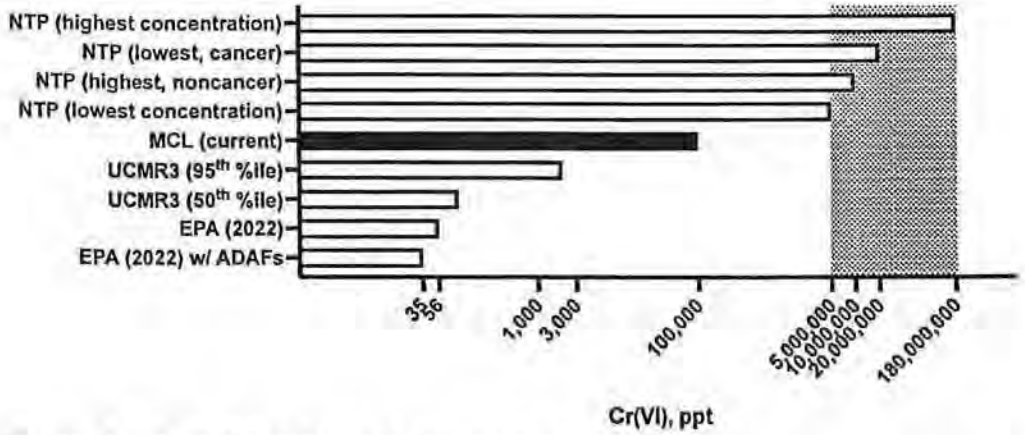


Figure 1. Plot of notable Cr(VI) water concentrations
The two shortest bars at the bottom represent the safe drinking-water levels based on the EPA (2022) draft Cr(VI) assessment. The black bar represents the current safe drinking-water level based on the current IRIS reference dose

(RfD) for Cr(VI). The stippled region on the far right marks the range of Cr(VI) concentrations used in the NTP (2008) cancer bioassay, with the darker region indicating the concentration range where significant increases in tumors were observed. Note: x-axis is on log scale.

The key findings from our review are listed here and discussed in detail in the balance of this review:

- EPA's analysis of the NTP (2008) cancer bioassay suffers from mis- and over-interpretation of the available data.
- EPA's literature review is biased and incomplete.
- EPA's study evaluation is inconsistent and data integration incomplete.
- EPA's analysis and integration of *in vivo* genotoxicity studies and overall MOA evaluation are flawed and incomplete.
- EPA's linear no-threshold value is not consistent with the available science and is out of step with several authoritative evaluations on Cr(VI), to wit:
    - World Health Organization (2020)
    - Health Canada (2016)
    - Texas Commission on Environmental Quality (2016)
    - Food Safety Commission of Japan (2018).

1 Section 1. Response to EPA's Draft Charge Questions

1.1 Draft Charge Question 1. Literature

Please comment on whether the literature search strategy and screening criteria for Cr(VI) are appropriate and clearly described. Please identify additional peer-reviewed studies of Cr(VI) compounds that the assessment should consider.

1.1.1 Updates to the Protocol are insufficient to fully assess the systematic review methods, including the search strategy and screening criteria.

It is difficult to fully assess the compliance with systematic review methods, including the literature search strategy and screening criteria, given the limited characterization (Section 12. Protocol History) of updates to the protocol. It is not clear what the specific updates are, when updates were made in the assessment process, or when updates represent deviations from the initial protocol vs. when updates represent additions or omissions. To understand specific updates, a comparison was conducted in Adobe, which indicated substantial changes (see inset). Importantly, rationale as to why there were changes to the specific methods was not provided, demonstrating a lack of compliance with standard systematic review

Family Farm ALLIANCE®

Protecting Water for Western Irrigated Agriculture

January 2023

Issue No. 247 13 Pages

Monthly Briefing

A Summary of the Alliance's Recent and Upcoming Activities and Important Water News

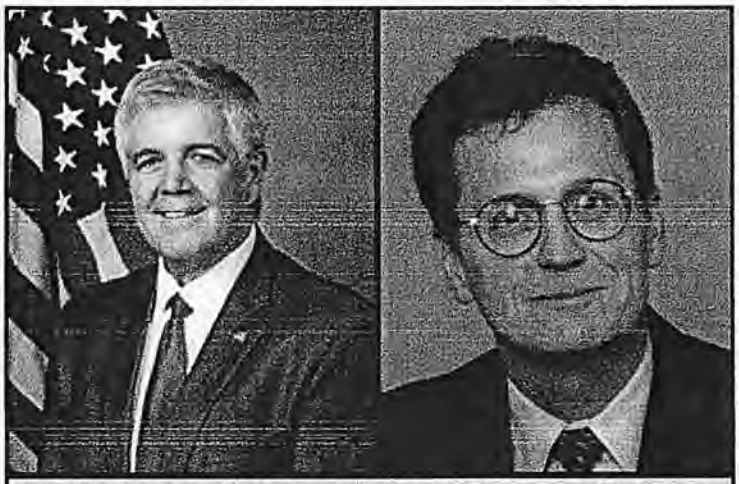
2023 Annual Conference Agenda Takes Shape

Rep. Cliff Bentz and Tom Birmingham Confirmed as Keynote Speakers

America gave up domestic manufacturing over the last several decades leading to global trade deals that resulted in a diminished national security. Are we now headed for a crisis which will lead to the loss of domestic food production, inevitably leading to a complete collapse of our national security?

We cannot continue long-term hypothetical processes that focus primarily on continued conservation and downsizing of Western agriculture. As we teeter on the brink of recession and global famine, the stability of domestic food supply becomes even more pressing.

Our irrigated system of agriculture in the West can provide the most stable food supply in the world — if we let it.



U.S. Congressman Cliff Bentz (R-OREGON), the new chairman of the House Water, Oceans and Wildlife Subcommittee (L) and Tom Birmingham, long-time general manager of Westlands Water District, will deliver keynote addresses at the 2023 Family Farm Alliance annual conference in Reno next month.

The 2023 Family Farm Alliance Annual Meeting and Conference is an opportunity for producers, policy makers and water professionals from throughout the West to focus on topics of critical concern. A wide variety of speakers will take on the issues that make a difference to irrigators. Members of Congress and their staff, Administration officials, and representatives from constructive NGOs are regulars on the program.

This year's annual meeting and conference will take place February 23-24, 2023, at the Silver Legacy Resort and Casino in Reno, Nevada. The 2023 annual conference theme is, *"A Wake Up' Call for America - Why Farms, Water and Food Matter"*.

Congressman Cliff Bentz (R-OREGON), the new chairman of the House Water, Oceans and Wildlife Subcommittee will present his vision for how the subcommittee will address pressing water challenges in the West in his keynote address at the February 23rd conference luncheon.

Tom Birmingham, the long-time general manager of the nation's largest irrigation district – Westlands Water District in California, will deliver closing remarks before

Continued on Page 2

STORIES INSIDE.....

2023 Family Farm Alliance Annual Conference (*Cont'd from Pg. 1*)

the conference is adjourned at noon on February 24th. Mr. Birmingham's last day at Westlands was on December 31, 2022.

A typical Family Farm Alliance annual conference features diverse, high- profile speakers and panel discussions that focus on the innovative ways and new partnerships that Western farmers and ranchers are developing to protect rural communities. The 2023 conference will feature the other following addresses and panel discussions:

- **Opening Keynote Address:** Tanya Trujillo, Interior Department Assistant Secretary for Water and Science (invited)
- **Reclamation Roundtable** — featuring representatives from the Bureau of Reclamation Commissioner's office and all 5 regional directors
- **"Kiss the Ground" with Forestry and Ag Solutions**
- **SCOTUS and Western Water:** The Highest Court in the Land Gets Busy in Your Backyard
- **A Look at D.C. from the Hill**
- **Generation "NEXT": Re-framing Western Agriculture**
- **Solving Nutrients Challenges with Bushels of Nature:** The Nutrient Work Group
- **The P.L.- 566 Small Watershed Program** – A Report from the Field
- **A Conversation with Biden Administration Water Leaders on Opportunities to Best Implement the Watershed and Flood Prevention Operations Program**
- **Ag in the Crosshairs:** Colorado River Agricultural Water Management and Policy Challenges

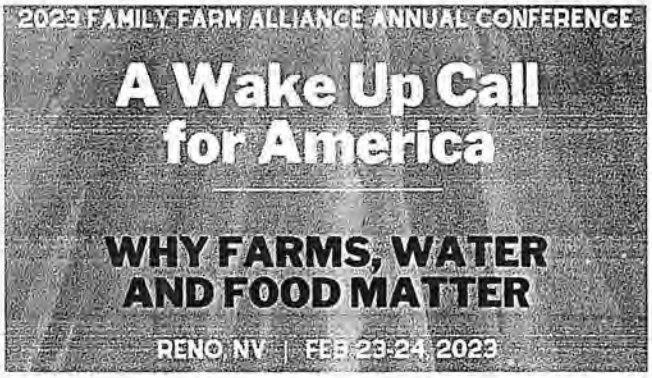
Following the end of the conference general session at noon on February 24, a "Farm (Bill) to Fork" luncheon will take place off-site at Mari Chuy's Restaurant in mid-town Reno. Leaders of the Western Agriculture and Conservation Coalition will guide an informal discussion on the 2023 Farm Bill.

Internal meetings of the Alliance board of directors and Advisory Committee will take place earlier in the week in Reno.

Please visit www.familyfarmalliance.org for conference registration information, hotel booking information, sponsorship opportunities, and the latest schedule of events.

Family Farm ALLIANCE

PROTECTING WATER FOR WESTERN IRRIGATED AGRICULTURE



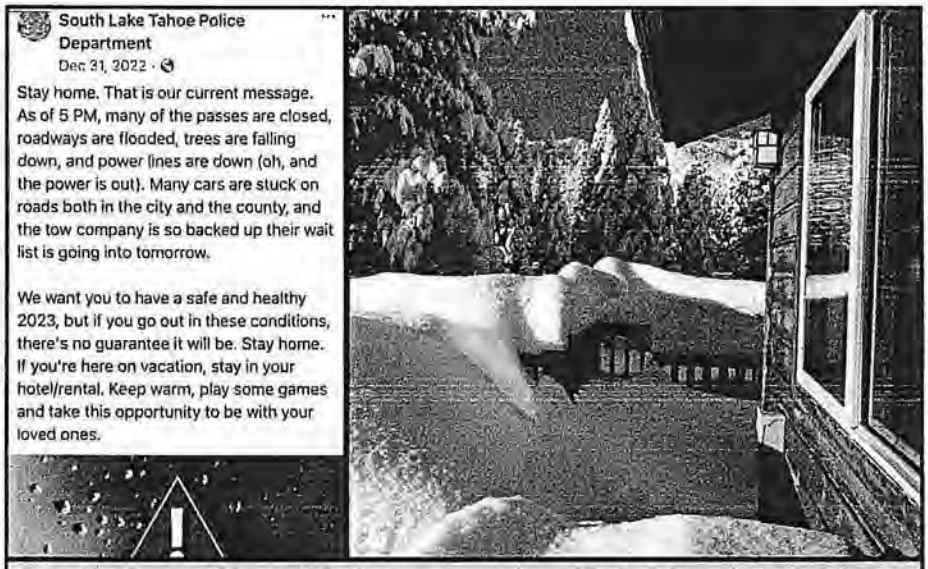
California and the West Coast, Reeling from Prolonged Drought, Get New Year "Atmospheric River" Relief

An atmospheric river of moisture from the Pacific Ocean late last month hit California and other parts of the West, unleashing heavy rain that will help to replenish reservoirs and raise the risk of flooding, and producing heavy snow in the mountains as the New Year rolled in.

More impactful storms were predicted to move through Northern California in the first week of January.

"It is possible that this single storm brings some reservoirs close to full capacity," AccuWeather Senior Storm Warning Meteorologist William Clark. "Where there are no dams or flood control measures, unprotected areas along some of the rivers can quickly take on water in this situation."

Earlier in December, a powerful low-pressure trough developed in the upper levels of the atmosphere over the eastern contiguous U.S. during the week of Christmas. According to the U.S. Drought Monitor (USDM), at the surface, the trough was associated with a strong cold front that poured frigid arctic air into the U.S. east of the Rockies.



Two feet of snow fell overnight in some areas around Lake Tahoe on the last day of 2022. South Tahoe Police Department advised visitors and residents to "Stay home".
Photo source: Jane Townsend

Daytime maximum temperatures in the northern Plains were well below zero degrees Fahrenheit, with minimum temperatures colder than 20 below zero, at the peak of the cold wave. Bismarck, North Dakota, registered minus 10 for a high and minus 20 for a low on December 21 and 22. The freezing arctic air even breached the Rocky Mountain chain to reach the Pacific Northwest.

Most of the High Plains region received less than half an inch of precipitation. With the entire region experiencing a deep freeze, little change was made to the USDM depiction.

The atmospheric river brought monster waves, high tides and strong winds to batter western Oregon and Washington. The weather led to fatal crashes, power outages and flooded homes on December 27.

The National Weather Service bureau in Seattle said on Twitter that annual rainfall in the area for 2022 officially surpassed the usual yearly total — by a fraction of an inch — after the recent flood, according to CBS News in Seattle.

"With 0.27" at @flySEA [Seattle-Tacoma International Airport] <December 27> the yearly rainfall total is 39.52" surpassing the yearly normal rainfall for Seattle which is 39.34"," wrote NWS Seattle in a December 28 tweet.

Southern California Drought Declaration

As the New Year rolled in, Southern California was drenched with rain as another winter storm moved into the region. The precipitation provided at least temporary relief from the prospect of a fourth consecutive dry year. Earlier in December, officials with the Metropolitan Water District of Southern California declared a regional drought emergency and called on water agencies to immediately reduce their use of all imported supplies.

Most of the region relies on water imported from the Colorado River and the State Water Project from northern California for about half of their supply, and during the past several years, those regions have experienced some of the worst drought years in history.

"Conditions on the Colorado River are growing increasingly dire," MWD Chairwoman Gloria Gray said in a statement. "We simply cannot continue turning to that source to make up the difference in our limited state supplies. In addition, three years of California drought are drawing down our local storage."

2022 Drought Impacts to the Central Valley

The recent storms provide some hope that the multi-year drought – the driest three-year period since the late 1800s – will come to an end. However, economists and farmers warn that there could be severe environmental and economic consequences that stretch beyond these dry fields that farmers are challenged with.

In a new report prepared for the California Department of Food and Agriculture, the state's irrigated farmland shrunk by 752,000 acres of farmland in 2022, or by nearly 10%. In the past two years, a combined $3 billion has been lost in revenue because of crop losses.

Other sectors in the agriculture industry have had significant losses as well. In 2022, $3.5 billion was lost in gross reve-

Continued on Page 4

Central Valley Drought Impacts (*Cont'd from Pg. 3*)

nue for processing and purchasing agriculture products.

"Everything from the milk industry around to almonds has been affected," University of California Davis Agricultural Economics Professor Daniel Sumner told *Fox Business*.

The rice crop in California was only about half of a normal harvest season.

And, for the first time in a quarter of a century, California's almond acreage has decreased instead of grown, according to Land IQ, an agricultural and environmental research and consulting firm. In an August crop report, total almond tree acreage was estimated at 1.64 million acres, down from 1.66 million acres in August 2021, according to *Packer* magazine.

"Land IQ's report may indicate a possible trend towards lower California almond acreage in the year ahead," Richard Waycott, president and CEO of the Almond Board of California, said in a news release.

The ecological impacts of the drought are noticeable. . According to the latest assessment from Ducks Unlimited (DU), the total breeding duck estimate across the Pacific Flyway was 15.8 million birds, down 17 percent from 2019 and 7 percent below the long-term average. The most striking report regarding habitat conditions in the Pacific Flyway came from California and the Intermountain West.

"Many areas in the Pacific Flyway are experiencing the worst drought since 800 A.D., and although duck production in Washington and Oregon should be about average, the same isn't true for California," said Dr. Mark Petrie, DU's director of conservation planning in the Western Region. "The mallard estimate there was 46 percent below average, and with severe curtailment of water supplies for rice and managed wetlands this summer, we expect little local production from California."

That is a significant loss for the state's waterfowlers, because approximately 60 percent of California's mallard harvest is derived from locally produced birds.

Policy Implications for the Central Valley

Citing climate change and following three years of drought, the state of California is incentivizing farmers to fallow their lands. To do this, the California Department of Water Resources is providing financial incentives of up to $2.5 million to farmers to fallow fields in areas called "critically overdrafted basins."

Farmers are identified based on their proximity to drinking water wells that have gone dry or are in jeopardy of going dry.

"The program is really unique because it's focused on wet water, making sure we have wet water for our communities and aquifers, our ecosystems and farms," Aubrey Bettencourt, executive director of the California Almond Alliance, recently told CBS News in Sacramento. ""It starts by looking at reducing immediate demand next to those watersheds to provide that instant relief to protect those wells from collapsing during this dry period," she said.

Back in Washington, D.C., House Republicans are preparing to take the Biden Administration to task for its decision to revisit a Trump-era biological opinion that provided more operational flexibility for the federal Central Valley Project (CVP).

In a December 22, 2022 letter to Interior Secretary Deb Haaland, Republican Congressmen reiterated earlier demands for the Interior Department to turn over information about its decision to revisit a Trump-era biological opinion that would deliver more water to CVP farmers.

"We are concerned that this reconsultation process represents a departure from common practice, raising questions about whether outside entities may have exerted undue influence on the Department's decisions," the letter states.

House Republicans will likely conduct oversight hearings through the Committee on Natural Resources on this matter.

"In order for Congress to properly exercise its oversight responsibilities, Members require timely access to the requested information," the GOP letter stated. "We expect that you will direct your staff to fulfill all parts of this information request no later than January 16, 2023."

Farmers Hope New Storms Will Bolster Snowpack

The odds that the drought-enhancing La Nina will fade by the end of California's rainy season are rising, offering some hope of an easing of parched conditions across the West.

The Climate Prediction Center last month forecasted that the Pacific Ocean has a 71% chance of returning to normal temperatures between February and April, bringing an end to the La Nina weather pattern that has persisted for three years. La Nina has dominated global weather, prompting drought in many parts of the West (*Bloomberg*).

The odds that the drought-enhancing La Nina will fade by the end of California's rainy season are rising, offering some hope of an easing of parched conditions across the West.
BLOOMBERG

Although the latest winter storm helped bolster California's snowpack, there is still a sense of caution for the remaining months ahead. The last water year started out with positive momentum, which was subsequently followed by some of the driest winter months on record (*AgNet West*).

"Will this last? Last year it broke down after January and we didn't see a drop," Sarge Green with the California Water Institute told KFSN in Fresno. "Big picture is, it looks like we're headed for a fairly decent year this year and if you happen to be a good surface water user, I think that the water outlook is fair."

Central Valley farmers are hoping recent storms add to the water content in the snowpack, which they rely on during the hot summer months.

"Yeah we did see elevation drop on snow levels here on the last storm. But the storms before that were on the warmer side. We really saw the rain levels move up the mountain," explained Ron Jacobsen, Fresno County Farm Bureau CEO. "We are hoping that these are a little colder so that it's able to drop that incredible snowpack up in the Sierras there."

Alliance Leaders Engage in 2022 CRWUA Conference

And other Colorado River News.....

Family Farm Alliance leaders and members made the trek through wintry Western weather last month to engage in the 2022 Colorado River Water Users Association (CRWUA) Conference in Las Vegas (NEVADA).

Prior to the CRWUA conference, leaders and irrigated agriculture producers who depend on the waters of the Colorado River watershed expressed concerns that the issues most important to farmers and ranchers in the Basin would not be addressed at the three-day event.

"We intended to make the voice of Colorado River agriculture heard at CRWUA this year," said Alliance President Patrick O'Toole, whose family owns and operates a sheep and cattle ranch near the headwaters of the Colorado River in Wyoming. "We're tired of the relentless demonization of agriculture coming from competing interests, whose main solution appears to be questioning the viability of producing alfalfa and other forage crops in the Colorado River Basin."

Family Farm Alliance President Patrick O'Toole (right) discusses Colorado River challenges with Deputy Secretary of the Interior Tommy Beaudreau at the 2022 CRWUA conference in Las Vegas last month.

Reclamation Pursues Two-Pronged Strategy on the River

After over 20 years of drought, Colorado River supplies are insufficient to meet the growing demands of the Basin. But cutting back at the scale necessary – and on a voluntary basis – to avoid reservoirs like Lake Mead to "crash" and hit dead pool elevations has proven challenging this year as top officials from across the Colorado River watershed have failed to reach agreement on how to meet these massive reductions.

The Bureau of Reclamation is pursuing a two-pronged strategy through voluntary conservation programs that might be supplemented by mandatory cutbacks if a negotiated deal cannot be reached.

"The short-term solutions developed on the Colorado River in the coming months must continue to follow the law, but also match the science and hydrology," said Don Schwindt, an Alliance director who farms near Cortez, Colorado. "Mother Nature gives us no choice. The Colorado River Compact, coupled with the prior appropriation doctrines of the seven Basin states, provide the framework we must continue to follow."

Civil Discourse Prevails

The CRWUA conference brought together water officials, policymakers and interest groups from across the Basin, which includes seven U.S. states, 30 Native American tribes and the Country of Mexico.

While the conference took place in the wake of numerous media reports calling for the elimination of irrigation for crops in order to send more water to urban areas to facilitate growth, the CRWUA event was relatively tempered, with speakers preaching for collaboration, rather than confrontation.

"We are gathered here today at a time of unprecedented crisis in the basin," said Anne Castle, President Biden's newly appointed Upper Colorado River Commission federal chair. "The real enemy here is not another basin, or another state or alfalfa or golf courses. It is climate-change-induced lower flows. It's not an enemy that we can defeat. It is one that we have to learn to live with."

The "all together, now" mantra was echoed by high-level appointees within the Department of Interior, who are urging the seven Basin states to develop a consensus alternative in the coming months.

"Despite the dire conditions we face, we at the Department know that we can and must develop new solutions for mitigating decreasing water supplies," said Tommy Beaudreau, Deputy Secretary of the Interior. "The coming three months are absolutely critical.... I'm encouraged by the conversations among the basin states."

"It will take contributions from all of us," added Tanya Trujillo, Interior Assistant Secretary for Water and Science. "From all the states, all of the sectors, we have a shared responsibility to continue to take actions to protect the system for our future generations."

Looking at Ag to Meet New Basin Demands

The 2022 CRWUA conference happened at a time of increased and pervasive anti-agricultural messaging in Colorado River media coverage as growing urban areas rely on Colorado River supplies to support continued growth.

Between 2000 and 2020, Nevada's population has grown 55 percent, Utah's population 46 percent and Colorado's population 34 percent, according to U.S. census data (*Politico*).

Gene Shawcroft, general manager of the Central Utah Water Conservancy District, told the audience at CRUWA that agricultural efficiency must play a major role in balancing urban and suburban growth in states like Utah.

"Ag efficiencies is a major part of how we anticipate moving forward with this limited water supply," he said.

Continued on Page 6

Colorado River Ag in the Crosshairs (*Cont'd from Pg. 5*)

The *Salt Lake Tribune* editorial board prior to the CRWUA conference published an editorial calling for the complete buy-out of Utah alfalfa producers.

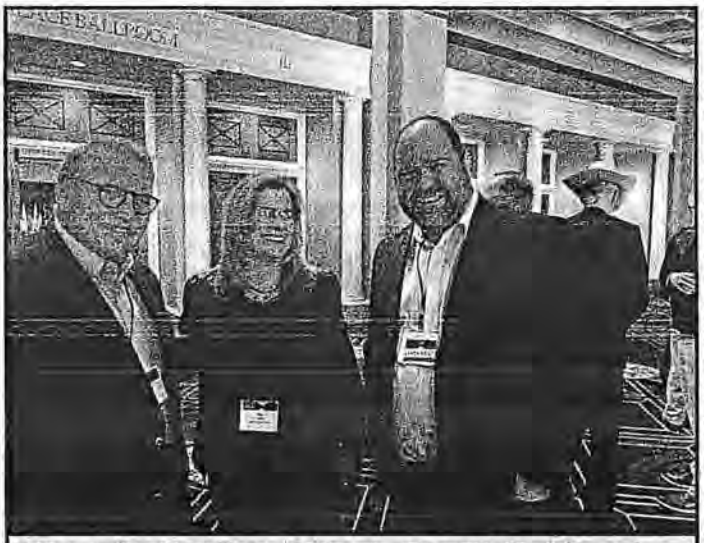
"The simple fact is that agriculture - with the possible exception of some boutique products such as cherries, peaches and dairy - is just not the future of Utah," the *Tribune* editorial board wrote.

The *Tribune* neglected to note that dairy cows eat alfalfa, and that the Salt Lake City metropolitan area's 11.4% growth rate in the last decade is one of the highest in the West.

"There must be an end to taking ag water for urban growth," said Mr. O'Toole. "When this water has been 'repurposed,' then what? We will have no food, no water and no options."

At the CRWUA conference in Las Vegas, Mr. O'Toole was interviewed by a reporter from *E&E Daily* about the Colorado River ag-urban conflict.

"We've got to find out what the West that we want is and then start working toward what we want, or you get what you deserve," he said, as reported in *Politico*.



Alliance President Patrick O'Toole, Tina Shields (Imperial Irrigation District) and Lane Dickson (The Ferguson Group) find reasons to smile at the recent CRWUA conference at Caesars Palace in Las Vegas. **Photo courtesy of Sharon O'Toole.**

Alfalfa 101

In the weeks leading up to CRWUA, the Alliance and California Farm Water Coalition released a white paper that tells the "other side of the story" about alfalfa, not often conveyed in media accounts of Colorado River water battles.

Alliance Executive Director Dan Keppen believes the underlying problem is that many people and policy makers have lost touch with the basics of American food supply.

"It is a fallacy to simply single out the one crop that plays such an integral role in growing our food, one that benefits both forage uses and soil health as a rotational crop here in the Basin and the U.S," he said.

The Struggle is Real

Alliance leaders for over the past decade have warned about the dangers of taking safe domestic food production for granted.

"Fallowing any farmland during a time of crisis should be temporary, or we risk losing control of our reliable and safe U.S.-grown food supply," said Mr. O'Toole. "Permanent buy-out of farms and ranches brings with it truly horrendous unintended consequences."

Pat O'Toole and his wife Sharon recently traveled to Ireland to engage in a livestock grazing forum, attended by livestock interests from 23 nations.

"We were struck by the delegation report from Africa, where in some places, the goal is to ensure one glass of milk per child per day," said Mr. O'Toole. "Many American parents were rightly concerned with the baby formula shortage we experienced earlier this year. The grim stories you hear from other parts of the world are stark reminders of the importance of strong domestic food production."

State-Driven Proposals for the Colorado River

Elsewhere in the Colorado River Basin, states are proposing plans and taking action to conserve water before low water levels cause critical problems behind Glen Canyon and Hoover dams.

The State of Nevada has submitted a plan for cutting diversions by 500,000 acre-feet in a last-ditch effort to shore up flows on the Colorado River. But – as reported by the *Salt Lake Tribune* – Nevada's plan looks elsewhere, and targets cuts in the river's other Upper Basin states.

The Upper Basin states of Colorado, New Mexico, Utah and Wyoming argue they have historically used less than their allotted shares of the river. Accordingly, they say, the Lower Basin States – Arizona, California and Nevada - should shoulder the cuts needed to save the river.

Those states revived a program last month aimed at keeping water in the dwindling Colorado River by paying users who take conservation measures (*Deseret News*). Starting next April, the System Conservation Pilot Program will pay users $150 per acre-foot of water they conserve. The Program aims to reduce consumptive use through temporary, voluntary, and compensated measures across the Upper Division States and allocates up to $125 million for the re-initiation with the potential to increase in scale.

The payments will be funded with $125 million from the Inflation Reduction Act, which includes $4 billion to fight drought in the Colorado River Basin and other parts of the West.

Colorado River District General Manager Andy Mueller – who also serves on the Family Farm Alliance Advisory Committee - responded that a program of this scale and speed poses as much risk and opportunity as a Demand Management program, therefore it is critical how the program is implemented.

"It is vital to the health of our communities and our agricultural industry that the River District have a decision-making

Continued on Page 12

Alliance, Coalition Submit Comments on NRCS Proposed "Climate Smart" Programs

The Family Farm Alliance helped lead a coalition that developed formal comments and recommendations to the U.S. Department of Agriculture (USDA), who last November asked for public input on implementation of more than $19 billion provided by the Inflation Reduction Act (IRA). The Natural Resources Conservation Service (NRCS) will use the investments provided through IRA-funded conservation programs to support farmers and ranchers in adopting and expanding climate-smart activities and systems.

NRCS requested comments on how to target program benefits, quantify impact, and improve program delivery and outreach, especially for underserved producers. The Family Farm Alliance and others sought to address the concerns of some Western producers that the carbon-centric priority of the IRA program does not endanger projects that also address broader matters.

"Climate mitigation should not just focus on carbon and assume that planting more carbon-sequestering trees will solve the problem," said Alliance Executive Director Dan Keppen. "Projects that help producers and water managers adapt to the impacts of climate change must also be encouraged."

> ***"In order to truly support the farmers, ranchers, and farmworkers who feed our nation in adopting and expanding climate-smart activities and systems, we must ensure that the historic funding in the Inflation Reduction Act for emissions reductions also bolsters drought resilience."***
>
> **December 15, 2022 Letter to Agriculture Secretary Vilsack from Sens. Feinstein and Padilla (D-CA), Heinrich and Lujan (D-NM), Merkley (D-OR) and Murray (D-WA).**

The IRA directs USDA funding to support agricultural practices of enhancements that directly improve soil carbon, reduce nitrogen losses, or reduce, capture, avoid or sequester greenhouse gases (GHGs) associated with agricultural production. The controlling language of the law applies to the Environmental Quality Incentives Program, Conservation Stewardship Program, Regional Conservation Partnership Program and easement programs funding.

"Efforts to control invasive species like tamarisk, juniper, and salt cedar are important and should not be seen as being somehow bad, simply because carbon-capturing vegetation is being removed," said Mr. Keppen. "Deliberate and sensitive removal of invasives make prevent much more serious GHG emissions from being generated via fires tearing through unhealthy forests in the future."

A recent University of Chicago study found that California wildfire emissions in 2020 essentially negated 18 years of reductions in GHG emissions from other sectors in the state by a factor of two.

"Our comment letter – signed on to by five Western state Farm Bureaus, Western Growers, two conservation NGOs, and irrigation districts from multiple Western states – focused primarily on our collective concern that irrigation management, conifer removal, and other conservation measures important to sage grouse management are not listed as covered practices in the proposed rule," said Mr. Keppen. "We felt this comment process was a good opportunity to get policy makers to look at this issue in a more nuanced way," said Mr. Keppen.

Western Senators Push USDA to Focus More on Drought

Senators from the Western U.S. also weighed in with USDA on the proposed IRA "climate smart" conservation program, arguing that those dollars should be directed in part to drought resiliency, itself a key aspect of the climate crisis.

"As you work to finalize details, we urge the Natural Resources Conservation Service (NRCS) to specifically incentivize the adoption of conservation practices that, while combating climate change can simultaneously mitigate the impacts of drought," the letter stated, which was signed by Democratic senators from California, New Mexico, Oregon and Washington.

The letter was directed to Agriculture Secretary Tom Vilsack and NRCS Chief Terry Cosby.

"In order to truly support the farmers, ranchers, and farmworkers who feed our nation in adopting and expanding climate-smart activities and systems, we must ensure that the historic funding in the *Inflation Reduction Act* for emissions reductions also bolsters drought resilience," the letter stated.

Earlier in the month, another group of 15 Western senators led by Senator Michael Bennet (D-COLORADO) called on Secretary Vilsack to help Western states survive the "22-year mega-drought" that is threatening farms and ranches across the West.

As reported by *The Hill*, the senators argue that many existing Department of Agriculture programs "do not translate well to the needs of Western agriculture" and want USDA to promote projects to help basins such as Colorado River Basin, the Rio Grande Basin, the Sacramento-San Joaquin River Basin and the Columbia River Basin.

"The American West is in crisis," the letter stated. "The acute shortage of water for Western growers threatens productive farmland across our states, which are both a pillar of our rural economies and drivers of America's food production."

The Senators also urged Secretary Vilsack to address the capacity of USDA Agriculture Department field offices and to prioritize hiring more staff with expertise in Western agricultural production.

Biden WOTUS Rule Reinstates 2015 regulations

The Biden administration in the midst of the holidays finalized its definition of which wetlands and waterways are protected by the federal Clean Water Act (CWA).

The rule from the Environmental Protection Agency (EPA) and the Army Corps of Engineers (Corps) largely restores water protections that were in place prior to 2015 under the Clean Water Act for traditional navigable waters, the territorial seas, interstate waters, as well as upstream water resources that significantly affect those waters.

"When Congress passed the Clean Water Act 50 years ago, it recognized that protecting our waters is essential to ensuring healthy communities and a thriving economy," said EPA Administrator Michael S. Regan. "Following extensive stakeholder engagement, and building on what we've learned from previous rules, EPA is working to deliver a durable definition of WOTUS that safeguards our nation's waters, strengthens economic opportunity, and protects people's health while providing greater certainty for farmers, ranchers, and landowners."

The Family Farm Alliance over the past two decades has engaged in a variety of ping-pong administrative efforts -now spanning four different presidential administrations - all of them aimed at clarifying the interpretation of the Clean Water Act. Alliance Executive Director last June testified at a Western regional roundtable hosted by the California Farm Bureau and outlined Alliance concerns with the proposed WOTUS rule.

"This vastly expands regulatory jurisdiction beyond just returning to the pre-2015 regulations and guidance as proposed in the rule," Mr. Keppen said at the time. "Any possible expansion of WOTUS in a future rulemaking could transform the Clean Water Act into a federal land-use regulation."

The Alliance was one of many parties who also urged the federal agencies to pause this rulemaking until after the Supreme Court rules on *Sackett v. Environmental Protection Agency*, which has direct bearing on CWA jurisdiction.

"It is troubling to see the Biden Administration double-down on the significant nexus test after October's oral argument in the *Sackett* case, during which the high Court seems inclined to do away with it," said Mr. Keppen. "Significant nexus is a legally fragile test, created and signed onto by a single Justice in one Supreme Court case, 15 years ago. Yet, the new Biden WOTUS rule has been built on this precarious test. If, as expected, the Supreme Court strikes down the significant nexus test, the Biden WOTUS rule will certainly topple to the ground with it."

Western Republicans in the House of Representatives reacted swiftly and were critical of the new WOTUS rule.

"This rule is yet another bureaucratic attack on rural America," said Rep. Dan Newhouse, Chair of the Western Caucus. (WA-04). "Today, it became crystal clear that we have been ignored. Not only is this rule premature, but it is ultimately detrimental to rural communities – and clean water conservation efforts – across the United States. We will continue to fight for effective locally led efforts to protect our clean water and against one-size-fits-all mandates."

Several House Republicans also raised concerns with the timing of the proposed rule in light of the looming Supreme Court decision on *Sackett*.

"As a lifelong farmer, I know firsthand the challenges government overreach places on the day-to-day operations of farms and businesses," said Rep. David Valadao (R-CALIFORNIA). I am hopeful that the Supreme Court will put an end to this regulatory nightmare when *Sackett v. EPA* is decided."

President Signs 2023 WRDA into Law

President Biden on December 23 signed the *James M. Inhofe National Defense Authorization Act* (NDAA) for Fiscal Year 2023 into law, which included the Water Resources Development Act (WRDA) of 2022.

"This WRDA bill, which is the fifth consecutive biennial and bipartisan WRDA to pass, will continue to build upon its predecessors by investing in our ports, harbors, and inland waterways and improving water infrastructure and flood protection across the nation," outgoing Chair of the House Transportation and Industry (T&I) Committee Peter DeFazio (D-OREGON) said. "This is the most ambitious WRDA to date and I am proud to have continued this bipartisan tradition during my time as Chair."

WRDA is biennial legislation that authorizes flood control, navigation, and ecosystem restoration projects for the U.S. Army Corps of Engineers (Corps).

WRDA legislation in recent years has also included provisions for Bureau of Reclamation projects, although this year's WRDA was Corps-focused, as it was included in the must-pass NDAA package to support military funding and authorizations.

"However, the 2022 WRDA does have a strong Western flavor," said Dan Keppen, Family Farm Alliance Executive Director. "Notably, it establishes a Corps Western Water Cooperative Committee".

The purpose of this new committee is to ensure that Corps "flood control projects in Western States are operated consistent with congressional directives by identifying opportunities to avoid or minimize conflicts between the operation of Corps projects and water rights and water laws in such States."

The membership of the Cooperative Committee includes the Assistant Secretary of the Army for Civil Works, the Chief of Engineers, two representatives from each Western State appointed by the governor and the attorney general, and one employee from each of the impacted regional offices of

Continued on Page 10

Congress Passes Massive FY 2023 Omnibus Spending Bill

After months of negotiation and several continuing resolutions, Congress on December 23rd passed the gargantuan *Performance Enhancement Reform Act* H.R. 2617, the vehicle for the fiscal year 2023 omnibus spending package.

"Thanks to Democrats' tenacious negotiating, we have secured an enormous increase in non-defense discretionary funding – investing heavily in families and workers, honoring our commitment to our veterans, and strengthening Democracy at home and abroad," said outgoing House Speaker Nancy Pelosi (D-CALIFORNIA).

***Outgoing Speaker of the House Nancy Pelosi (D-CALIFORNIA).* Photo source: www.speaker.gov**

As the last act of the lame-duck session and 117th Congress, the $1.7 trillion, 4,000-page measure funds the federal government through September 2023.

President Biden signed the bill into law in advance of the December 30 deadline (the House added a week-long CR to ensure enough time to enroll and sign the bill).

"The bipartisan funding bill advances key priorities for our country and caps off a year of historic bipartisan progress for the American people," said President Biden.

The omnibus appropriations package includes all 12 fiscal year appropriations bills for the fiscal year 2023 – plus a lot more.

Democrats championed the omnibus bill's record-setting level for domestic spending — $800 billion, or a 9.3 percent increase from last year's levels (*PoliticoPro*).

Among the funding bill's other provisions:

- Nearly $40 billion in aid for Ukraine;
- Bipartisan election reforms intended to prevent another Jan. 6 attack;
- A ban on the Chinese-owned app TikTok on government devices; and
- New incentives for retirement savings.

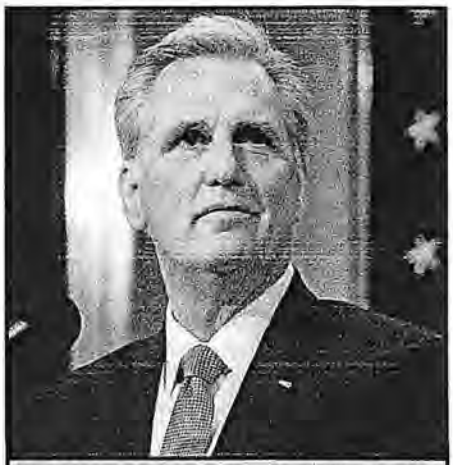
While Republican leaders successfully negotiated huge increases to the bill's military spending, GOP resistance held up the bill for days in the Senate.

"Americans have had enough," said House Republican leader Kevin McCarthy (R-CALIFORNIA). "That's why millions voted last month to end Democrats' one-party rule, retire Speaker Pelosi, and usher in a new House Republican majority that won't waste your hard-earned tax dollars or pass massive government spending bills that cause more inflation and contribute to higher prices."

Provisions for Agriculture

The appropriations bill allocates an additional $3.74 billion to offset crop losses due to droughts, wildfires, hurricanes, or floods. Some agricultural groups lauded these provisions, as well as the additional $494.5 million that was earmarked for livestock disaster losses (*Western Farmer-Stockman*).

"This relief will help stabilize the cotton sector as many producers suffered devastating losses from this season's extreme drought and other weather events and merchandisers who suffered economic loss during the COVID-19 pandemic," National Cotton Council President Ted Schneider said.



***U.S. Representative Kevin McCarthy (R-CALIFORNIA).* Photo source: Western Congressional Caucus**

Several farm groups expressed disappointment that the Senate did not include the *Affordable and Secure Food Act*, which addresses agricultural immigration reform.

"Congress missed a huge opportunity and did not do their part to improve production and increase the legal supply of labor," said Robert Guenther, Chief Policy Officer for the International Fresh Produce Association.

"This is a lost opportunity for Congress to have addressed the labor crisis in agriculture that threatens the economic survival of farms and ranches across the country," added Chuck Connor, President of the National Council of Farmer Cooperatives. "Producers will enter the new year facing a continued shortage of skilled workers combined with spiraling wage costs in the H-2A program. This failure to act will have long-term consequences that will impact agricultural policy for years to come."

Earmarks and Next Steps

The omnibus also includes member projects known as Congressional Directed Spending and Community Project Funding in the Senate and House, respectively – also known as earmarks.

"Lawmakers included various provisions and policy riders in the government spending bill, which we will report on in the coming weeks," said Mark Limbaugh with The Ferguson Group, the Family Farm Alliance's representative in Washington, D.C.

Lawmakers returned home for the holiday recess. The 118th Congress begins today (January 3).

Alliance Joins Amicus Brief in SCOTUS Consideration of *Navajo Nation v Department of the Interior*

The Family Farm Alliance board of directors last month moved to join an amicus ("friend of the court") brief with other Western water groups in support of plaintiffs as the Supreme Court of the United States (SCOTUS) considers *Interior Department v. Navajo Nation*. This case could decide whether the federal government has a duty to protect the Navajo Nation's access to the dwindling flows of the Colorado River.

The federal government argues in the case that it is not legally obligated to assess the Navajo Nation's needs because no treaty, agreement or law explicitly addresses the tribe's claim to Colorado River water.

The 9th U.S. Circuit Court of Appeals sided with the Navajo Nation and said the Interior Department had a "duty to protect and preserve the Nation's right to water."

"When the United States creates an Indian reservation, it also promises and reserves for the tribe the amount of then-unappropriated water necessary to fulfill the reservation's purposes," lawyers for the Navajo Nation wrote in a 42-page filing. "... The question presented is whether ... the United States owes the Navajo Nation a fiduciary duty to assess the Nation's water needs and develop a plan to meet them."

The Biden Administration and backers of the Western water user amicus brief argued that the lower court ruling would complicate ongoing efforts among seven Western states to reduce their use of water from the drought-plagued Colorado River that serves the needs of 40 million people and millions of acres of important food-producing farms and ranches.'

"Here, the Ninth Circuit endorsed an end-run around the longstanding allocation processes, threatening to undermine the certainty of water rights not only in the Colorado River Basin, but also throughout other water-scarce regions of the United States more broadly," said Patrick Sigl, an attorney for the Salt River Project (ARIZONA), part of the Western water coalition signing on to the amicus brief in support of the defendants in this case.

Mr. Sigl and others supporting the Western water brief believe that end-run is improper for two reasons. First, because it infringes upon this Court's retained and exclusive jurisdiction over the allocation of water from the mainstream of the Colorado River in the Lower Basin. It also seeks to impose judicially enforceable fiduciary duties on the United States without the kind of express positive-law grounding that the Supreme Court has repeatedly required before recognizing a judicially enforceable trust obligation.

"For either or both of those reasons, and to avoid throwing crucially important water rights into a state of grievous uncertainty with widespread adverse impacts on water users across the West, this Court should reverse," said Mr. Sigl.

The amicus brief argues that: 1) Reliable and secure water rights are crucial to the social, economic, and legal health of the West; 2) If the Navajo Nation's lawsuit Is allowed to proceed, other users' water rights will necessarily be curtailed or at least thrown into doubt; and 3) Recognizing breach-of-trust claims like the Navajo Nation's could threaten the stability of water rights elsewhere in the West.

"In addition to the Arizona Central Arizona Project, the brief also discusses a few other examples that could be affected if the Supreme Court endorses the Ninth Circuit's approach, including, among others, the Klamath Basin," said Norm Semanko, the Alliance's general counsel.

The Navajo Nation's response brief(s) on the merits are due January 18, 2023. Replies are not required but are due by February 17, 2022. Oral argument is likely in late March and the Court will likely issue a decision by June 30, 2023.

President Signs 2023 WRDA into Law (*Cont'd from Page 8*)

the Bureau of Indian Affairs. Other authorizations of the 2022 WRDA important to Western water users include:

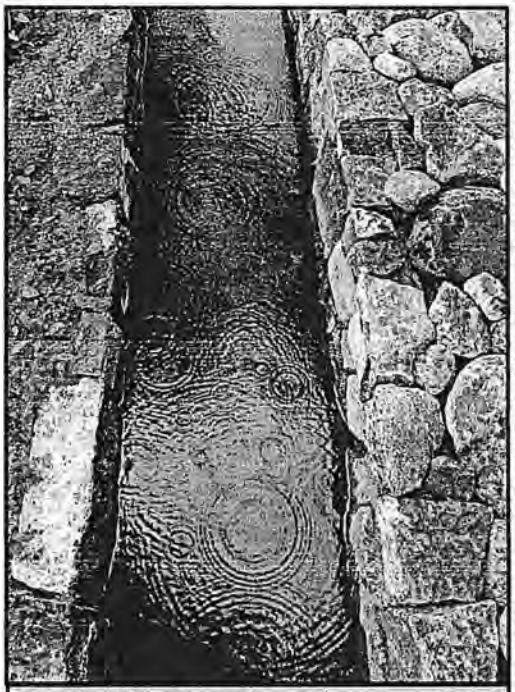
- A national assessment of managed aquifer recharge projects at Corps facilities to address drought, water resiliency, and aquifer depletion;
- Updates to Corps water control manuals at the request of any governor that declared a statewide drought disaster in 2021, "with priority given to those projects that include water supply or water conservation as an authorized purpose";
- Establishment of the Non-Federal Interest Advisory Committee to develop and make recommendations to the Corps for more effective and efficient delivery of water resources development programs;
- Expanded provisions to report on additional opportunities for utilizing forecast informed reservoir operations. The original directive in the 2020 WRDA included the Upper Missouri River Basin and the North Platte River Basin;
- A study of the feasibility of a project in the Columbia River Basin to reduce reliance on Canada for flood risk management; and
- Amendments to WRDA 2014 regarding surplus water contracts and water storage agreements for the Upper Missouri Mainstem Reservoirs by removing the 10-year sunsetting provision.

"The 2022 Water Resources Development Act delivers big wins for not only North Dakota, but the entire United States," said Senator Kevin Cramer (R-NORTH DAKOTA), Ranking Member of the Senate Transportation and Infrastructure Subcommittee. "It embraces states' water rights, improves recreational access, supports flood mitigation initiatives, and establishes policies to better develop and utilize Corps projects. This bill came together through regular order and within the two-year timeframe, and proves when we work in a cooperative manner, we can make meaningful progress."

Reclamation Announces Millions in Funding for Western Projects and Studies

The Bureau of Reclamation (Reclamation) last month announced nearly $90 million in funding for new water projects and studies in the Western U.S.

Several of the projects will be funded by the Bipartisan Infrastructure Law (BIL) signed by President Biden in November 2021 allocates $8.3 billion for Reclamation water infrastructure projects over the next five years to advance drought resilience and expand access to clean water for families, farmers and wildlife. The investment is intended to repair aging water delivery systems, secure dams, complete rural water projects, and protect aquatic ecosystems.



"Rebuilding of the El Zaguán portion of the Canyon Road Community Ditch" by Mara Saxer, award winner in the 2022 Acequia Art Contest at the 2022 Congreso de Las Acequias , December 2022 in Las Vegas (NEW MEXICO). **Photo courtesy of New Mexico Acequia Association.**

Basin Study Funding

Reclamation last month announced it will use $4.6 million to partner with water managers to conduct comprehensive basin studies in Colorado, Idaho, Oregon, Utah and Washington.

"These studies will help ensure reliable water supplies in communities affected by the impacts of drought," said Reclamation Commissioner Camille Calimlim Touton. "Each of these programs will use the latest science and data available to develop strategies that meet current and future water demands."

Basin studies are collaborative studies, cost-shared with non-federal partners, to evaluate water supply and demand and help ensure reliable water supplies by identifying strategies to address imbalances in water supply and demand. Three basins were selected to conduct full basin studies:

- **Great Salt Lake Basin Study**, Upper Colorado River Basin: Federal funding $3,174,000; non-federal funding $3,320,000;
- **Walla Walla River Basin Study**, Columbia-Pacific Northwest: Federal Funding $500,000; non-federal funding $500,000;
- **Big Wood River Basin Study**, Columbia-Pacific Northwest: Federal Funding $494,000; non-federal funding $494,000

A plan of study helps a cost-share partner -- such as a local water district - define the outcomes and set the scope and focus for a potential future basin study. Reclamation will develop the plans of study with each cost-share partner. The Dolores Water Conservancy Project in Colorado was selected to receive $100,000 of federal cost-share funding to develop a plan of study.

The Dolores Water Conservancy District – a member of the Family Farm Alliance - will complete a plan of study to understand the extent and consequences of water supply and demand imbalances, and how climate change will impact the Dolores Project, located in Colorado. After completion, this plan of study can be used to support an application for a full Basin Study which will address shortages in the Dolores Water Conservancy District, Ute Mountain Ute Tribe, and the downstream fishery.

This plan of study will include the development of a communication and stakeholder outreach plan as well as an initial application of the San Juan/ Dolores River Basin StateMod water allocation model to estimate current and future water supply for the Dolores Basin and to analyze infrastructure and operations.

The Basin Study Program is part of the WaterSMART Program, the U.S. Department of the Interior's sustainable water initiative that uses the best available science to improve water conservation and help water resource managers identify strategies to narrow the gap between supply and demand.

Drought Resiliency Projects

Reclamation last month also announced a $84.7 million investment from the BIL to help 36 communities throughout the West prepare and respond to the challenges of drought.

"Drought resilience is more important now than ever as the West is experiencing more severe and longer droughts," said Reclamation Commissioner Touton. "This investment from the Bipartisan Infrastructure Law in locally-led projects will help solidify community's water supplies and allow families and farmers to respond to the challenges posed by drought."

In Arizona, Family Farm Alliance member Maricopa-Stanfield Irrigation and Drainage District will receive $5 million for its Drought Resiliency Water Augmentation Program, Phase 2A Central Zone Project.

Several Alliance members in California will receive funding for drought projects, including $2 million for Arvin-Edison

Continued on Page 12

Colorado River Action in D.C. (*Continued from Page 6*)

role in this program, consistent with past implementation of a previously-authorized System Conservation Pilot Program," Mr. Mueller said.

Colorado River Action in D.C.

The massive omnibus bill signed into law by President Biden last month (*see related story, Page 9)* included two Colorado River provisions: *The Upper Colorado and San Juan River Basins Recovery Act*, and the *Colorado River Basin Conservation Act.*

The Conservation Act would reauthorize a program that offers Colorado River water users payments in exchange for voluntarily conserving water. The bill was introduced by Senators John Hickenlooper (D-COLORADO) and John Barrasso (R-WYOMING), with Senators Michael Bennet (D-COLORADO) and Cynthia Lummis (R-WYOMING), as co-sponsors.

The Recovery Act, sponsored by Senator Hickenlooper, Senator Mitt Romney (R-UTAH), and Rep. Joe Neguse (D-COLORADO), would continue protections for four threatened and endangered native fish species in both river basins. Sen. Bennet was a co-sponsor of the bill, which was supported by the Family Farm Alliance.

"This is the time when we can't dilly-sally around. We've got to start looking and get real about conserving water in the Colorado River for everybody involved," Rep. Hickenlooper told *CPR.*

Further downriver, the Department of Interior in late November said it will spend $250 million over four years on environmental cleanup and restoration work around the Salton Sea, a California lake formed in 1905 when the Colorado River overflowed. In recent years, receding water levels have exposed residents to harmful dust and impacted wildlife habitat.

Now, the lake is largely fed by runoff from farms in California's Imperial Valley, who use Colorado River water to grow many of the nation's winter vegetables as well as feed crops like alfalfa. As the farmers reduce their water use, less flows into the lake. California said it would only reduce its reliance on the over-tapped river if the federal government put up money to mitigate the effects of less water flowing into the sea, as recently reported by KPBS.

The deal was met with approval by JB Hamby, board member of Imperial Irrigation District, the largest user of Colorado River water.

"The collaboration happening at the Salton Sea between water agencies and state, federal, and tribal governments is a blueprint for effective cooperation that the Colorado River Basin sorely needs," Hamby said in a statement.

The $250 million will come out of the recently passed Inflation Reduction Act, which set aside $4 billion to address Western drought challenges.

Additionally, the U.S. Army Corps of Engineers has agreed to review both short-term and long-term options for restoring the Salton Sea, which could ultimately net billions for major public works to restore the crashing ecosystem of California's largest water body, according to *The Desert Sun.*

"This study will help chart a path forward toward the long-term restoration of the Salton Sea," said Wade Crowfoot, California Natural Resources Secretary. "It will identify projects to improve conditions at the Sea and opens the possibility of new federal funding to deliver these projects."

Reclamation Funding Announcements (*Cont'd from Page 11*)

Water Storage District's Drought Recovery Wells and Conjunctive Use Modeling Tool; $2 million for Fresno Irrigation District's Carter-Bybee Recharge Basin Project; and nearly $2 million for Shafter-Wasco Irrigation District's efforts to improve recharge facilities and conveyance projects.

In Idaho, Falls Irrigation District will receive over $415,000 for its Snake River Plain Aquifer Wells Project.

The New Mexico Acequia Association – whose executive Director, Paula Garcia serves on the Alliance Advisory Committee - was granted over $1.4 million to develop tools to adapt to water scarcity and guide implementation of strategies to increase acequia community and water resilience. *(See photo, page 11).*

The project descriptions and information about Reclamation's drought resiliency program are available at www.usbr.gov/drought.

Environmental Water Resources Projects

Reclamation anticipates posting the fiscal year 2023 Environmental Water Resources Project funding opportunity to grants.gov later this month.

Section 40907 of the BIL includes additional authority for Reclamation to provide funding for multi-benefit projects that improve watershed health. Section 40907 is being implemented through WaterSMART Environmental Water Resources Projects.

Eligible projects under this funding opportunity include water conservation and efficiency projects that result in quantifiable and sustained water savings and benefit ecological values or watershed health, water management or infrastructure improvements to benefit ecological values or watershed health, and restoration projects benefiting ecological values or watershed health that have a nexus to water resources or water resources management.

Reclamation will provide Federal financial assistance of up to $3 million in Federal funding for projects with a total project cost of $6 million or less that can be completed in three years.

You can find additional information regarding the Environmental Water Resources Projects funding opportunity on Reclamation's WaterSmart website.

A Big Thank You to Our New and Supporting Members!

YEAR END 2022

ADVOCATE ($5,000 - $9,999)

Panoche Water District (CALIFORNIA)

DEFENDER ($1000-$4999)

Coleman Farming Company, LLC (CA) **Klamath Irrigation District (OR)**
McCilli Farms (NM) **Northern Water (CO)**
Teixeira & Sons (CA) **Vail Ranches, LLC (CA)**
Whitman / SWK Farms (AZ) **Wonderful Orchards (CA)**

PARTNER ($500-$999)

Lower South Platte Water Conservancy District (CO)
O'Neill Ag (CA) **Oregon Potato Commission**
Salopek Foundation (NM) **Schroeder Law Offices (NV)**

SUPPORTER ($250—$499)

Campbell Brothers Farms (CA) **Mancos Water Conservancy District (CO)**
North Fremont Canal Systems (ID) **Paul Orme (AZ)**
Perez Farms (CA) **Clinton C. Pline (ID)**
Imperial Valley Water Association (CA)

DONOR SUPPORT

Make your tax-deductible gift to the Alliance today! Grassroots membership is vital to our organization. Thank you in advance for your loyal support.

If you have questions, please call our fundraising coordinator, Jane Townsend, at (916)206-7186 OR EMAIL jane@familyfarmalliance.org

OR EMAIL jane@familyfarmalliance.org

Family Farm ALLIANCE®

Protecting Water for Western Irrigated Agriculture

Contributions can also be mailed directly to:
Family Farm Alliance
P.O. Box 1705
Clearlake Oaks, CA 95423

Agenda Item 11. Reports

RECEIVED

LOS OLIVOS COMMUNITY SERVICES DISTRICT
WORKSHOP
January 11, 2023, 6:00 PM
St Mark's in the Valley Episcopal Church, Stacy Hall
2901 Nojoqui Ave, Los Olivos CA 93441
Please observe decorum and instructions from the President

Posted: 1-6-2023

This meeting will be held both in-person and electronically via Zoom meetings. In-person the meeting will be held at the following location:
St Mark's in the Valley Episcopal Church, Stacy Hall - 2901 Nojoqui Ave, Los Olivos CA 93441
The public will also be able to hear and participate electronically by using the following links:
On Zoom:
https://us06web.zoom.us/j/82515801920?pwd=VHFQd1VDZUVucFZXZEVEdVhzVjhkQT09
By Phone:
Meeting ID: 825 1580 1920 Passcode: 378600
One tap mobile +16694449171,,82515801920#,,,,*378600# US

The Los Olivos Community Services District is committed to ensuring equal access to meetings. In compliance with the American Disabilities Act, if you need special assistance to participate in the meeting or need this agenda provided in a disability-related alternative format, please call 805.500.4098 or email to losolivoscsd@gmail.com. Any public records, which are distributed less than 72 hours prior to this meeting to all, or a majority of all, of the District's Board members in connection with any agenda item (other than closed sessions) will be available for public inspection at the time of such distribution at a location to be determined in Los Olivos, California 93441.

MEETING AGENDA

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **PUBLIC COMMENT**
Members of the public may address the Committee on any items of interest within the subject matter and jurisdiction of the Committee but not on the agenda today (Gov. Code - 54954.3). The public may also request future agenda topics at this time. Speakers are limited to 3 minutes. Due to the requirements of the Ralph M. Brown Act, the District cannot take action today on any matter not on the agenda, but a matter raised during Public Comments can be referred to District staff for discussion and possible action at a future meeting.

4. **WORKSHOP**
Representatives from the Central Coast Regional Water Quality Control Board (RWQCB) and County of Santa Barbara Environmental Health Services (EHS) will discuss their respective letters from 2022 (see attached) as well as other pertinent matters related to the LOCSD wastewater treatment and reclamation project. EHS discussion will include receiving input on the Local Agency Management Program (LAMP) as it relates to parcels within the LOCSD boundaries.

5. **ADJOURNMENT**

NOTE THAT THIS WORKSHOP WILL BE FOLLOWED BY THE LOCSD BOARD OF DIRECTOR'S REGULAR MEETING FOR THE MONTH OF JANUARY 2023.

Central Coast Regional Water Quality Control Board

September 23, 2022

Guy Savage
General Manager
Los Olivos Community Services District
gm.locsd@gmail.com

Sent by electronic mail

Dear Mr. Savage:

RE: Los Olivos Community Wastewater Reclamation System Project

The implementation of community wastewater systems are a high priority for the Central Coast Water Board. As you know, California law requires the California Regional Water Quality Control Board, Central Coast Region (Central Coast Water Board) to regulate waste discharges (including those from septic systems) to ensure long-term water quality protection. Therefore, the Central Coast Water Board has direct regulatory authority over individual septic and community wastewater systems in the central coast region. Throughout the past several decades, the Central Coast Water Board has supported and continues to support Santa Barbara County and the Los Olivos Community Services District's (CSD) efforts to implement a community wastewater reclamation system for the Los Olivos Community to replace individual septic systems (also known as onsite wastewater treatment systems or OWTS).

In 1974, the Santa Barbara County Board of Supervisors designated Los Olivos as a Special Problem Area for septic systems and the county has since conducted several studies evaluating and supporting the implementation of a community wastewater system. The basis for the county's 1974 designation was combination of compounding factors in the community including small lot sizes and unfavorable soil conditions for septic system disposal, and nitrate impacts to shallow drinking water supply wells. The Central Coast Water Board's 1989 *Water Quality Control Plan for the Central Coastal Basin* (Basin Plan) also identified Los Olivos as an area needing wastewater management planning. The county's 2003 Septic System Survey[1] identify the Los Olivos area as high risk for OWTS contamination of groundwater and surface water due to the high density of systems associated with small lot sizes, shallow groundwater, unfavorable soil conditions, proximity to surface water bodies, age and condition of

[1] Hantzsche, N.N., Habal, J.A., Hopkins, W., McGregor, J., Eckman, N., Gonzales, M., Pettifor, G. (2003). Septic system sanitary survey for Santa Barbara County California. Questa Engineering Corporation Project #210029 prepared for Santa Barbara County Environmental Health Services.

systems, and the predominant septic system disposal method employed in the community. Some of these issues are described in more detail below to provide context regarding the necessity of the community wastewater system project.

Lot sizes are small in Los Olivos with approximately two thirds of the lots being less than half an acre and many of the lots less than a quarter acre. For reference, the State Water Resources Control Board's statewide OWTS Policy[2] limits parcel size for new subdivisions utilizing OWTS to a half-acre or greater based on average annual rainfall (Section 7.8, Table 1, OWTS Policy). The OWTS Policy dictates minimum lot sizes of two or two and one-half acres for Los Olivos based on an available range of average annual rainfall data for the Los Olivos area.

Soil conditions that are unfavorable to percolation and small lot sizes in the Los Olivos area preclude the use of conventional leachfields to spread out the septic system effluent discharge closer to the surface where it can percolate through the soil before reaching groundwater. The county's 2003 Septic System Survey found that approximately two thirds of the surveyed systems utilized drywells or seepage pits. Seepage pits are a high-risk disposal method for groundwater contamination because they concentrate septic system effluent disposal over a smaller area and reduce the level of wastewater contaminant treatment and attenuation that would occur in the unsaturated soil zone over a greater area and depth as compared to conventional leachfields.

The use of drywells and seepage pits coupled with shallow groundwater increases the risks of groundwater contamination from septic system discharges. According to the 2003 Septic System Survey, first encountered groundwater exists at 5-15 feet below ground surface (bgs) in Los Olivos and many of the seepage pits may discharge directly into the saturated portion of the aquifer, precluding unsaturated zone soil treatment and attenuation before the septic system effluent reaches groundwater. At the time the 2003 Septic System Survey was conducted, approximately one third of the systems were greater than 10 years old. Septic systems typically have a lifespan of approximately 40 years. Many of the systems in Los Olivos are approaching the end of their useful life and may result in a decrease in treatment and disposal performance.

Shallower drinking water supply wells in the Los Olivos community historically identified as being impacted with nitrate have been abandoned and replaced with deeper water supply wells. Nitrate concentrations in deeper water supply wells that now support the Los Olivos community contain fluctuating levels of nitrate with maximum levels of up to 4.3 milligrams per liter as nitrogen (mg/L - N; the public health drinking water maximum contaminant level is 10 mg/L - N). Although limited groundwater quality data are available for the Los Olivos area, these data and the above noted unfavorable septic system issues in the Los Olivos area support the Special Problem Area designation and need for a community wastewater system.

[2] https://www.waterboards.ca.gov/water_issues/programs/owts/docs/owts_policy.pdf

Increased groundwater regulation through the Sustainable Groundwater Management Act (SGMA) and an ever-worsening drought that limits statewide water supply and increases groundwater pumping requires communities to consider all sources of water as a critical resource and to develop long-term approaches to protect and manage our shared finite water supplies. A community wastewater reclamation system will provide both water quality and water supply benefits for the Los Olivos community by eliminating nitrate discharges from septic systems to the community's groundwater supply and by producing a drought resilient source of recycled water for beneficial reuse in the community. The county and CSD have invested significant staff and financial resources towards evaluating various community wastewater system alternatives and is on a critical path towards realizing a project that will be benefit the Los Olivos community well into the future.

Ongoing wastewater management in Los Olivos via OWTS will be subject to Santa Barbara County oversight via ordinances in accordance with the county's Local Agency Management Plan (LAMP)[3] approved by the Central Coast Water Board pursuant to the OWTS Policy. The LAMP and associated ordinances include OWTS related requirements and restrictions for Los Olivos in addition to other problem areas in the county. The ongoing operation and maintenance of OWTS, particularly for high-risk constrained site conditions and systems like those in Los Olivos, will be burdensome and costly to individual property owners and the community. A community wastewater facility owned and operated by the Los Olivos Community Services District will facilitate local control of wastewater services versus control by the county or Central Coast Water Board as may be necessary in the future if a community wastewater system is not implemented and the area is subject to ongoing OWTS failures or continued water quality degradation.

It is the Central Coast Water Board's longstanding position that a community wastewater solution is necessary for Los Olivos' benefit and viability. Continued use of individual septic systems is not feasible in the long term for the reasons outlined above and will result in ongoing potential system failures, groundwater degradation, and financial and intrinsic societal costs to the community associated with a substandard wastewater management approach subject to county and state level requirements and restrictions. A community-based approach will also enable Los Olivos to better manage its water supply via the potential beneficial reuse of recycled water and/or the discharge of highly treated wastewater into the Santa Ynez River Valley Groundwater Basin the Los Olivos community relies on for its drinking water supply. Wastewater and water supply infrastructure funding is currently available through various state and federal programs that could be pursued in support of implementing a community wastewater reclamation system project. The cost of a community wastewater project will increase and the availability of funding will decrease with each passing month, so time is of the essence to finally act on this warranted project that has been discussed and studied for nearly five decades.

[3] https://content.civicplus.com/api/assets/6aa4e5d0-3d64-4521-99e9-b37e89eaa7b0?cache=1800

The Central Coast Water Board is committed to working in partnership with the Los Olivos community and Santa Barbara County to facilitate this very important and necessary project for the community and for the future of our shared water resources.

Sincerely,

Matthew T. Keeling
Executive Officer

cc:

Lars Seifert, Santa Barbara County, Environmental Health Services Director
Lars.Seifert@sbcphd.org

Supervisor Joan Hartmann, Third District, Santa Barbara County Board of Supervisors
jHartmann@countyofsb.org

Mike Prater, Executive Officer, Santa Barbara County Local Agency Formation Commission
lafco@sblafco.org

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Santa Barbara County
PUBLIC Health
DEPARTMENT

Environmental Health Services

225 Camino del Remedio • Santa Barbara, CA 93110
805/681-4900 • FAX 805/681-4901

2125 S. Centerpointe Pkwy. #333 • Santa Maria, CA 93455-1340
805/346-8460 • FAX 805/346-8485

Daniel L. B. Nielson, MPA *Interim Director*
Suzanne Jacobson, CPA *Chief Financial Officer*
Paige Batson, MA, PHN, RN *Deputy Director*
Darrin Eisenbarth *Deputy Director*
Dana Gamble, LCSW *Deputy Director*
Henning Ansorg, MD *Health Officer*

Lara Seifert *Director of Environmental Health*

October 31, 2022

VIA ELECTRONIC MAIL

Guy Savage
General Manager
Los Olivos Community Services District
gm.locsd@gmail.com

Dear Mr. Savage:

Santa Barbara County Environmental Health Services (EHS), as the locally-designated administrative authority for enforcing the County's Local Agency Management Program (LAMP), finds it necessary to inform you in writing that timely steps are needed to establish a community wastewater treatment system for the Los Olivos Community Services District.

Wastewater treatment in Los Olivos and the surrounding area is currently provided through the use of onsite wastewater treatment systems (commonly referred to as septic systems) located on individual parcels. However, due to the high density of existing septic systems associated with small lot sizes (less than 2.5 acres), unfavorable soil conditions, and the deteriorating functionality of aging systems in the district, there is a high and continuing risk for contamination of groundwater within the Los Olivos Community Service District service area.

In Los Olivos, most parcels are developed and many of the septic systems are approaching the end of their useful life. The components of the systems (tanks, piping, valves, and dispersal field) have varying lifespans based on factors such as the construction and use of the system, but typically require replacement within 40 years. Many of these aging systems are at risk of failing. A *failing* septic system is a system that is not properly treating wastewater and is typically indicated by a backup of sewage into the structure or sewage surfacing on the ground. In general, the failure occurs at the dispersal field, which could be either a drywell (seepage pit) or leach lines. A failure may also be indicated by needing to pump the tank more than once a year (so as to reduce flow to the dispersal field).

It is imperative for property owners within the Los Olivos Community Services District to be aware that current upfront cost estimates for the design and installation of a supplemental treatment system and a dispersal field to replace a failing septic system range from $30,000 to $70,000, depending on site conditions and the components required. On parcels in Los Olivos that have limited buildable space, construction costs for a septic system that meets current requirements may not be feasible or may be even more costly to construct.

For your reference, the required permitting steps and associated ongoing costs for a septic system with supplemental treatment based on non-site specific, third-party estimates have been outlined on the following page. Note that any new, modified, or replacement septic system on a parcel less than 2.5 acres in size requires the installation of supplemental treatment to reduce the ongoing risk of contamination in shallow groundwater.

Steps to permit and construct a septic system in Los Olivos:

1. Obtain a site-specific design for the system prepared by a California licensed professional engineer or other qualified professional including soils/percolation data.
2. Submit a permit application to EHS, including design and application fee.
    a. "New" or "Modification" - $255 + $161/hour
    b. ""Repairs" - ($713).
3. Upon approval, construct the system per approved plans. For systems with supplemental treatment, a Notice to Property Owner shall be recorded, and service contract provided to EHS, prior to final inspection.

Estimated ***one-time*** construction costs: **$30,000 to $70,000**

4. Operation and maintenance of a supplemental treatment system requires:
    a. Operating permit (Permit renewal permit fee every 5 years = $324),
    b. Service contract with qualified provider, inspections per manufacturer's requirements, generally every 6 months ($800-1200/year),
    c. Effluent sampling, analyzed for total suspended solids, biochemical oxygen demand (BOD_5, five-day biochemical oxygen demand), and nitrogen series (Total nitrogen (as N)) ($400/year),
    d. Pumping the septic tank or supplemental treatment tank ($1,200 every 5 years),
    e. Property owner shall submit inspection reports and effluent sampling analysis within 30 days of inspection.

Estimated ***ongoing*** cost for OWTS[1]: **$1,505 - $1,905/year**

(or $125-$159 monthly)

The ongoing operation and maintenance of septic systems with supplemental treatment is burdensome and costly to individual property owners and the community. As outlined in communication by the Regional Water Quality Control Board (dated September 23, 2022), a community wastewater project engineered for the district is necessary to avoid inevitable septic system failures and to avoid continued groundwater degradation in the area. As a result, EHS expects you to take prompt and timely steps to establish a community wastewater treatment system for the Los Olivos Community Services District.

[1] Not including electricity or telecommunication/monitoring costs and system component replacements.

If you or members of the community have any questions, please direct them by email to ehsadmin@sbcphd.org.

Regards,

Lars Seifert, M.A., REHS, Director
Environmental Health Services

Cc: Chair Joan Hartmann, Third District, Santa Barbara County Board of Supervisors
JHartmann@countyofsb.org

Matthew T. Keeling, Executive Officer, Central Coast Regional Water Quality Control Board
Matt.Keeling@waterboards.ca.gov

Mike Prater, Executive Officer, Santa Barbara County Local Agency Formation Commission
lafco@sblafco.org

LOS OLIVOS COMMUNITY SERVICES DISTRICT **Posted: 1-6-2023**

REGULAR MEETING

January 11, 2023

NOTE THIS MEETING WILL START AFTER THE WORKSHOP, WHICH STARTS AT 6:00 PM

St Mark's in the Valley Episcopal Church, Stacy Hall

2901 Nojoqui Ave, Los Olivos CA 93441

Please observe decorum and instructions from the President

This meeting will be held both in-person and electronically via Zoom meetings. In-person the meeting will be held at the following location:
St Mark's in the Valley Episcopal Church, Stacy Hall - 2901 Nojoqui Ave, Los Olivos CA 93441
The public will also be able to hear and participate electronically by using the following links:
On Zoom:
https://us06web.zoom.us/j/82515801920?pwd=VHFQd1VDZUVucFZXZEVEdVhzVjhkQT09
By Phone:
Meeting ID: 825 1580 1920 Passcode: 378600
One tap mobile +16694449171,,82515801920#,,,,*378600# US

The Los Olivos Community Services District is committed to ensuring equal access to meetings. In compliance with the American Disabilities Act, if you need special assistance to participate in the meeting or need this agenda provided in a disability-related alternative format, please call 805.500.4098 or email to losolivoscsd@gmail.com. Any public records, which are distributed less than 72 hours prior to this meeting to all, or a majority of all, of the District's Board members in connection with any agenda item (other than closed sessions) will be available for public inspection at the time of such distribution at a location to be determined in Los Olivos, California 93441.

MEETING AGENDA

1. **CALL TO ORDER**

2. **ROLL CALL**

3. **PUBLIC COMMENTS**
   Members of the public may address the Committee on any items of interest within the subject matter and jurisdiction of the Committee but not on the agenda today (Gov. Code - 54954.3). The public may also request future agenda topics at this time. Speakers are limited to 3 minutes. Due to the requirements of the Ralph M. Brown Act, the District cannot take action today on any matter not on the agenda, but a matter raised during Public Comments can be referred to District staff for discussion and possible action at a future meeting.

4. **ADMINSTRATIVE AGENDA**
   All matters listed hereunder constitute a consent agenda and will be acted upon by a single vote of the Board. Matters listed on the Administrative Agenda will be read only on the request of a member of the Board, in which event the matter may be removed from the Administrative Agenda and considered as a separate item.
   A. **APPROVAL OF MEETING MINUTES**
      Regular Meeting Minutes of December 14, 2022.
      Special Meeting Minutes of December 30, 2022.
   B. **REVIEW AND APPROVE PAYMENT OF INVOICES RECEIVED BY JANUARY 2, 2023.**
      The invoices below have been reviewed by the Finance Committee and are recommended for approval.

No.	Invoice Date	Invoice #	Provider	Amount
1.	9/9/2022	81166	MNS – Engineering and Support Services	$ 3,485.00
2.	12/10/2022	876.003-6	GSI Water Solutions Inc – Effluent Disposal Study	$ 3,987.50
3.	12/12/2022	1064	Confluence Engineering – Effluent Disposal Study	$ 5,150.00
4.	12/12/2022	00876.001-21	GSI Water Solutions Inc – Groundwater Management	$ 16,766.27
5.	12/20/2022	81982	MNS – Engineering and Support Services	$ 5,875.00
6.	12/20/2022	306531	NV5 – Assessment Engineering Services – FINAL	$ 1,186.84
7.	12/31/2022	221231	Savage – General Manager services	$ 4,050.00

5. **GENERAL MANAGER AND DISTRICT ENGINEER REPORTS**
   The GM and DE will give reports on any meetings that they attended on behalf of the District, comment on various District-related activities and/or provide status on projects. The GM may also review Budget Reports (see packet).

6. **COMMENTS**
   The Directors will provide comments and report on activities related to District business. Comments are informational only, no action will be taken, and public comment not received.
   A. **DIRECTORS COMMENTS**
      Directors will give reports on any meetings that they attended on behalf of the Board and/or choose to comment on various District-related activities.

7. **ADJOURNMENT**

LOS OLIVOS COMMUNITY SERVICES DISTRICT **Posted: 12-27-2022**

SPECIAL MEETING

December 30, 2022, 6:00 PM

St Mark's in the Valley Episcopal Church – Stacy Hall

2901 Nojoqui Ave, Los Olivos CA 93441

Please observe decorum and instructions from the President

This meeting will be held both in-person and electronically via Zoom meetings. In-person the meeting will be held at the following location:
St Mark's in the Valley Episcopal Church, Stacy Hall - 2901 Nojoqui Ave, Los Olivos CA 93441
The public will also be able to hear and participate electronically by using the following links:
On Zoom:
https://us06web.zoom.us/j/82515801920?pwd=VHFQd1VDZUVucFZXZEVEdVhzVjhkQT09
By Phone:
Meeting ID: 825 1580 1920 Passcode: 378600
One tap mobile +16694449171,,82515801920#,,,,*378600# US

The Los Olivos Community Services District is committed to ensuring equal access to meetings. In compliance with the American Disabilities Act, if you need special assistance to participate in the meeting or need this agenda provided in a disability-related alternative format, please call 805.500.4098 or email to losolivoscsd@gmail.com. Any public records, which are distributed less than 72 hours prior to this meeting to all, or a majority of all, of the District's Board members in connection with any agenda item (other than closed sessions) will be available for public inspection at the time of such distribution at a location to be determined in Los Olivos, California 93441.

MEETING AGENDA

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **PUBLIC COMMENTS**
   Members of the public may address the Committee on any items of interest within the subject matter and jurisdiction of the Committee but not on the agenda today (Gov. Code - 54954.3). The public may also request future agenda topics at this time. Speakers are limited to 3 minutes. Due to the requirements of the Ralph M. Brown Act, the District cannot take action today on any matter not on the agenda, but a matter raised during Public Comments can be referred to District staff for discussion and possible action at a future meeting.

5. **BUSINESS ITEMS**
   A. **CONSIDERATION OF FOUR CONTRACTS FOR ENGINEERING AND TECHNICAL SERVICES; REGEN ($10,600), NV5 ($26,520), REGEN ($40,000), AND NV5 ($84,020).**
   Proposals from REGEN, Inc. and NV5, Inc. were reviewed by an ad hoc Technical Committee appointed by President Fayram in May 2022. The ad hoc committee consisted of President Fayram, Vice-President Ross, and General Manager Savage. No specific recommendation was made by the Technical Committee. Instead, all four proposals are being brought to full Board of Directors for consideration and possible approval. All of the proposals are intended to further the District's understanding of gravity collection, septic tank effluent pumping (STEP), and/or advanced on-site approaches. The proposals (in cost order) include:

1. REGEN – An hourly contract, not to exceed $10,600, to provide a comparison and recommendation on gravity, STEP, and advanced on-site alternatives being considered by the LOCSD. A brief set of pros/cons for each alternative would be provided.
2. NV5 – An hourly contract, not to exceed $26,520, to provide a detailed comparison of gravity versus STEP collection approaches.
3. REGEN – An hourly contract, not to exceed $40,000, to provide a "30% Design" for STEP. The proposal includes system layouts in sufficient detail for estimating purposes, technical documentation and issue enquiries for all major equipment for the purposes of developing the capital, operating cost, and repair and replacement frequency and cost estimates.
4. NV5 – An hourly contract, not to exceed $84,020, to provide a detailed analysis of STEP versus traditional collection approaches, plus an evaluation of installing advanced on-site treatment systems for residential properties in lower density areas with larger lots. The contract would include the development of a conceptual combined (hybrid) collection system layout.

Authority is being sought for the President and/or General Manager to sign a District Counsel approved contract with any selected vendors.

6. **ADJOURNMENT**

CORRESPONDENCE LIST
JANUARY 2023

1. December 15, 2022 – Notice and Agenda received from Cachuma Operations and Maintenance Board for the December 19, 2022 Board of Directors Meeting

2. December 15, 2022 – Letter from Santa Barbara County Fire Department – Fire Service requirements for APN 141-330-009

3. December 17, 2022 - Agenda and Board Packet received from Los Olivos Community Services District for the November 9, 2022 Board of Directors Regular Meeting

4. December 14, 2022 – Letter from District for Water Service Requirements for APN 141-360-006

5. December 21, 2022 – Letter from District to Santa Barbara County Elections regarding return of Certificate(s) of Appointment and Oath of Office – November 2022 Election

6. December 21, 2022 – Letter from District to Santa Barbara County Clerk Recorder's Office regarding submittal of Annual/Assuming Office Form 700 for N. Urton

7. December 20, 2022 – Letter from Brownstein Hyatt Farber Schreck, LLP to Bartlett, Pringle & Wolf, LLP regarding Audit Confirmation

8. December 20, 2022 – Letter from Santa Barbara County Fire Department regarding Fire Department requirements for APN 083-160-003/083-150-010

9. December 22, 2022 – Letter from District regarding updated Water Service Requirements for APN 141-111-005

10. December 27, 2022 – Notice, agenda, and packet received from the Los Olivos Community Services District for the December 30, 2022 Special Meeting

11. December 28, 2022 – Can and Will Serve Letter from District for APN 137-390-010

12. January 6, 2023 – Agenda and Board Packet received from Los Olivos Community Services District for the January 11, 2023 Workshop and Regular Meeting of the Board of Directors

13. January 11, 2023 – Letter to Central Coast Water Authority regarding Appointment of Director and Alternate Representatives to Board of Directors

14. January 11, 2023 – Letter from Santa Barbara County Fire Department regarding Fire Service requirements for APN 139-520-017