County of Santa Cruz

Water Advisory Commission

701 Ocean Street, Room 312, Santa Cruz, CA 95060
(831) 454-2022 TDD/TTY -Call 711 www.scceh.com
EnvironmentalHealth@santacruzcounty.us

AGENDA

SANTA CRUZ COUNTY WATER ADVISORY COMMISSION

Wednesday August 6, 2025, 4pm

This meeting will be held in hybrid format. Commissioners are expected to attend in person.
In-Person: 701 Ocean Street; **5th Floor Redwood Room**
Remote via Teams: **Join the meeting now** Meeting ID: 256 352 840 689 4 Passcode: YY2wM3Er
Dial in by phone +1 831-454-2222 Phone conference ID: 647 328 39#

A. OPENING

1. Call to Order
2. Roll Call

B. PUBLIC COMMUNICATIONS

Opportunity for the public to comment on items under the purview of the Water Advisory Commission but not on today's agenda.

C. CONSENT AGENDA

Items on the consent agenda are considered to be routine in nature and will be acted upon in one motion. Specific items may be removed by members of the advisory body or public for separate consideration and discussion. Routine items that will be found on the consent agenda are meeting minutes, drought response updates, and Groundwater Sustainability Agency updates.

1. Approval of Meeting Minutes for June 4, 2025
2. Update from Groundwater Sustainability Agencies
3. Drought Response Updates

D. COMMISSIONERS' REPORTS

Opportunity for Commissioners to provide brief updates

E. STAFF REPORTS AND ANNOUNCEMENTS

Opportunity for staff to provide brief updates

F. NEW BUSINESS

1. Local Area Management Plan (LAMP) multi-year assessment results
   Review report on the results of data analysis on the implementation of the LAMP and provide feedback before submittal to the Regional Water Quality Control Board.
   Attachments: LAMP Report

2. Multi-Jurisdictional Hazard Mitigation Planning Process
   Introduction to the Multi-Jurisdictional Hazard Mitigation Planning Process and provide feedback.
   Attachments: Staff Report
   Informational handouts (English and Spanish)
   Informational slides

G. UNFINISHED BUSINESS and UPDATES

None

H. CORRESPONDENCE

None

I. BOARD OF SUPERVISORS ACTION ON ITEMS AFFECTING WATER:

Adopt an "Ordinance Amending Section 4.65.060(A)(3) of the Santa Cruz County Code relating to the Safe Drinking Water, Clean Beaches, Wildfire Risk Reduction, and Wildlife Protection Act," (Approved in Concept May 20, 2025) (Clerk of the Board) (Item 27)

J. ITEMS OF INTEREST

Coastal Commission meeting agenda, July 10, 2025. Item 18a. Santa Cruz County LCP Amendment No. LCP-3-SCO-25-0021-1-Part A (Wells and Water Systems).

K. AGENDA ITEMS FOR FUTURE MEETINGS

L. ADJOURNMENT

County of Santa Cruz

Water Advisory Commission

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Minutes

SANTA CRUZ COUNTY WATER ADVISORY COMMISSION

Wednesday June 4, 2025, 4pm

This meeting will be held in hybrid format. Commissioners are expected to attend in person.
In-Person: 701 Ocean Street; **5th Floor Coastlines Room**
Remote via Teams: **Join the meeting now** Meeting ID: 280 136 550 008 3 Passcode: sE6Mg6rB
Dial in by phone +1 831-454-2222 Phone conference ID: 720 117 288#

A. OPENING

1. Call to Order (4:02)
2. Roll Call

In attendance: Cheap, Gillespie, Lego, Lockwood, Wilson
Staff: Sierra Ryan, Sean Abbey

B. PUBLIC COMMUNICATIONS

Opportunity for the public to comment on items under the purview of the Water Advisory Commission but not on today's agenda.

No comments

C. CONSENT AGENDA

Items on the consent agenda are considered to be routine in nature and will be acted upon in one motion. Specific items may be removed by members of the advisory body or public for separate consideration and discussion. Routine items that will be found on the consent agenda are meeting minutes, drought response updates, and Groundwater Sustainability Agency updates.

1. Approval of Meeting Minutes for April 4, 2025
2. Update from Groundwater Sustainability Agencies

Motion by Lego, second by Lockwood, approved unanimously.

D. COMMISSIONERS' REPORTS

Opportunity for Commissioners to provide brief updates

Cheap: Joined SMGWA as an alternate director as a private well owner. He has been attending a UC Davis course. Recently he learned about the work of Santa Clara Valley Water District, which is highly complex and well organized.

Lego: San Andreas Mutual has applied for an emergency intertie with Soquel Creek Water District. Did the application with LAFCO. Has learned a lot. The staff from Moonshot Missions have been a great support. They are considering doing an income survey of the water system households with RCAC to see if they qualify for financial aid. Being located next to La Selva Beach makes them appear very high income. The goal is to get grant funding for the intertie or nitrate and chrome 6 treatment. As an interconnection they do not need to upgrade the system to Soquel Creek's standards.

Lockwood: Went to a conference in Sacramento on May 27 and 28th and was on a panel talking about seawater intrusion on the central coast. Heard about United Water Conservation's seawater intrusion prevention project which is similar to Orange County. The event was hosted by ACWA and GRA and Brownstein. There was an interesting panel on State well mitigation programs. Laurel Firestone noted that there is a budget gap of $2-4 Billion to provide safe water. The following day was the legislative day. There were interesting panels on pending laws that could work their way through the system. If people do not like their water allocations through the GSAs they are trying their luck at adjudications through the courts.

PV water is working with DWR to lead a Pajaro river watershed program on June 10th.

Gillespie: By July 1 of 2025, all public water systems need a cross-connection control policy. Requires commercial and residential fire control systems and potable connections to have backflow prevention. These devices and costs will ultimately fall on the property owner and the water district is the enforcement agency. The regional intertie between SVWD and Santa Cruz is 75% complete with the pipeline on La Madrona. Looking to wrap up by the end of June on the La Madrona section. Scotts Valley has completed construction of the Graceway well on Scotts Valley Drive. It can reliably produce 600 gpm.

E. <u>STAFF REPORTS AND ANNOUNCEMENTS</u>

Opportunity for staff to provide brief updates

Measure Q: Staff recommends the WAC follow along with the stakeholder meetings and

COAB updates. Initially concerned that water wasn't well represented but now Sierra will be integrated into discussions when water is involved.

County budget has significant challenges, HSA is making cuts to staffing and services. Currently the Water Resources budget is whole, staff are trying to keep costs low and look for grants.

Staff has submitted the Well Ordinance Update to the Coastal Commission, but it may not go into effect on July 1, it depends on when it is agendized.

F. NEW BUSINESS

1. Intercommission Working Group

Provide guidance to staff as to the Commission's interest in reviving the Intercommission Working Group. Questions to consider: which commissions? Any specific topics?

The last meeting was in 2023, Commissioners Lockwood and Wilson participated. There was interest in impacts of homeless encampments, and Vision Santa Cruz. They discussed the significant tree ordinance, transfer of development rights, the decade of the environment, homeless encampments.
Could potentially start by examining the workplans. Talked about coastal retreat. Commissioner Wilson doesn't think we need a formal structure, but rather we can wait until there is a need.

Lego: it seems like we always run out of time and never get to all the topics. If there is a topic, offer to make the meeting a joint meeting and otherwise just proceed with our agenda. Nate agrees. Frank suggests commissioners could attend other meetings.

Public Comment (Steinbruner) – Commission on the Environment is planning a series on energy, the first is focusing on battery storage systems.

Conclusion: No need to pursue unless there is a specific issue of interest that might warrant a joint meeting.

G. UNFINISHED BUSINESS and UPDATES

1. Domestic Well Water Quality Testing Program Updates

Update on the progress and results of the domestic well testing program kicked off in April of 2024.

Sean Abbey presented.
Q: What is the treatment device?

A: It's an RO unit with GAC. Lego believes that POU is a really great option though many mandates require full house treatments.

Q: Can we test at Buena Vista Migrant Center?
A: The grant is limited to State smalls and domestic wells.

Q: Is there follow-up testing?
A: Yes to ensure that the system is working but not after it's working.

Lego: the POU treatments on nitrate and chrome 6 that they have tested have had significant reductions of 5x or 6x.

Lockwood: There was a celebration at Springfield Terrace to get POE treatments at the houses in the community.

2. Draft Small Water System Support Guidebook

Provide feedback on the draft Guidebook for small water systems to use as a reference when considering water supply partnerships and possible consolidations.

Staff tried to rank the concerns we heard from water systems into 5 categories. We overlapped those with four strategies and broke it down by strategy to address these.

Comment: Missing from table: add context – consolidation can be very expensive, need to find a way to add ($) to represent the cost.

Lego: document reads well, strategies are good. Problem is there isn't much that a system can do about it. Maybe good to get more information on funding source information. As a small water company, what they're looking at is a cost to consolidate that is probably $10 million dollars to get the infrastructure up to standards. Long term loans are the only financing options. Even if they do consolidate, the water bills will go way up. There is also a small contingent of people that worry about relative water quality. Without grant money from the state, it's almost guaranteed that none of these systems will consolidate.

Frank expressed concern that mandates will make it very challenging for systems that can't meet new standards.

Lompico first interconnected with SLV and then overtime without TMF they did a full consolidation. That intertie was provided by DWR.

Lego says we can use their water system as a case study to demonstrate their activities.

RCAC does provide some guidance and financial studies but not legal advice.

Q: Could we use the wildfire resilience in Measure Q to help fund water resilience. Perhaps for storage for firefighting?

SqCWD charges $1 per connection per month to have the intertie and then the water charged if needed is very high.

H. CORRESPONDENCE

No discussion

I. BOARD OF SUPERVISORS ACTION ON ITEMS AFFECTING WATER:

No discussion

J. ITEMS OF INTEREST

No discussion

K. AGENDA ITEMS FOR FUTURE MEETINGS

Septic system management – water quality/LAMP report

Multi-jurisdictional hazard mitigation plan

Measure Q update from OR3

L. ADJOURNMENT (5:57)

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Subject: August 6, 2025 Water Advisory Commission Consent Agenda

Title: Groundwater Sustainability Agency Updates

Background

There are three groundwater basins in the County subject to the Sustainable Groundwater Management Act. The following updates come from the Groundwater Sustainability Agencies tasked with managing and monitoring those basins.

Pajaro Valley Water Management Agency

- Grant Funded Projects
    - Department of Conservation (DoC) Multibenefit Land Repurposing Grant, $8.89 million: Staff and consultants continue to meet monthly with DoC staff and the Statewide Support Entity (SSE); staff and consultants are developing an Outreach and Engagement Plan and preparing for Community Meetings to commence later this summer; and the DoC has formally approved three projects included within the proposal: the Land Trust's Beach Ranch acquisition, PV Water's College Lake Project, and the Resource Conservation District's Recharge Net Metering infiltration basin.
    - Department of Water Resources Watershed Resilience Pilot Grant, $2 million: Recent and upcoming activities include finalizing the Existing Network Assessment and conducting Asset Manager Interviews; hosting Advisory Group Meeting #5 on July 28, 2025; hosting Workshop #3 to discuss "Initial Adaptation Strategies" on August 19, 2025, in person, at the Watsonville Community Room; and submission of Invoice No. 4 in the amount of $391,543.51 to DWR on June 9, 2025.
- College Lake Integrated Resources Management Project
    - Construction:
        - Water Treatment Plant & Intake Facility
            - Work continues at the Intake Facility and Water Treatment Plant; commissioning meetings are ongoing; and delivery of treated College Lake water is continuing during the commissioning phase, with PV Water's Operations Team learning to run the system under the contractor's guidance,

After the commissioning phase is complete, PV Water's Operations Team will operate the plant for a 7-day operational testing phase, followed by a 60-day process fine tuning phase. Over 250 acre-feet of College Lake water has been treated and conveyed to the Coastal Distribution System during commissioning phase.

- Supplemental Well No. 3 (SW3)
  - Following a successful pump test that achieved sustained flows of approximately 2,000 gpm in April 2025, engineers are working to prepare a bid package for the pump, VFD, and associated electrical work.
- Supplemental Well No. 4 (SW4)
  - SW4 has been drilled, developed, pump tested, and is nearly ready for commissioning.
- Treated Water Pipeline
  - Meetings to discuss contract change orders due to impacts of the Differing Site Condition at Salsipuedes Creek and groundwater are ongoing; contract change orders are being issued for those items that have been resolved and agreed to.

- Environmental: Biological resource monitoring is taking place as needed, and worker environmental training continues as needed.
- Adaptive Management Plan: Hydrologic monitoring, waterfowl monitoring, and steelhead surveys are ongoing; staff and consultants are preparing an annual report and discussing vegetation management and other maintenance needs.
- Outreach Activities: Staff continue to post information about the project online. Please check https://www.pvwater.org/construction regularly for construction related updates.

- Watsonville Slough System Managed Aquifer Recharge & Recovery Projects
  - Permitting: Work on preparing permit applications continues, in addition, staff and consultants have updated the Struve Slough Water Availability Analysis and are preparing to add data to the hydraulic model to simulate additional wet years to meet State Water Resources Control Board requests, to show water availability during specific months. Staff submitted the California Department of Fish and Wildlife permit package on July, 18, 2025.
  - Environmental: The Board approved the addendum to the Environmental Impact Report on March 19, 2025.

    - Outreach: Communications are ongoing; staff and the support team continue to meet with property owners; several properties have entered escrow.
- Sustainable Groundwater Management Act Well Monitoring Network Expansion
    - Permitting: Staff have held preliminary discussions with the permitting agencies of Santa Cruz and Monterey Counties to identify the necessary requirements. Well permits and encroachment permits will be required by both counties, and a coastal development permit may be required for proposed wells in the coastal zone of Santa Cruz County.
    - Property Rights: Staff is engaged in discussions with property owners for proposed wells that would be located on privately owned land.
    - Environmental: Staff engaged Environmental Service Associates (ESA) to consult on California Environmental Quality Act (CEQA) and environmental compliance. Staff received a memorandum describing the results of a cultural resources database search to aid in the determination of whether sites qualify for an exemption from CEQA.

Santa Cruz Mid-County Groundwater Agency

- The Agency Board met on June 12, 2025, at 6:00 pm at the Capitola Branch Library. At the meeting, the Board:
    - Approved the Agency budget for Fiscal Year 2026.
    - Received an update on the evaluation of funding options for expenses associated with Sustainable Groundwater Management Act (SGMA) compliance and provided direction to the staff and consulting team on next steps for the evaluation.
- The next regular meeting of the Agency is on September 18, 2025, at 6:00 pm.

Santa Margarita Groundwater Agency

- The next regular meeting of the Agency is on August 28, 2025, at 6:00 pm.
- The Agency will commence work on its SGMA-required Groundwater Sustainability Plan Periodic Evaluation, which is due to the Department of Water Resources by January 30, 2027.

By: Sierra Ryan, Water Resources Program Manager with information from Rob Swartz and Brian Lockwood

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Subject: August 6, 2025, Water Advisory Commission

Title: Drought Response & Outreach Plan (DROP) Update

Background:
On September 23, 2021, Senate Bill (SB) 552 was signed into law. SB 552 requires that "a county shall establish a standing county drought and water shortage task force to facilitate drought and water shortage preparedness for state small water systems and domestic wells within the county's jurisdiction". The Water Advisory Commission voted to adopt the responsibility for implementing SB 552 and receives regular updates on the progress of implementation.

Updates:

- There are currently 190 applicants that have enrolled in the Regional Waterboards free well testing program. 83 wells have been tested and 107 are on the waiting list to be tested.
- Since the June 4th meeting, results were received for 13 wells and 1 had an exceedance of the arsenic drinking water standard.
    - County staff is currently working to enroll the applicant and provide services
- County staff completed a pilot test of PFAS sampling procedure using one of our enrolled households. The household was tested and no PFAS was detected in the source water. Staff plans to sample the other enrolled households in August.
- Sierra Ryan continues to represent interests of local government at the State Drought Response Interagency Partnership (DRIP) Collaborative.

By: Sean Abbey
Water Quality Specialist III

County of Santa Cruz

HEALTH SERVICES AGENCY
Environmental Health Division
701 Ocean St. Room 312, Santa Cruz, CA 95060
(831) 454-2022 TDD/ TTY: Call 711
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LAMP Assessment Report, 2018-2024

This report provides a multi-year assessment of the effectiveness of implementing the Local Area Management Program (LAMP) for management of onsite wastewater treatment systems (OWTS) in Santa Cruz County. This report is prepared pursuant to Section 9.3.4 of the State OWTS Policy. This report reflects implementation of the LAMP from October 2021 through 2024, and also includes information from previous years to indicate trends in OWTS management.

Background

The County of Santa Cruz Environmental Health Division has implemented an extensive OWTS management program since 1986, with a particular focus on the San Lorenzo River Watershed. That program was endorsed by the Central Coast Regional Water Quality Control Board and incorporated into the Basin Plan through adoption of Resolution 95-04. That program was also referenced as a key element of the San Lorenzo Nitrate TMDL and the San Lorenzo Pathogen TMDL. The County has prepared a series of status reports regarding the results of water quality monitoring and program implementation over the period of 1989-2016.

County staff were actively involved in the development of the State OWTS Policy. After that policy was adopted, County staff began developing a LAMP. There were delays in completion of the County LAMP and on May 18, 2018, the Regional Board suspended the County's authority to approve OWTS permits that did not meet the Tier 1 requirements of the State OWTS Policy. Any proposals that did not meet Tier 1's requirements were forwarded to the Regional Board staff for review and approval. On October 14, 2021, the Regional Board approved the County's LAMP and returned authority for permit approval to the County.

The LAMP and related ordinance amendments represent substantial changes to the requirements for permitting OWTS in Santa Cruz County that were in place prior to 2018. Following are some of the key changes:

- Minimum groundwater separation for replacement systems has increased from 1-3 ft to 5-8 feet unless enhanced treatment is used.

- All new and replacement systems in fast percolating sandy soils in nitrate concern areas now require enhanced treatment with nitrogen removal.
- Enhanced treatment is now required for replacement of all seepage pits.
- System repairs may no longer be designed by a contractor, but must be designed by a qualified professional, who also must conduct required soil and percolation testing.
- The tighter requirements for conventional systems may provide for incremental improved water quality protection but require a much greater use of expensive enhanced treatment systems where the conventional standards cannot be met. It was estimated that the percentage of permits requiring enhanced treatment would increase from 16% to 30-40% of future permits for new or replacement systems. County staff have expressed concern that this might cause property owners to defer repairing a failing system, or that they might complete an unpermitted repair, which may not meet even previous standards.

Permit Activity

There has been a steady decline in both repairs and new OWTS serving new development over the past 24 years (Fig. 1, 2). The number of repairs may have declined as many of the older substandard systems have been repaired or upgraded (Fig. 1). The decline in new systems reflects the general decline in new development in rural areas of the county, and the diminished number of available lots suitable for development (Fig. 2).

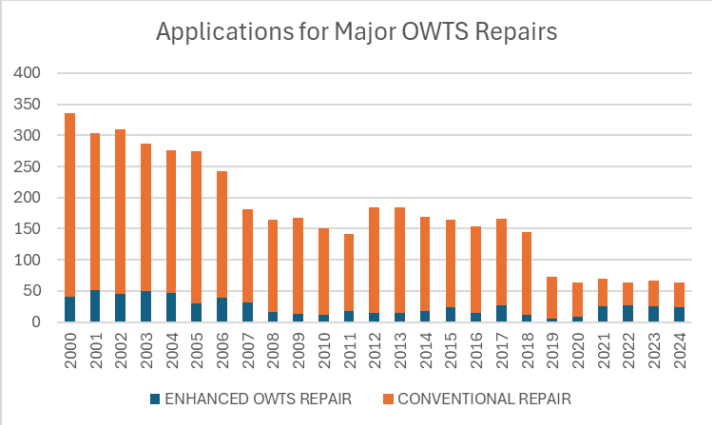


Figure 1. Shows the number of applications for OWTS repairs from 2000-2024

A very sharp drop in the number of repair permits occurred after 2019, when the tighter requirements of the State OWTS Policy and the County LAMP came into effect (Fig. 3). The proportion of repairs requiring enhanced treatment also increased significantly from 10% to 38%. The increased proportion of required enhanced treatment systems is also reflected in permits for new OWTS.

In the past, the great majority of repairs were initiated voluntarily by property owners when they discovered their system was not working properly. The more stringent requirements of the State OWTS Policy often require a very expensive enhanced treatment system and are likely to serve as a deterrent to property owners completing needed repairs on a timely basis. This is likely the cause of the steep decline in applications for repairs to systems (Fig. 1). This has probably also led to increased failures and degraded water quality during wet periods. This would result in higher pathogen levels in receiving waters and may offset the limited incremental benefit of the more stringent LAMP standards. It would be appropriate to revisit some of the requirements for repairs in the LAMP to see if a better balance could be established in the standards to promote repairs while still providing basic water quality protection.

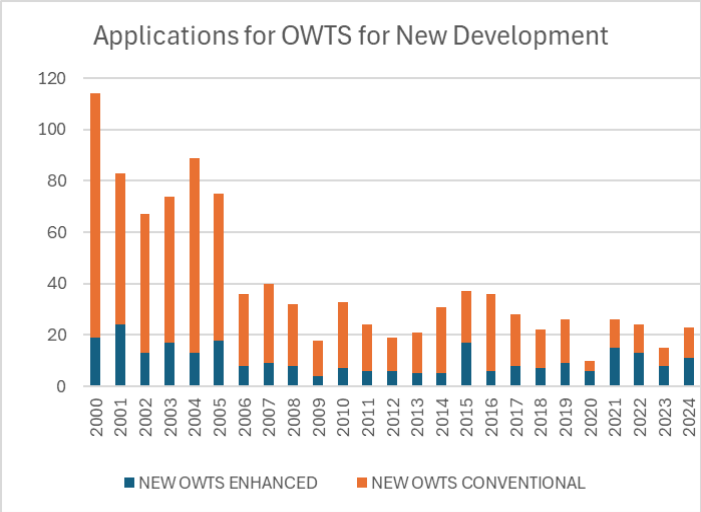


Figure 2. Shows the number of applications for new OWTS systems from 2000-2024

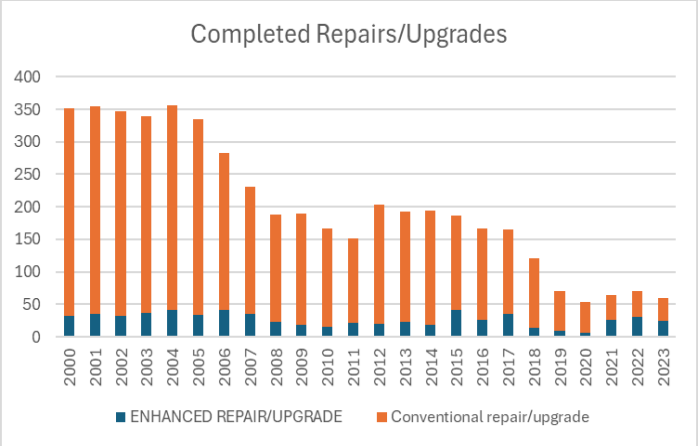


Figure 3. Shows the number of completed repairs and upgrades to OWTS systems from 2000-2024

For all OWTS permits approved in 2022-24, 34% indicated an identified site constraint. Of the primary constraints identified, 40% identified limited available area, 36% identified fast percolation soils, 13% identified slow percolation soils, and 8% identified high groundwater. For enhanced treatment systems alone, primary identified constraints were fast percolation (29%), slow percolation (28%), limited area (19%), and high groundwater (14%). However, for 60% of the enhanced treatment systems approved, no specific site constraint was noted in the database. There will be a greater effort to better capture this information in the future.

Inspections and Pumping

The ongoing performance of existing OWTS is evaluated in several ways:

- Septic tank pumping by private pumping companies in response to property owner requests. Since 1989, companies have been required to report to the County the results of each pumping and general system condition.
- Pumping and evaluation have been required prior to approval of any building permit for remodels of properties served by an OWTS.
- Pumping and evaluation have often been done at the time of property transfer and is now required under the LAMP.
- Nonstandard systems are periodically inspected and evaluated by County staff and/or Onsite System Service Providers.
- County staff investigate complaints of failing systems and investigate sources of observed high indicator bacteria levels. The number of complaints received has declined steadily in the past 25 years from about 200 per year in 1999 to about 45 per year in recent years.

The following table (Table 1) shows the results of recent pumping and inspection activities. It is interesting to note that the percentage of system failures reported by pumping companies declined significantly from an average of 10% to only 3% in 2024. This timing also coincided with the introduction of a new electronic online reporting system in July 2023. The lower reported failure rate is consistent with investigations in prior years where County staff visited properties where pumper companies had reported a failure the previous winter and 74% were observed to be functioning satisfactorily.

Table 1: OWTS Pumping and Inspection data 2017-2024

	2017	2018	2019	2020	2021	2022	2023	2024	AVG.	
Rainfall Water Year - inches	92	30	68	29	22	35	77	48	50	
Total Pump Records	3,313	3,146	2,959	3,241	3,655	3,022	2,881	2,386	3,075	
Surfacing Effluent	328	231	230	304	363	448	364	71		
Percent Failure	9.9%	7.3%	7.8%	9.4%	9.9%	14.8%	12.6%	3.0%	9.3%	
High Level/Flow back	754	607	561	626	554	632	744	541		
	22.8%	19.3%	19.0%	19.3%	15.2%	20.9%	25.8%	22.7%	20.6%	
Tank Poor Condition	77	94	96	124	101	99	163	168		
	2.3%	3.0%	3.2%	3.8%	2.8%	3.3%	5.7%	7.0%	3.9%	
Pump for Sale Inspection	542	615	562	514	786	525	463	756		
	16%	20%	19%	16%	22%	17%	16%	32%	20%	
Inspections/Complaints									Total	
ANNUAL Insp (NONSTAND. SYS	98	74	83	--	--	--	25	--		AVG
COMPLAINT	67	42	41	55	24	45	44	41	359	45
No Problem Found	26	18	17	15	8	14	12	17	127	35%
Resolved with Permit	9	5	2	5	1	4	5	4	35	10%
Resolved, without Permit	9	11	10	7	8	3	5	6	59	16%
Marginal/Pending/Recheck	19	8	11	23	7	24	22	13	127	35%

Groundwater Quality

Although in previous years the County sampled groundwater quality in shallow monitoring wells, in recent years the assessment of groundwater quality is primarily based on reviewing sample results from mandated water system sampling and records in the State GAMA groundwater database (Fig. 4). The County also requires submittal of water quality data for new wells and individual water systems. Beginning in July 2025, sampling and reporting water quality of existing wells will also be required at the time of property transfer.

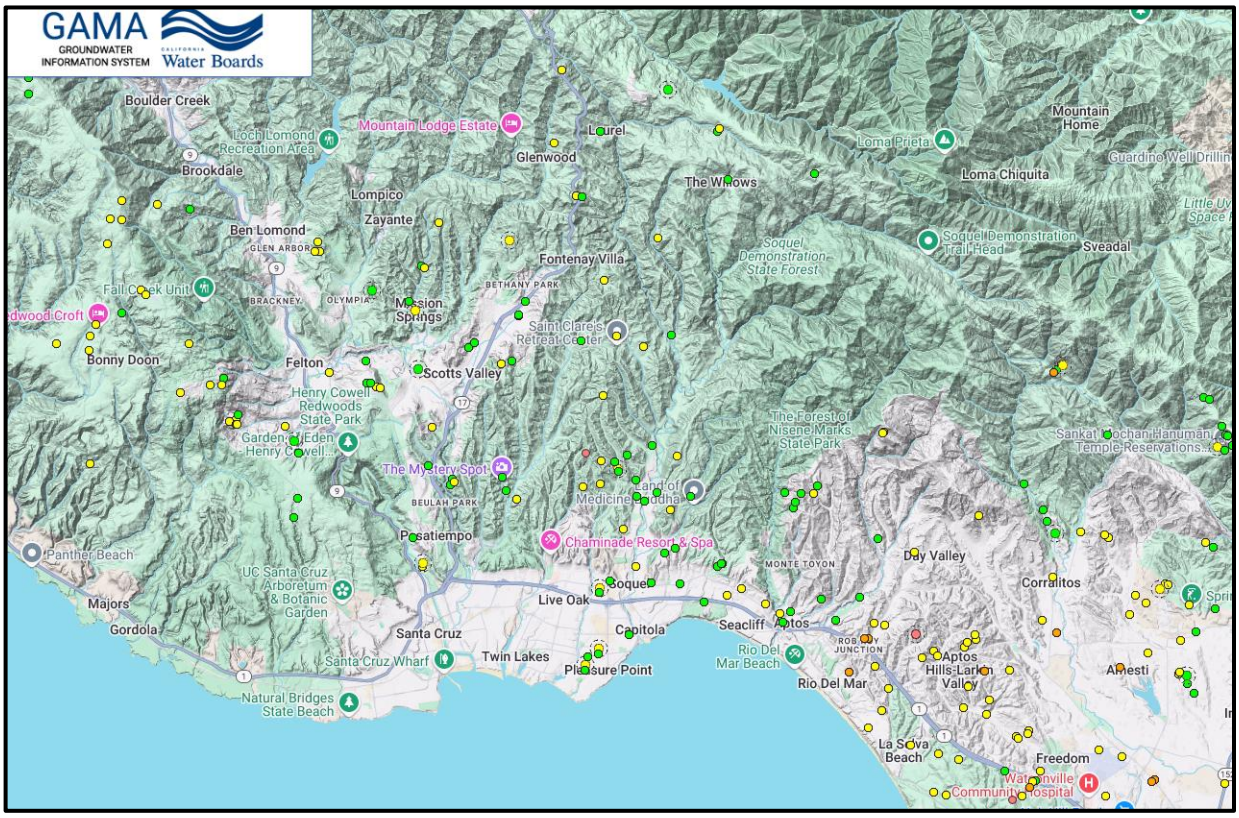


Figure 4. Nitrate in groundwater 2019-2024 from GAMA groundwater database. Green: non-detect; yellow detect <5 mg-N/L; orange 5-10 mg-N/L; red >= 10 mg-N/L. Source: GAMA.

The primary potential impact of OWTS on groundwater quality is the contribution of elevated nitrate. This primarily occurs in areas of highly permeable sandy soils. The LAMP identified two areas with elevated nitrate originating from OWTS: the Santa Margarita Sandstone and the La Selva Beach Area in Mid-County. A review of GAMA data shows no significant change in those areas in the past 5 years. Other areas of elevated nitrate in the San Andreas Road area and Pajaro Valley are attributable to agriculture.

A further review of GAMA data and water system data indicates a third area of elevated nitrate likely from OWTS in the Aptos Hills northeast of Rio del Mar in the western Pajaro groundwater basin (Fig. 4). There is no significant agriculture in that area and it is downgradient from concentrations of OWTS with deep seepage pits in sandy soils. Some of that area was sewered in in the 1990s, but areas served by OWTS remain and there may be a residual nitrate plume at depth. For example, a water supply well screened at a depth of 360 to 500 feet has nitrate levels approximately 10 mg-N/L, while a shallower adjacent well has nitrate levels of about 1.6 mg-N/L. A review of the trend in one of the wells in that area shows that the nitrate levels have been elevated with only a slight upward trend since at least 1985 (Fig. 5).

Figure 5: Nitrate trends in water supply well at Rob Roy Junction, Aptos, 1984-2023. Source: GAMA

Surface Water Quality Monitoring

Nitrate and pathogens are the two surface water quality parameters in the San Lorenzo River Watershed (SLR) that can be affected by onsite wastewater disposal. Parts of the SLR and its tributaries have been designated as impaired due to pathogens, nitrate, and sediment. The nitrate Total Maximum Daily Load (TMDL) and Implementation Plan were based on the County's Nitrate Management Plan, which addresses onsite sewage disposal as a primary source of elevated nitrogen. This TMDL was adopted by the Regional Board in 2003. The SLR pathogen TMDL was adopted by the Regional Board in 2011 and identifies onsite wastewater disposal as one of the sources of impairment. Pathogen TMDLs have also been adopted for Aptos and Soquel Creeks, but onsite wastewater disposal is not identified as a significant source of pathogens in those streams.

Monitoring Sites

The focus of this analysis is primarily the SLR, where over thirty sites have been routinely sampled since the seventies, though there are also additional sites in the Soquel, Aptos, Corralitos and Pinto Lake watersheds. Despite data existing since the seventies, here, we only consider nitrate data collected from 1994-2024 when ion chromatography became the analytical technique to determine Nitrate (NO_3-) as Nitrogen. Similarly, we will focus on pathogen data from 2011-2024 for only E. Coli as analytical techniques changed in 2011. Furthermore, E. Coli has specific targets indicated in pathogen TMDLs. We exclude any sites where more than three years of data were missing, since large gaps may miss important fluctuations and can obscure long term trends and interpretation. Finally, at several sites sampling ended in 2018 or 2019 and were therefore also excluded since they do not have more recent data to assess their current status. However, these sites can be useful in contextualizing results and understanding watershed dynamics (Fig. A1). A total of 26 sites were included to assess water quality parameters in the SLR as well as three sites from Aptos, one site from Corralitos Creek, and one site from Pinto Lake (Fig. 6, Table 2).

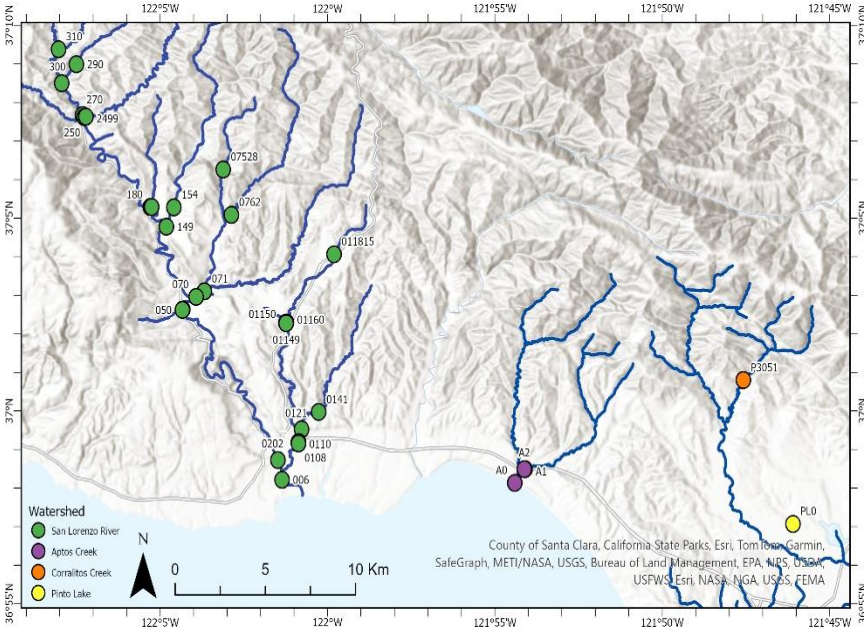


Figure 6. Long term monitoring locations where water quality grab samples have been taking from 1994-2024. Green symbols represent sites within the San Lorenzo River Watershed, purple symbols represent sites in Aptos Creek, orange symbols represent sites in Corralitos Creek, and yellow represents Pinto Lake.

Table 2: Monitoring locations with sites ordered north to south and length of time series in years.

Watershed	Site Name	Site Code	Nitrate (yrs)	E. Coli (yrs)
Upper San Lorenzo River	Kings Creek at Hwy 9	310	30	14
	San Lorenzo at Two Bar Creek	300	30	14
	Two Bar Creek at Fern Avenue Culvert	290	30	14
	Bear Creek at San Lorenzo River	270	29	14

	Boulder Creek at Junction Park	250	30	14
	San Lorenzo River below Boulder Creek	2499	28	14
Mid San Lorenzo River	San Lorenzo River above Love Creek	180	28	14
	Love Creek at Glen Arbor Road	171	6	6
	Newell Creek at Rancho Rio	154	6	6
	San Lorenzo River at Highlands Park	149	19	14
Lower San Lorenzo River	Lompico Creek at Carrol Ave	07528	30	14
	Zayante Creek	0762	30	14
	Bean Creek above Zayante Creek	071	28	12
	Zayante Creek at San Lorenzo River	070	30	14
	San Lorenzo River at Big Trees (11160500)	060	30	14
	Shingle Mill Creek at San Lorenzo River	050	30	14
	San Lorenzo River at Water Street Bridge	0202	6	6
	San Lorenzo River at Laurel Bridge	006	30	14
Carbonera/Branciforte	Carbonera at Bethany Drive	011815	6	7
	Carbonera Creek Above Camp Evers	01160	30	7
	Camp Evers at Carbonera Creek	01150	30	9
	Carbonera at Camp Evers	01149	6	14
	Branciforte Creek at Isbel Drive	0121	30	14
	Branciforte Creek at Delaveaga Park	0141	19	14
	Carbonera Creek at Branciforte Creek	0110	30	14
	Branciforte Creek at Market St	0108	6	6
Aptos Creek	Aptos Creek at Mouth	A0	6	14
	Valencia Creek at Aptos Creek	A1	20	14
	Aptos Creek at Valencia Creek	A2	20	14
Corralitos Creek	Brown Creek at 621 Browns V Rd	P3051	21	14
Pinto Lake	Pinto Lake at Boat Rental	PL0	6	14

Nitrate

Nitrate levels in the SLR have been estimated to be 5-7 times above natural background levels because of human settlement and other activities in the Watershed (SCCHSA, 1995). Nitrate levels in the SLR are well below the safe drinking water standard of 10 mg-N/l. However, nitrate has been the limiting nutrient in the SLR and increased nitrate levels can stimulate biological growth of algae, molds, fungi, and other organisms. The San Lorenzo Nitrate Management Plan (SCCHSA,

1995) determined that an estimated 84% of the nitrate load in the SLR resulted from human activities in the watershed with septic systems, sewer discharge, the Scotts Valley nitrate plume, livestock, landscaping/fertilizer all contributing significant amounts.

Long term monitoring data shows that nitrate concentrations vary both spatially and temporally across the watershed (Fig. 7). Spatial variability is likely due to differences in geology and anthropogenic inputs, while temporal variability is driven by seasonal patterns of rainfall and water flow.

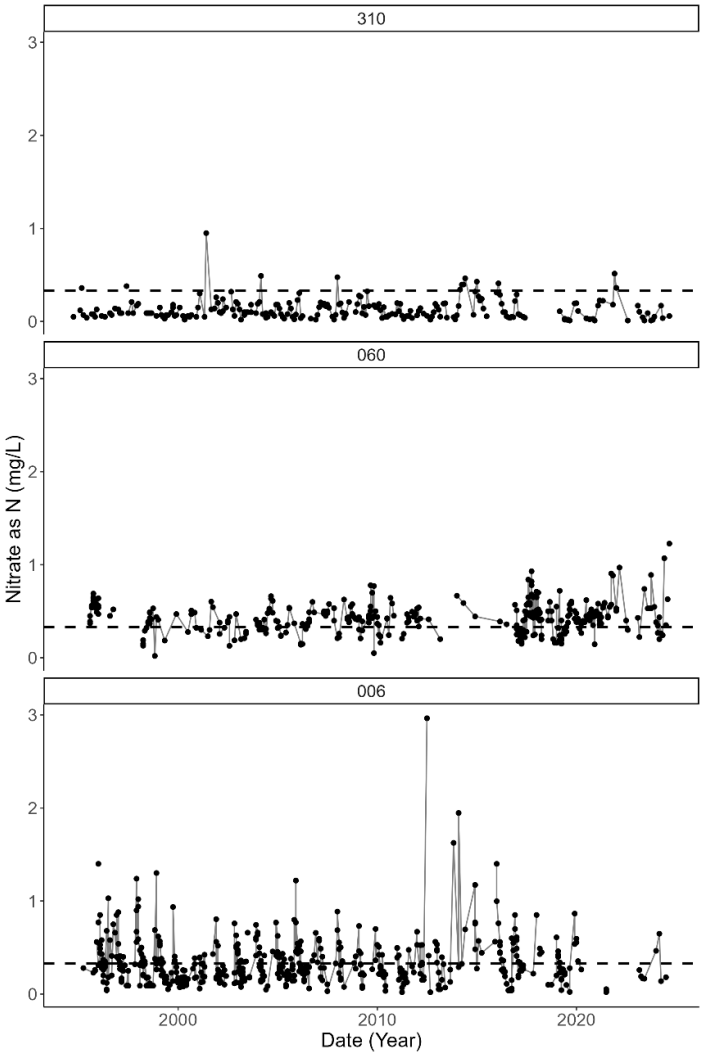


Figure 7. Nitrate concentrations from 1994-2024 at select sites in the (a) Upper SLR (site 310), (b) Mid SLR (site 060), and (c) Lower SLR (006). Concentrations fluctuate over time and increase from upper regions of the river to lower regions of the river. The lower SLR is influenced by tidal influx of seawater. Data shown here correspond to sampling events where specific conductivity is <1500 µS.

Mean nitrate concentrations ranged from 0.108 to 0.298 mg/L, 0.179 to 0.483 mg/L, and 0.150 to 1.036 mg/L in the Upper, Mid, and Lower SLR respectively. In the Upper and Mid SLR, locations with mean nitrates above the TMDL threshold of 0.33 mg/L were only found at locations influenced by tributaries with highly permeable soils and elevated nitrate [i.e., Boulder Creek at Junction Park, San Lorenzo River at Highlands Park, downstream from Newell Creek (Fig. A1b)]. In the lower SLR, values were commonly above 0.33 mg/L and were highest at site 050 where Shingle Mill Creek empties into the SLR. Shingle Mill Creek has high densities of onsite wastewater systems on sandy soils. Mean nitrate concentrations ranged from 0.176 to 0.967 mg/L in Carbonera and Branciforte Creeks, while they ranged from 0.063 to

0.492 in Aptos Creek, and were 0.162 and 0.072 mg/L for Corralitos Creek and Pinto Lake sites respectively.

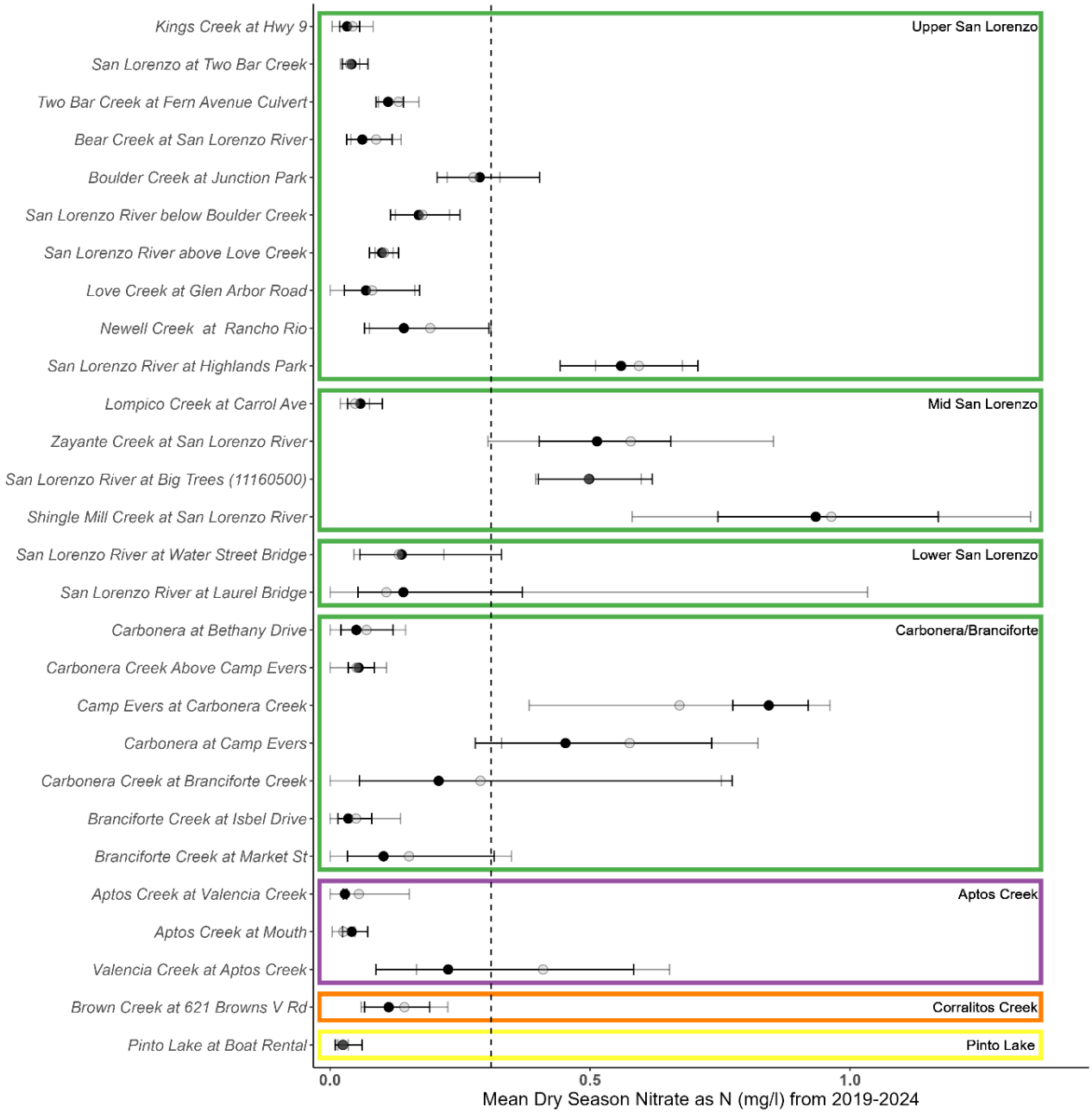


Figure 8. Mean dry season (June-September) nitrate concentrations from 2019-2024 at sites in the San Lorenzo River Watershed (green), Aptos Creek (purple), Corralitos Creek (orange), and Pinto Lake (yellow) from. Grey indicates mean and confidence intervals from raw data, black indicates mean and confidence intervals extracted from modeled data.

Both the San Lorenzo Nitrate Management Plan and the Nitrate TMDL focus on dry season (June-September) nitrate levels as levels tend to be more stable and have

the largest effect on growth of algae and creation of taste and odor problems in the drinking water supply and potential for reduction of dissolved oxygen in the lagoon. Mean dry season nitrate concentrations follow similar patterns as annual means (Fig. 8).

Trend analysis - Nitrate

Mean nitrate concentrations are useful in understanding TMDL attainment; however, they may mask meaningful changes in the watershed due to large scale management efforts (i.e. LAMP). Therefore, trend analyses are necessary to more fully understand nitrate dynamics in the watershed. Water quality monitoring data are particularly problematic for trend analysis as grab samples are often not evenly spaced in time and gaps in time-series are frequent due to logistical constraints. In order to assess trends in nitrate concentrations from 1994 to present, we first used general additive models (GAMs) to fill in gaps in nitrate time series. Next, we extracted annual and seasonal estimates of nitrate concentrations along with uncertainty in those estimates and used mixed effects meta-regression to test for significant linear trends over time[1]. This approach is advantageous over more conventional approaches for trend analysis as it is robust to missing or irregularly sampled data and more fully propagates model uncertainty[1,2].

With the exception of four sites where data were particularly patchy (i.e., Zayante Creek, Bean Creek above Zayante Creek, Branciforte Creek at DeLaveaga Park, and Aptos Creek at Valencia Creek), GAM model prediction was high (R^2 ranged from 0.241 to 0.956). Modeled mean nitrate concentrations follow similar relationships as raw data, with the following exceptions. In particular, modeled means show that Boulder Creek at Junction Park only exceeds TMDL limits (≥ 0.33 mg/L) in dry weather, whereas raw means show exceedances in both annual and dry season data. In the lower SLR, modeled data show exceedances at the Water Street Bridge (Site 0202), but do not show exceedances at the Laurel Bridge (Site 006), conversely raw mean data does not show exceedances at the Water Street Bridge, but does in annual data at Laurel Bridge. Finally, raw data show exceedance at Carbonera Creek Above Camp Evers (Site 01160), but modeled data do not. Differences between raw and modeled data are likely driven by uneven sampling and data gaps across the time series. Importantly, modeled data remove sampling bias and incorporates uncertainty, thus leading to more conservative and robust estimates of mean concentrations.

To better understand how nitrate concentrations have changed over time, we conducted two separate sets of analyses. In the first analysis, we consider trends

over five-year periods, which is the length of time used in reporting cycles. In this analysis, we start in the year 2024 (our most recent complete water year) and assess trends over five-year periods (i.e., 2019-2024, 2014-2019, 2009-2014, 2004-2009, 1999-2004, 1994-1999) for all sites where data are available. These short-term trends are useful in understanding how nitrate concentrations change over shorter time periods but may be highly influenced by climatic phenomenon (e.g., drought). For instance, 2014-2019 (year 2019 in table) followed a significant period of drought. Past work has shown that nitrate concentrations are elevated during periods of drought due to low flows (i.e., lack of dilution). Therefore, periods following drought are more likely to show declines in nitrate concentrations as flows increase and dilution occurs. Our short-term trend analyses support this hypothesis with numerous sites showing declines in nitrate concentrations in 2019 (Table 3). Importantly, small magnitude trends, such as those expected from LAMP, will be difficult to detect over short time scales in highly dynamic environments. Therefore, results from shorter-term analyses should be interpreted with caution.

Table 3. Slopes from mixed-effects meta-regression over 5-year intervals. Year indicates the end year for five-year regression analysis (e.g., 2024 indicates regression of nitrate concentration from 2019 to 2024). Statistically significant relationships are indicated by colors with red showing an increase in nitrate concentrations over the five-year period and blue showing a decrease in nitrate concentrations over the five-year period.

Watershed	SiteNum	1999	2004	2009	2014	2019	2024
Upper San Lorenzo River	310	0.008	-0.003	0.029	-0.001	**-0.013**	0.000
	300	0.004	0.002	0.010	0.000	-0.004	0.011
	290	0.006	0.018	-0.005	-0.015	-0.002	0.004
	270	0.004	-0.017	0.001	0.003	**-0.010**	-0.002
	250	-0.045	0.022	**0.062**	**0.079**	**-0.096**	-0.005
	2499	*NA*	-0.008	**0.049**	0.017	-0.022	-0.019
Mid San Lorenzo River	180	-0.017	0.008	-0.001	0.026	-0.028	-0.007
	171	*NA*	*NA*	*NA*	*NA*	*NA*	0.019
	154	*NA*	*NA*	*NA*	*NA*	*NA*	0.057
	149	*NA*	0.011	**0.082**	0.056	**-0.092**	-0.039
Lower San Lorenzo River	07528	0.000	0.002	-0.006	-0.001	-0.005	**0.024**
	0762	**-0.024**	0.008	0.008	**0.012**	**-0.018**	0.000
	071	-0.031	0.018	-0.014	0.028	**-0.043**	0.008
	070	-0.013	-0.038	-0.013	-0.043	-0.040	0.020
	060	-0.032	0.031	0.014	0.077	-0.048	0.039
	050	-0.055	0.057	-0.062	0.013	0.008	0.015
	0202	*NA*	*NA*	*NA*	*NA*	*NA*	0.066
	006	-0.031	0.051	-0.008	-0.038	0.046	0.027
Carbonera/Branciforte	011815	*NA*	*NA*	*NA*	*NA*	*NA*	0.016

	01160	-0.068	**0.088**	-0.006	-0.062	-0.030	-0.004
	01150	-0.089	0.065	-0.072	-0.436	**0.422**	0.011
	01149	*NA*	*NA*	*NA*	*NA*	*NA*	-0.077
	0141	*NA*	*NA*	-0.003	-0.003	-0.003	-0.003
	0121	0.015	-0.003	-0.001	-0.052	0.002	0.008
	0110	0.107	-0.070	-0.046	-0.089	0.068	0.043
	0108	*NA*	*NA*	*NA*	*NA*	*NA*	0.035
Aptos Creek	A0	*NA*	*NA*	*NA*	*NA*	*NA*	-0.002
	A1	*NA*	*NA*	0.053	-0.026	0.034	0.042
	A2	*NA*	*NA*	*NA*	-0.007	-0.003	-0.001
Corralitos Creek	P3051	*NA*	*NA*	-0.009	-0.001	-0.018	0.018
Pinto Lake	PL0	*NA*	*NA*	*NA*	*NA*	*NA*	0.006

In the second analysis, we assess trends over 28-30 years (~1994-2024) and therefore only include a subset of sites where long-term monitoring has occurred. These data are useful in understanding the long-term trends that are more likely a result of best management practices. We find that trends in nitrate concentrations differ greatly across the watershed but are generally either declining over time or remain constant (Fig. 9). More specifically, annual and dry season trends are similar in direction, but in several cases, trends are not present in annual data, but are present in dry season data. For instance, in the upper San Lorenzo River above Boulder Creek, dry season trends suggest declines in nitrate concentrations until reaching Junction Park, where we did not detect a trend in nitrate concentrations over time. In the mid San Lorenzo River, nitrate concentrations show little change over the approximately 30-year period, until Big Trees and Shingle Mill Creek where nitrate concentrations have increased over time, though only when considering the annual time series at Shingle Mill Creek.

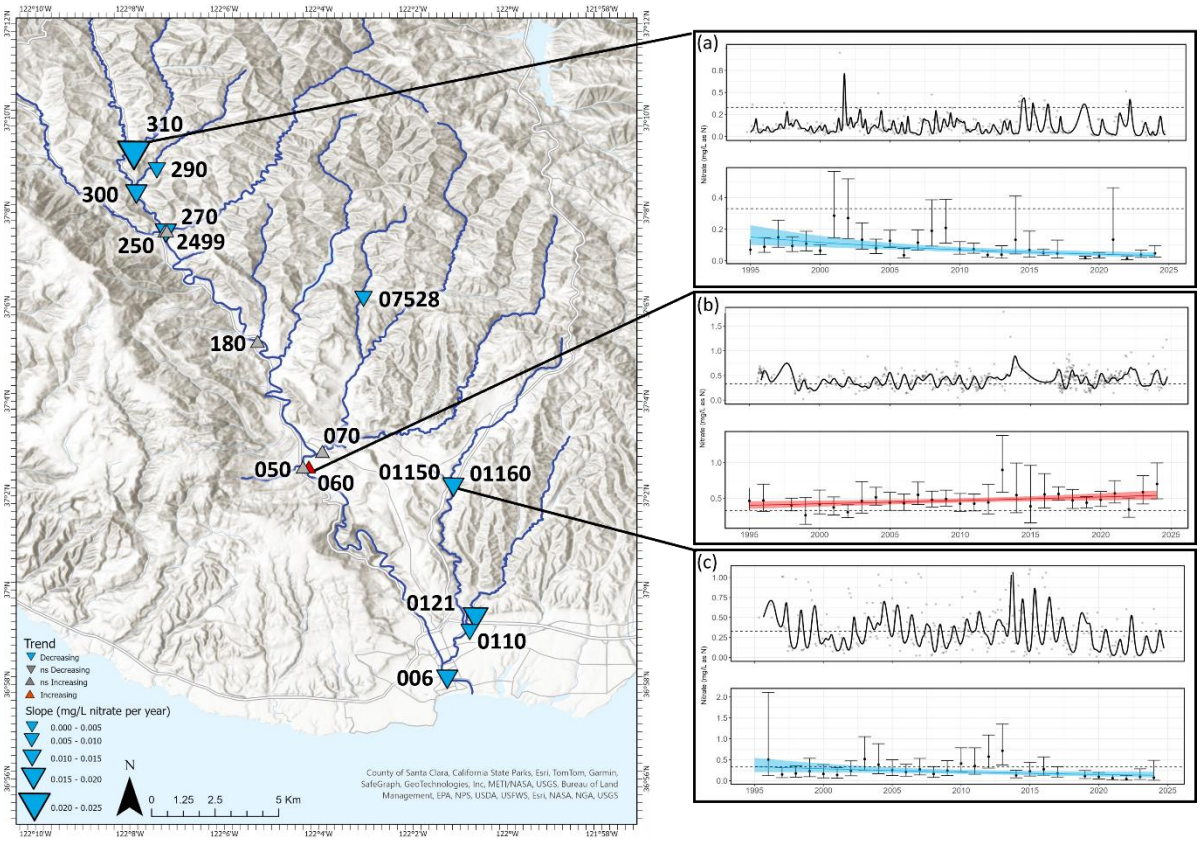


Figure 9. Trends in long-term (>28 years) nitrate concentrations during the dry season (June-September). Nitrate concentrations are declining in the northern portion of the watershed, represented by (a) Site 310, and in the Carbonera/Branciforte creeks regions, represented by (c) Site 01160. While nitrate concentrations are increasing at site 060, shown in (b). Upper panels show time series of nitrate concentrations over time (gray circles indicate grab samples, black line indicates GAM model fit). Lower panels show extracted dry season means and confidence intervals. Blue lines indicate declining nitrate concentrations over time, while red lines indicate increasing nitrate concentrations over time.

Fecal Indicator Bacteria

The presence of fecal indicator bacteria (FIB) can indicate the potential presence of pathogenic organisms that can be hazardous for human health. In particular, risks to human health are higher when FIB are a result of human waste leaking into the watershed. For this reason, the monitoring of fecal indicator bacteria has been occurring in the region since the 1970's and source identification has become an important tool to determine the origin (e.g., human, livestock, wildlife, soil) of FIB.

In general, FIB varies both spatially and temporally (Fig. 10), though seasonal trends are less apparent than in nitrate time series (Fig. A2, A3). This is likely because the sources of FIB differ during periods of wet versus dry conditions, as has been shown in other systems[3]. Therefore, high FIB concentrations can occur at any time of year, but the potential risks to humans may differ across seasons.

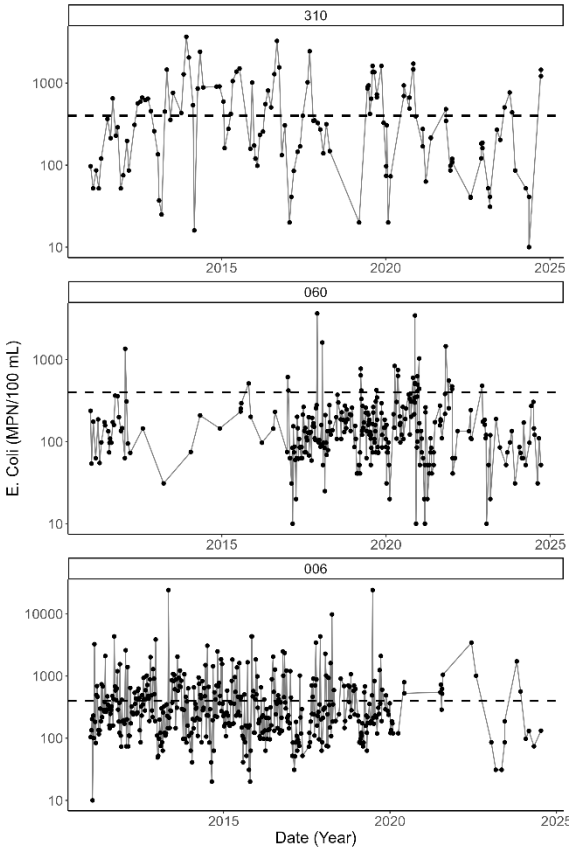


Figure 10. E. Coli concentrations from 2011-2024 at select sites in the (a) Upper SLR (site 310), (b) Mid SLR (site 060), and (c) Lower SLR (006). Concentrations vary greatly over time. The dashed line indicates the single sample health advisory threshold for E. Coli (i.e., 400 MPN/100 mL). The lower SLR is influenced by tidal influx of seawater. Data shown here correspond to sampling events where specific conductivity is <1500 µS.

Trend Analysis – E. Coli

The two main criteria defined in the San Lorenzo River TMDL are: 1) 10% of samples within a 30 day period should not exceed the single sample health hazard threshold for E. Coli and Fecal Coliforms (i.e., 400 MPN/100mL) and 2) 30-day geometric mean of five or more E. Coli samples must be below 200 MPN/100mL. Unfortunately, due to logistical constraints, time series of geometric means that meet these criteria only exist for a handful of sites, but do not extend into 2024. Therefore, to evaluate current trends (2011-2024) in fecal indicator bacteria over time, we used logistic regression to assess how the probability of exceedance in E. Coli has changed over time. A probability of 0.1 is equivalent to 10% of samples exceeding the health advisory threshold. Therefore, a probability less than or equal to 0.1 indicates that a site meets the TMDL requirement. We first transformed raw E. Coli data into binary 0 or 1 depending on whether the value was above the single sample threshold (0 = below the threshold, 1 = above the threshold). We then modeled binary exceedance data using logistic regression with a factor of time (year) using the glm function in R.

Across all sites, only Aptos Creek at Mouth showed a significant change in the probability of exceedance over time (Fig. 11). At Aptos Creek at Mouth, the probability

of exceedance has declined since 2011, though the probability of exceedance is still high at 0.41 or 41% of samples.

Although there are few statistically significant trends in E. Coli exceedance data, the probability of exceedance is equal to or lower than 0.1 for most sites in the upper and mid San Lorenzo River (Fig. 12). This means that 10% or less of samples collected will exceed the single sample threshold of 400 MPN/100mL. However, in the Lower San Lorenzo, Carbonera/Branciforte Creek, and Aptos Creek regions, the probability of exceedance is much higher and additional work is needed to reduce bacteria levels. Importantly, E. Coli testing alone does not differentiate between sources and therefore, future microbial source tracking studies are necessary to elucidate the mechanism through which bacteria are entering the watershed. It is likely that multiple sources are responsible for bacteria in these watersheds and understanding these dynamics will be crucial for improving water quality through effective management.

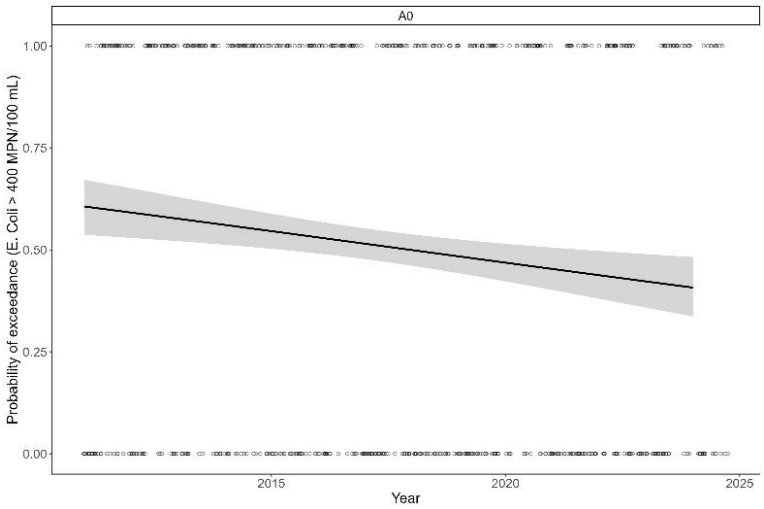


Figure 11. Logistic regression on binary exceedance data at Aptos Creek at Mouth shows a decline in the probability of exceedance over time.

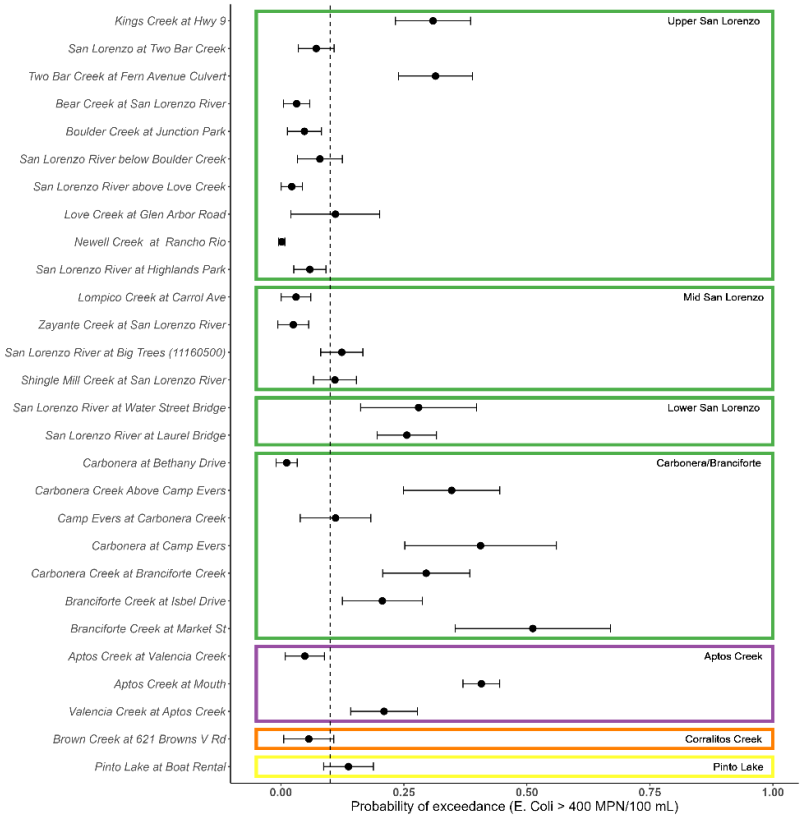


Figure 12. Mean probability of exceedance in 2024 at sites in the SLR (green), Aptos Creek (purple), Corralitos Creek (orange), and Pinto Lake (yellow). Error bars represent standard error. Dashed line indicates a probability of 0.1 or the threshold in which 10% of samples exceed the single sample health advisory limit.

Additional information on historical nitrate and FIB concentrations at these and other sites is presented in the LAMP and in the San Lorenzo Wastewater Management Plan Program Status Report 2008-2016.

Conclusions

Tremendous efforts have been made to reduce nitrates and fecal indicator bacteria in Santa Cruz County. Water quality monitoring data suggests that in most locations in the San Lorenzo River mean nitrate concentrations are already below 0.33 mg/L and E. Coli percent exceedances are below 10%, both important thresholds outlined in the San Lorenzo River TMDLs. We also show that trend detection can be problematic in this system. This is because natural variability is high and can therefore mask underlying small magnitude changes that may be occurring due to ongoing management practices. Importantly, over longer time scales, we were able to detect declines in nitrate concentrations, though several sites also show no change or an increase in nitrate concentrations. Conversely, we only detected trends in the probability of exceedance in E. Coli for a single location. This is likely due to changes in sampling efforts over time, the relatively short length of time over which we are able to assess trends, or because the sources of E. Coli in the watershed may differ from the source of nitrates (i.e., not exclusively due to septic leakage) and therefore can not be effectively managed through the LAMP. Additional studies are needed to focus on fecal source identification to determine whether LAMP management is effectively reducing the E. Coli contributions from failing septic systems.

Finally, from nitrate analyses, we can identify "hot spots" as regions where future management efforts should focus additional resources to reduce nitrate pollution within the San Lorenzo River watershed. In particular, sites where nitrate levels are high (≥ 0.33 mg/L) and there is an increase or no trend over time (Fig. 13) suggests that

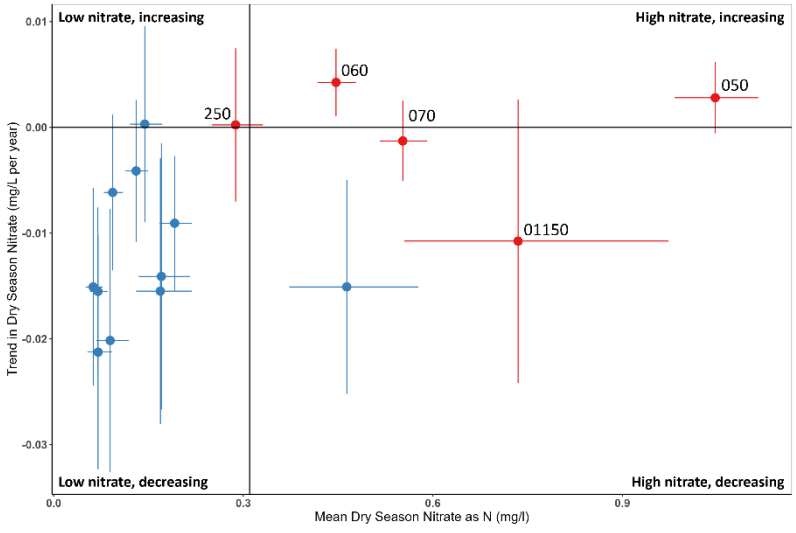


Figure 13. Shows sites identified as "hot spots" in red. These sites have mean dry season nitrate concentrations above 0.33 mg/L and either no trend or an increasing trend in nitrate concentrations over the past 30 years.

past actions have not been sufficient and more stringent regulations, innovative solutions, or more time will be necessary to achieve water quality standards.

The majority of the nitrate hotspots are areas with OWTS located in highly permeable soils and have already been targeted for improved management in the LAMP and in preceding management programs. Since 1995, new and upgraded systems in those areas were required to utilize enhanced treatment for nitrogen reduction. In 2021, the LAMP extended that requirement to apply to all repairs of OWTS. However, the limited number of system repairs and upgrades taking place per year suggests that even with new standards and technologies, a measurable reduction of nitrate in receiving waters will not take place for many years. A program to provide financial assistance or incentives to make system improvements in those areas could expedite the process. Another approach would be to provide sewer service to critical areas with a high density of OWTS in sandy soils, such as the area in the vicinity of Valencia Creek area. Financing such efforts continues to be challenging.

References

1. Beck, M. W. *et al.* Multi-scale trend analysis of water quality using error propagation of generalized additive models. *Sci. Total Environ.* **802**, 149927 (2022).
2. Medina, M. *et al.* Water Quality Trends and Eutrophication Indicators in a Large Subtropical Estuary: A Case Study of the Greater Charlotte Harbor System in Southwest Florida. *Estuaries Coasts* **48**, 56 (2025).
3. Schiff, K., Griffith, J., Steele, J. & Zimmer-Faust, A. Dry and Wet Weather Survey for Human Fecal Sources in the San Diego River Watershed. *Water* **15**, 2239 (2023).

Appendix:

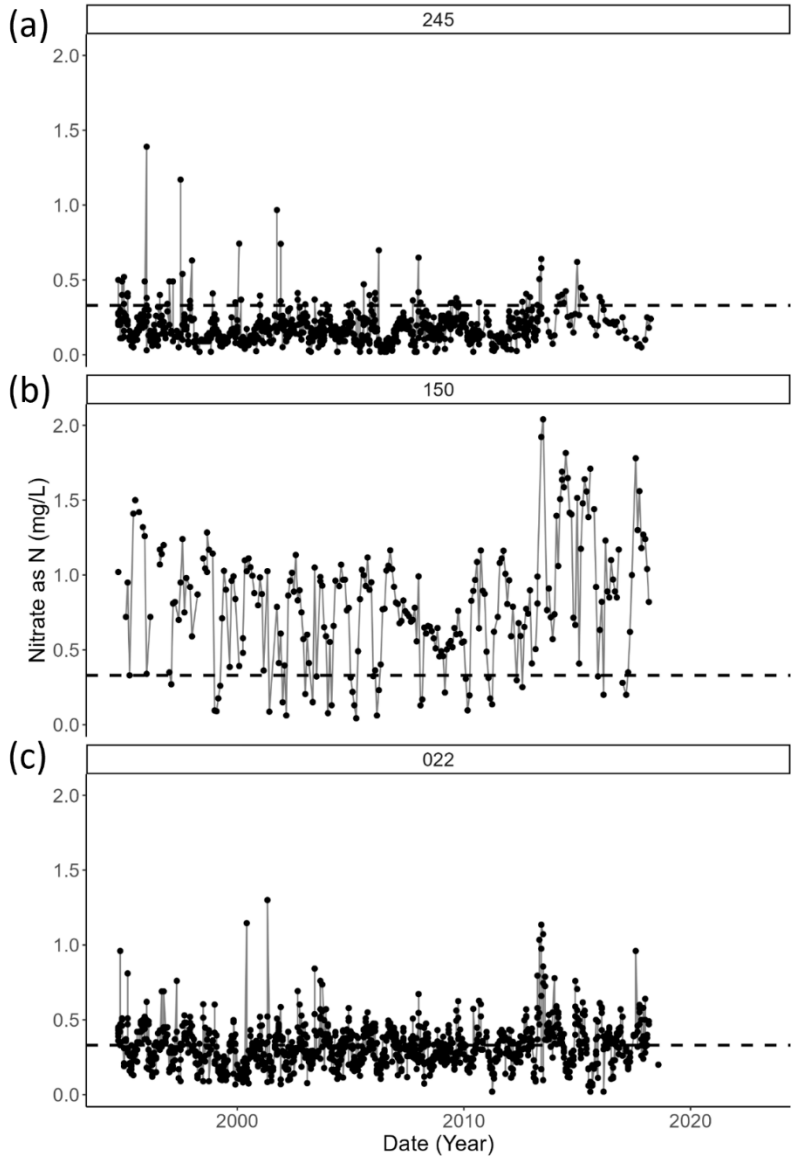


Figure A1. Nitrate concentrations from 1994-2018 at long term sites not included in trend analysis due to sampling ending in 2018 with (a) Bean Creek at Mt. Hermon (site 245), (b) Newell Creek at Camp Evers (site 150), and (c) San Lorenzo at Sycamore Grove (022).

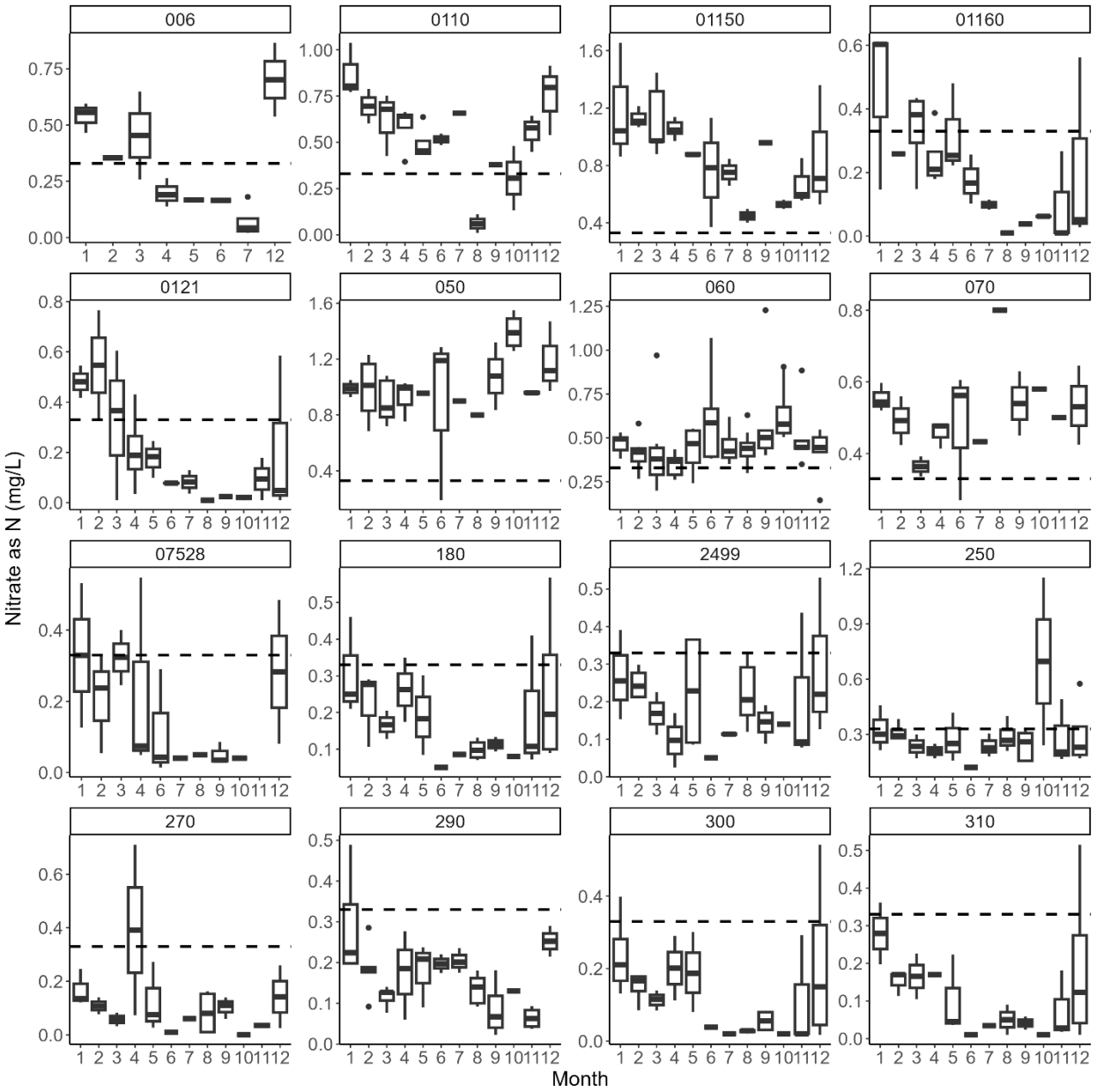


Figure A2. Boxplots showing nitrate concentrations by month from all samples collected from 2019-2024. Line within boxplots indicates the median, bottom of the box indicates the 25th percentile, top of the box indicates the 75th percentile, while whiskers indicate the minimum and maximum. Points beyond whiskers are outliers.

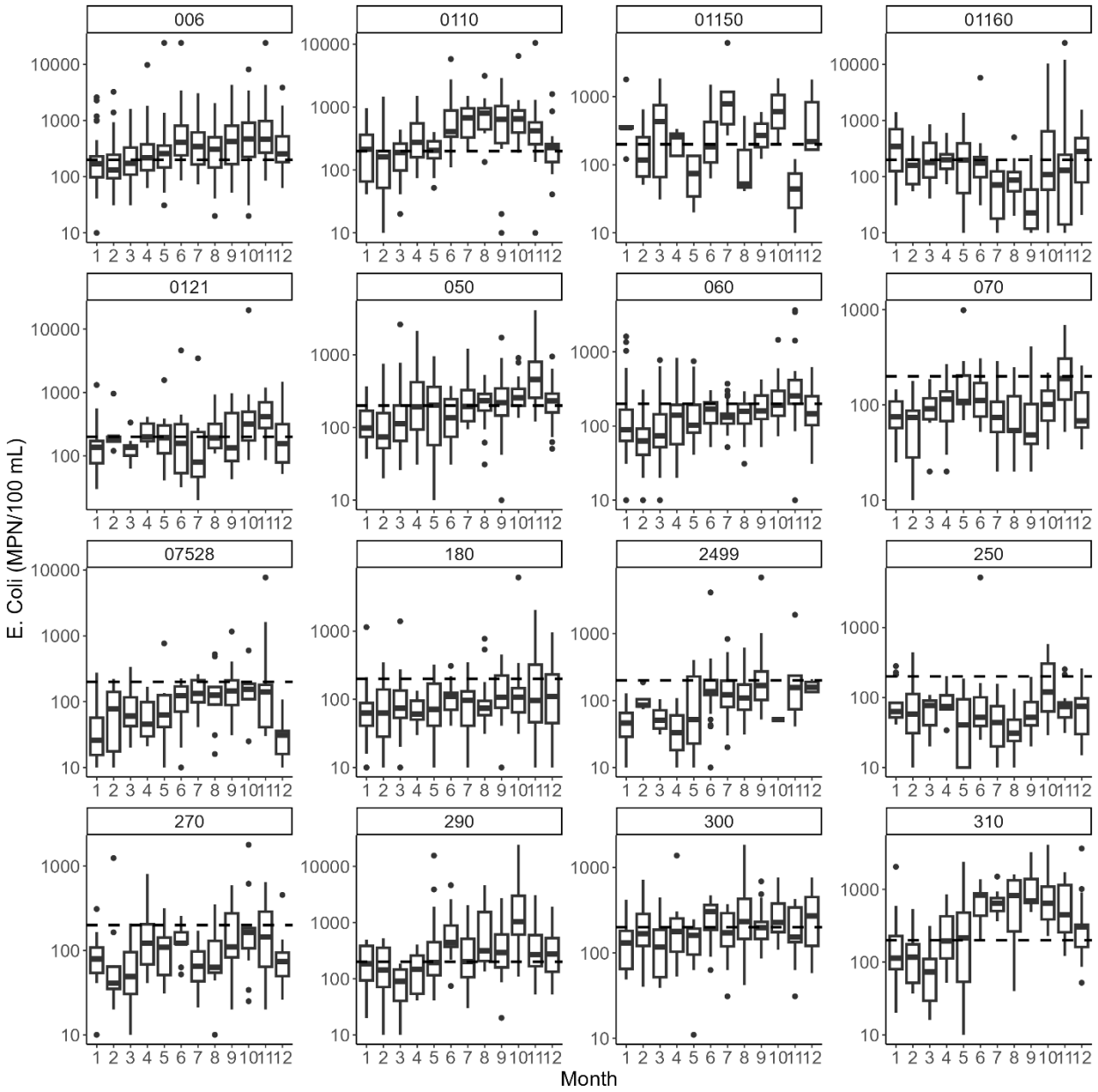


Figure A3. Boxplots showing E. Coli MPN by month from all samples collected from 2019-2024. Line within boxplots indicates the median, bottom of the box indicates the 25th percentile, top of the box indicates the 75th percentile, while whiskers indicate the minimum and maximum. Points beyond whiskers are outliers.

County of Santa Cruz

Water Advisory Commission

701 Ocean Street, Room 312, Santa Cruz, CA 95060
(831) 454-2022 TDD/TTY -Call 711 www.scceh.com
EnvironmentalHealth@santacruzcounty.us

Subject: August 6, 2025, Water Advisory Commission

Title: Multi-Jurisdiction Hazard Mitigation Plan Update

Background:
Santa Cruz County is in the process of drafting a Multi-Jurisdiction Hazard Mitigation Plan Update to reduce losses resulting from natural disasters. Hazard mitigation is the use of sustained, long-term actions to reduce the loss of life, personal injury, and property damage that can result from a disaster. More information and a survey that Commissioners and the public are encouraged to take is available at: https://mitigatehazards.com/santacruzmjhmp/

Planning efforts include capital projects and other pragmatic activities that can mitigate the impacts of hazards. The 2025 HMP Update covers each of the major natural hazards that pose risks to County infrastructure and residents. Water Resources staff have attended numerous planning meetings to provide input on topics such as Drought, Climate Change, and Flood. Staff will return at subsequent WAC meetings with further updates. Participating Jurisdictions include:

- Santa Cruz County
- City of Capitola
- City of Scotts Valley
- City of Watsonville
- Scotts Valley Water District
- Soquel Creek Water District
- Pajaro Valley Water Management Agency
- Resource Conservation District of Santa Cruz County
- Santa Cruz Port District
- Cabrillo College

By: Sierra Ryan
Water Resources Program Manager

WHAT IS MITIGATION?

Hazard mitigation *means reducing risks from disasters—before they happen.* From home repairs to public infrastructure upgrades, mitigation means protecting people, property, and our way of life.

WHY IT MATTERS

Santa Cruz County is unique in its geography, history, and exposure to **many different types of hazards.** Our mitigation strategies must address:

Tsunami • Wildfire • Flooding
Coastal Erosion • Landslides
Earthquake • Drought
Extreme Heat • High Winds
Coastal Storms

WHO'S RESPONSIBLE?

🔷 **Public agencies** handle large-scale projects—like road upgrades, drainage improvements, vegetation management, and slope stabilization.

🔷 **Property owners & renters** can take steps to protect their homes and land—such as retrofitting, buying insurance, or clearing brush.

WHAT'S A HAZARD MITIGATION PLAN (HMP)?

The **HMP** is Santa Cruz County's roadmap for reducing disaster risk, which gets updated every 5 years. The County is currently updating the HMP in partnership with local cities / agencies, and we want to hear your concerns and priorities when it comes to mitigation.

➜ Take the survey to inform the plan!

HMP SURVEY LINK

SANTA CRUZ COUNTY OFFICE OF RESPONSE, RECOVERY & RESILIENCE

Participating Jurisdictions

City of Scotts Valley
City of Capitola
City of Watsonville
Scotts Valley Water District
Soquel Creek Water District
Pajaro Valley Water Management Agency (PVWMA)
Santa Cruz Port District
Resource Conservation District (RCD) of Santa Cruz County
Cabrillo College

¿QUÉ ES LA MITIGACIÓN?

La mitigación de riesgos *significa reducir el riesgo de desastres antes de que ocurran*. Incluye acciones como reparar viviendas o mejorar la infraestructura pública para proteger a las personas, sus propiedades y su forma de vida.

¿POR QUÉ ES IMPORTANTE?

El Condado de Santa Cruz es único por su geografía, historia y **la variedad de peligros naturales** a los que está expuesto. Las estrategias de mitigación abordan:

Tsunami · Incendios forestales · Inundaciones · Erosión costera
Deslizamientos de tierra
Terremotos · Sequía
Calor extremo · Vientos fuertes
Tormentas costeras

¿QUIÉN ES RESPONSIBLE?

◆ **Las agencias públicas** se encargan de proyectos a gran escala, como mejoras en carreteras, sistemas de drenaje, y estabilización de pendientes.

◆ **Propietarios e inquilinos** pueden tomar medidas para proteger sus hogares y terrenos, como hacer mejoras estructurales, comprar seguros o limpiar la vegetación inflamable.

¿QUÉ ES UN PLAN DE MITIGACIÓN DE RIESGOS (HMP)?

El **Plan de Mitigación de Riesgos (HMP)** es la hoja de ruta del Condado de Santa Cruz para reducir el riesgo de desastres. Identifica los peligros locales y describe acciones que podemos tomar—como gobierno y como comunidad. Estamos actualizando este plan y queremos escuchar sus preocupaciones sobre los peligros naturales.

➜ ¡Participe en la encuesta para informar el plan!

ENCLACE DE ENCUESTA

SANTA CRUZ COUNTY OFFICE OF RESPONSE, RECOVERY & RESILIENCE

Jurisdicciones participantes

City of Scotts Valley
City of Capitola
City of Watsonville
Scotts Valley Water District
Soquel Creek Water District
Pajaro Valley Water Management Agency (PVWMA)
Santa Cruz Port District
Resource Conservation District (RCD) of Santa Cruz County
Cabrillo College

Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP)

Mid-Planning Process Presentation to the Emergency Management Council

May 15, 2025

SANTA CRUZ COUNTY OFFICE OF RESPONSE, RECOVERY & RESILIENCE

Photo : County of Santa Cruz

Project Background

Funded by FEMA Hazard Mitigation Grant Program (HMGP) Award**:**
$250,000

Requirement (update every 5 yrs) to **maintain eligibility** for FEMA Hazard Mitigation Assistance (HMA) grants: BRIC, HMGP, FMA

Our County's first **Multi-Jurisdictional** HMP with 10 participating jurisdictions! (cities, water districts / special districts)

Photo: County of Santa Cruz

Intended Outcomes

Reduced duplication of efforts **and lowered costs** for ongoing HMP update cycles

Shared awareness of hazards and vulnerabilities, leveraging comprehensive stakeholder and community outreach

Coordinated planning to secure mitigation and resilience funding (FEMA, State Prop 4, Measure Q / WWPA, etc...)

Consultant Team

mitigatehazards.com/santacruzmjhmp

MITIGATE HAZARDS

Dynamic Planning + Science

Participating Jurisdictions

County of Santa Cruz*
City of Scotts Valley
City of Capitola*
City of Watsonville*
Cabrillo College*

RCD of Santa Cruz County
Scotts Valley Water District
Soquel Creek Water District
Pajaro Valley Water Management Agency
Santa Cruz Port District

***existing HMP's**

Photo: Clare Peabody

SANTA CRUZ COUNTY OFFICE OF RESPONSE, RECOVERY & RESILIENCE

Planning Committee Membership

Roles/Positions

- Public Works
- Flood and Stormwater Control
- Sanitation
- Transportation
- Planning
- County/City Administration
- Water Resources
- Vegetation Management
- Human Services

Other Stakeholder Groups

- Fire / Law
- Education
- Utilities
- Med Health
- Community Based Organizations
- Academia
- Neighbor Agencies
- …Leverage existing partnerships (RWG, CAAP, IRWM)

Photo: Clare Peabody

Planning Process Overview

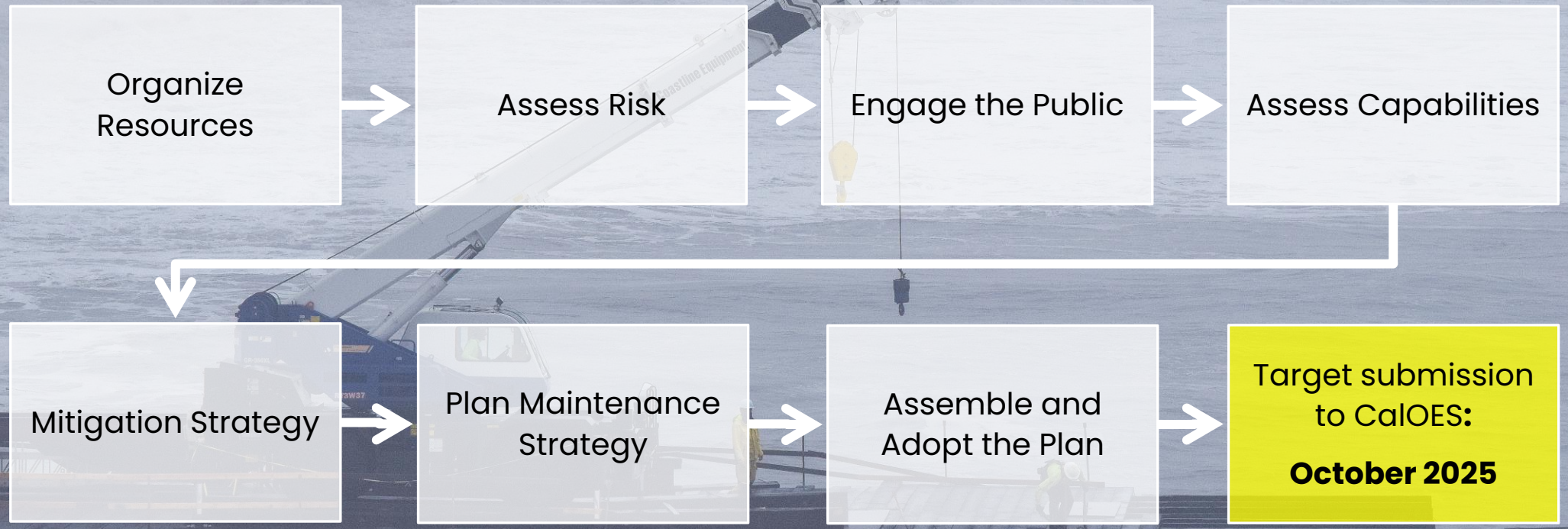


Photo: County of Santa Cruz

SANTA CRUZ COUNTY OFFICE OF RESPONSE, RECOVERY & RESILIENCE

Planning Process Overview

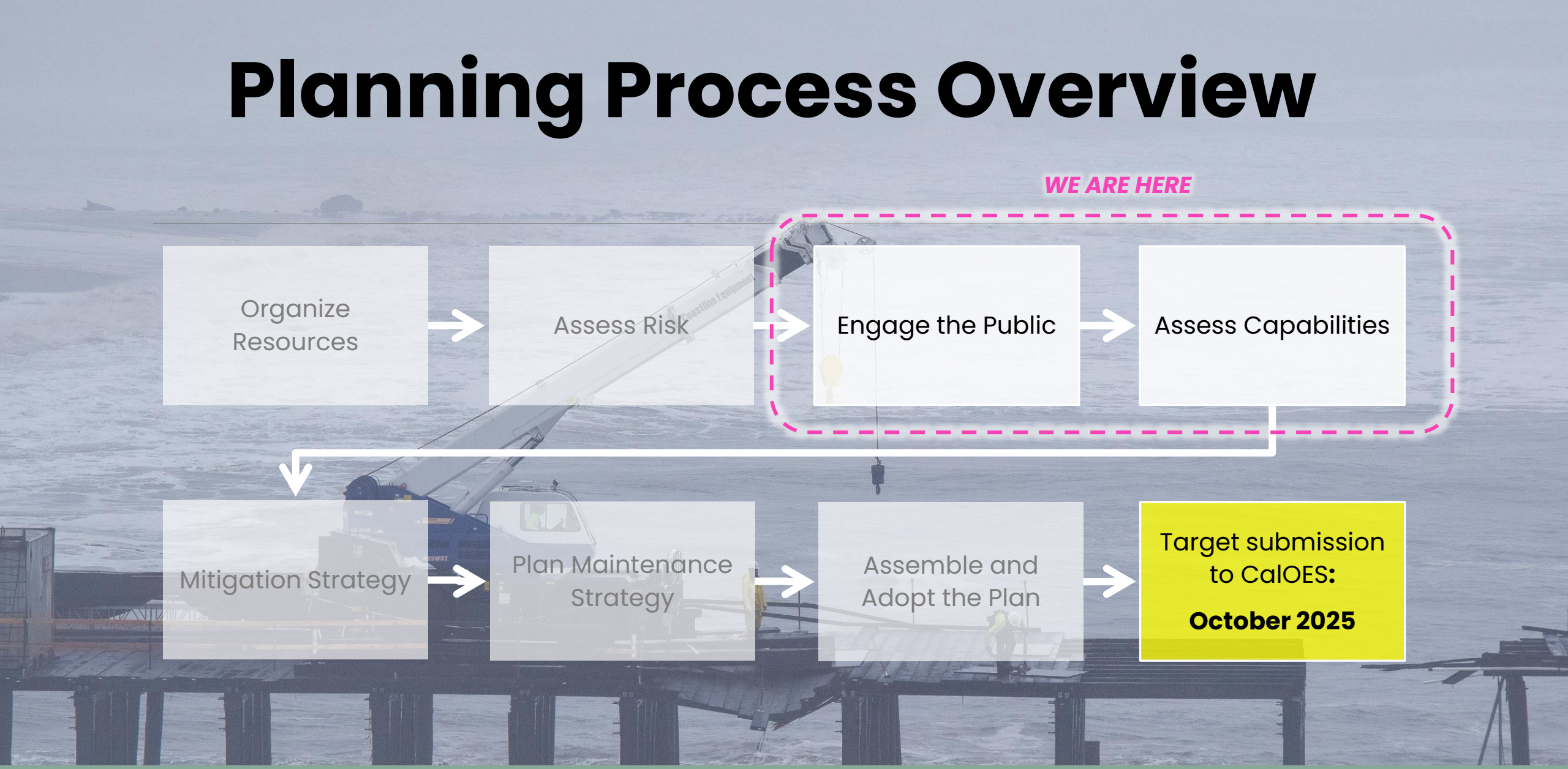
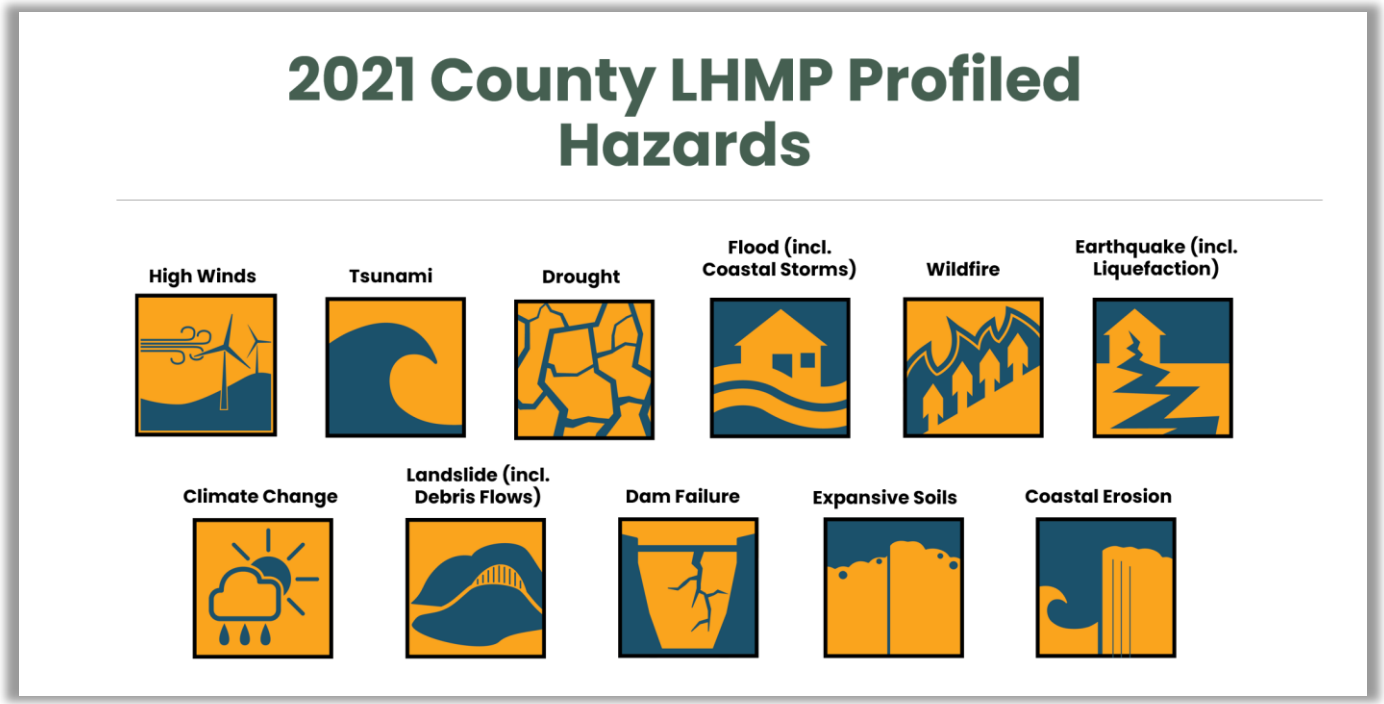
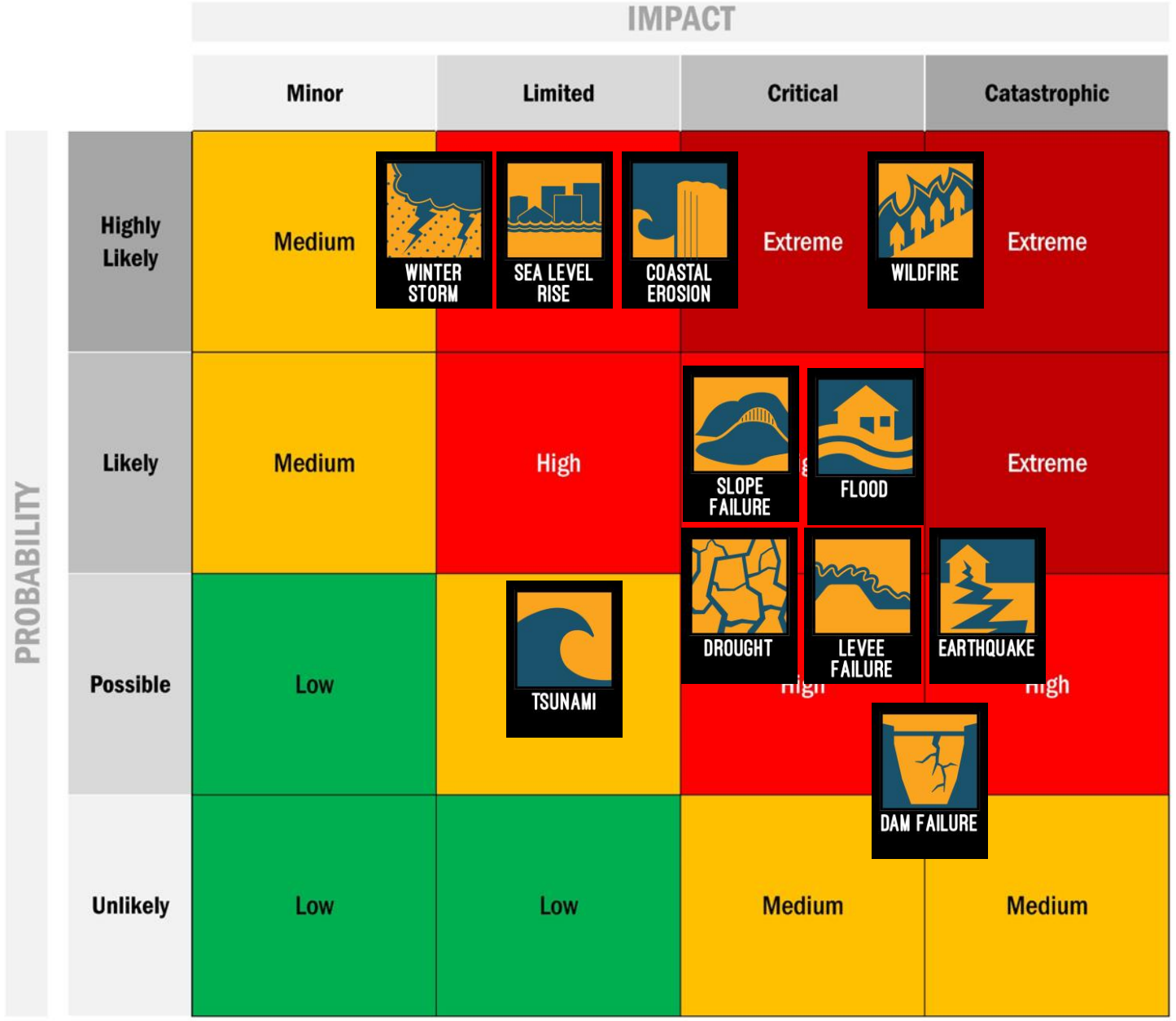


Photo: County of Santa Cruz

SANTA CRUZ COUNTY OFFICE OF RESPONSE, RECOVERY & RESILIENCE

Planning Process Highlights: Review Historical Plans and Data

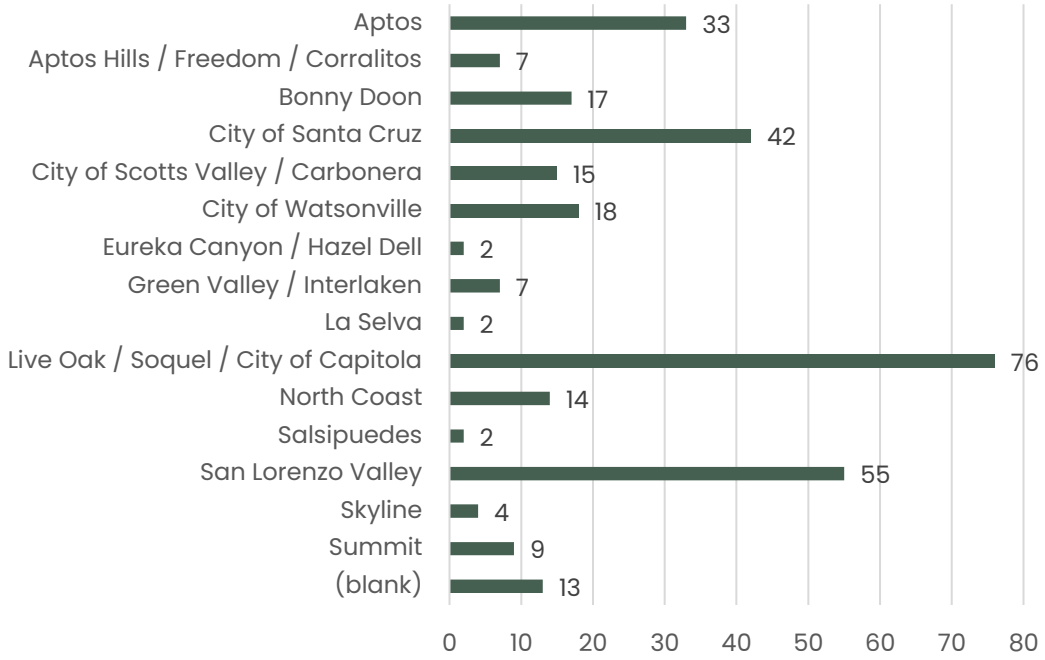



IMPACT
Minor
Limited
Critical
Catastrophic
PROBABILITY
Highly Likely
Likely
Possible
Unlikely
Medium
Extreme
Extreme
Medium
High
Extreme
Low
High
Low
Low
Medium
Medium
WINTER STORM
SEA LEVEL RISE
COASTAL EROSION
WILDFIRE
SLOPE FAILURE
FLOOD
DROUGHT
LEVEE FAILURE
EARTHQUAKE
TSUNAMI
DAM FAILURE

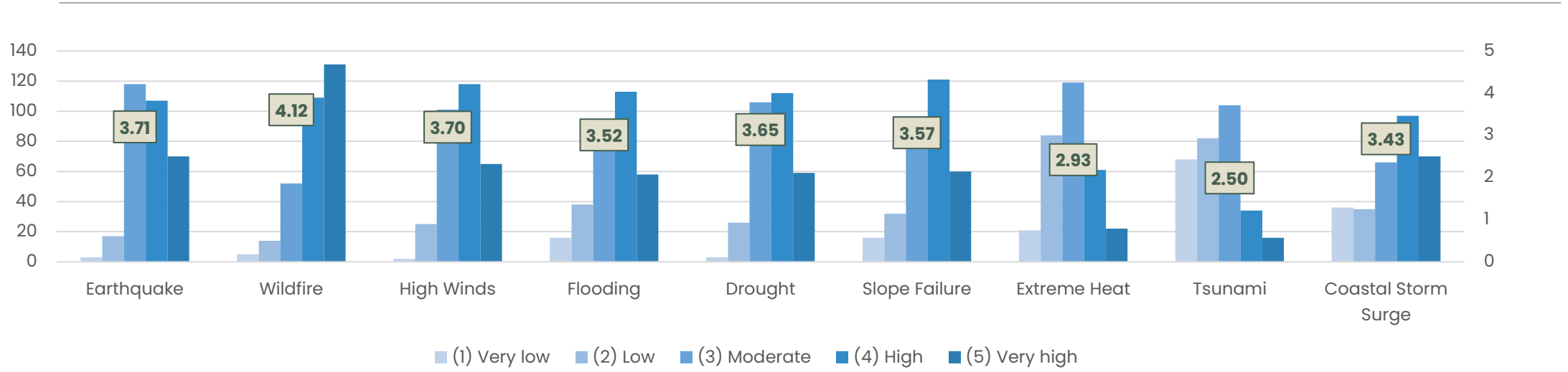
Planning Process Highlights: Public Engagement

Photo: Clare Peabody

HMP Survey: 320 responses and counting

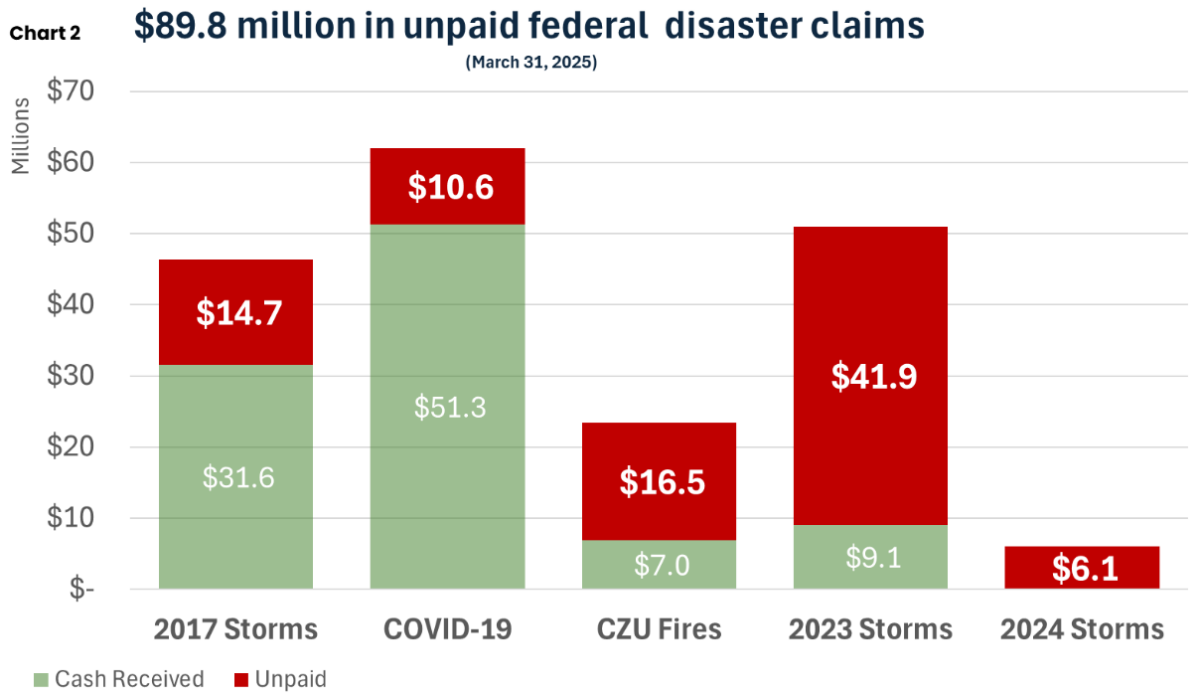


Planning Process Highlights: Public Engagement



Source: DP+S

What's changed since the last update?
County Disaster Financing

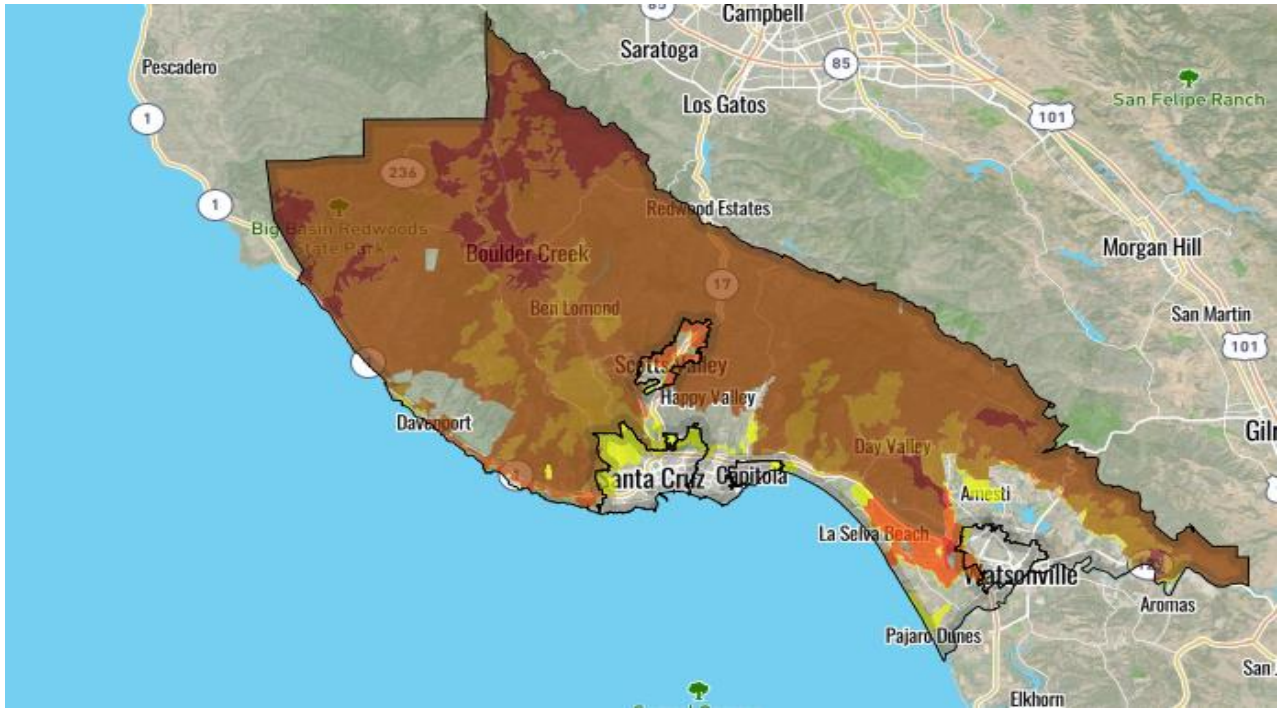


Source: County Budget Presentation (May 2025)

SANTA CRUZ COUNTY OFFICE OF RESPONSE, RECOVERY & RESILIENCE

What's changed since the last update?

New state SRA/LRA Fire Hazard maps



Source: CAL FIRE, DP+S

What's changed since the last update?

HMA Funding Landscape

SANTA CRUZ COUNTY
MEASURE Q

2021 LHMP Mitigation Goals

Avoid or reduce the potential for **life loss, injury, and economic damage** to Santa Cruz County residents from hazard events.

Increase the ability of the County government and partner organizations to **serve the community** during and after hazard events.

Protect Santa Cruz County's unique **character, scenic beauty, and values** in the natural and built environment from being compromised by hazard events.

Identify and encourage mitigation activities to increase the disaster resilience of our community, institutions, private companies, and systems essential to a functioning County of Santa Cruz.

Next Steps / Milestones

- Continue attending public events to promote survey and educational materials (***through August***)
- Planning Committee – HMPC # 3 (***June 2nd***) plus jurisdictional breakouts, mitigation strategy development focus
- RWG Meeting (***TBD - July***)
- Admin and Public review drafts (***September – October***)
- Submission to CalOES/FEMA (***October***)
- ***Formal adoption proceedings by each participating jurisdiction***

Thank you!

Questions? clare.peabody@santacruzcountyca.gov

Left: Prescribed burn, Wilder Ranch State Park (2022)

Right: PRFMA Pajaro Levee Project – Reach 6 (Dec 2023)

Photos: California State Parks, County of Santa Cruz

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