



**Session Coordinator:** Sam Adelson, Coastal Watershed Council, Santa Cruz, CA



At the interface between urban rivers and those who live along them lies opportunity. This presentation session highlights community connections and relationships to urban rivers and streams and the value of partnerships in restoring salmonid populations. Healthy urban rivers play a crucial role in supporting both aquatic ecosystems and human communities. For salmon and trout, these waterways can provide essential habitats, spawning grounds, and migration routes. Thriving urban waterways also provide numerous benefits to human populations, including access to natural spaces for recreation that significantly enhance mental well-being and physical health. To foster a sense of ownership and connection to the river, community-based restoration projects and environmental education programs engage local residents and youth in the stewardship of their environment. Through the lens of inclusivity and equity, discover how community-based collaboration and partnerships foster a relationship between nature and urban environments to benefit salmonid restoration and community well-being.

### **Presentations**

•	Where does your water come from?" A Summary of City of Santa Cruz Water Department Education and Outreach Efforts to Connect the Local Community to Our Drinking Water Sources and the Wildlife that Lives There  Maryna Sedoryk and Kristoffer Patterson, City of Santa Cruz Water Department
•	City Meets Nature: Engaging Los Angeles in Major Dam Removal and Southern Steelhead Recovery  Russell Marlow, CalTrout
•	A Multidisciplinary Approach Toward Protecting Beneficial Uses of Water in the Lower San Lorenzo River Watershed Chris Berry, City of Santa Cruz
•	Fall Salmon in San Jose Jordan Almaguer and Josh Lopez, South Bay Clean Creeks Coalition
•	Reconnecting Communities to the San Lorenzo River: Equity, Education, and Stewardship  Maria Rocha and Sam Adelson, Coastal Watershed Council - Santa Cruz, CA
•	Rewilding and Resilience in the Urban San Luis Obispo Creek Freddy Otte, City of San Luis Obispo

# "Where does your water come from?"

A summary of City of Santa Cruz Water Department education and outreach efforts to connect the local community to our drinking water sources and the wildlife that lives there

Maryna Sedoryk Water Resources Analyst

Kristoffer Patterson Water Resources Analyst



### **Presentation Overview**

- Background
  - Santa Cruz Water Dept
  - Local watersheds
  - Watershed impacts

- School Education Programs
  - Staff lead programs
  - Consultant lead programs
- Outreach Program
  - Interpretive Events
  - Science Symposium

- Conclusion
  - Impact of programs

### Santa Cruz Water Department

- ~100,000 customers
- Drinking Water Sources
  - 65% San Lorenzo River
  - 30% "North Coast" streams
  - 5% Groundwater wells
- 100% Local Water
- Maintain environmental flows in all source streams



### Watersheds

Liddell Laguna Majors

- 6.24 square miles of watershed area
- Does not possess a lagoon environment

- 7.79 square miles of watershed area
- Critical habitat for special status species
- 4.7 square miles of watershed area
- Variety of land uses within the watershed



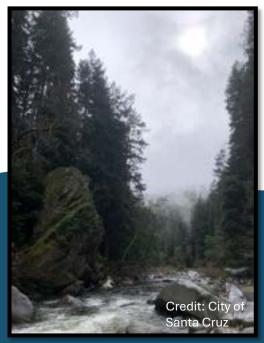




### Watersheds

### San Lorenzo

- 138 square miles of watershed area
- Significant tributaries
- Historically supported a healthy salmon fishery
- A highly flashy system







# **Biology**

### Salmonids

- Steelhead
- Coho
- Chinook\*

### Others

- Tide Water Goby
- Red Legged Frog
- Northwestern Pond Turtle



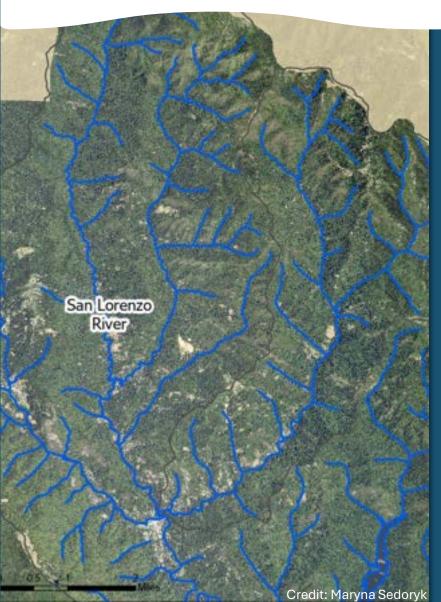








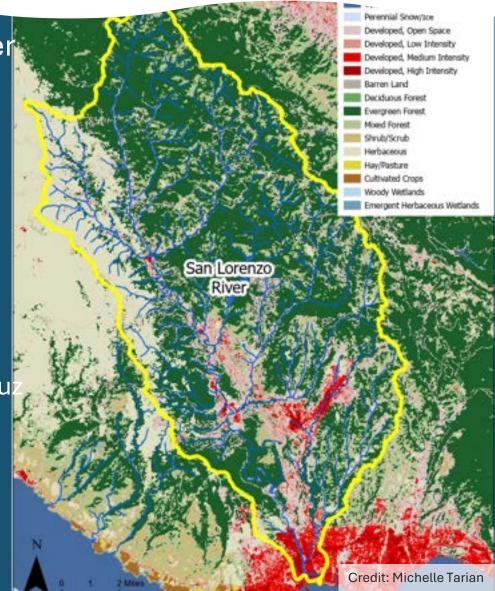
# Watershed Impacts



Focus: San Lorenzo River Watershed

- Feels rural, but surprisingly dense
- 138 square miles
- Population
  - ~44k in San Lorenzo Valley
  - ~62k in City of Santa Cru.
- 4 water agencies

People = Impacts

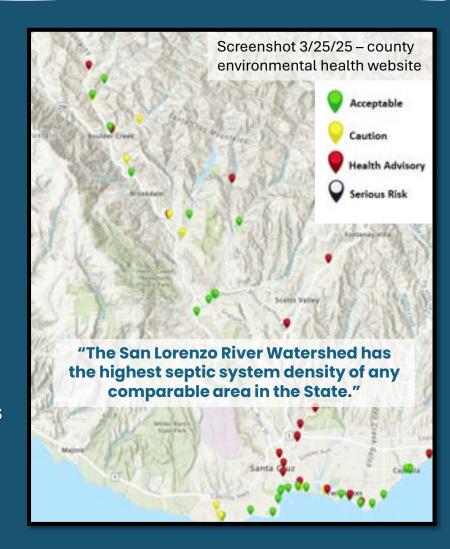


# Watershed Impacts



Credit: City of Santa Cruz

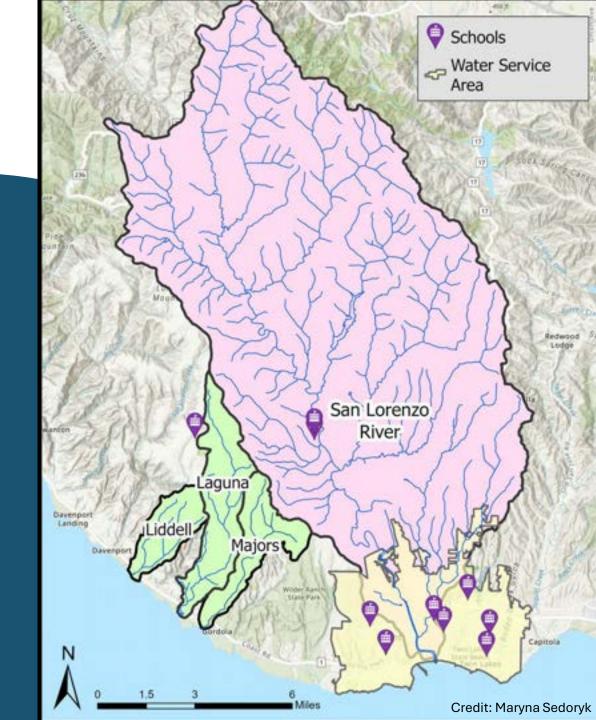
- Pollutants
  - Homeless
  - Septic
  - Dumping
- Temperature & Habitat
  - Removal of Riparian & Stream Wood
- Sedimentation & Erosion
  - Landslides
  - Floods
  - Historical land use (timber, quarries, tanning)
- Streamflow
  - Multiple water agencies in watersheds
  - Private diversions & wells
  - Karst geology
  - Passage barriers



### **Education & Outreach**

City funded programs complement other watershed protection work by:

- Teaching local students about their watershed
- Engaging the local community about watershed issues



# Watershed Science Fieldtrips

- Elementary programs since at least 2005
  - Current program format began in 2015
- Aimed at 5th graders
  - 7 local schools
  - 300-400 students per school year
- Grade-appropriate learning and science standards
- Classroom visit & watershed fieldtrip

fake a hypothesis: to you think the quality of the water in Newell Creek is/isn't (circle or						
nalthy? Why or why not?						
Parameter	Data					
Watershed						
Location						
Time	am/pm (circle one)					
Air Temperature						
Water Temperature	'C'F					
pH (circle one)	1 2 3 4 5 6 7 8 9 10 11 12 13 14					
Dissolved Oxygen	mg/L (also known as ppm)					
Dissolved Oxygen - Saturation	%					
Turbidity	High Medium Low (circle one)					

Compare Your Results

Circle the range that your results fall under for each parameter

	EXCELLENT	MEDIUM	POOR
Water Temperature	5 - 13°C	13 - 20°C	Greater than 20°C
pH	6-8	4 - 5 or 9 - 10	1 - 3 or 11 - 14
Dissolved Oxygen	Greater than 7 mg/L	4 - 7 mg/L	Less than 4 mg/L
Turbidity	Low	Medium	High

Based on your data, do you think the water quality of the stream is:

EXCELLENT or MEDIUM or POOR

What we measure: Air and water temperature, pH, dissolved oxygen, and turbidity.

Why we measure: The correct water temperature is important to support plants, fish, and aquatic insects that live in the water. Dissolved oxygen is the amount of oxygen dissolved in the water available for animals like fish to breathe; it is the single most important factor for life in lakes and streams. Just like we need air, fish and other aquatic life need oxygen in

the water to survive. pH is an indicator of water acidity or alkalinity; most aquatic life is sensitive to pH extremes. Watershed geology (rocks) determines the pH of water; pollution can affect pH too. Turbidity is how clear the water is. Turbidity is caused by silt, sand, or microscopic plants suspended in the water; the more there is, the murkler is the water. If there's too much turbidity

suspended in the water, the more there is, the murkler is the water. If there's too much turbidity fish gills can become clogged.

Page 3

Page :

the result by 2 and add 30.

Example: A 15 °C result: 15 x 2 = 30; 30 + 30 = 60 °F

Your result will be within 1-2 "F

## Watershed Science Fieldtrips

### Be a watershed scientist for a day!

#### Make a hypothesis:

Do you think the quality of the water in Newell Creek is/isn't (circle one) healthy? Why or why not?









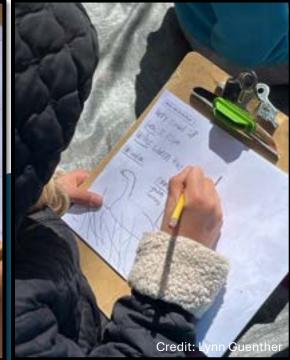


### Watershed Science Fieldtrips

Ride the Newell Jewell across the reservoir

Nature Journaling: observing and drawing nature







Watershed Model: effects of pollution in the watershed

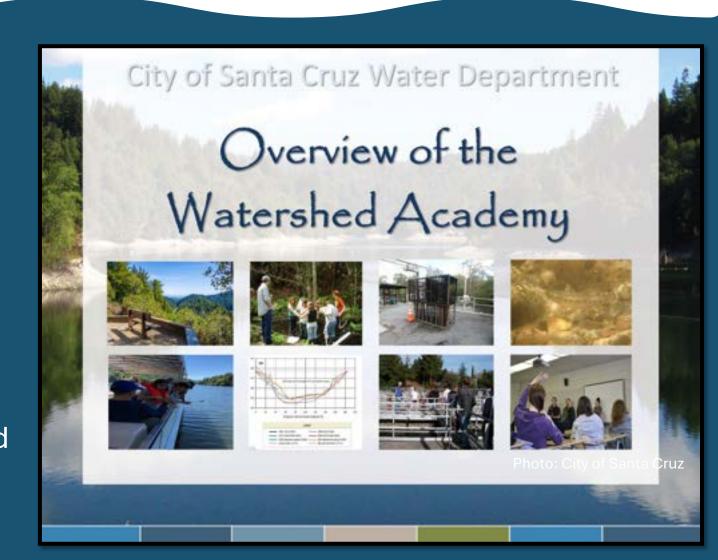


# Watershed Academy: Introduction

- Highschool Aquaculture Class
- Personal approach, more intensive lessons, career focused
- Classroom lessons & Fieldtrips

### <u>Lesson 1:</u> Introduction

 Classroom presentation focused on establishing a foundation for the rest of the program



# Watershed Academy: Field Trips

### Lesson 2: Watersheds and More

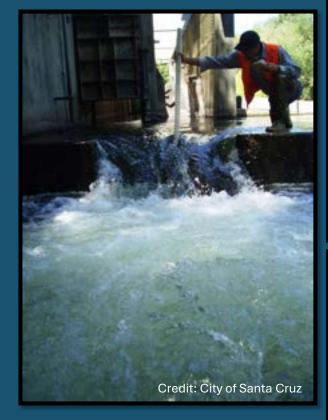
- A walk at Henry Cowell
- Watersheds and Impacts

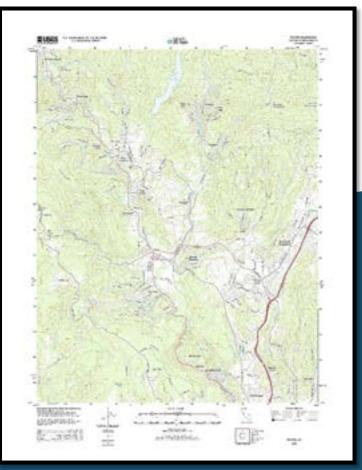
### Lesson 3: Fish and Flow

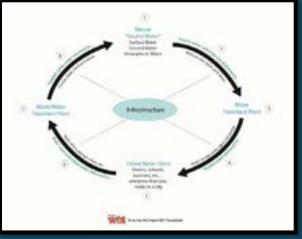
- A walk to the Felton Diversion
- ESA and the Water Department

# <u>Lesson 4:</u> Water Treatment and Careers in Water

- A tour of the Newell Creek Dam Site
- Recent work and future challenges







# Watershed Academy: Field Trips

### <u>Lesson 5</u>: Water Quality

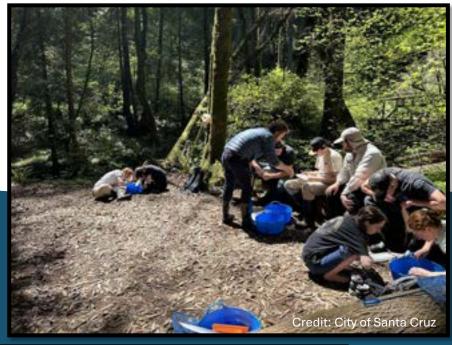
- A boat ride at Loch Lomond
- Ecology/Biology

### **Lesson 6: Sedimentation**

- A boat ride at Loch Lomond
- Geology/Abiotic factors

### Lesson 7: Benthic Macroinvertebrates

- Walk to Fall Creek
- Citizen science for indicator species





# Watershed Academy: Conclusion

### Lesson 8: Mock Townhall Activity

- Environmental laws, planning, ordinances, and civic engagement
- Program summary and take aways
- Local resources and ways to get involved
- Student Feedback







# Partnership: Coastal Watershed Council





- Bacteria Pollution Prevention Watershed Ranger Journal

- Ongoing for 15 years
- San Lorenzo Valley Elementary and Middle schools
  - Classroom and field-based lesson series for 1<sup>st</sup> – 7<sup>th</sup> graders
- Next Generation Science and Common Core Standards
- Education about local environmental issues and sustainable practices



6<sup>th</sup> graders looking for sources of bacteria on campus before taking a water sample to test for E. coli.



## Partnership: Bonny Doon Elementary School

- Ongoing for 11 years
- Grant to school science teacher for lesson development
  - Watershed functions & karst geology
  - Endangered species (coho salmon and steelhead)
  - Runoff, sedimentation, pollution
  - Water quality monitoring









"Depending on what creek bugs are living in the creek, can show how healthy or unhealthy the creek is at that time.— student, 2022

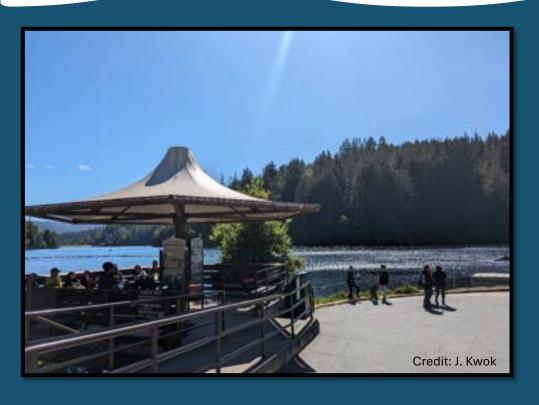


"In Bonny Doon we almost all get our water from wells...If our groundwater gets polluted then our drinking water will be unsafe." – student, 2022



"Yesterday, my class went to the San Lorenzo River. All of our tests and observations showed us the San Lorenzo is very healthy and diverse at Henry Cowell State Park." – student, 2022

# Outreach Program





- Some local residents are not reached by school programs
- Temporary watershed users
- Santa Cruz County: ~3 million visitor trips a year

### **Loch Lomond Events**

### Loch Walks

- Explore watershed lands and topics
- Educate the public

### Newell Jewell tours

- A free boat tour
- Talk covering the history, ecology, and water source use of the lake

### Secchi Dip In Day

- Raise awareness during "Lakes Appreciation Month"
- Participate in citizen science





# The State of the San Lorenzo River Symposium



- A multi agency event
- Inform about local natural resources



 Provide a forum to ask questions and express concerns regarding the environment











## Impacts

#### **Elementary School Program**

- 4 7 schools per year
- 300 400 students per year
- Educational programming for 20 years

#### Bonny Doon School Program

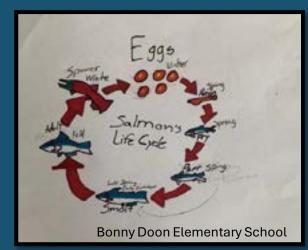
- Connection with all students at school
- Class projects highlighting watershed issues

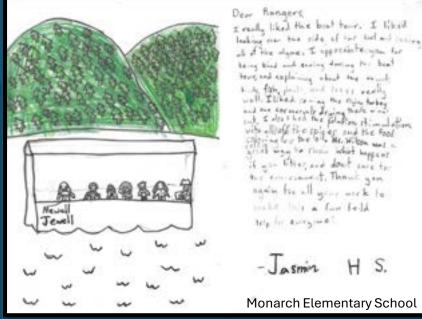


### Coastal Watershed Council Program

Survey results show increase in students:

- belief in their abilities and desire to "help out" nature
- knowledge of how water resources affect steelhead trout
- knowledge that stormwater runoff transports harmful bacteria





# **Impacts**

### Watershed Academy

- 150+ students
- Future Environmental Scientists

### Loch Lomond Outreach

- Max capacity on tours
- Secchi Dip In: Participated since 2010

# State of the San Lorenzo River Symposium

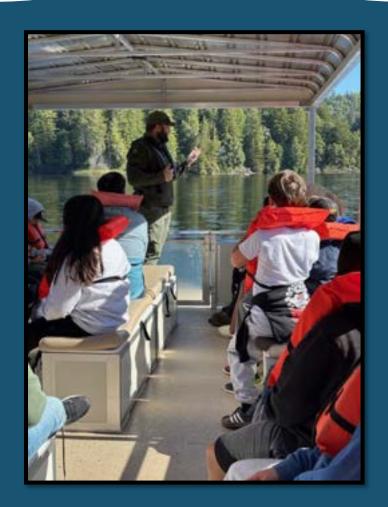
- Started in 2015
- Interest has remained high

"The Watershed Academy taught me how to be a proactive, empathetic, and critical thinker....Going through the program gave me the confidence to pursue higher education and inspired my career in aquatic ecology." – Rosealea Bond, Ph.D.

# Thank you

### **Education Programs**



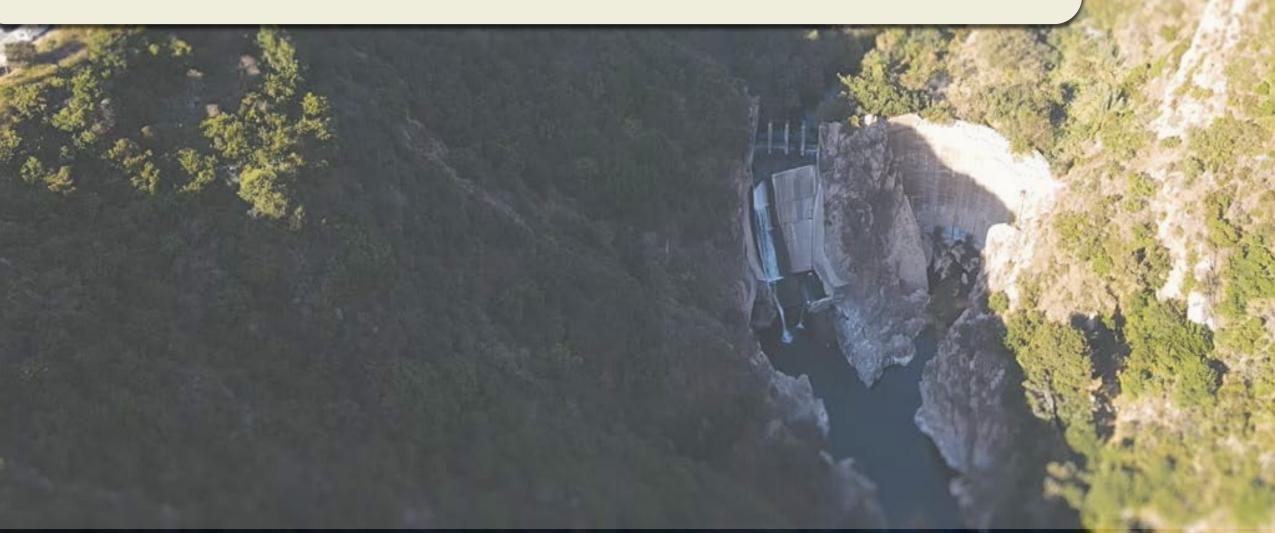


### Watershed Section





City Meets Nature: Engaging Los Angeles in Major Dam Removal and Southern Steelhead Recovery Russell Marlow – CalTrout



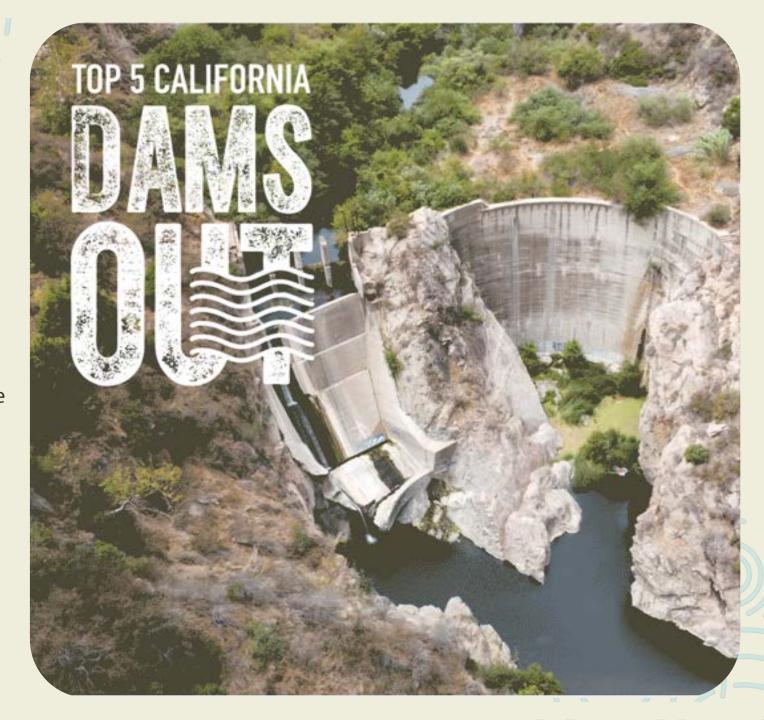




Restore natural processes at watershed scale

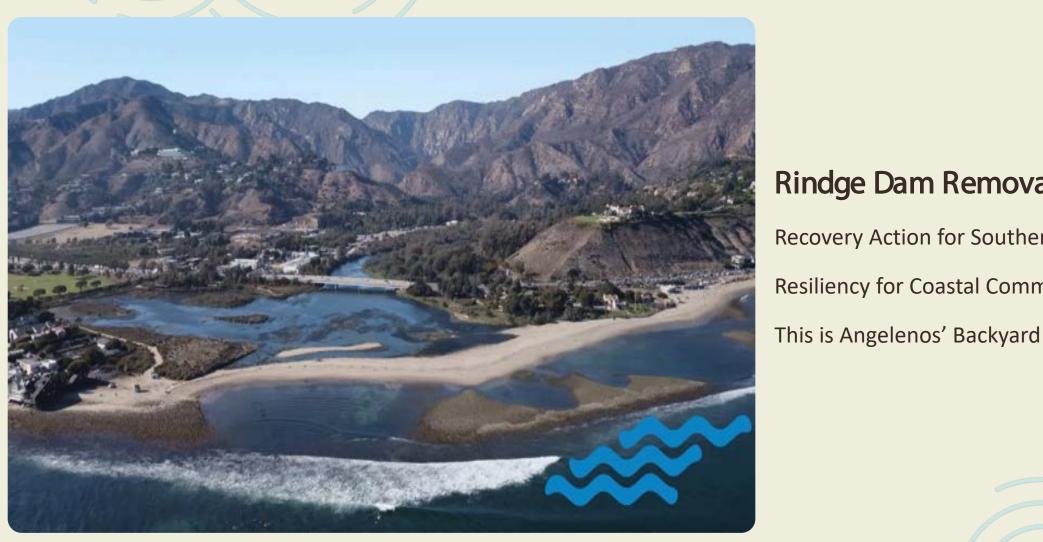
Remove barriers to species migration

Replenish downstream, coastal and nearshore habitats









### Rindge Dam Removal Impact

Recovery Action for Southern Steelhead Resiliency for Coastal Communities





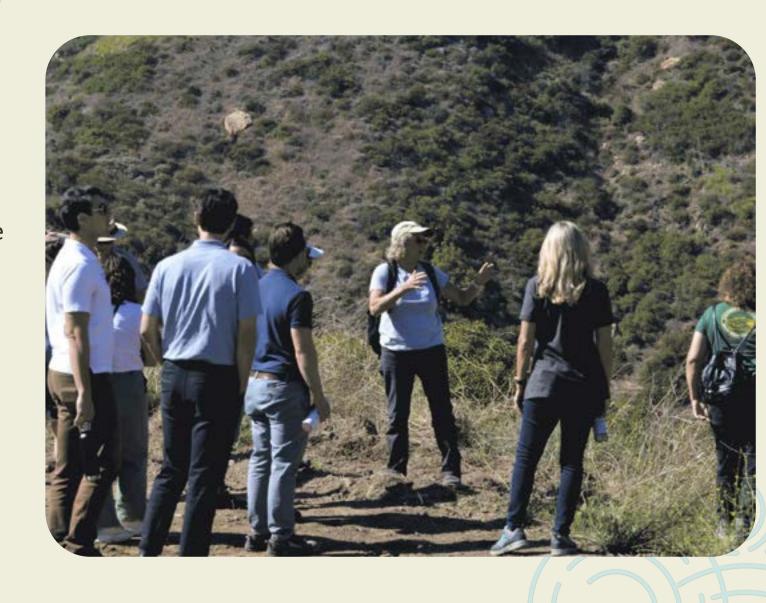


# Community Science Photo Point Monitoring

Document historic ecosystem change

Data collection for research and adaptive management

Community empowerment









Locations

Design and Fabrication









Locations

Design and Fabrication













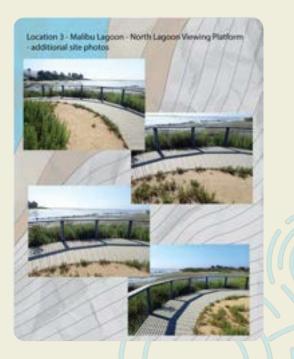
Locations

Design and Fabrication









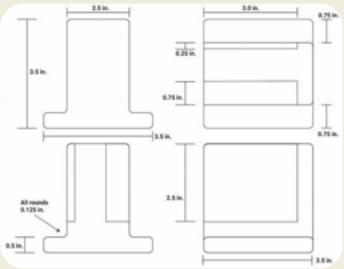


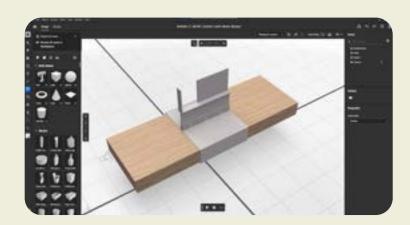




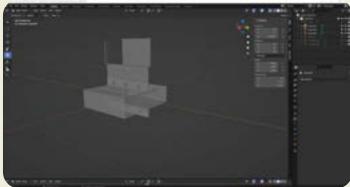
Locations

Design and Fabrication













Locations

Design and Fabrication













Headwaters - Crags Road

Mainstem - Malibu Canyon Overlook

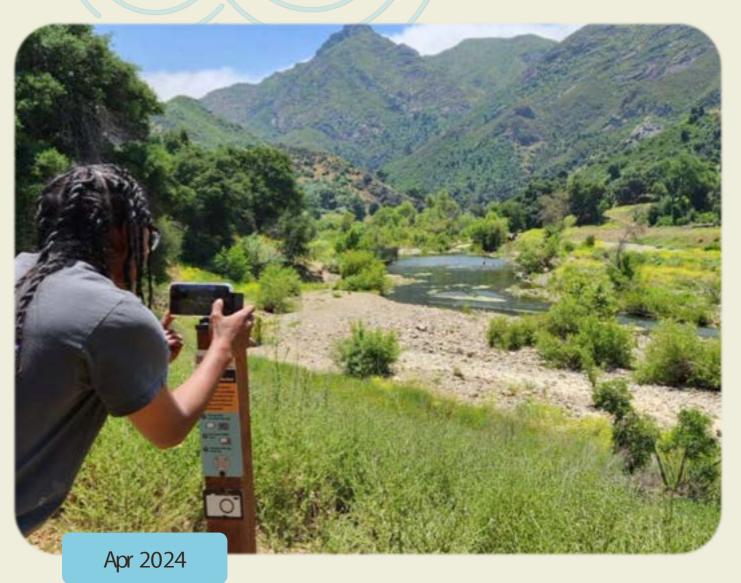
Lagoon – Malibu State Beach and Lagoon

Nearshore – Adamson House









Headwaters - Crags Road

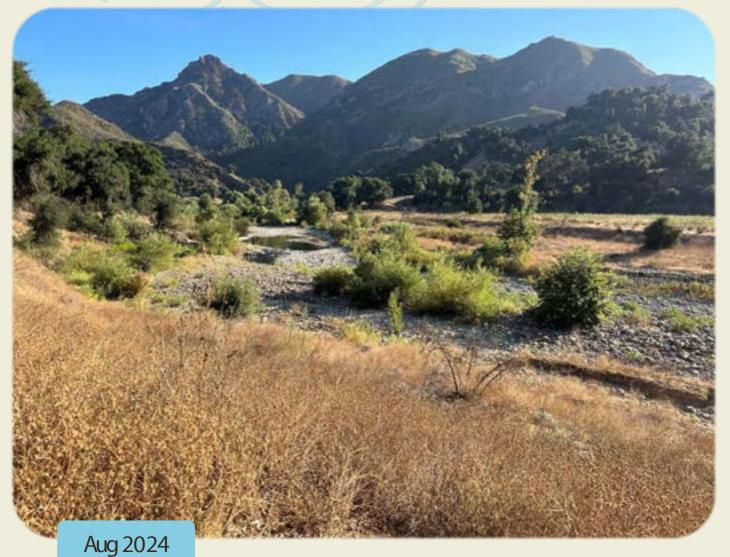
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Headwaters - Crags Road

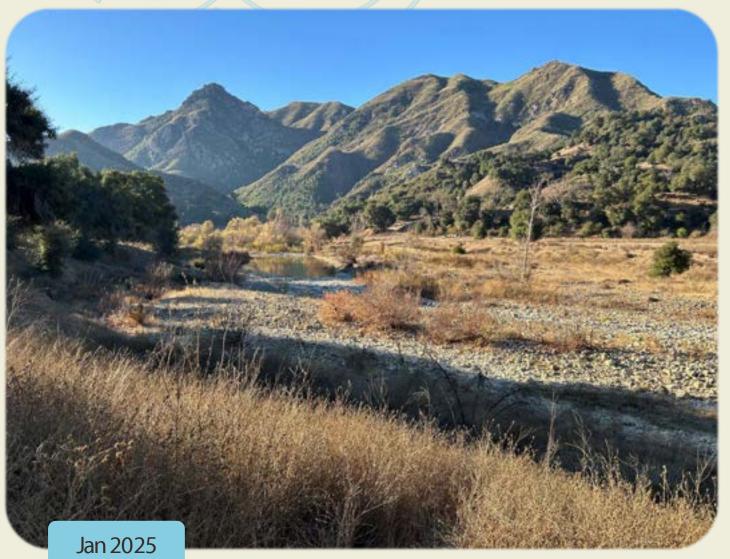
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Nearshore – Adamson House







Headwaters - Crags Road

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Headwaters - Crags Road

Mainstem - Malibu Canyon Overlook

Lagoon – Malibu State Beach and Lagoon

Nearshore – Adamson House









Headwaters - Crags Road

Mainstem - Malibu Canyon Overlook

Lagoon – Malibu State Beach and Lagoon

Nearshore – Adamson House





Feb 2025



#### **Current Program**

Headwaters - Crags Road

Mainstem - Malibu Canyon Overlook

Lagoon – Malibu State Beach and Lagoon

Nearshore – Adamson House







Headwaters - Crags Road

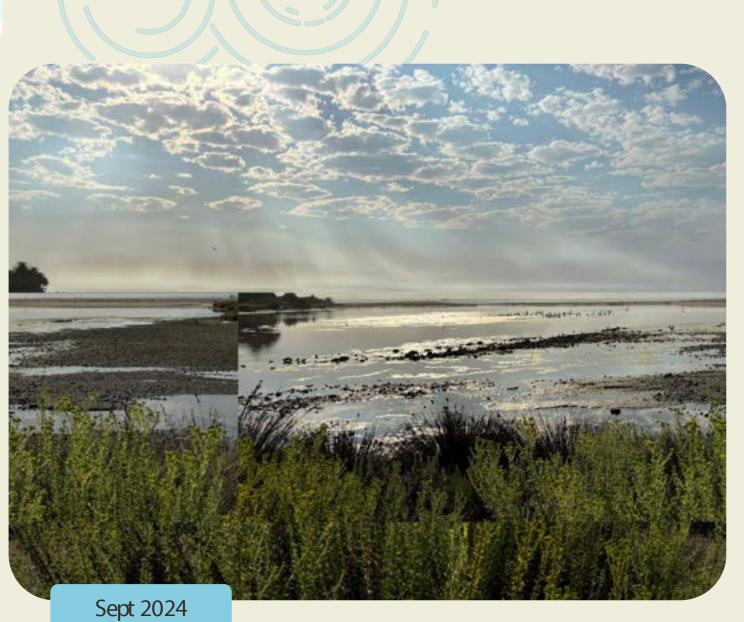
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Headwaters - Crags Road

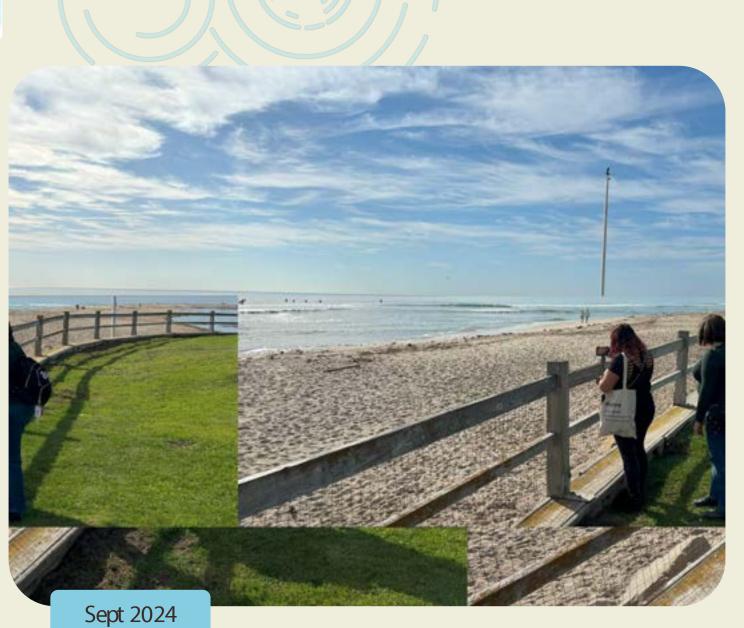
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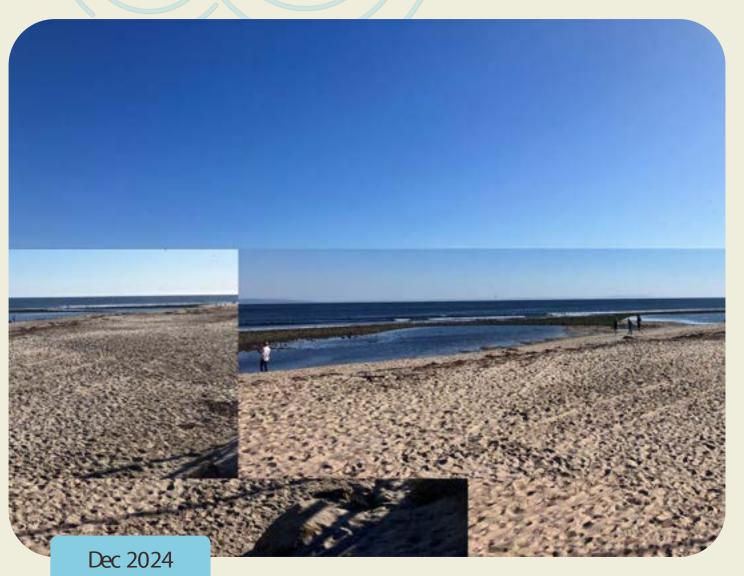
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Headwaters - Crags Road

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Nearshore – Adamson House









Headwaters - Crags Road

Mainstem - Malibu Canyon Overlook

Lagoon – Malibu State Beach and Lagoon

Nearshore – Adamson House







Oct 2024



#### **Current Program**

Headwaters - Crags Road

Mainstem - Malibu Canyon Overlook

Lagoon – Malibu State Beach and Lagoon

Nearshore – Adamson House







Feb 2024



#### **Current Program**

Headwaters - Crags Road

Mainstem - Malibu Canyon Overlook

Lagoon – Malibu State Beach and Lagoon

Nearshore – Adamson House



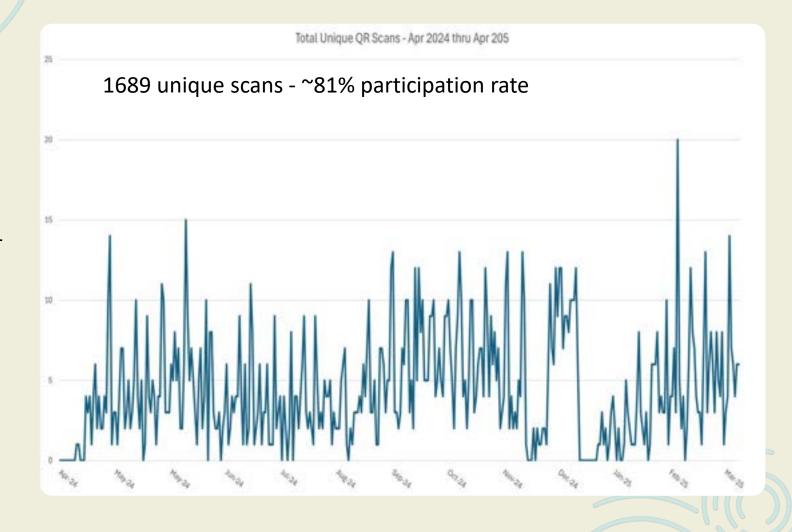


#### **Program Outcomes**

Over 1374 photos submitted

Broad Engagement in LA

Beyond California





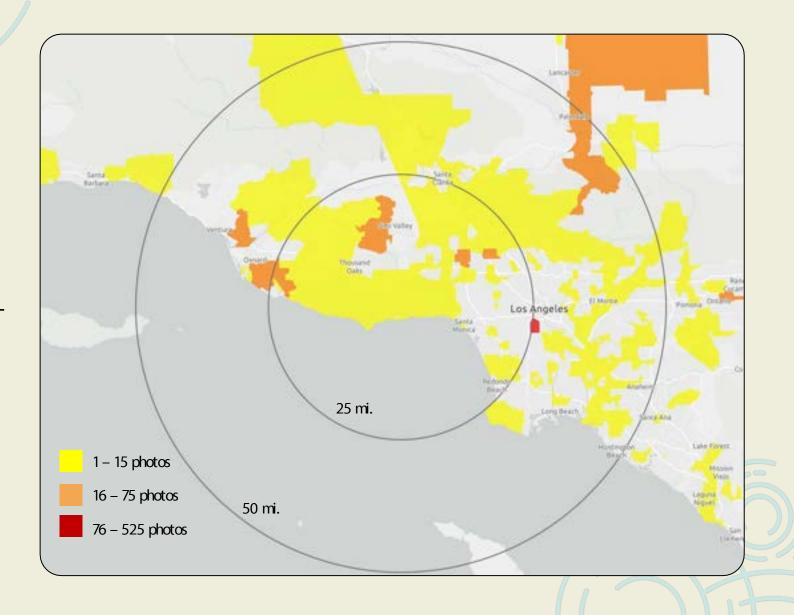


#### **Program Outcomes**

Over 1294 photos submitted

Broad Engagement in LA

Beyond California





## **Program Outcomes**

Over 1294 photos submitted

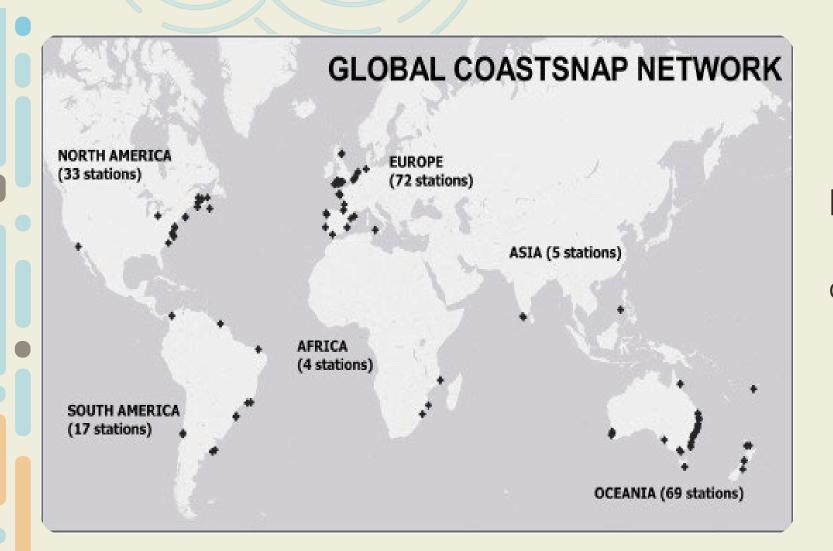
Broad Engagement in LA

And Beyond







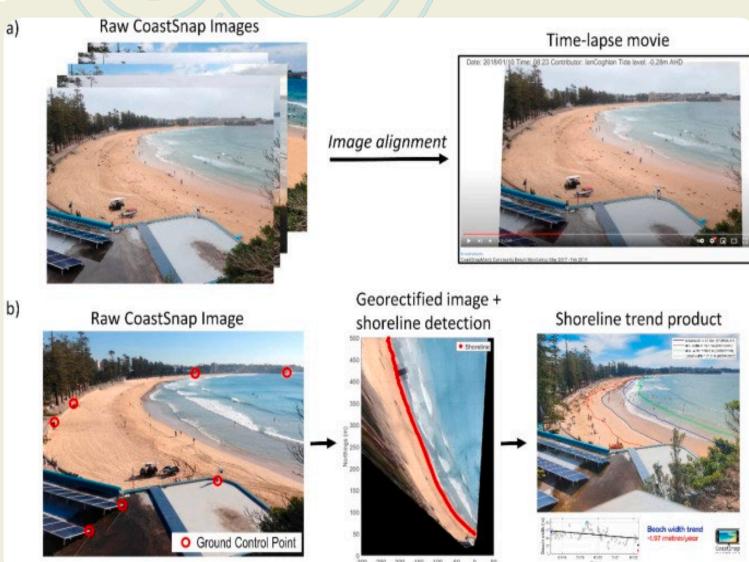


#### **Program Collaboration**

Coast Snap Program





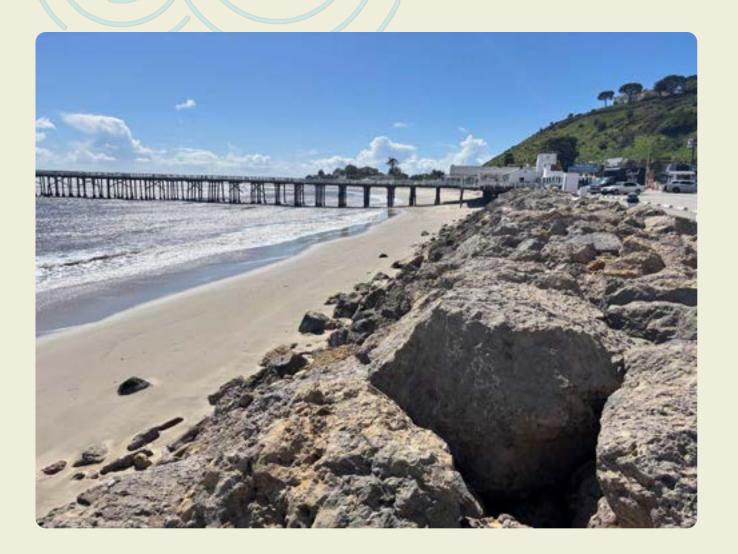


### **Program Collaboration**

Coast Snap Program







## **Program Collaboration**

Coast Snap Program





































# A Multidisciplinary Approach Toward Protecting Beneficial Uses of Water in the Lower San Lorenzo River Watershed

Salmonid Restoration Federation Annual Conference

May 1, 2025

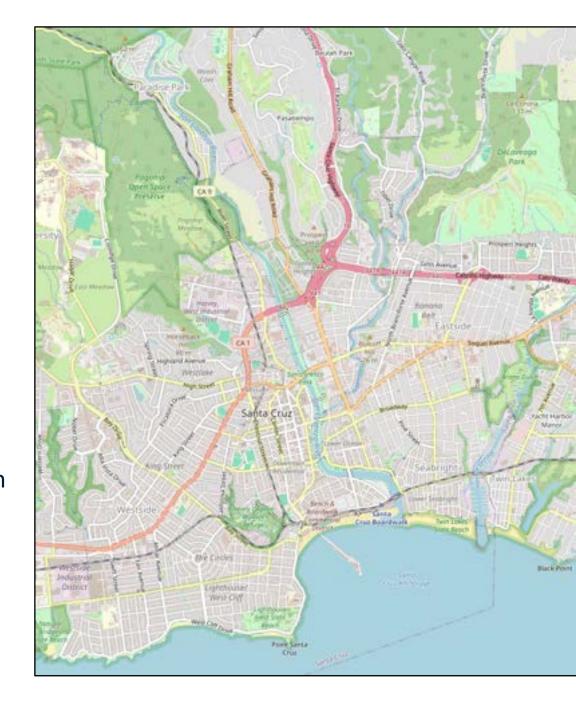
Chris Berry - City of Santa Cruz



#### Urban River –

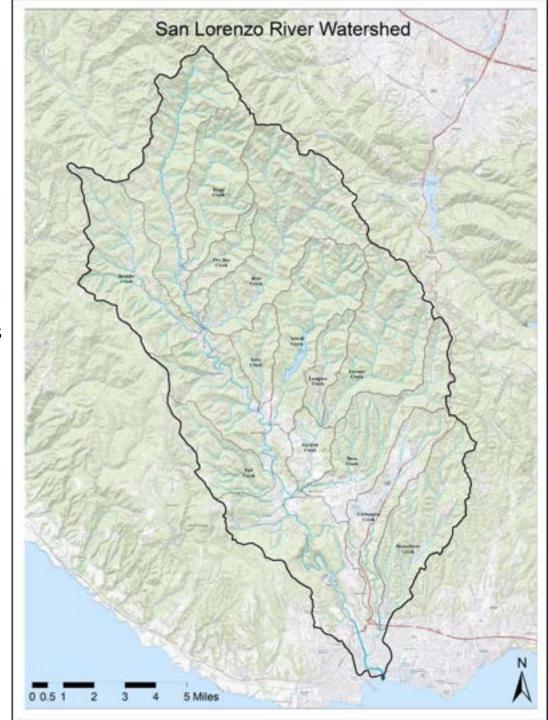
"Urban rivers are natural waterways that flow through populated areas and are significantly altered by human activities and development. They can be considered a part of a larger urban ecosystem and are often affected by pollution, channelization, and alterations to their riparian habitats. These rivers play a crucial role in urban areas, influencing everything from water quality and ecosystem health to recreation and community engagement."

- Al Overview



#### Watershed background

- Flood control issues
- •Intense recreation use
- •Infrastructure issues
- Multiple TMDLs
- Urban influences
- High solar input
- •Low exposure to wind
- High nutrient input
- Stormwater issues
- •Lagoon water level management issues
- Historic low flows
- •Weather whiplash and climate change
- related hydrologic changes
- Biodiversity
- Unique geology
- High cost of living
- High road density
- Legacy land use issues
- Seasonally fully-appropriated
- •Recent improvements in instream flows and regional water resource management



"It takes a village"...but also a watershed focus...

And..."We all live downstream"!





Above : San Lorenzo River watershed headwaters – Shmuel Thaler

#### Beneficial uses

- Recreation
- Cold freshwater habitat
- Estuarine habitat
- Aquatic organism migration
- Fish spawning
- Rare species habitat
- Municipal water supply
- Agriculture
- Groundwater recharge
- Industrial service supply
- Preservation of habitats of biological significance

#### More info here:

https://www.waterboards.ca.gov/centralcoast/water\_issues/programs/basin\_plan/docs/2024 basin\_plan\_r3.pdf

#### Water Quality Control Plan

for the

#### **Central Coastal Basin**



June 2024 Edition - pending OAL approval

Regional Water Quality Control Board, Central Coast Region State Water Resources Control Board California Environmental Protection Agency



# The San Lorenzo River Watershed "Village"

- National Marine Fisheries Service
- National Weather Service
- United States Fish and Wildlife Service
- United States Army Corps of Engineers
- State of California
- County of Santa Cruz
- City of Santa Cruz
- City of Scotts Valley
- Downtown Streets Team
- Residents and property owners
- Resource Conservation District of Santa Cruz County
- San Lorenzo Valley Water District
- Scotts Valley Water District
- Land Trust of Santa Cruz County
- Sempervirens Fund
- Valley Women's Club
- Monterey Bay Salmon and Trout Project
- Save our Shores
- Save the Waves
- California Native Plant Society
- Santa Cruz Bird Club
- Santa Cruz Flyfishing Club
- Coastal Watershed Council
- Local schools
- Mid-County Groundwater Basin stakeholders
- And more!



Top: State of the San Lorenzo River Symposium, Bottom: Sempervirens Fund, City of Santa Cruz and Califonria Native Plant Society exotic/invasive plant management project — City files



# Upper Watershed Restoration Efforts

- Passage work
- Water rights
- Instream flow work
- Land use planning
- Road improvements
- Livestock/Equestrian facility management
- River/camp cleanups
- Fuel management
- Onsite wastewater treatment systems
- Well Ordinance update
- Water rights changes
- Significant Tree Ordinance update
- Streamwood program
- JSSH
- Water quality monitoring
- Habitat Conservation Planning
- Education



# Lower Watershed Efforts

- Positive engagement
- Arts
- Lagoon water level management
- Citywide coordination around river management
- Climate change planning
- Homelessness response
- River-oriented development
- Climate change planning
- Benchlands rehabilitation
- B40 and Tait St. passage improvements
- Public education
- Monitoring
- Wildfire resiliency planning
- Stormwater management
- Job training
- Habitat improvement
- Habitat Conservation Planning



Top – Chinatown Bridge by Shmuel Thaler, bottom – redevelopment adjacent to the levee rendering by Lookout

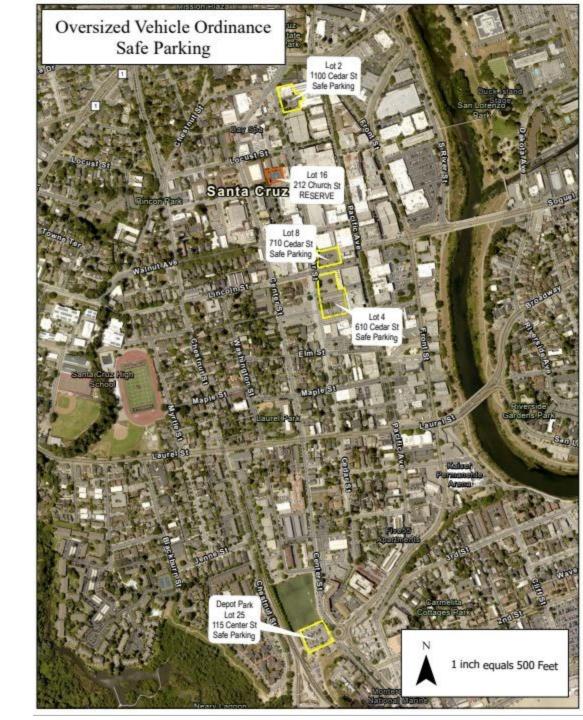


## Homelessness Response

- Internal, multidepartment coordination and collaboration
- Shelter, safe parking, health care, food, hot showers, rental assistance programs.
- EncampmentAssessment Team

#### More here:

https://www.cityofsantacruz.com/com munity/homelessness



# Unauthorized camping management:

- Outreach
- Enforcement
- Cleanup
- Shelter
- Maintenance
- Policy

City of Santa Cruz Camping Ordinance:

https://www.codepublishing.com/CA/SantaCruz/#!/html/SantaCruz06/SantaCruz0636.html

City of Santa Cruz Oversize Vehicle Ordinance:

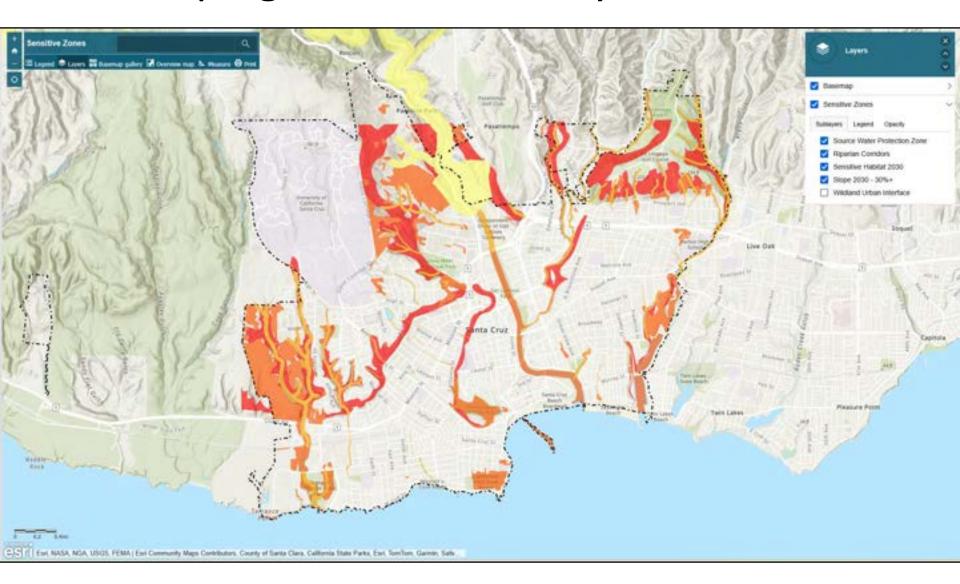
https://www.codepublishing.com/CA/SantaCruz/#!/html/SantaCruz06/SantaCruz0636.html

Upper left: Levee camp cleanup – City of Santa Cruz files, bottom left: Pogonip homeless camp fire – Shmuel Thaler

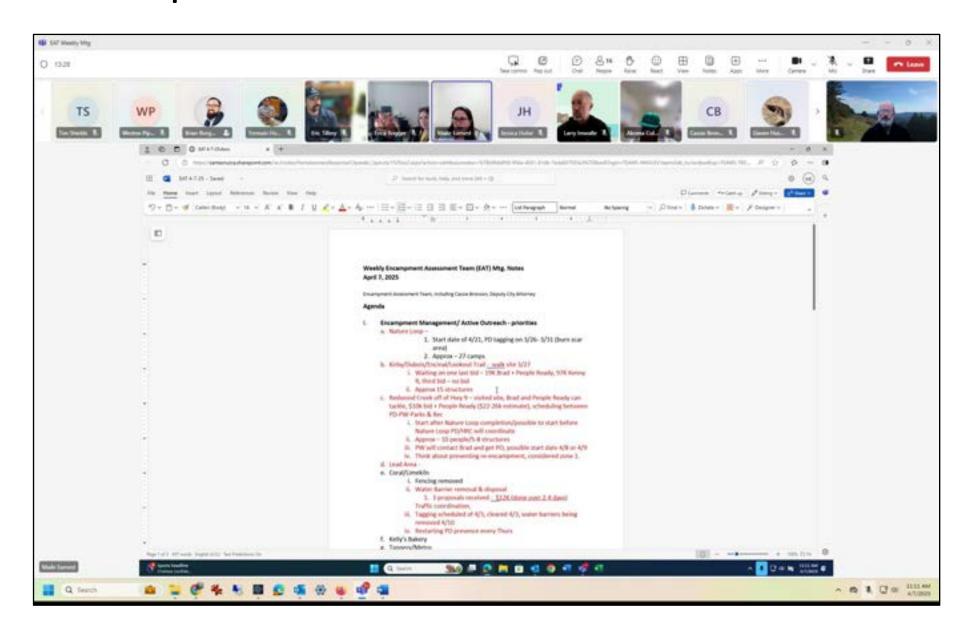




## No Camping Zones in the City of Santa Cruz



### **Encampment Assessment Team**



# 2024 Homelessness Response Data

- 1100 new affordable housing units
- 931 people served in shelter and safe parking programs
- 165 authorized tent spaces
- 1098 tons of waste removed from public spaces
- ~\$400K spent on camp cleanup (not counting staff time)







### Historic Instream Flow

Withdrawal

Historic Water Rights (until May 2025?!)

Source	License/ Permit Number	Period	Maximum Diversion Rate (cfs)	Fish Flow Requirement (cfs)	Annual Diversion Limit (mil gal)
North Coast	Pre-1914	Year-round	No limit	None	None
San Lorenzo River					
Tait Street Diversion and Wells	001553 007200	Year-round	12.2	None	None
Felton Diversion to Loch Lomond	016601 016123	September October November-May June-August	7.8 20.0 20.0 0.0	10 25 20	977
Loch Lomond Reservoir: Collection to Storage (max	009847	Sept-June	No limit	- <del>-</del>	1,825
amount/year)					

Year-round

Summary of Water Dighte Held by the City of Santa Cruz

1.042

## Instream Flow Improvement San Lorenzo River at Tait St. Flow Goals

			Minim	um Flow in the S	an Lorenzo Rive	r below Tait Stre	eet (cfs)		
	Rearing Baseflow					Migration		Spawning <sup>1</sup>	
	Hydrologic condition 5 80-100% (driest)	Hydrologic condition 4 60-80% (dry)	Hydrologic condition 3 40-60% (normal)	Hydrologic condition 2 20-40% (wet)	Hydrologic condition 1 0-20% (very wet)	Adult <sup>2</sup>	Smolt Migration <sup>3</sup>	Spawn	Incubate
Jan	8	8	15.8	16.4	17.5	17/25.2	10		
Feb	8	8	15.9	16.7	18.0	17/25.2	10		
Mar	8	8	16.3	17.3	18.2	17/25.2	10		
Apr	8	8	17.2	17.9	18.4	17/25.24	10		
Мау	8	8	17.7	18.2	18.5		10		
Jun	8	8	16.6	18.1	18.5				
Jul	8	8	12.4	15.8	18.2				
Aug	8	8	9.8	11.9	16.4				
Sep	8	8	9.0	11.1	13.3				
Oct	8	8	9.8	11.4	13.3				
Nov	8	8	12.5	14.1	16.4				
Dec	8	8	15.1	16.2	17.6	17/25.2			

<sup>&</sup>lt;sup>1</sup> No spawning occurs in this reach.

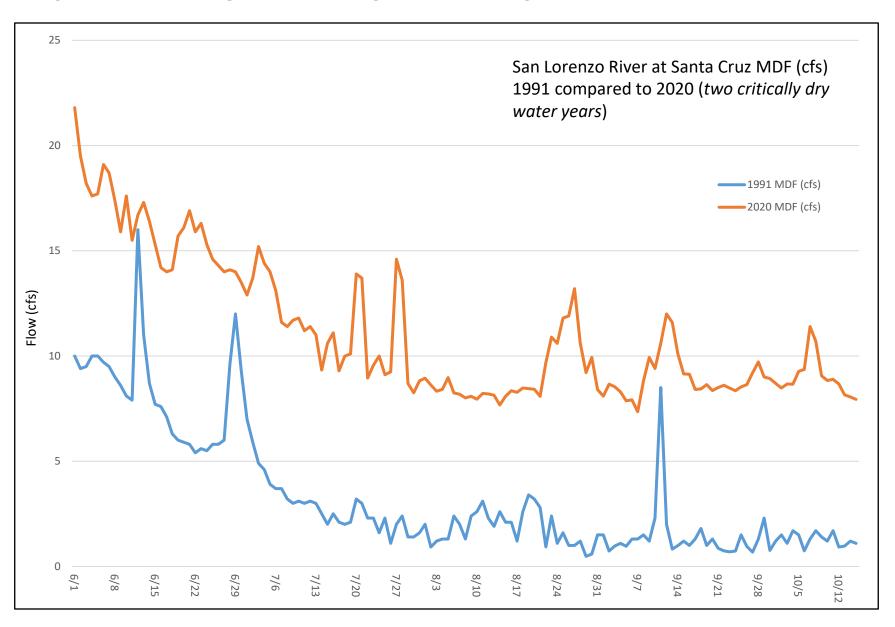
Above: City of Santa Cruz files

<sup>&</sup>lt;sup>2</sup> Adult migration flows may be reduced to 3 consecutive days a week if storage levels in Loch Lomond Reservoir fall below the following levels (MG): Dec-1900 MG; Jan-2,000 MG; Feb-2,100 (MG); Mar-2,200 (MG). Further, adult migration flows may be reduced to 5 consecutive days after each storm event that exceeds 17 cfs if storage levels in Loch Lomond Reservoir fall below the following levels: Dec-1600 (MG); Jan-1700 (MG); Feb-1800 (MG); Mar-1900 (MG).

<sup>&</sup>lt;sup>3</sup> During critically dry conditions (80%-100% Hydrologic condition) smolt outmigration flows shall be provided at least 3 days per week in March, April, and May. If additional water is determined to be required, the City may further reduce smolt outmigration requirements at the Tait Street Diversion provided that: (a) drought has been officially declared; and (b) this reduction in smolt outmigration opportunities will not reduce smolt migration more than one full day/week in the lower San Lorenzo River system or there is evidence from the San Lorenzo River or neighboring watersheds (i.e. Scott Creek) indicating that smolt migration is no longer occurring.

<sup>&</sup>lt;sup>4</sup> April adult migration flows provided in hydrologic conditions 1-3.

### **INSTREAM FLOW IMPROVEMENTS**



Source: USGS data

# Lagoon Water Level Management

- Maintain predictable water elevation
- Reduce drastic water quality changes incurred from unauthorized sandbar breaches
- Reduce potential for flushing tidewater gobies during unauthorized breaches
- Provide maximum amount of wetted habitat while also maintaining flood protection

#### More here:

https://www.youtube.com/watch?v=gZ IX2kvm6VU





### Stormwater Management

- Storm WaterManagement Plan
- Clean River, Beaches and Ocean Fund (Measure E)
- Business Certification Programs
- Cigarette Butt "Bait Tank" Rebate Program
- Education
- Adopt a Levee!

#### More here:

https://www.cityofsantacruz.com/government/city-departments/public-works/stormwater





Top: Sediment discharge into Loch Lomond - City of Santa Cruz files, bottom: Snapshot Day San Lorenzo River team — Jim Vivian



When I am talking about "It Takes a Village", I'm obviously not talking just about or even primarily about geographical villages any longer, but about the network of relationships and values that do connect us and binds us together.

- Hillary Clinton

More State of the San Lorenzo River info here:

https://sites.google.com/view/soslrs/home

Left: State of the San Lorenzo River Symposium Tour – City of Santa Cruz files



cberry "@" santacruzca.gov

# City of Santa Cruz Water Department

Certificate of Appreciation

In Recognition of Your Outstanding Partnership and Collaboration

NOAA Fisheries West Coast Region recognizes the City of Santa Cruz Water Department's unwavering commitment to developing a Habitat Conservation Plan (HCP) that will support and enhance the conservation of Central California Coast coho salmon and steelhead in the San Lorenzo River and North Coast watersheds over the next 30 years. Thank you for your dedicated leadership throughout the HCP development process.

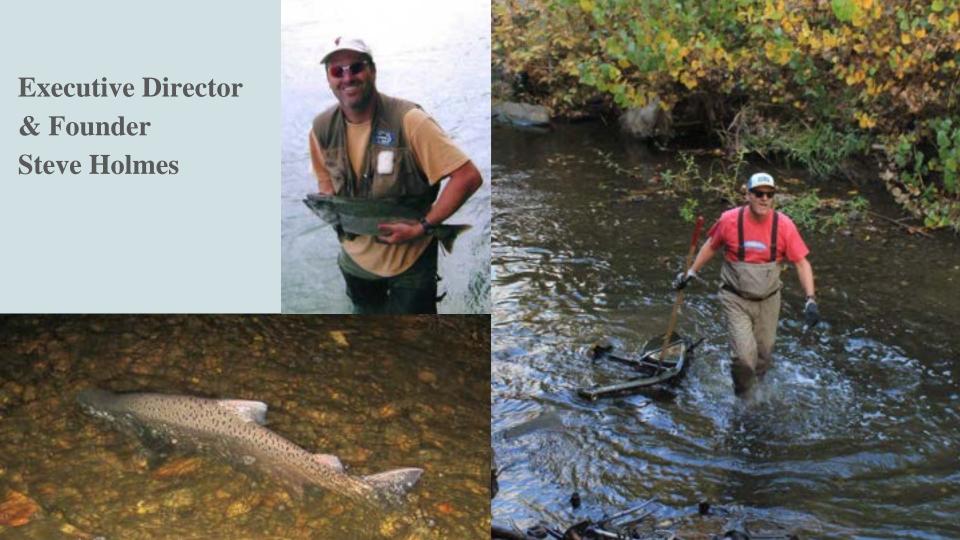
aleileil



**NOAA**FISHERIES







Humble Beginnings
First of hundreds of outreach events



Friends Of Los Gatos Creek 2013

South Bay Clean Creeks Coalition 2017



# **Community Effort and Events**

Since 2013 Cleanup Events 482

Volunteer Hours 32,032







## Volunteers







### **HITACHI**

### servicenow.















Sage





























# Tons Removed

784 tons = 1,568,000 lbs



Our Local Waterways are heavily impacted by













Working together to clean up the waterways.





We also work with people to help us find salmon in the waterway



Water Resource Protection Zones would prohibit people from encamping or reencamping an area. This would allow the riparian habitat to recover over time.



### Sign of Hope in the Waterway

PLoS One, 2021 Apr 15:16(4):e0244470, doi: 10.1371/journal.pone.0244470, eCollection 2021.

Ancient DNA analysis of archaeological specimens extends Chinook salmon's known historic range to San Francisco Bay's tributaries and southernmost watershed

```
Richard B Lanman <sup>17, 2</sup>, Linda Hylkema <sup>2</sup>, Cristle M Boone <sup>4</sup>, Brian Allée <sup>5</sup>, Roger O Castillo <sup>6</sup>, 
Stephanie A Moreno <sup>3</sup>, Mary Faith Flores <sup>7</sup>, Upuli DeSilva <sup>7</sup>, Brittany Bingham <sup>7</sup>, Brian M Kemp <sup>7</sup>
```

Affiliations + expand

PMID: 33857143 PMCID: PMC8049268 DOI: 10.1371/journal.pone.0244470

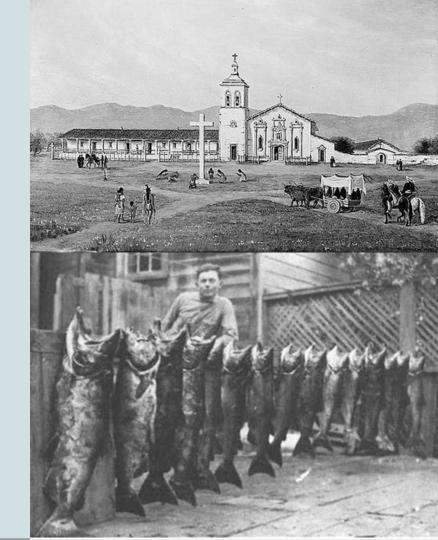
#### Abstract

Understanding a species' historic range guides contemporary management and habitat restoration. Chinook salmon (Oncorhynchus tshawytscha) are an important commercial and recreational gamefish, but nine Chinook subspecies are federally threatened or endangered due to anthropogenic impacts. Several San Francisco Bay Area streams and rivers currently host spawning Chinook populations, but government agencies consider these non-native hatchery strays. Through the morphology-based analysis of 17,288 fish specimens excavated from Native American middens at Mission Santa Clara (CA-SCL-30H), Santa Clara County, circa 1781-1834 CE, 88 salmonid vertebrae were identified. Ancient DNA sequencing identified three separate individuals as Chinook salmon and the remainder as treethead/rainbow trout (Oncorhynchus mykiss). These findings comprise the first physical evidence of the nativity of salmon to the Guadalupe River in San Jose, California, extending their documented historic range to include San Francisco Bay's southernmost tributary watershed.

PMID: 33857143

PMCID: PMC8049268

DOI: 10.1371/journal.pone.0244470











### Salmon Monitoring

Procedures



Any and all fishing is closed on Los Gatos Creek and Guadalupe River until the last Saturday in April

#### Report this illegal activity

888-334-2258

Spensored by South Bay Clear Coats Coattion.
To join our mission in Recipies, Restines, and Recipials South Bay understants, since the state of the

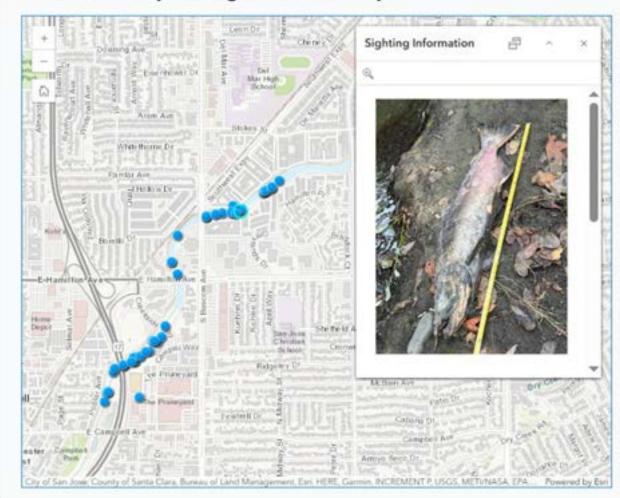






Check out our progress during the Fall Chinook Salmon Run at sbcleancreeks.com

#### 2024 Salmon Spawning Interactive Map





2019-2023
Total salmon harvest
178
Sent to U.C. Davis
126
Sent to CDFW
50

-		Samuel Rus Harvest		Total Samples 77	***************************************
	Date	Ses/Sength	Location in Watershed	6PS details	Addt Notes
_	19/09/03	Male St. Sizes	Scotting Nor	17.317907-133.8840W	adjusted, 88000 harvested the head
	11/00/01	Tenals ELiter	Line Sales Creek	E7300629-523.889404	original, SECCC forcested the helps
	11,90,91	Remark 81 Altern	Suid-lige New	\$2,504249-523,668405	whomas 18000 harvested the felast
1.0	10,040,00	95/e 61.12cm	Suddays For	ST. LANSING - LEL SCOURT	adjusted, SECCC frances and the financial
	11/04/01	Mylls 79.74	South spe four	2134279-123.00100	witness, SECCO forward the fated
	11/04/01	NVis 86.36cm	Sam Galley Climate	17,18 - 121,96	adjaces 36000 furnished the head
	11/29/31	Marie 201, Rom	Surbings from:	21.340.000 - 121.000.000	prisone, SECC forward the head
	13,555/50	Marie St. Effort	Southhapt Note:	ET340980 - 121,001895	edigme, (80)(Characterist the head
	11/25/21	Penale 61.38m	Suppliships Street	31340785-121,801877	adjuste. SECCC forvested the head
h	11/89/21	Neighb St. 30cm	Sveddage Firet	37.34E785-1CL901677	referent, SECOC Increased the fates'
1	117/09/01	Marie 106.66	South Lot Not	19.547466 - 121.866742	prisone, 18000 have easi the healt
N.	13/25/88	Notarior Std. Salutto	Stuesbringe Street, above dark	11.24640.7 - 1213.87980.7	adustion, 18000 harvested the head
-	11/05/01	Pemple 76,74(cm)	Southlase Niver, above then	10340411-1254F007	adiana, 16000 harvested the head
,	: F.P/p/P/GH ;	Morett at	Stanfalupe River, share dare	17340417 - 121,879617	edipose. SBCCC furnished the hotel
	10/09/00	totale (E), 29cm	use Setos Creek	17.310397 - 121.902099	indigition, SECCC for vessed the head
	1/1/04/08	Nemala 71.13cm	Line Subset Creek	17.3 (1963) - LES 805GE	adjust, SECC forward the fidel?
1	11/09/01	Nemela 83.35cm	Studdelige River, shows dark	35245835-131.851768	plane, SECC broaded the head
	11/04/31	Male 99.00	Swetshape River, above dom	27.245644 - 121.871766	informat, SACCO Surveyord the Saladi
1	11/03/01	Penels SL38/m	SubShipe Nerr	31360014 - DOLATEDIA	reference, SBCCC for ventral the hated
	11/08/03	Strike SM, Silvers	total Gallani Cheefi	31.257884 - 121.931046	adjusted, SBOOC harvested the head
	13/09/01	Female 76.3 cm	Southlape Nivel, show then	17.05_111.01	adjects 18000 harvested the head.
7	11/09/01	Intale 66.56cm	Suedeluje Niver, above darn	87.09-101.00	edigme, SECCO for vested the head
	11/04/01	Water FL1(cm)	con Galley Creek	TCHON-IZLERON	adjaces, 58000 harvested the heat
	11/09/01	Female RL2cm	Tate Sales Creati	37.398096 - 123.838090	referen, SECCO harvested the head
	13/09/33	Persole 63-32mm	Streets Land Street	87.96-129.69	effects, 58000 harvasted the facal
	11/30/21	Famule St. born	Suaddings Rose	37,250744 - 121,849614	advance. SBOOK harvested the head
	11/99/28	Marie St. Sturn	Street August Novel	97.25 - DOLME	refigures, 18000 harvested the felast
	115/00/01	Remaile 26.75cm	Bookings from	37GH-125.86	administ, SECCC for vessed the head.
	12/00/01	Marie St. Store	Sunda'upe Noer	\$7,29-101.00	adapted, SECCC believed the head
	113/369/313	Miles BE Born	Subliquities:	37,046-121,079	original, SBOOC harvested the head
	11/99/31	Penale \$1.33mm	Southfule Year	87.59 - 120.80	adjuste, \$8000 furnished the head
,	zarulm -	Figuratio St. Adoptio	Los Gatos Chesil	17,047-101,407	religions, SBCCC furnished the heart



#### Salmon Monitoring

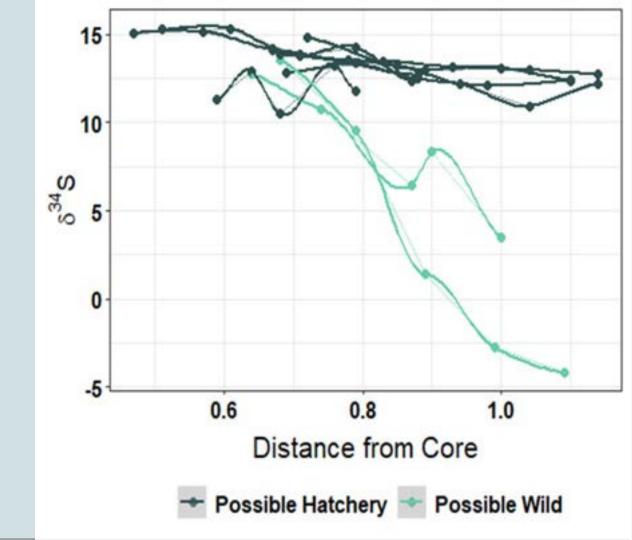
# UCDAVIS UNIVERSITY OF CALIFORNIA 2019-2024



2025 to present



Results are in but we are waiting for the next collections of sample to be analyzed



#### Revitalize the waterways

The population has seen an increase in our area but there are still challenges.

Spawning Habitat Improvement



Improve Fish Passage



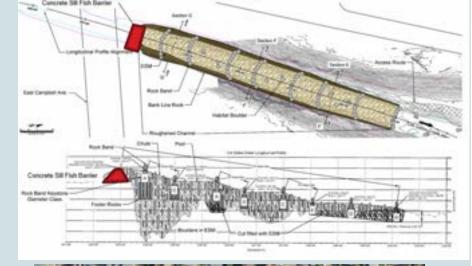
Invasive Plant Removal







Los Gatos Creek Fish Passage & Spawning Habitat Improvement Project





Join our mission to Reclaim, Restore, and Revitalize the local waterways!



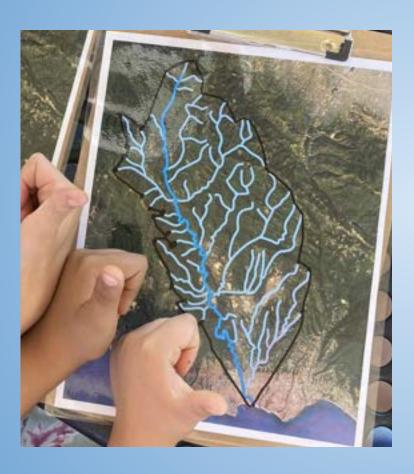
# Reconnecting Communities to the San Lorenzo River: Equity, Education, and Stewardship



Maria Rocha and Sam Adelson Coastal Watershed Council Santa Cruz, CA



#### Welcome to the San Lorenzo River



- Largest watershed within County
  - ➤ 138 sq mi.
  - ➤ 29 miles long
  - Final 2 miles through SC
  - Extreme dry, wet, slopes, erosion
- Critical habitat for salmonids
- Deep cultural history
  - > Indigenous
  - Mission and Victorian Eras
  - Lumber, Lime, Leather (3Ls)
- Current status and importance





## Introducing the Coastal Watershed Council (CWC)



- 1995 CWC founded to preserve and protect coastal watersheds in SC Co.
- 2006 CWC launches youth education program
- 2013 Shift to focus on San Lorenzo River (San Lorenzo River Alliance)
- 2015 CWC launches habitat enhancement program

## **CWC's Community Building**











#### CWC's Habitat Stewardship





- River Stewards Stewardship team of people experiencing homelessness
- River Health Days Stewardship events open to the entire community

## **CWC's Watershed Rangers**

- County-wide reach with focus on the lower San Lorenzo River
- Multiple-visit lesson series
  - School day (4 weeks)
  - Afterschool (12 weeks)
  - Summer collaborations
- This 2024-25 school year
  - > 21 teachers
  - > 8 schools
  - Over 600 students
- 25,000 students served since 2006!!



#### Watershed Rangers Keys to Success!

Teacher
Support and
Buy-in

Equity Focused Program

Meaningful Partnerships

Whole Child Education

Place-based Learning

Youth
Empowerment
& Action
Projects

Relevant and Engaging Curriculum

Best Practices in Education

## Our Watershed Rangers Approach



- Multidisciplinary program
  - Science, Art, Culture, History
- Accessible and relevant curriculum
- Aligned with best practices in education
  - Next Gen. Science Standards
  - ➣ 5E Instructional Framework
  - Inquiry-based Learning

#### Partnerships

- County Office of Education
- Districts, principals, and teachers
- Local organizations and agencies

## **CWC** in the Education Community



- Teacher Leadership Institute
- Monterey Bay Environmental Educators



Youth field trips with Watershed Section of Santa Cruz Water Department



Green School Certification

#### Watershed Rangers by Grade

Kinder
We all Live in a
Watershed!

1st
Helpful Native

**Plants** 

Champions of Groundwater

2nd

Migration of Steelhead Trout

3rd

4th
The Power
Of Erosion

5th
Stormwater
Solutions

Preventing Bacteria Pollution

6th

Biodiversity of a River Ecosystem

7th



#### 3rd Grade: Steelhead Trout Migration



#### Concepts

- River levels and flow
- Habitat and water quality
- Life cycle of steelhead
- Migration study
- Campus water audit

#### Incorporates

- > Teacher-led lessons
- > Outdoor activity
- Art and Literacy

#### Tracking and Development

- Pre and post surveys
- > Teacher feedback

## Instilling a Sense of Belonging





#### SEL and Whole Child Education



- Social Emotional Learning
  - Develop empathy
  - > Self-awareness
  - > Resilience
  - Collaboration skills

- Whole Child Education
  - Higher engagement
  - Thoughtful stewards
  - Deepens knowledge

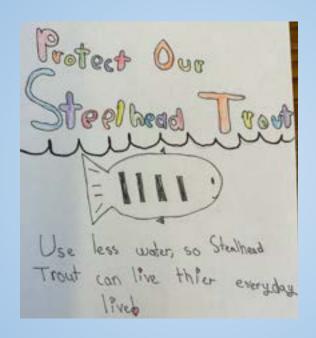
## **Action Projects and Youth Empowerment!**

- Turns learning into action
- Develop social-emotional skills
- Nurture responsibility
- Empower young voices



## **Examples of Action Projects**







**Coloring Flyers** 

Making a Poster

Passing out Flyers

## **Examples of Action Projects**







Creek/River Clean-ups

Youth River Health Days

Art Installments





#### Stories from our Watershed Rangers





Picture Credit: Cristian Duran

- Making an art banner of a spider and connecting to his cultural heritage.
- From walking on the riverwalk to walking IN the river!

#### Stories from our Community Partners and Teachers





- Working at the Boys and Girls Club over the summer.
- Patrick Foster, star teacher at Soquel Elementary

#### Teamwork makes the stream work!

We can't do this on our own - special shout outs to our community partners and funders:











## Thank you!





www.coastal-watershed.org

info@coastal-watershed.org

adelson.samuel@gmail.com

mrocha@coastal-watershed.org

# Rewilding and Resilience in San Luis Obispo Creek





# Background

- Grew up in the San Fernando Valley fishing
- Marine Biology work at the beach
- Cal Poly SLO grad '99
- **CCSE** 1997-2005
- Consulting
- City of San Luis Obispo 2005-present



## City of SLO: Natural Resources Program

- Robust open space acquisition program
- Comment on development projects with impacts to natural resources
- Write conservation and management plans for City owned open space
- Conduct sensitive species surveys
- Oversee City projects that may impact sensitive habitats
- Work on climate action, climate adaptation and process-based restoration (PBR) projects

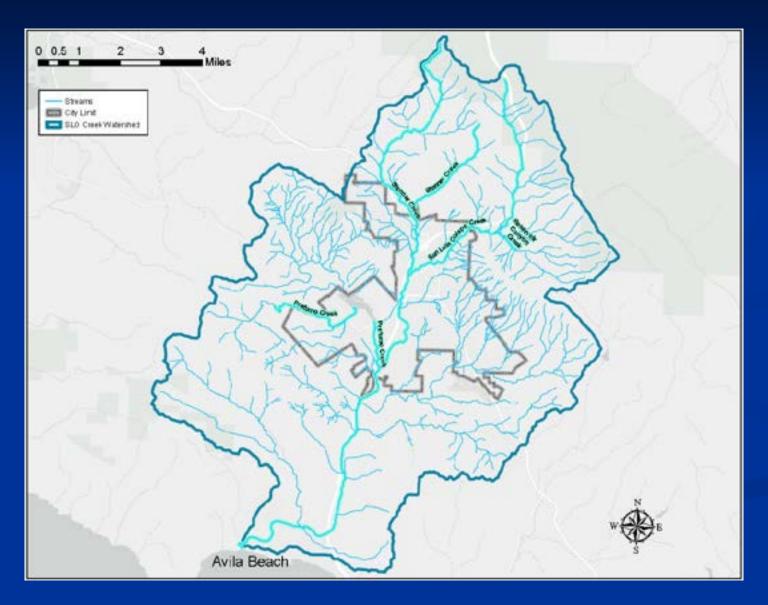


# City Biologist's Activities

- Fish, frogs, plants, animals, and open space monitoring
- WUI (Wildland Urban Interface) (fuels) Management
- Flood Control
- Stormwater Management
- Infrastructure Collaboration
- Maintenance / Silt Removal Projects
- Environmental Monitoring / Surveys
- Salmonid Restoration Federation (SRF)
- Homeless Services



# SLO Creek Watershed

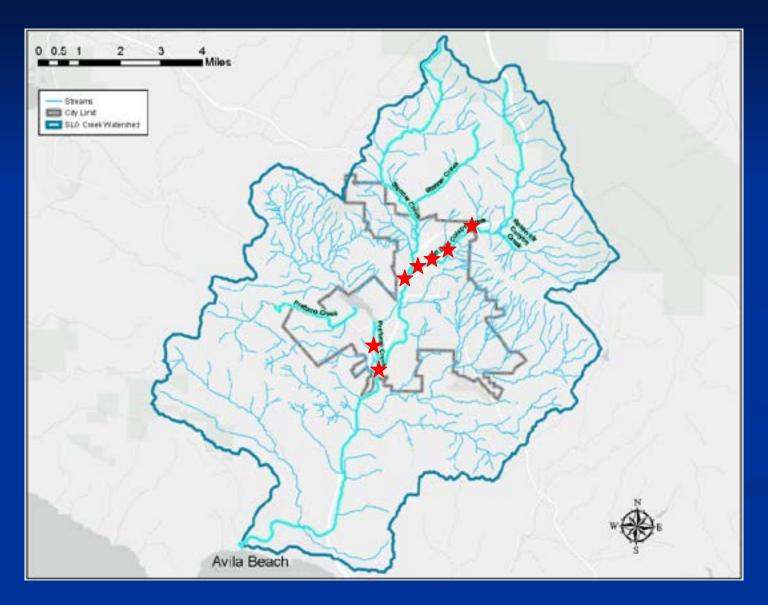


## SLO Creek around town...

- Cuesta Park
- San Luis Drive Emergency Project
- 'Uptown' in Downtown
- Mission Plaza
- Mid-Higuera Bypass Project
- Bob Jones Bike Trail\*
- Prefumo Creek Restoration Project



# SLO Creek Watershed



### Cuesta Park







## San Luis Drive Emergency Project







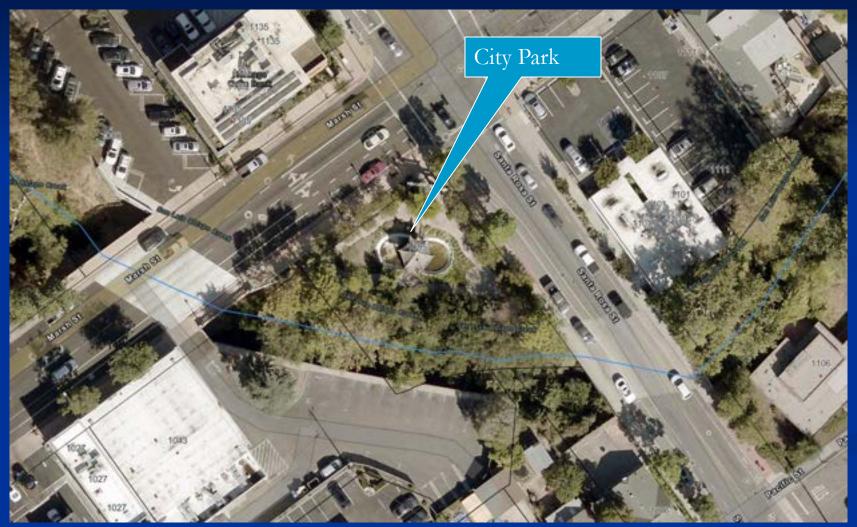
# San Luis Drive Emergency Project







### 'Uptown' in Downtown





## 'Uptown' in Downtown





### 'Uptown' in Downtown





#### Mission Plaza

January 9, 2023



April 28, 2025



#### Mission Plaza

Steelhead life history panel



Monarch butterfly panels and nectar garden







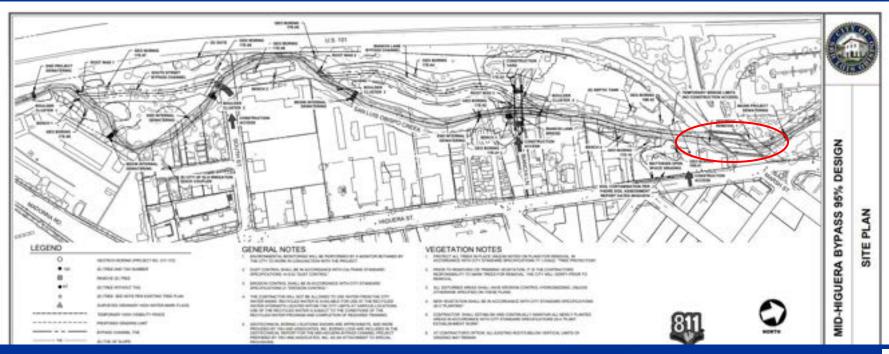






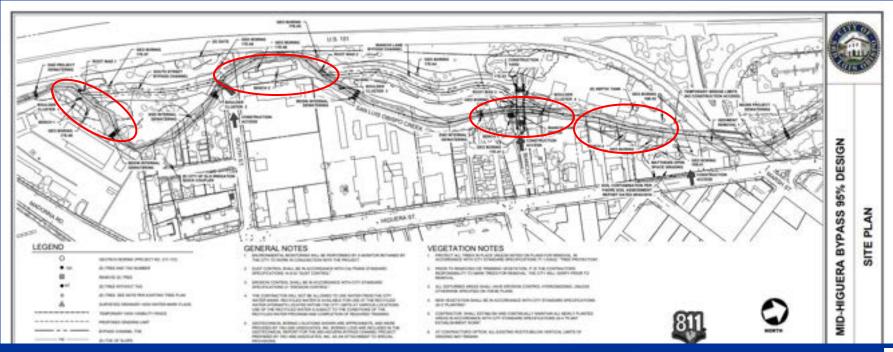


Silt removal at the Marsh St Bridge





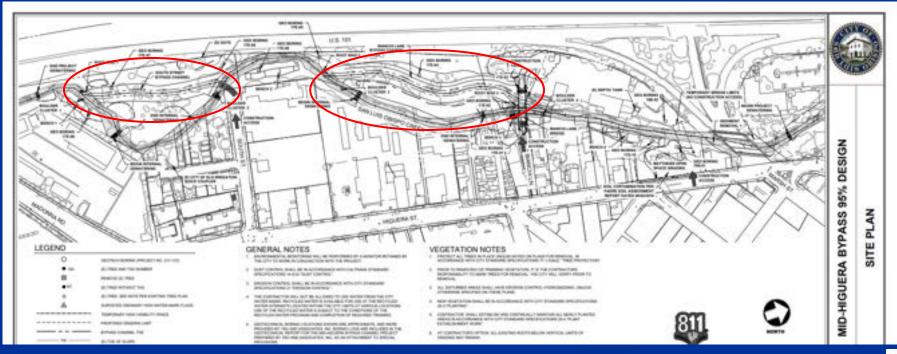
Silt removal at the Marsh St Bridge 4 flood benches





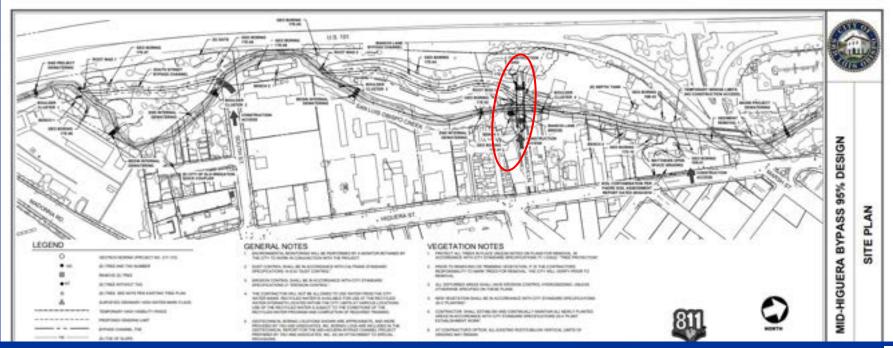
Silt removal at the Marsh St Bridge

- 4 flood benches
- 2 bypass channels





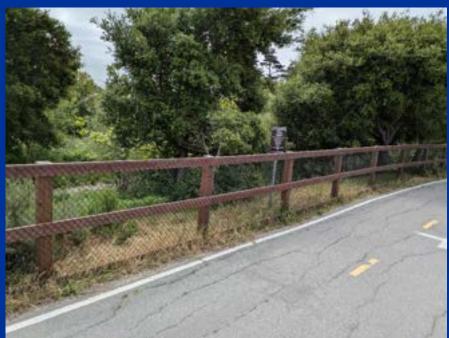
Silt removal at the Marsh St Bridge 4 flood benches 2 bypass channels Replace Bianchi Lane Bridge





## Bob Jones Bike Trail\*

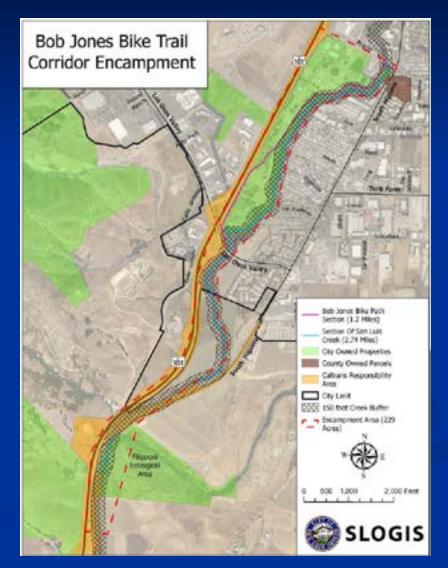






#### Bob Jones Bike Trail

- Bob Jones City to Sea Trail
- This segment was constructed by the City in 2006
- Trying to encourage positive uses of the trail.
- Several encampments are typically discovered along the trail.
- Fencing was installed to limit trash and encampments from getting into the creek corridor.
- This section of the trail is part of a County partnership for transitional housing opportunities for people experiencing homelessness\*.





## Major SLO Creek Planning Efforts

- San Luis Obispo Creek Resiliency and Rewilding
   Plan Creek Lands Conservation
- Waterway Management Plan City/County
  - Flood Control Bible Certified in 2003, update currently underway
- Vegetation Management Plan City
  - Funding received from Coastal Conservancy for fuel reduction/vegetation management in City Open Space and creeks



## SLO Creek Resiliency and Rewilding Plan

- Working with Creek Lands Conservation
- Steelhead Action Plan is the driver
- Has a large public educational and engagement portion
- Identifies key habitat improvement areas
- Prioritizes barrier removal projects
- Looking to increase public accessibility
- Is a 20-year vision plan



#### Prefumo Creek Restoration

- Lower Prefumo Creek is an engineered trapezoidal earthen channel
- On the adjacent residential development plans it was called the "stormwater drainage ditch"
- Is the new outflow from Laguna Lake
- Prematurely goes subsurface
- Is a migratory corridor for Steelhead
- Has several migration barriers along its length



## Prefumo Creek Overview Madonna to Calle Joaquin

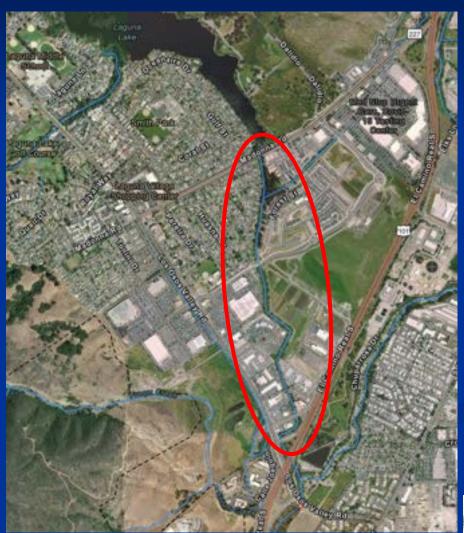
- Prefumo Creek was rerouted through Laguna Lake in the 1960's.
- The upper section now has a golf course and residential neighborhoods surrounding it and is directed into Laguna Lake.





## Prefumo Creek Overview Madonna to Calle Joaquin

- The lower section is an engineered earthen channel.
- Sediment transport and surface flow are significant issues to deal with.
- Restoration is happening though!
- Large housing project that incorporated a trail and native riparian restoration components.
- City Farm property has youth education programs, a new Creekside trail and native riparian restoration projects.





## Prefumo Creek Trail – San Luis Ranch Development





#### Prefumo Creek Trail City Farm

- City Farm accepted into 'Open Space' portfolio in 2012.
- Non-profit partner for incubator farming and educational opportunities.
- They have been amazing creek stewards to prevent encampments and remove non-native plant species.
- Significant native riparian plant restoration effort.





#### Prefumo Creek Trail City Farm

- City Farm accepted into 'Open Space' portfolio in 2012.
- Non-profit partner for incubator farming and educational opportunities.
- They have been amazing creek stewards to prevent encampments and remove non-native plant species.
- Significant native riparian plant restoration effort.
- Established on 'outdoor classroom' curriculum along the interpretive trail with Creek Lands Conservation.



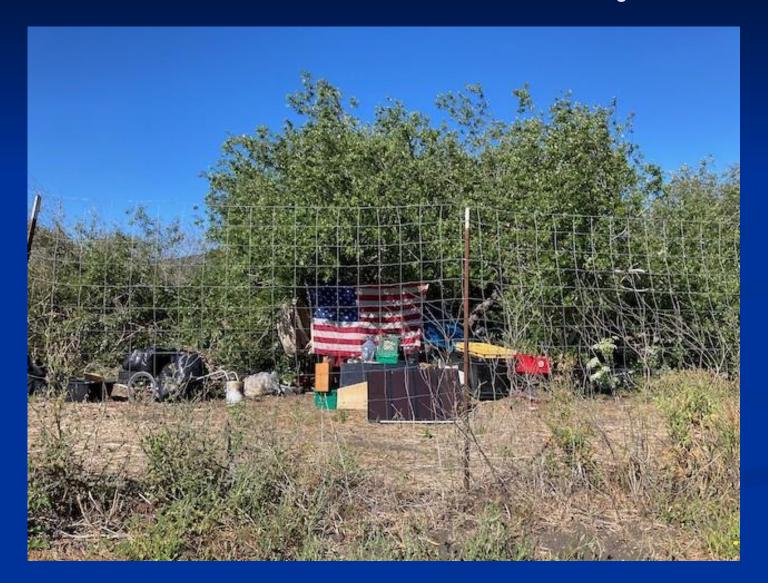


### Prefumo Creek Trail - City Farm





### Prefumo Creek Trail - City Farm



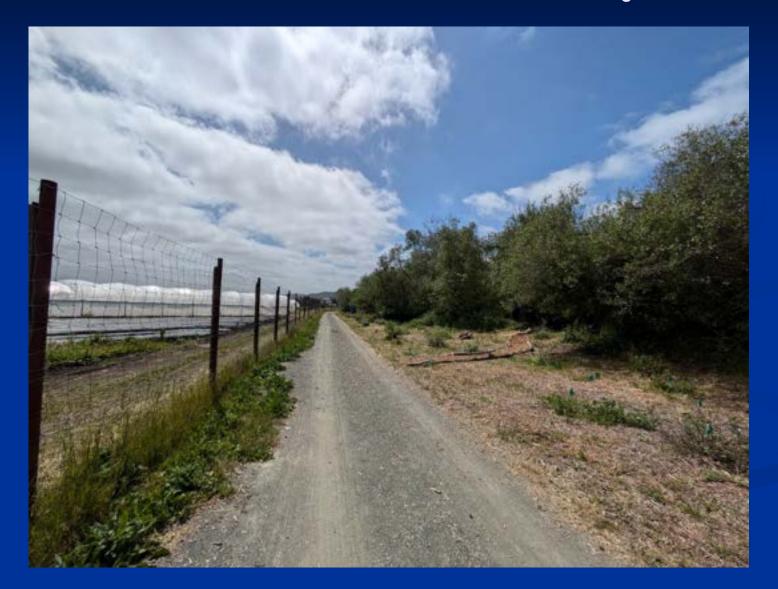


#### Prefumo Creek Trail – City Farm





## Prefumo Creek Trail – City Farm





## Prefumo Creek Trail - City Farm







## Prefumo Creek Trail – City Farm





## Prefumo Creek Trail City Farm to Calle Joaquin

- Continuation of the trail from City Farm down along the creek to the Calle Joaquin Homekey site.
- Exploring funding opportunities for the trail and workforce development between City Farm and Homekey residents.
- Connection for getting people training and back into the community.





### Homelessness ResponseProgram

- City program formally developed in 2021 to support efforts led by the County and address City issues.
- Multi-department strategy for implementation.
- Steering Committee consisting of upper management for policy and program decision making/support.
- Field Teams provide on the ground response and support for those experiencing homelessness.
- Homelessness Response Manager coordinates is the liaison to the Steering Committee and coordinates the Field Crews and external partners.

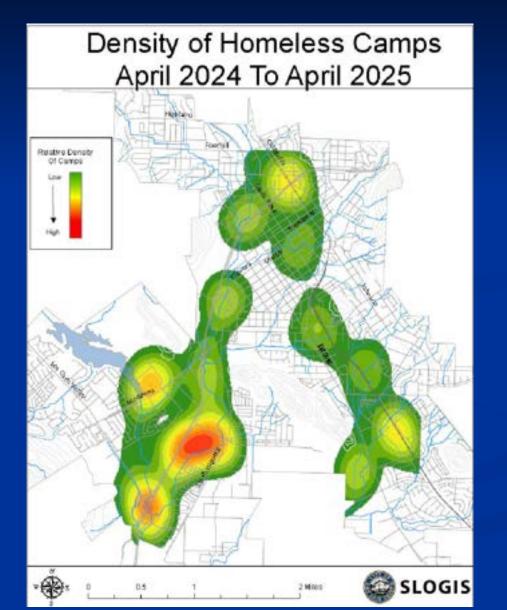


## Homelessness Response Program Organization Chart





## Encampment Monitoring





### Homelessness Response Program

- Homelessness Response Strategic Plan completed/updated in 2024
- Main focus areas:
  - Collaboration and partnership
  - Communication
  - Data collection
  - Initiate pilot programs
  - Pursue funding options for programs



### Homelessness Response Program

- CAMP (Compassionate Assistance, Mitigation and Prevention) Standards – Standard protocol for engagement.
- Field Teams meet weekly to coordinate efforts and outreach support.
- Field Teams also discuss approach for public vs. private property issues.
- Coordinate Flood Control Inspections with Field Team for outreach, notification and public safety.



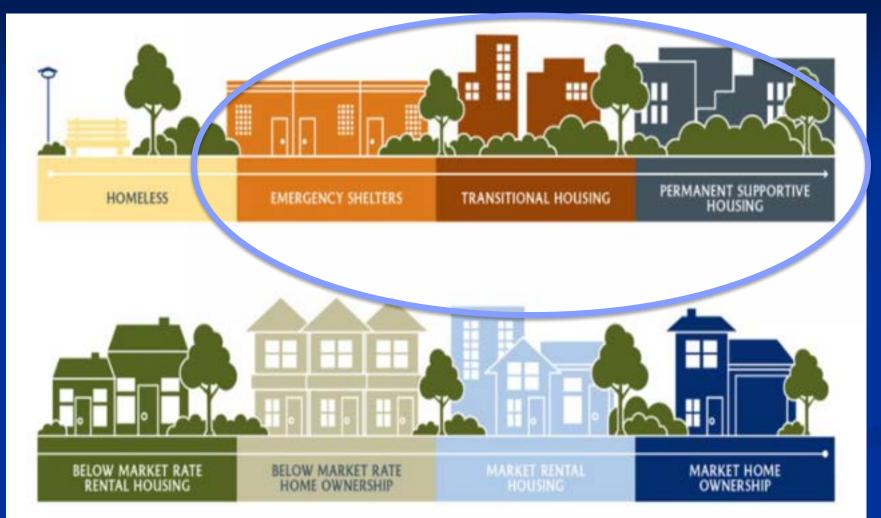
#### SLO City Housing Continuum







#### SLO City Housing Continuum





- 40 Prado Homeless
   Services Center
- Sponsor: CAPSLO
- Central campus for Social Services and case management.
- Congregate shelter facility. 129 beds.
- Future family shelter coming at 46 Prado.





- Anderson Hotel Apartments
- Originally constructed in 1923
- Sponsor: Housing Authority of SLO County (HASLO)
- 66 Units





- Calle Joaquin Homekey Project
- Partnership between
   People's Self-Help Housing
   and City of SLO
- Opening September 2025
- 75 Permanent supportive units with 30 units for youth.





- Welcome Home Village
- Sponsor: SLO County
   project with
   Encampment Resolution
   Funding from State
- Opening December 2025
- 14 Interim and 40
   Permanent supportive housing units





- Maxine LewisApartments
- Sponsor: HASLO
- Mixed-use, affordable housing project
- Opening by December 2025
- 39 units





- Rotating Overnight Safe Parking Pilot Program
- Partnership between
   CAPSLO, City of SLO and faith-based organizations
- 3 faith-based locations and 3
   City-owned sites, rotating monthly
- 12 safe parking spaces with case management required





### Fisheries Monitoring





#### Fisheries Monitoring

- SLO Creek native fish are the canary in the coal mine.
- Partnering with CDFW and our WSP members to build capacity for monitoring.
- Doing electrofishing and redd surveys to track key creek reaches to protect.
- Looking to implement an adaptive approach to Fish Bulletin 182.
- Co-chair for South Coast RMU through PLCI.
- Collecting recolonization data for Pacific lamprey.



#### Steelhead Monitoring

- Looking at population and habitat assessments on mainstem SLO Creek and Stenner Creek, the biggest tributary, and Reservoir Canyon Creek (above an earthen dam\*).
- Focusing population assessments in the upper watershed (refugia habitat).
- Working with collaborative group on the keystone barrier at the bottom of the watershed: the Marre Weir.
- Conducting annual steelhead monitoring and PIT tagging. 244 fish tagged in 2024. 12 fish have crossed the PIT antenna as of April 2025\*.
- Begin to implement recommendations in the SLO Creek Watershed Resiliency and Rewilding Plan



#### Next steps in SLO Creek

- Complete the SLO Creek Resiliency and Rewilding Plan and begin to seek grant funding for project implementation.
- Update the Waterway Management Plan for community protection while integrating habitat improvements.
- Develop the Vegetation Management Plan to make the creek system more resilient in light of a changing climate.
- Keep tabs of fish populations to continue what is working and adapt programs that are not effective.



#### Questions?



