Realizing a Vision of Multi-benefit Restoration in the Laguna de Santa Rosa/ Mark West Creek Watershed: Workshop and Tour

A Workshop at the 41st Annual Salmonid Restoration Conference
Santa Rosa, California, March 26-29, 2024

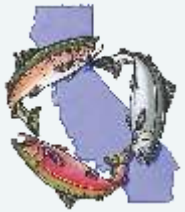
Session Coordinator: Anne Morkill and Clayton Creager, *Laguna de Santa Rosa Foundation*

The Laguna de Santa Rosa/ Mark West Creek watershed is the largest sub-watershed of the Russian River, encompassing 254 square miles in the heart of Sonoma County where the majority of people live, work, and play. The Laguna de Santa Rosa is a vital and unique wetland ecosystem that is home to a wide range of plant and animal species, including Coho salmon and steelhead trout. Over the past 150 years, development and landscape modification throughout the watershed have altered flows and increased fine sediment and nutrient supplies, thereby severely impacting habitat conditions for many threatened and endangered species. This workshop will highlight a range of collaborative multibenefit-restoration efforts within the Laguna/Mark West Creek watershed focused on improving conditions for both fish and wildlife and the local community.

This series of presentations and an interactive dialogue that ranged in breadth from landscape scale-restoration planning to site specific project design and implementation. The topics covered included the development of watershed-wide fine sediment and nutrient TMDLs, innovative regulatory and voluntary conservation measures that facilitate large-scale restoration on both private and public lands, and the design and implementation of multi-benefit restoration projects in the watershed. They also shared highlights of the recently completed Laguna de Santa Rosa Restoration Plan that identifies opportunities for re-creating critical habitats within an altered landscape that is vulnerable to continued land uses and climate change. The presentations culminated in an interactive dialogue to build commitment and momentum for realizing our shared vision of an enhanced Laguna de Santa Rosa that supports native fish and wildlife for part or all of their lifecycle in a resilient landscape where people can also thrive.

The workshop was held at the Laguna Environmental Center, featuring 360-degree open views of the watershed, and offers afternoon site visits to see completed and proposed restoration projects along the Laguna de Santa Rosa and tributary creeks. Presenters included the San Francisco Estuary Institute, Sonoma County Water Agency, North Coast Regional Water Quality Control Board, City of Santa Rosa, Sonoma Resource Conservation District, Cal Trout, and invited panelists from the Sonoma County Agricultural and Open Space Preservation District, California Department of Fish and Wildlife, private landowners, and more.

Presentations



Water Quality in the Laguna de Santa Rosa Watershed

Realizing a Vision of Multi-Benefit Restoration in the Laguna de Santa Rosa/Mark West Creek Watershed workshop

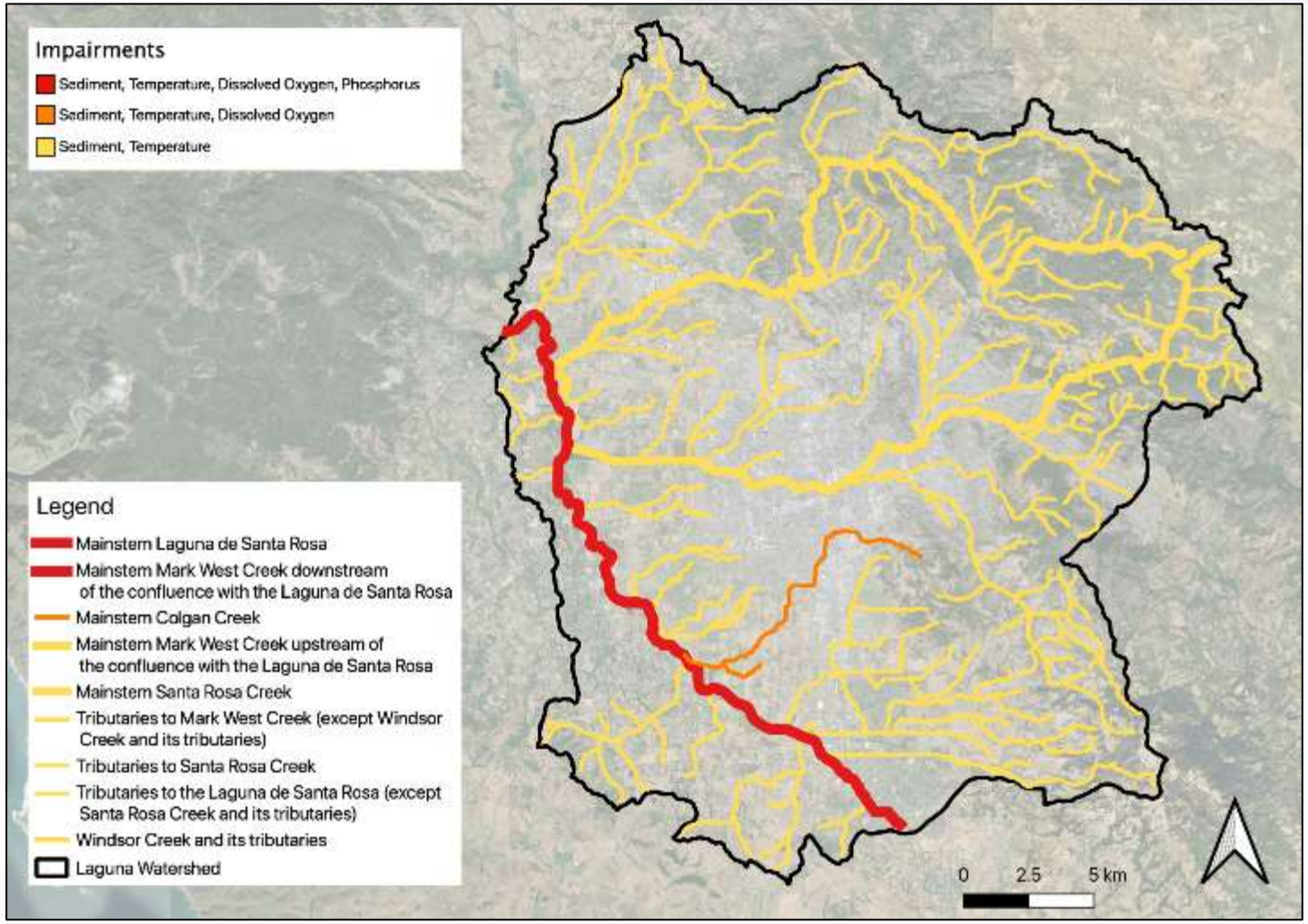
CALIFORNIA
Water Boards

March 27, 2024

Outline

- Fundamental Problem
- Watershed Background
- Pollutant Loads
- Sediment Transport Capacity
- Summary

Fundamental Problem



Pollutants

- Sediment
- Phosphorus
- Temperature
- Dissolved Oxygen
- Nitrogen (not mapped)

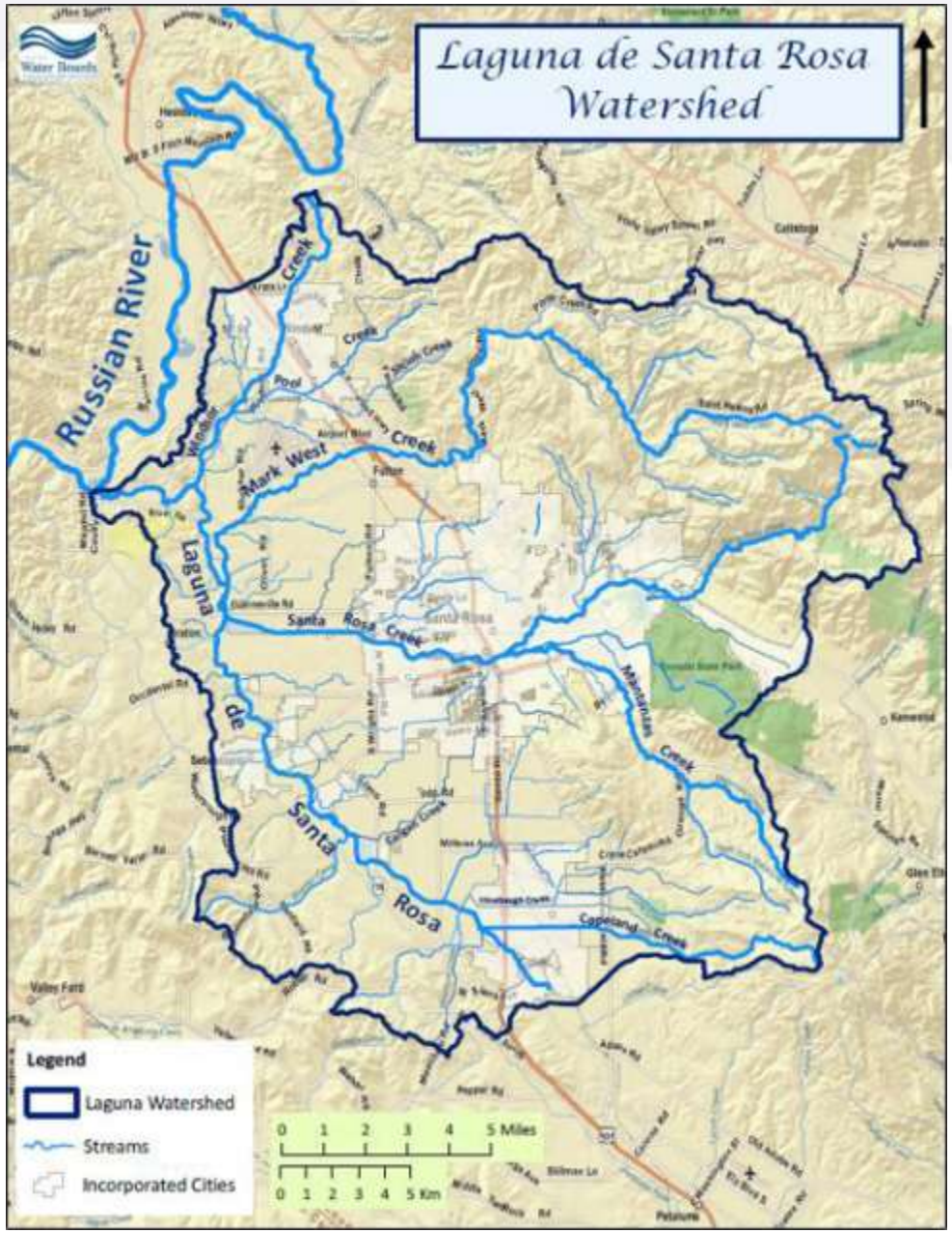
Fundamental Problem

	Sediment (ton/yr)	Phosphorus (kg/yr)	Nitrogen (kg/yr)
Total Load	91, 368	93,734	367,210
Loading Capacity	9,573	17,883	96,919
Reduction Needed	81,796	75,852	270,291
% Reduction Needed	**89.5 %**	**80.9 %**	**73.6 %**

Fundamental Problem

Increased Biostimulation: Impact on Water Quality

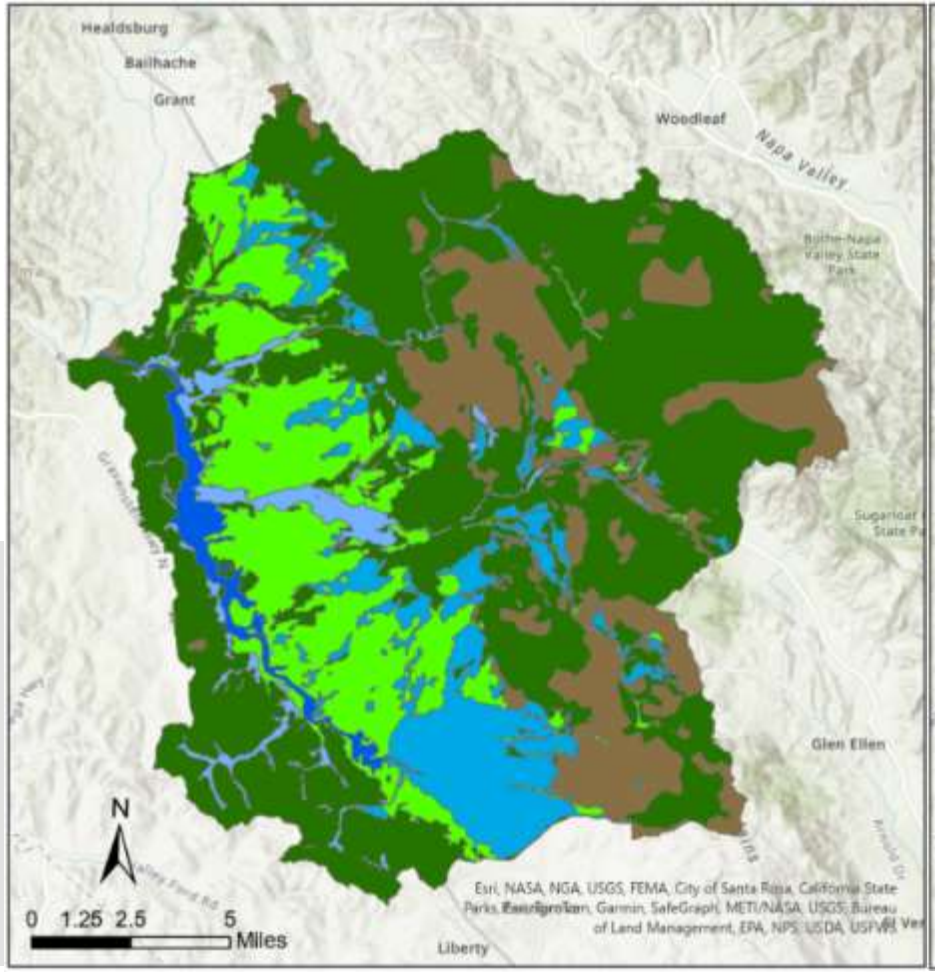
- Loss of assimilative capacity
- Elevated turbidity reduces salmonid growth rates
- Elevated stream temperatures lethal to salmonids
- Anoxic conditions prevent successful spawning and rearing of salmonids



Watershed Background

- 254 mi^2 watershed
- Population center of North Coast Region
- Largest tributary to the Russian River
- Cities, towns, and tribal lands
  - Federated Indians of Graton Rancheria
  - Windsor
  - Sebastopol
  - Santa Rosa
  - Rohnert Park
  - Cotati
- Designated a Wetland of International Significance by the Ramsar Convention

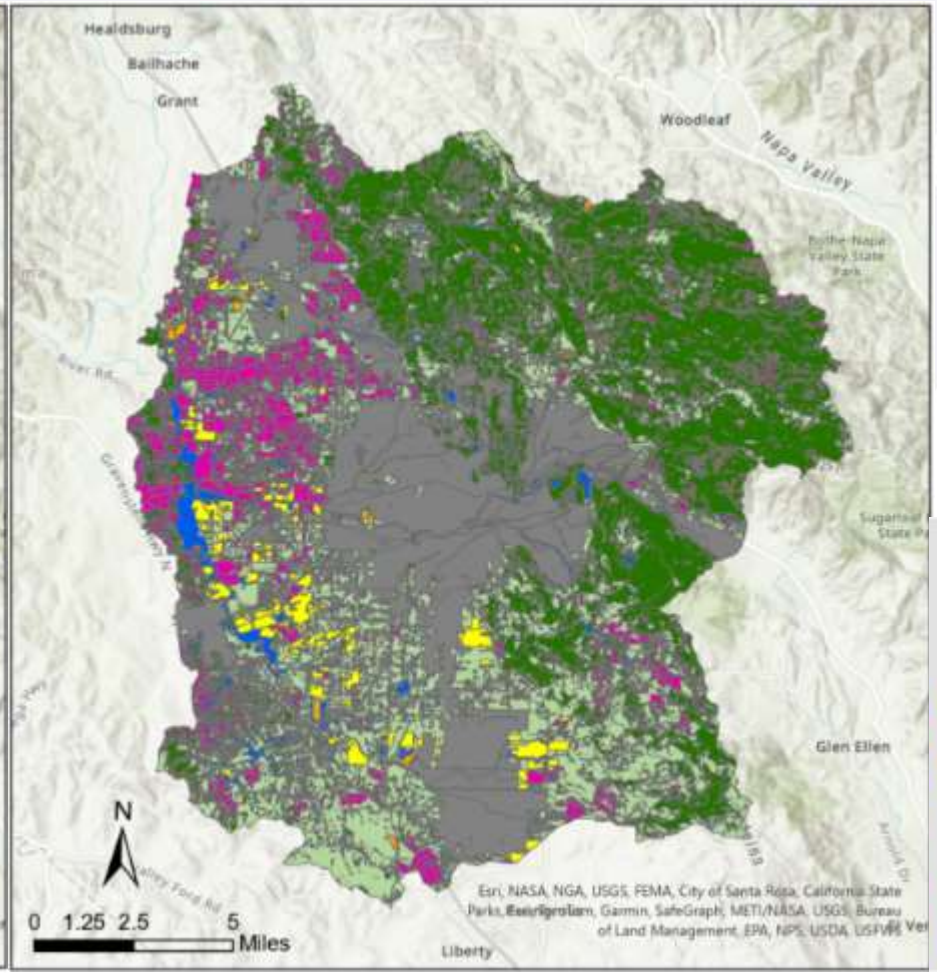
Land Use Change



Pre-Colonization

Land Cover

- Forest
- Shrubs & Grasses
- Oak Savanna & Vernal Pool Complex
- Riparian Wetland
- Perennial Wetland
- Open Water

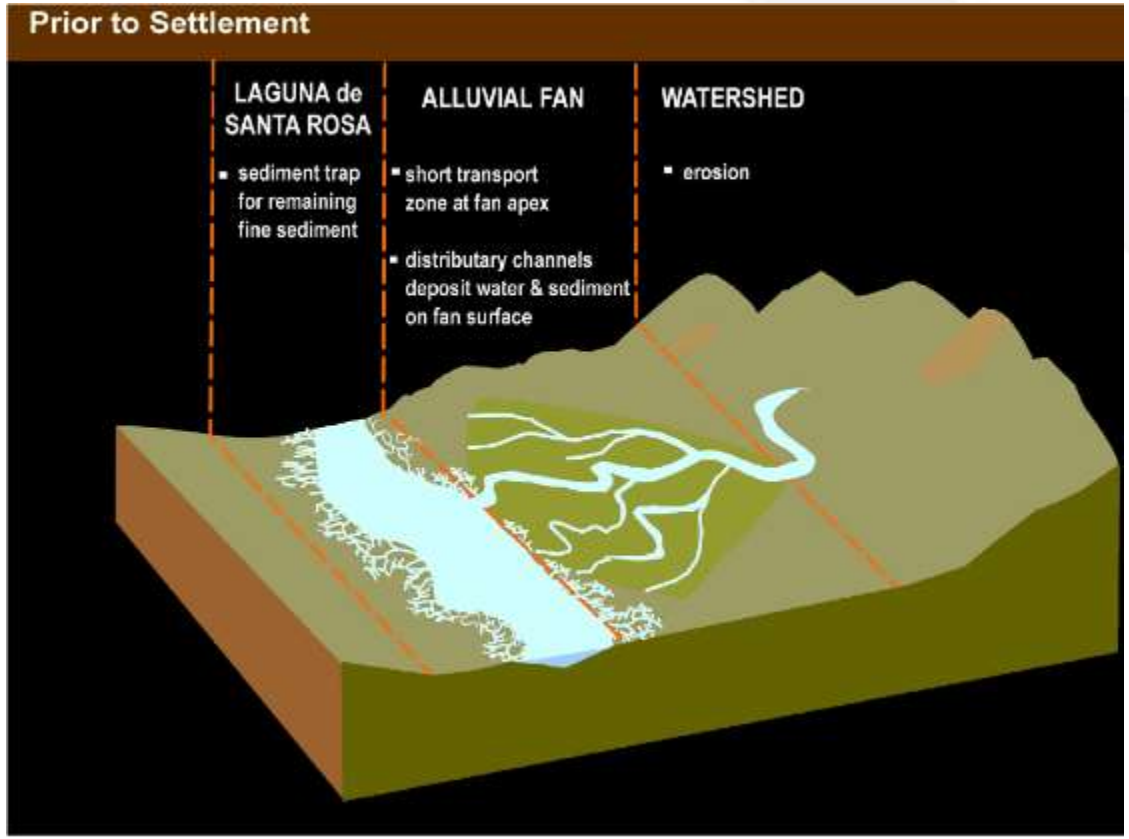


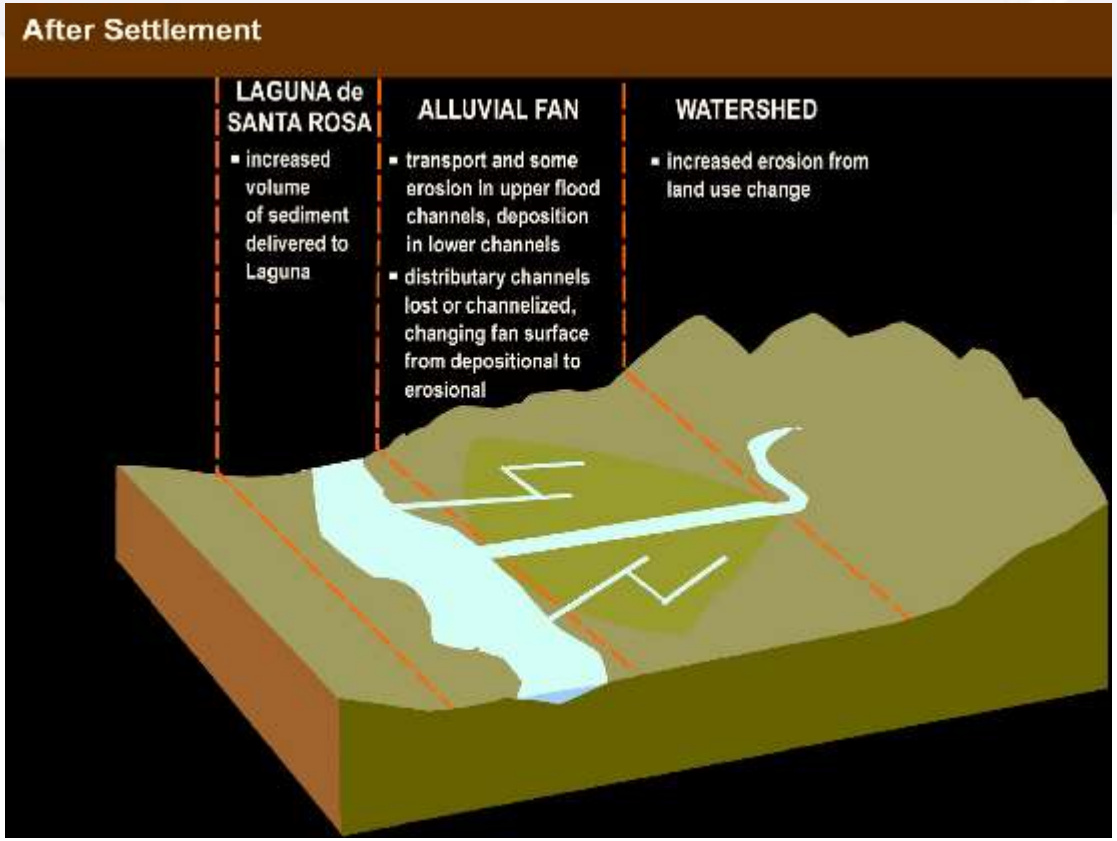
Modern

Land Cover

- Developed
- Barren
- Cropland
- Pasture/Hay
- Shrub
- Herbaceous
- Forest
- Water/Wetland

Broken Hydrology

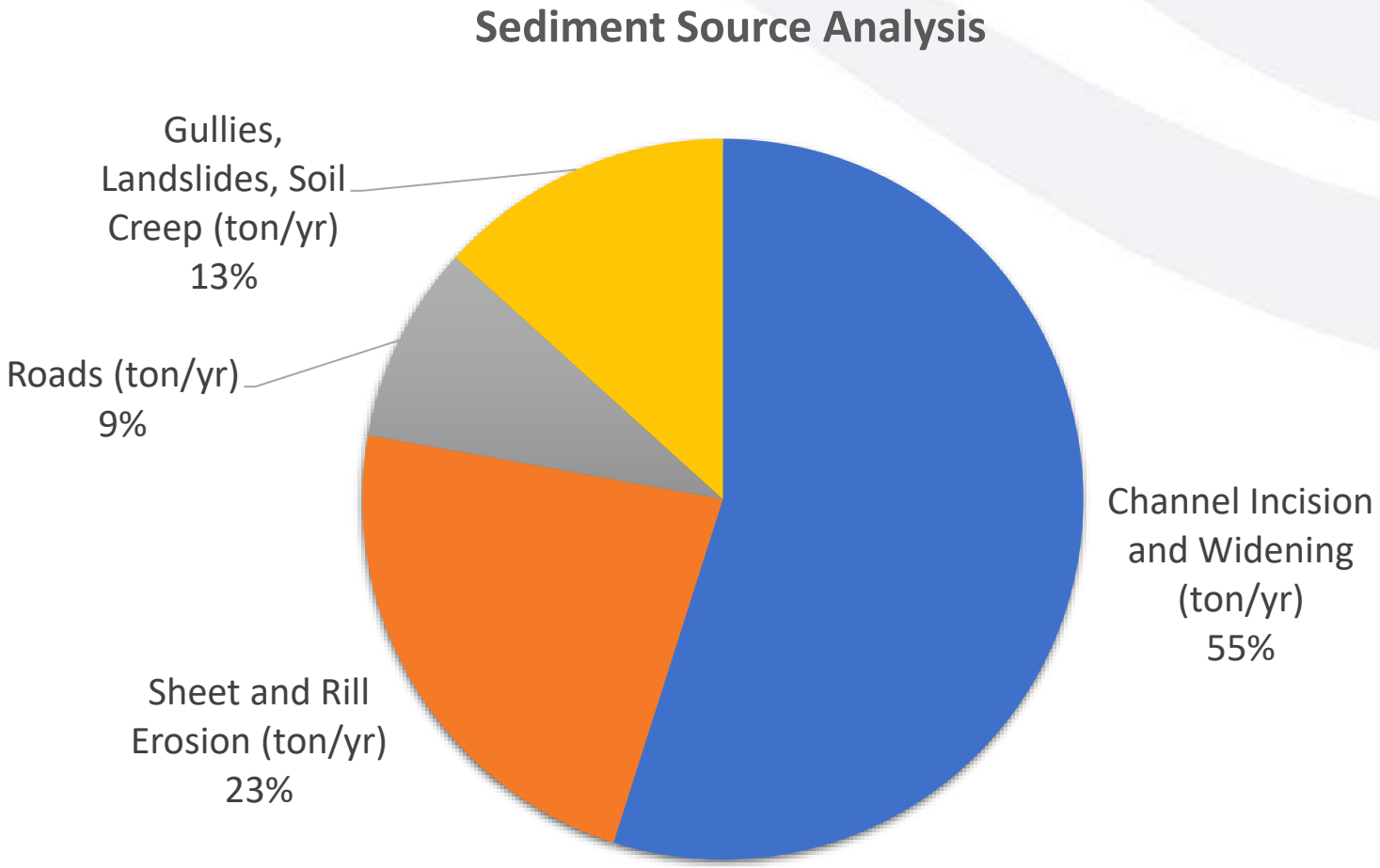




From Sloop et al., 2007

Broken Hydrology

Sediment Loads



Total Load	91, 368 ton/yr
Loading Capacity	9,573 ton/yr
Reduction Needed	81,796 ton/yr
% Reduction Needed	89.5 %

In-channel Sediment Loads

Kelsey Cody, 2020

In-channel Nutrient cycling

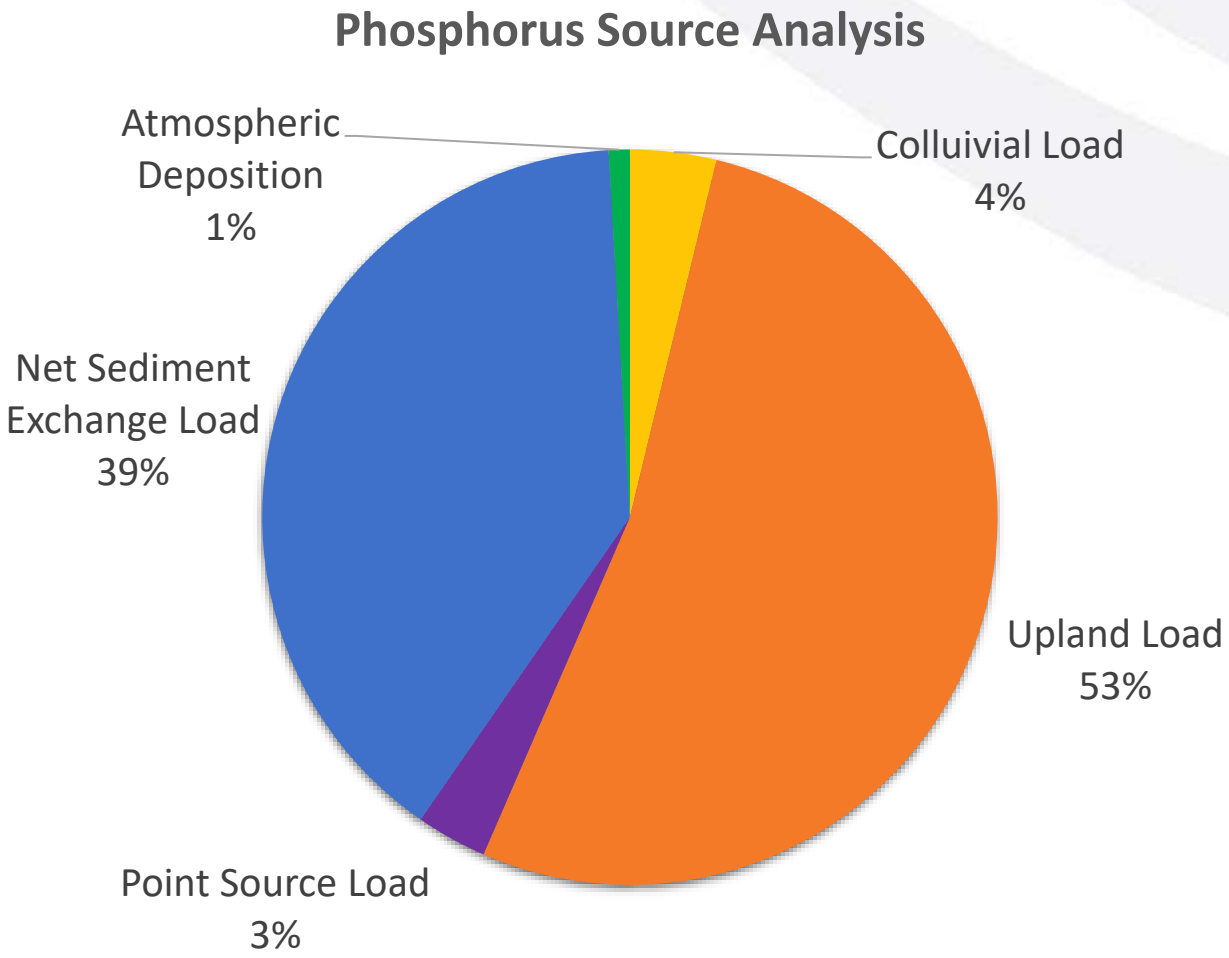

Monitoring for invasive *Ludwigia* spp. in the Laguna de Santa Rosa. Photo: Brenda Grewell.

From SFEI-ASC (2020)

Biostimulatory conditions: physical, chemical, and biological conditions interact to promote growth of aquatic primary producers such as algae and aquatic macrophytes

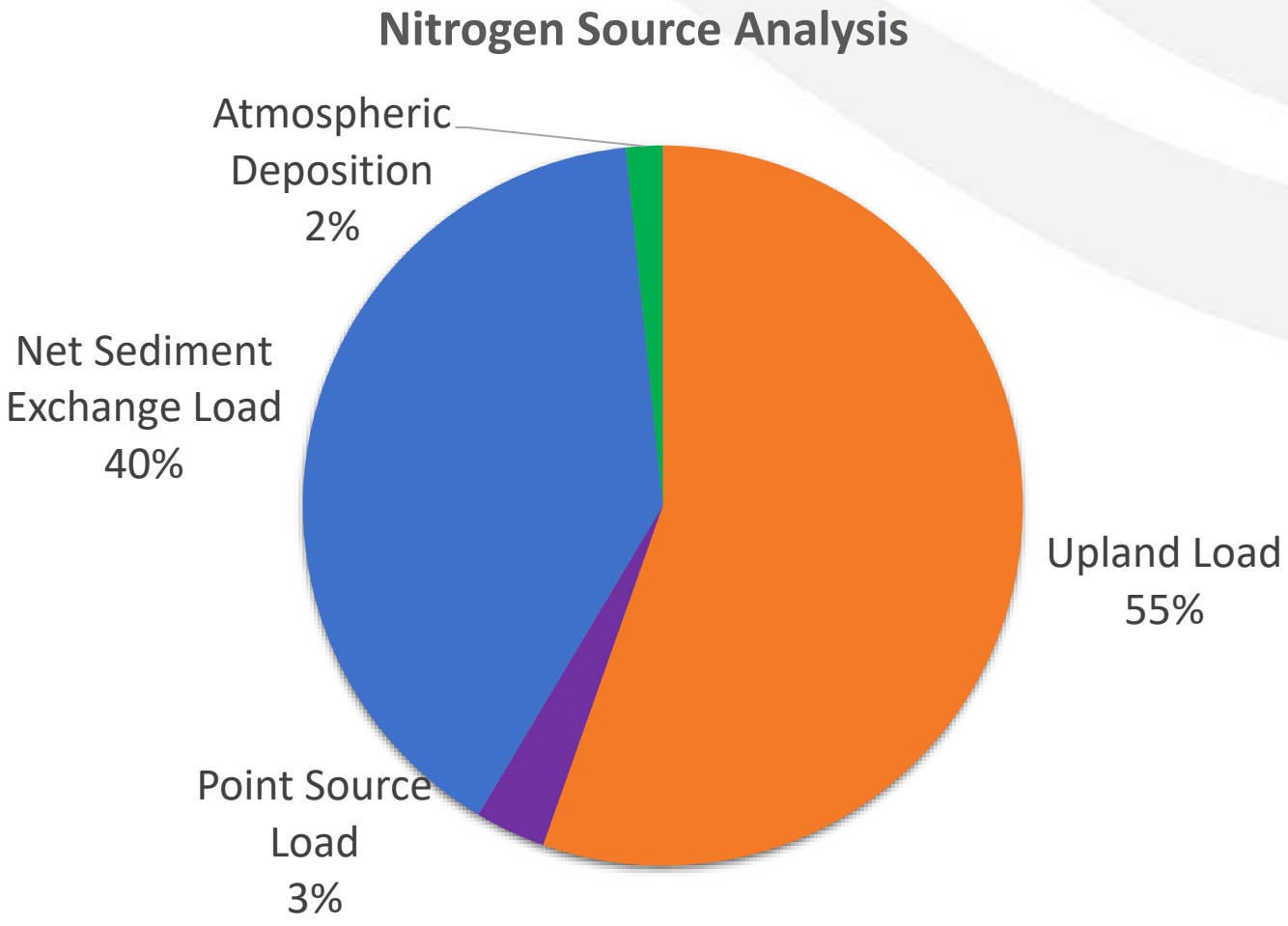
Ludwigia infestation: positive feedback loop

Phosphorus Loads



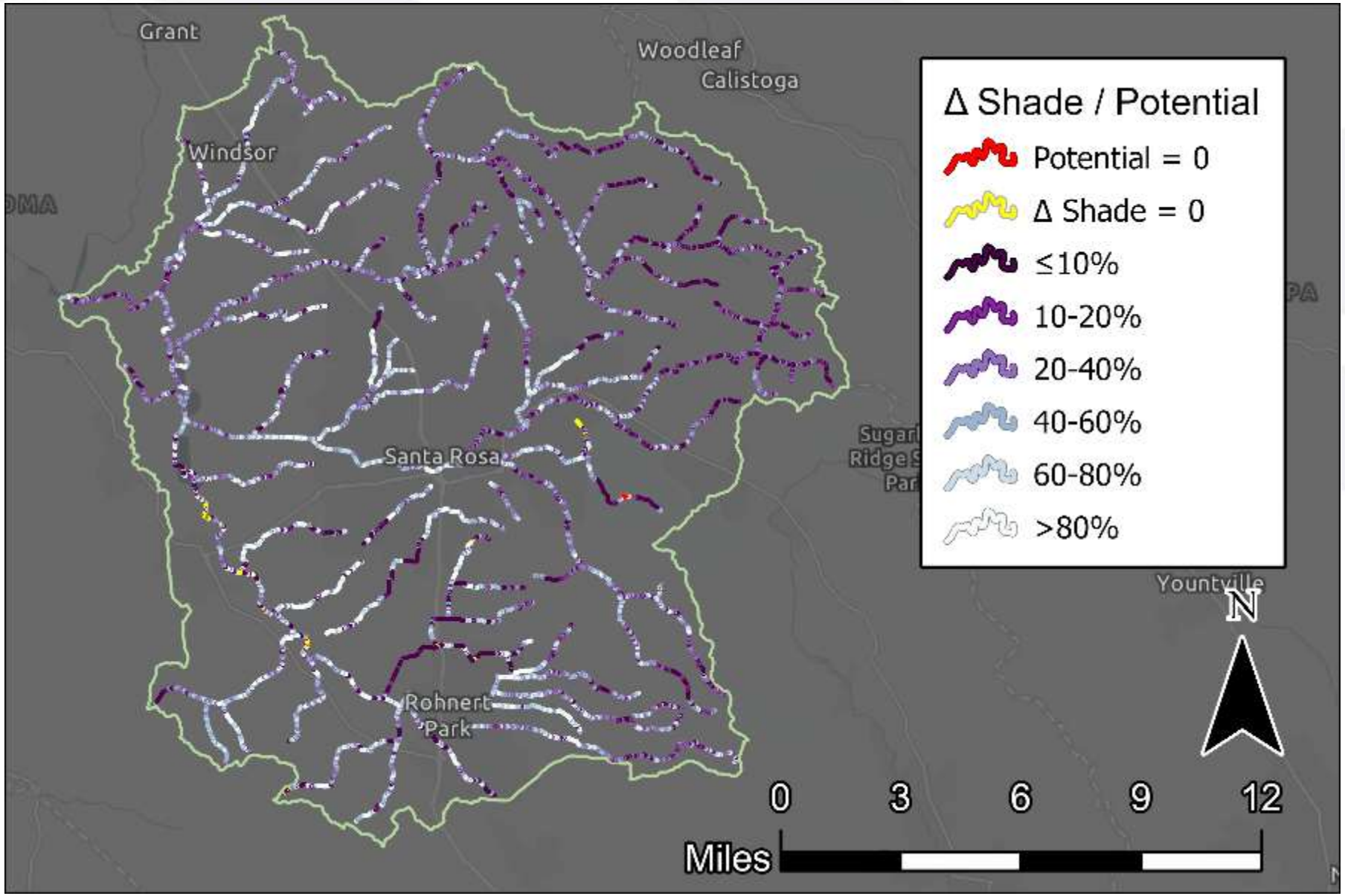
Total Load	93,734 kg/yr
Loading Capacity	17,883 kg/yr
Reduction Needed	75,852 kg/yr
% Reduction Needed	80.9 %

Nitrogen Loads



Total Load	367,210 kg/yr
Loading Capacity	96,919 kg/yr
Reduction Needed	270,291 kg/yr
% Reduction Needed	73.6 %

Shade


Grant
Woodleaf
Calistoga
Windsor
Santa Rosa
Rohnert Park
Yountville
Δ Shade / Potential
Potential = 0
Δ Shade = 0
≤10%
10-20%
20-40%
40-60%
60-80%
>80%
N
0
3
6
9
12
Miles

Sediment Transport Capacity

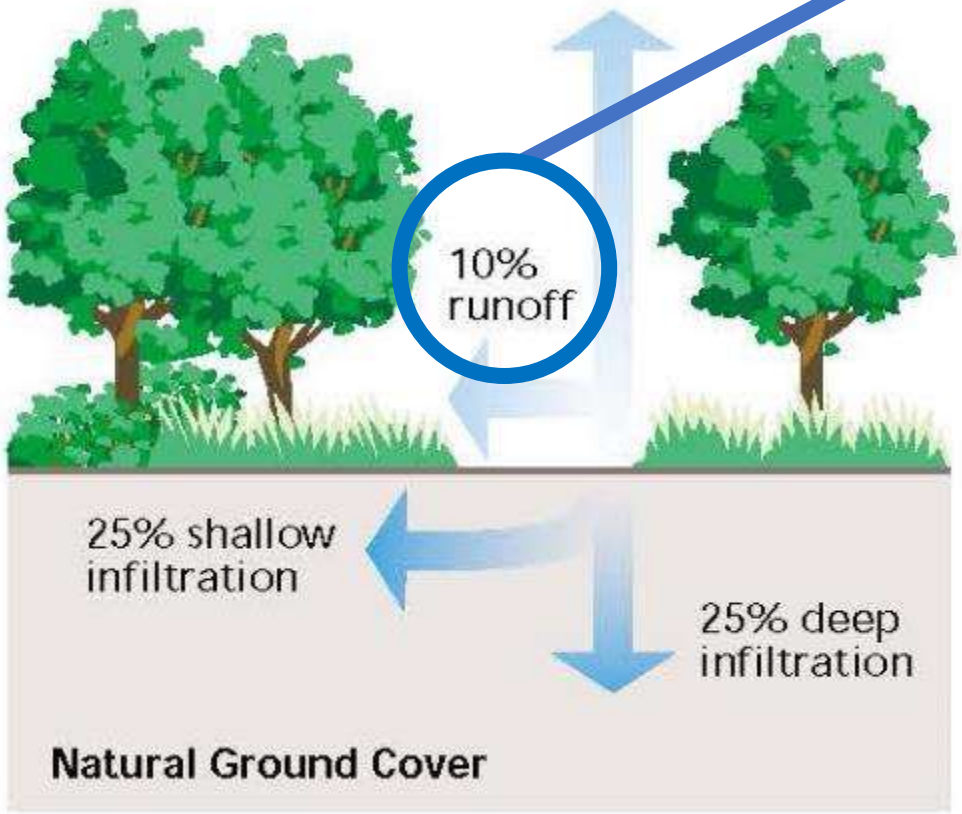
STC = surrogate parameter

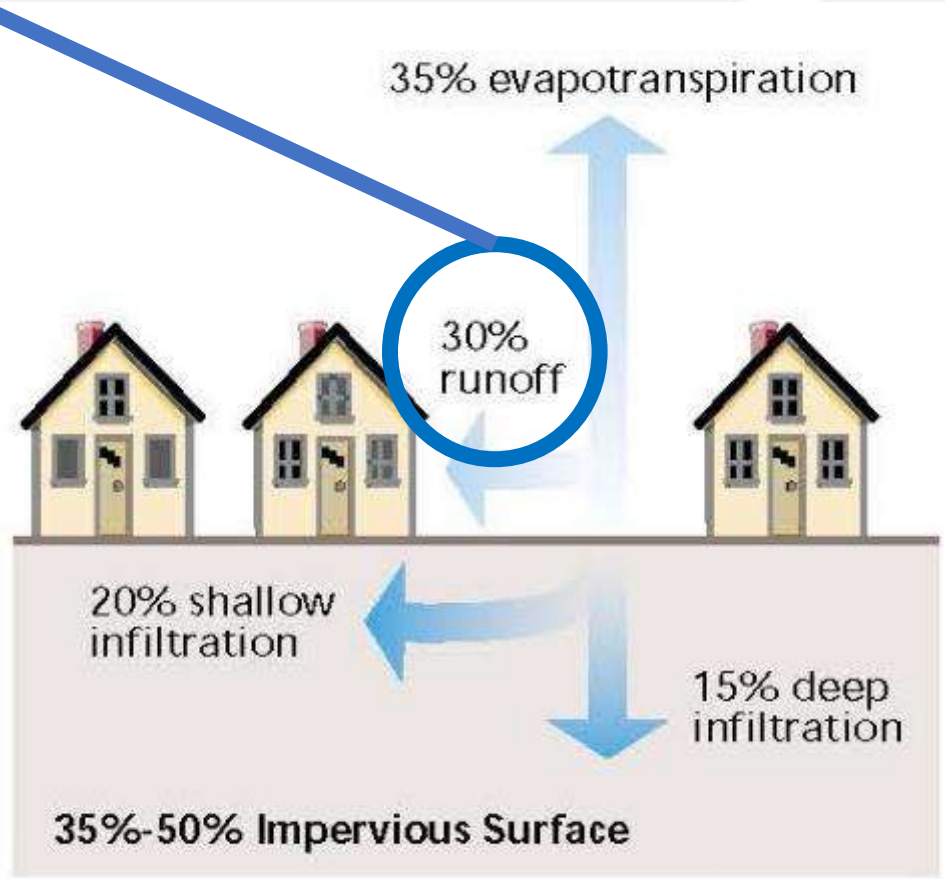
US EPA (1998): Report of the Federal Advisory Committee on the Total Maximum Daily Load (TMDL) Program

> *When the impairment is tied to a pollutant for which a numeric criterion is not possible, or where impairment is identified but cannot be attributed to a single traditional pollutant, the state should try to identify another (surrogate) environmental indicator that can be used to develop a quantified TMDL, using numeric analytical techniques where they are available, and best professional judgment (BPJ) where they are not.*

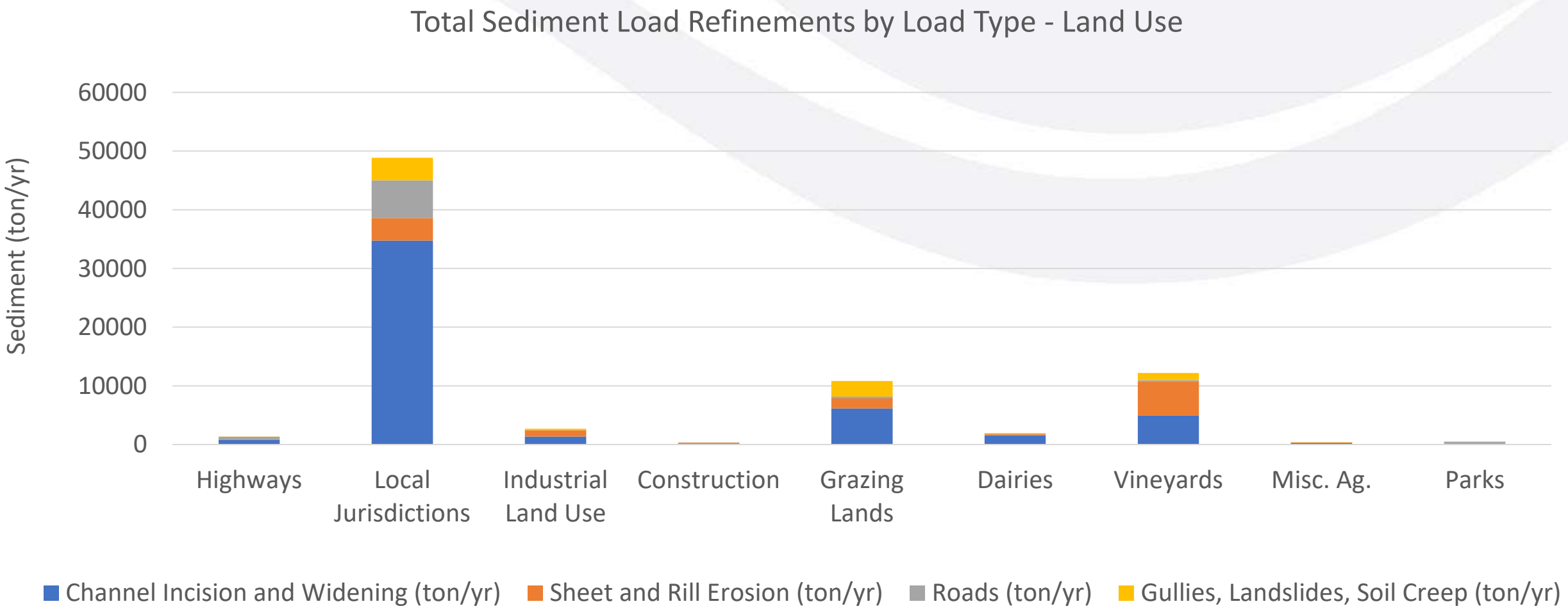
Sediment Transport Capacity

ΔQ = 20%

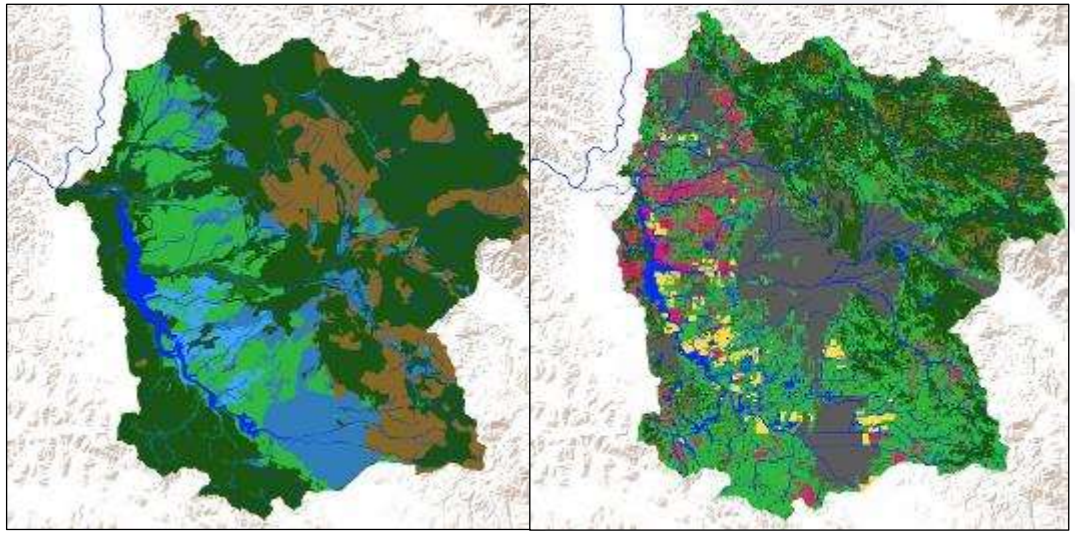


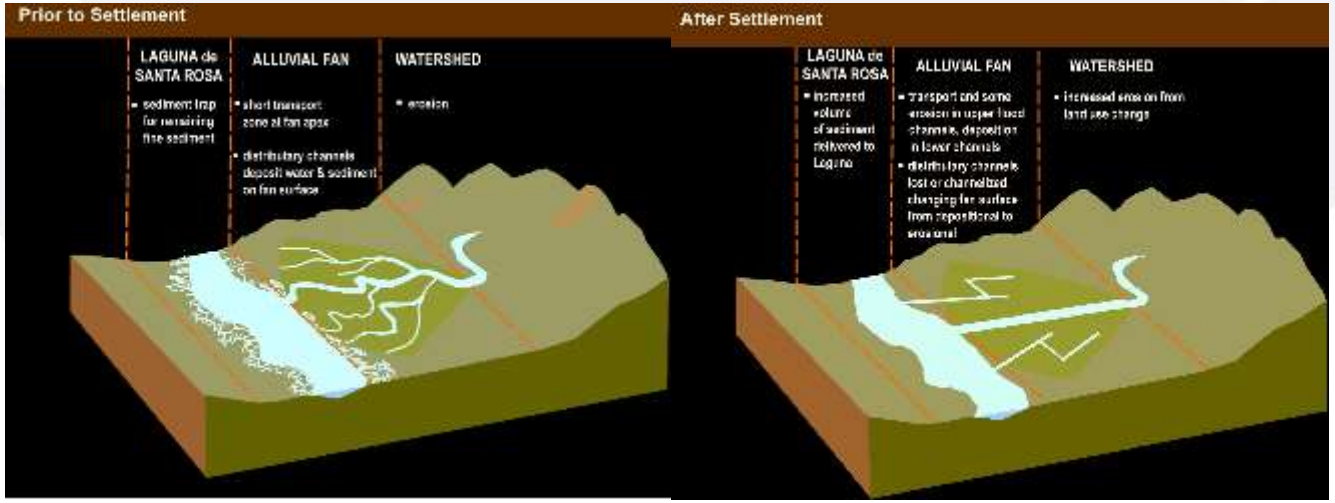


Sediment Loads



Summary





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Timeline

Data Collection and Assessment	2011 – 2022 ✓
Early Implementation	2013 – ongoing
Staff Report Development	Underway
CEQA Scoping	Spring 2024
Form TAC	Summer 2024
Public Review	Summer 2025
Regional Water Board hearing	Early 2026

Contact

Matt Graves, Engineering Geologist
Tel: 707-576-2831
Email: matt.graves@waterboards.ca.gov

Email subscriptions

- Visit https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/
- Click link under “Stay Informed” section
- Choose the Laguna de Santa Rosa option

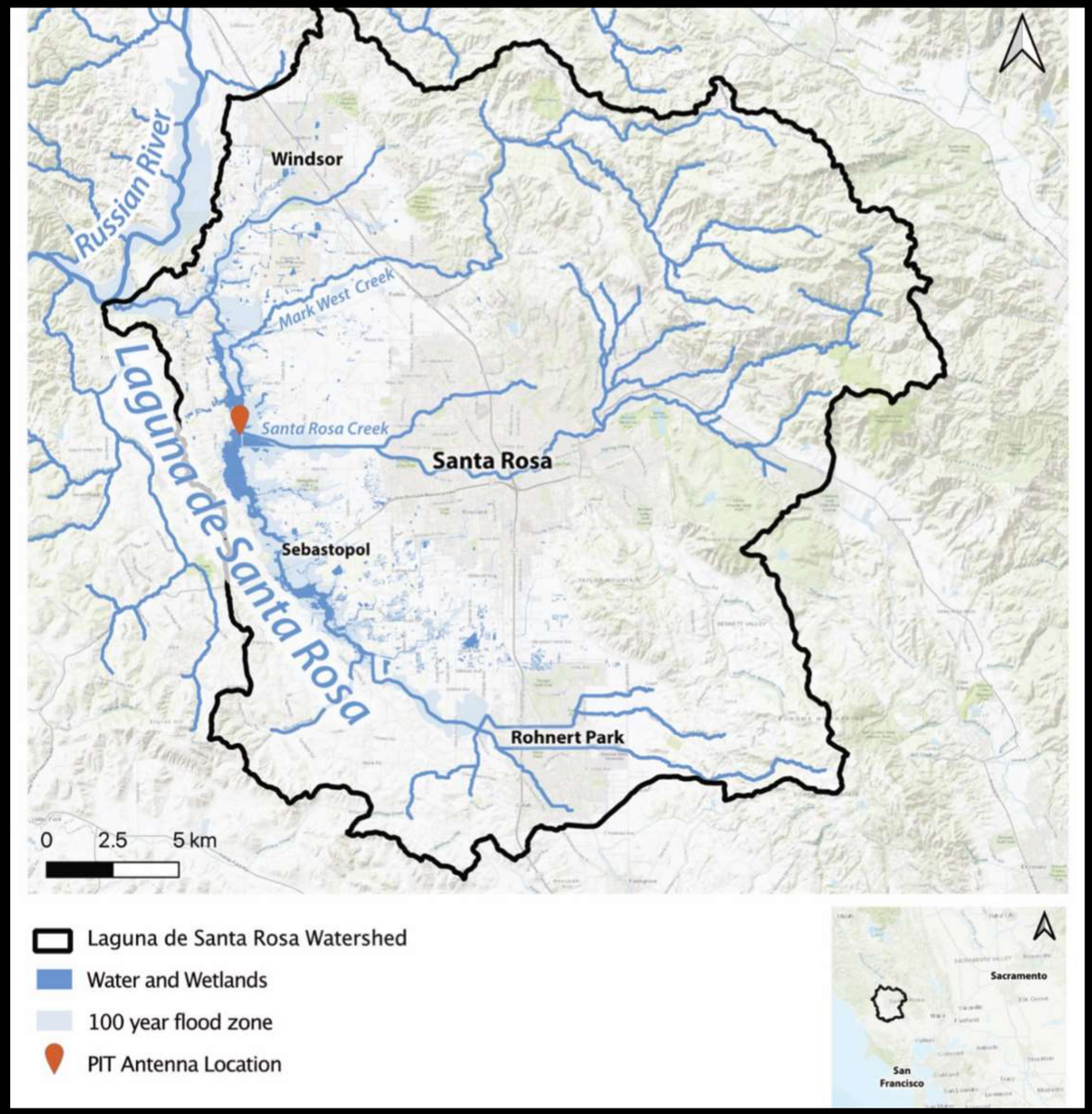
Questions?

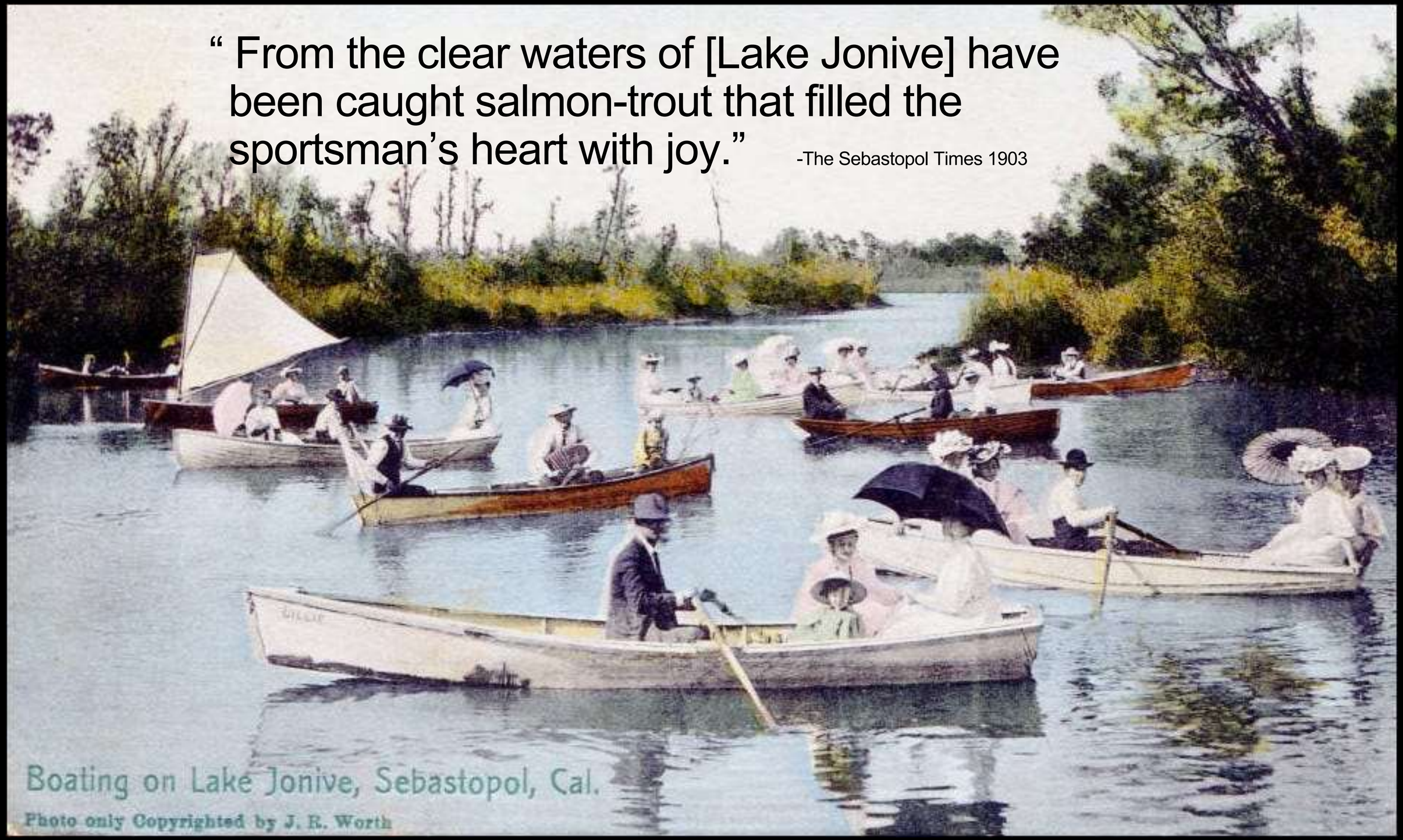
Investigating Coho Salmon use in the Laguna de Santa Rosa

Charlie Schneider & John Green - Redwood Empire Chapter Trout Unlimited

Background

- Coho nearly extirpated in early 2000s
- Broodstock program started
- Coho salmon and steelhead observed in tributary watersheds
- Mark West Creek is broodstock stream
- Steelhead in SR Creek, Copeland Cr.




“ From the clear waters of [Lake Jonive] have been caught salmon-trout that filled the sportsman’s heart with joy.”
-The Sebastopol Times 1903
Boating on Lake Jonive, Sebastopol, Cal.
Photo only Copyrighted by J. R. Worth

Questions

- Do coho salmon use the Laguna?
- If so, when?
- What are water quality conditions?
- Big picture: should we be thinking about salmonids in Laguna management?

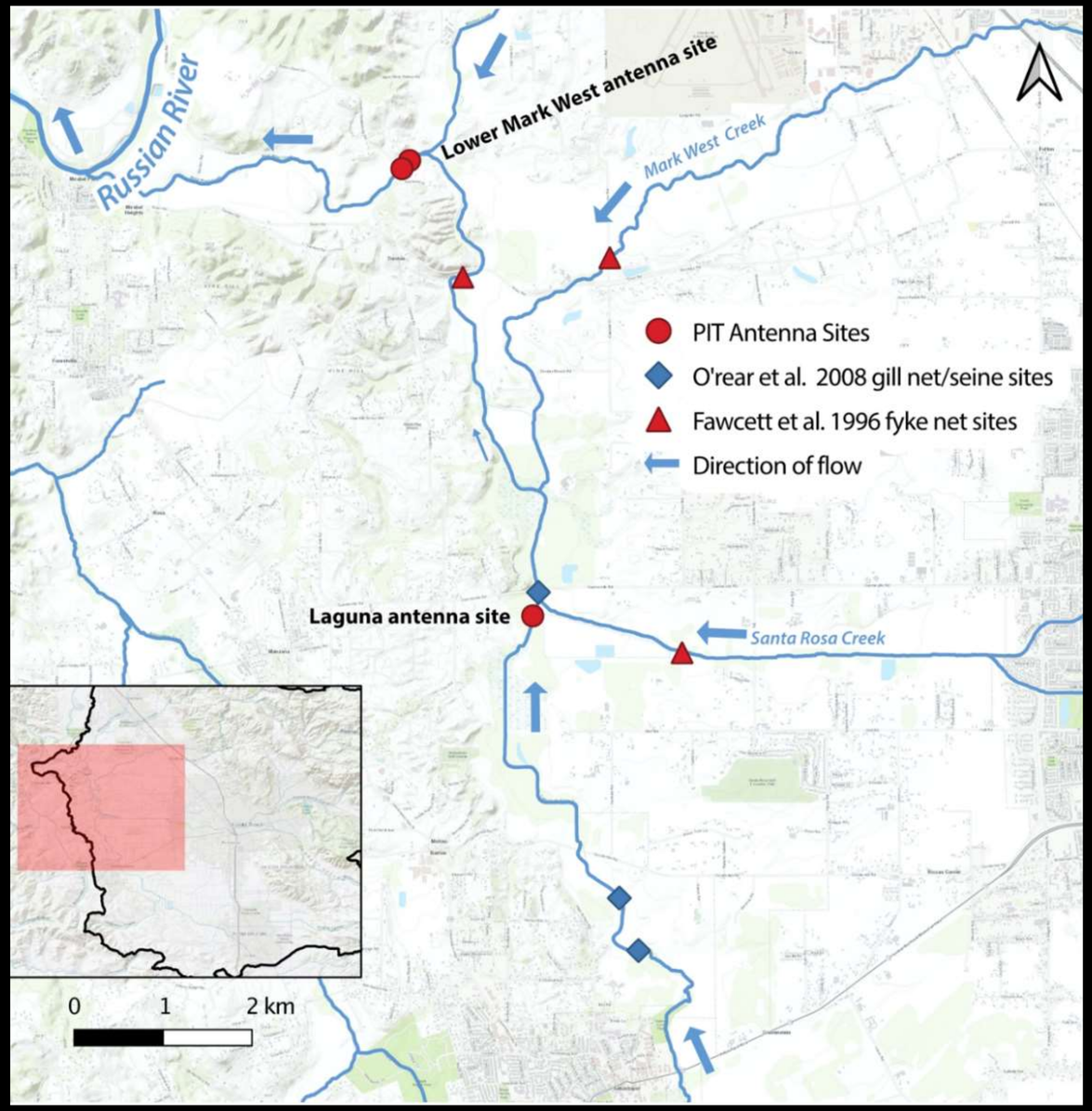
Background

- Fish get fat on floodplains
- Bigger juveniles more likely to come back as adults
- Hard to restore floodplains in the Russian basin

Background

Counting fish in the winter is hard

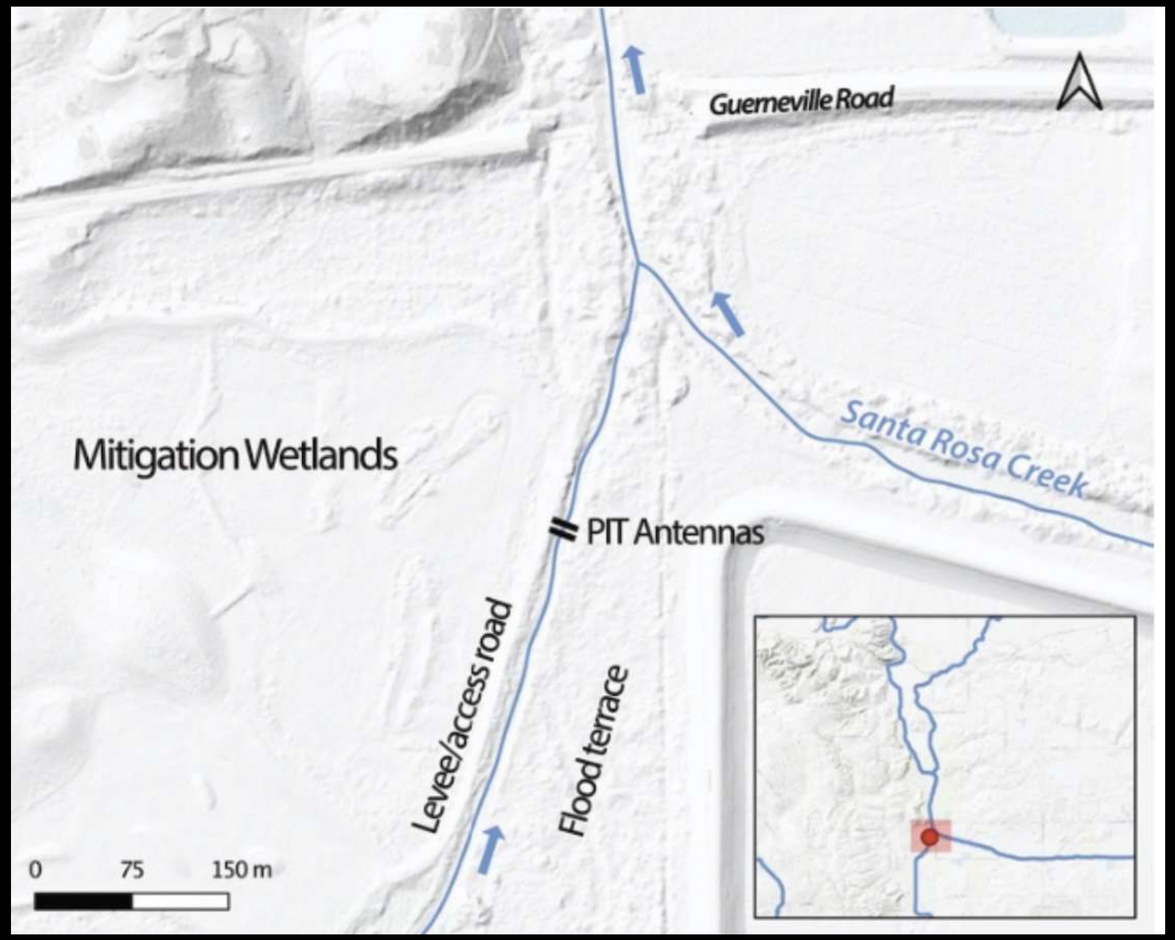
- Limited aquatic surveys over the last 30 years
- Most during the dry season
- Most downstream of the confluences with Santa Rosa and Mark West Creeks



Methods

We have the technology

- Two Two six-meter pass through PIT tag antennas (Biomark)
- 500m upstream of SR Creek confluence
- Installed vertically
- Solar powered


Guerneville Road
Mitigation Wetlands
Santa Rosa Creek
PIT Antennas
Levee/access road
Flood terrace
0
75
150 m

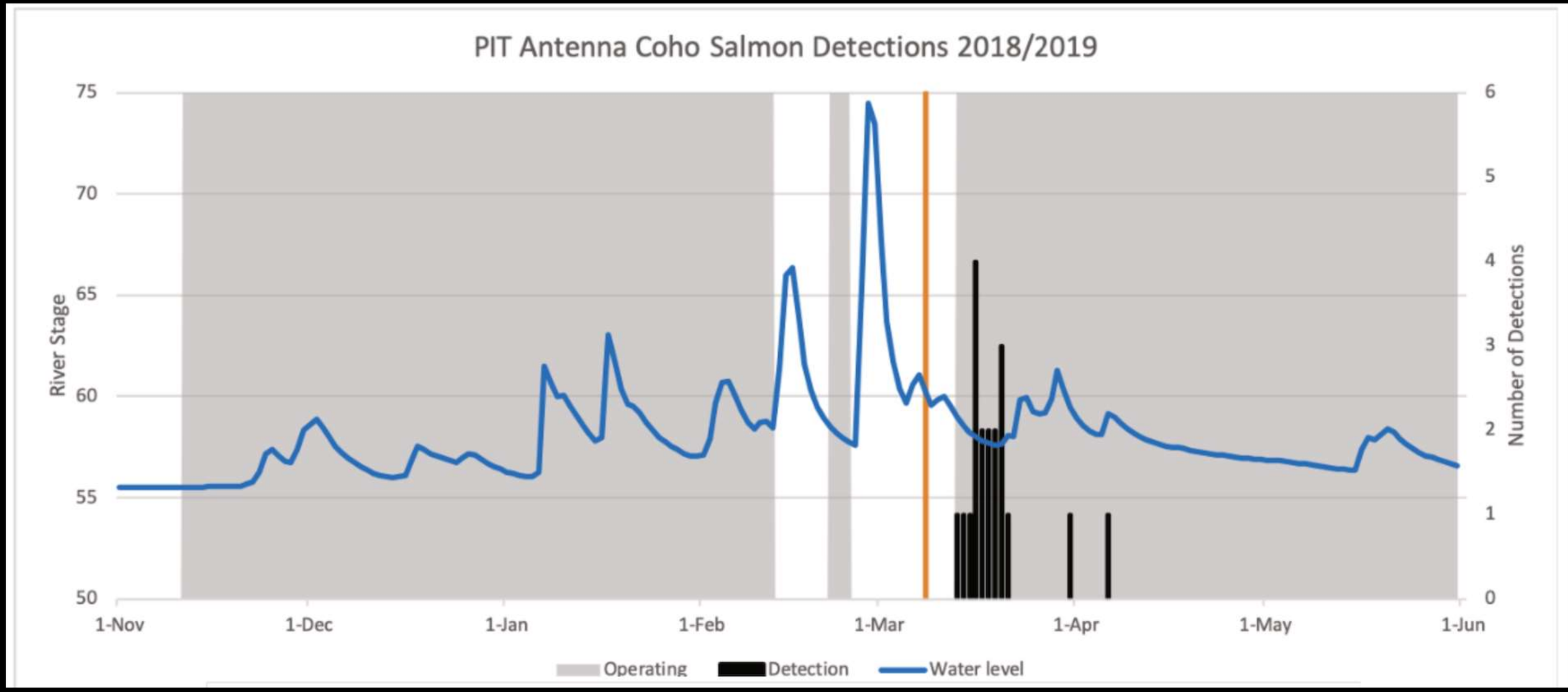
Methods

- 2018/19 Mark West release group totaled 7,135 individuals
- 20% PIT tag rate for a total of ~1,427 tagged individuals (avg. fork length 104mm ± 10mm, avg. weight 13.9g ± 4.1g)
- Onset Hobo U-26 DO logger

Results

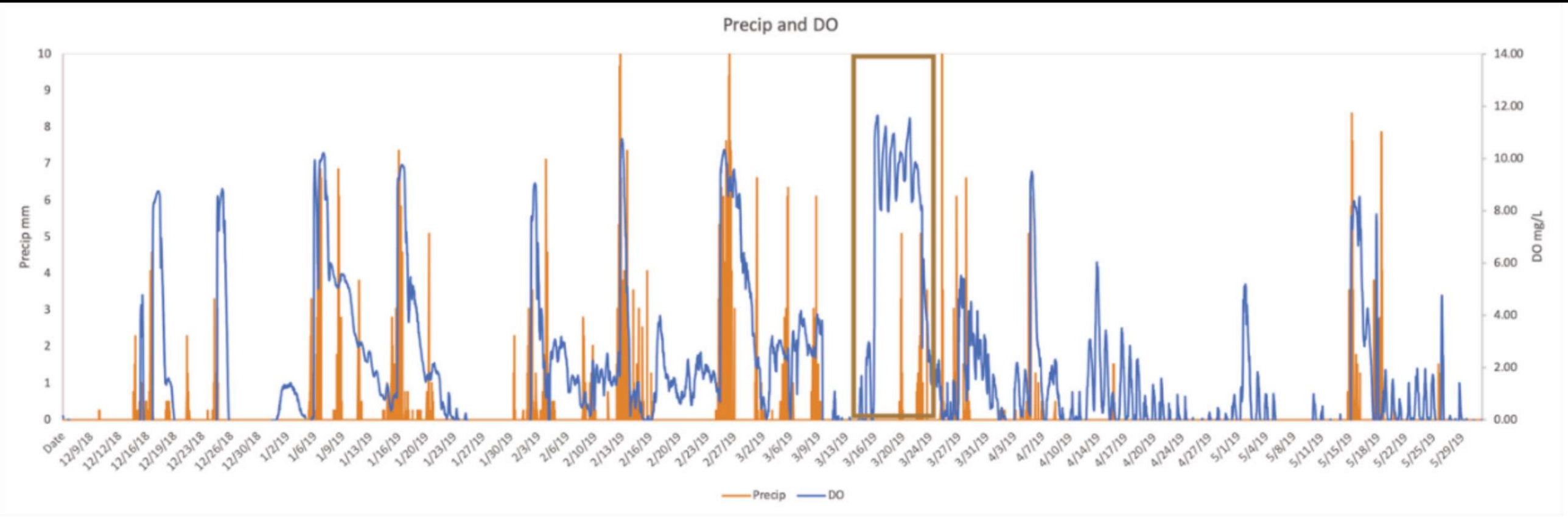
Counting fish in the winter is hard

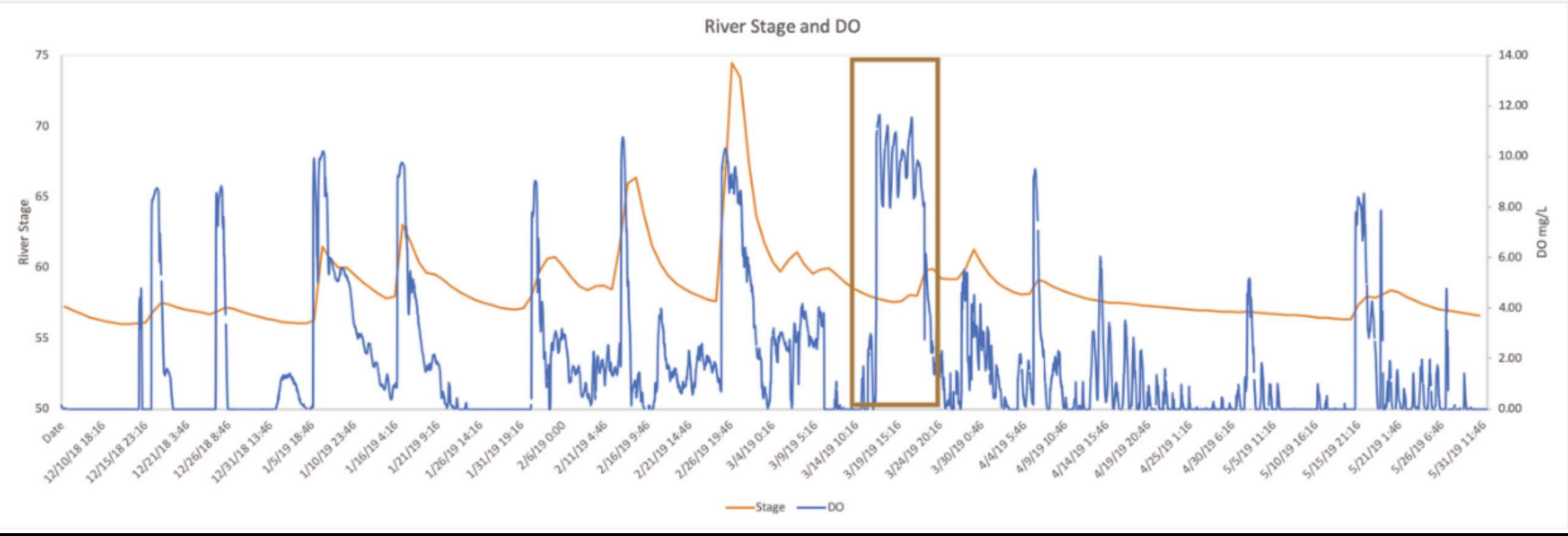
- 2018/19 winter was a big one!

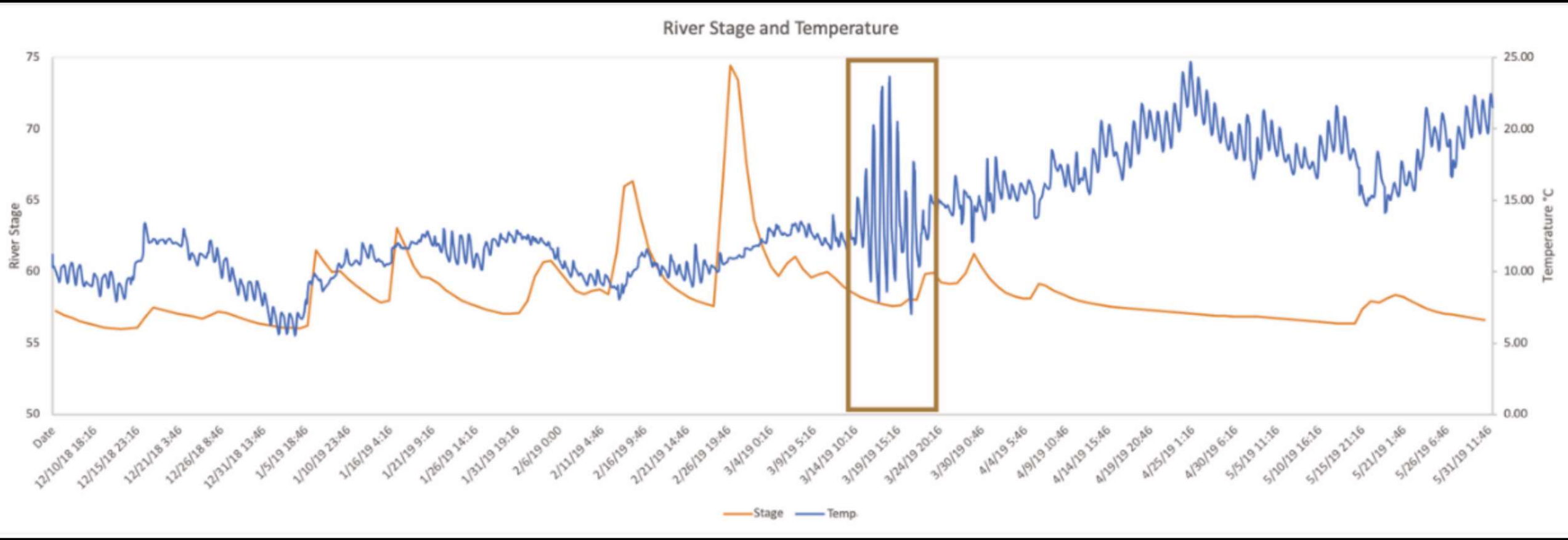

PIT Antenna Coho Salmon Detections 2018/2019
River Stage
75
70
65
60
55
50
Number of Detections
6
5
4
3
2
1
0
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
Operating
Detection
Water level

Results/Discussion

- Seven coho salmon were detected at the site between March 13th and April 6th
- Expanded count 35
- Detections correlated with Mark West Creek broodstock release
- One individual was detected at the site 17 days after its initial detection
- Two individuals were detected later moving downstream past the Mark West PIT antennas ~1 month later
- One individual was detected 35 days after first detection


Precip and DO
Precip mm
DO mg/L
Date
Precip
DO


River Stage and DO
River Stage
DO mg/L
75
70
65
60
55
50
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Date
12/10/18 18:16
12/15/18 23:16
12/21/18 3:46
12/26/18 8:46
12/31/18 13:46
1/5/19 18:46
1/10/19 23:46
1/16/19 4:16
1/21/19 9:16
1/26/19 14:16
1/31/19 19:16
2/6/19 0:00
2/11/19 4:46
2/16/19 9:46
2/21/19 14:46
2/26/19 19:46
3/4/19 0:16
3/9/19 5:16
3/14/19 10:16
3/19/19 15:16
3/24/19 20:16
3/30/19 0:46
4/4/19 5:46
4/9/19 10:46
4/14/19 15:46
4/19/19 20:46
4/25/19 1:16
4/30/19 6:16
5/5/19 11:16
5/10/19 16:16
5/15/19 21:16
5/21/19 1:46
5/26/19 6:46
5/31/19 11:46
Stage
DO


River Stage and Temperature
River Stage
Temperature °C
75
70
65
60
55
50
25.00
20.00
15.00
10.00
5.00
0.00
Date
12/10/18 18:16
12/15/18 23:16
12/21/18 3:46
12/26/18 8:46
12/31/18 13:46
1/5/19 18:46
1/10/19 23:46
1/16/19 4:16
1/21/19 9:16
1/26/19 14:16
1/31/19 19:16
2/6/19 0:00
2/11/19 4:46
2/16/19 9:46
2/21/19 14:46
2/26/19 19:46
3/4/19 0:16
3/9/19 5:16
3/14/19 10:16
3/19/19 15:16
3/24/19 20:16
3/30/19 0:46
4/4/19 5:46
4/9/19 10:46
4/14/19 15:46
4/19/19 20:46
4/25/19 1:16
4/30/19 6:16
5/5/19 11:16
5/10/19 16:16
5/15/19 21:16
5/21/19 1:46
5/26/19 6:46
5/31/19 11:46
Stage
Temp

Results/Discussion

- DO increased with precipitation events but generally in the lethal range for salmonids
- DO likely low while fish were present
- PIT tag detection on 3/31/19 at 22:53, fish was near the upper antenna while DO concentration at the site was 1.60 mg/L (recorded 9 minutes earlier)
- Nearby DO refuge, microhabitats?

Discussion

- But… winter of 2019/20 was dry, no detections

Discussion

More than just salmon!

- Other detections:
  - Sacramento Pikeminnow
  - Hitch
- RR Tule perch
- Lamprey
- Sucker
- Roach

Photo: KQED

Funders and Partners

Sonoma Water

NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

Redwood Empire Trout Unlimited

Sea Grant California

Rose Foundation for Communities and the Environment

Sonoma County Fish & Wildlife Commission

US Army Corps of Engineers®

California Department of Fish & Wildlife

Photo: Kent Porter

Projects and Policies in the Lower Laguna Watershed Designed to Support Habitat Restoration

Neil Lassettre, PhD, Sonoma Water and Sean McNeil, City of Santa Rosa

Introduction

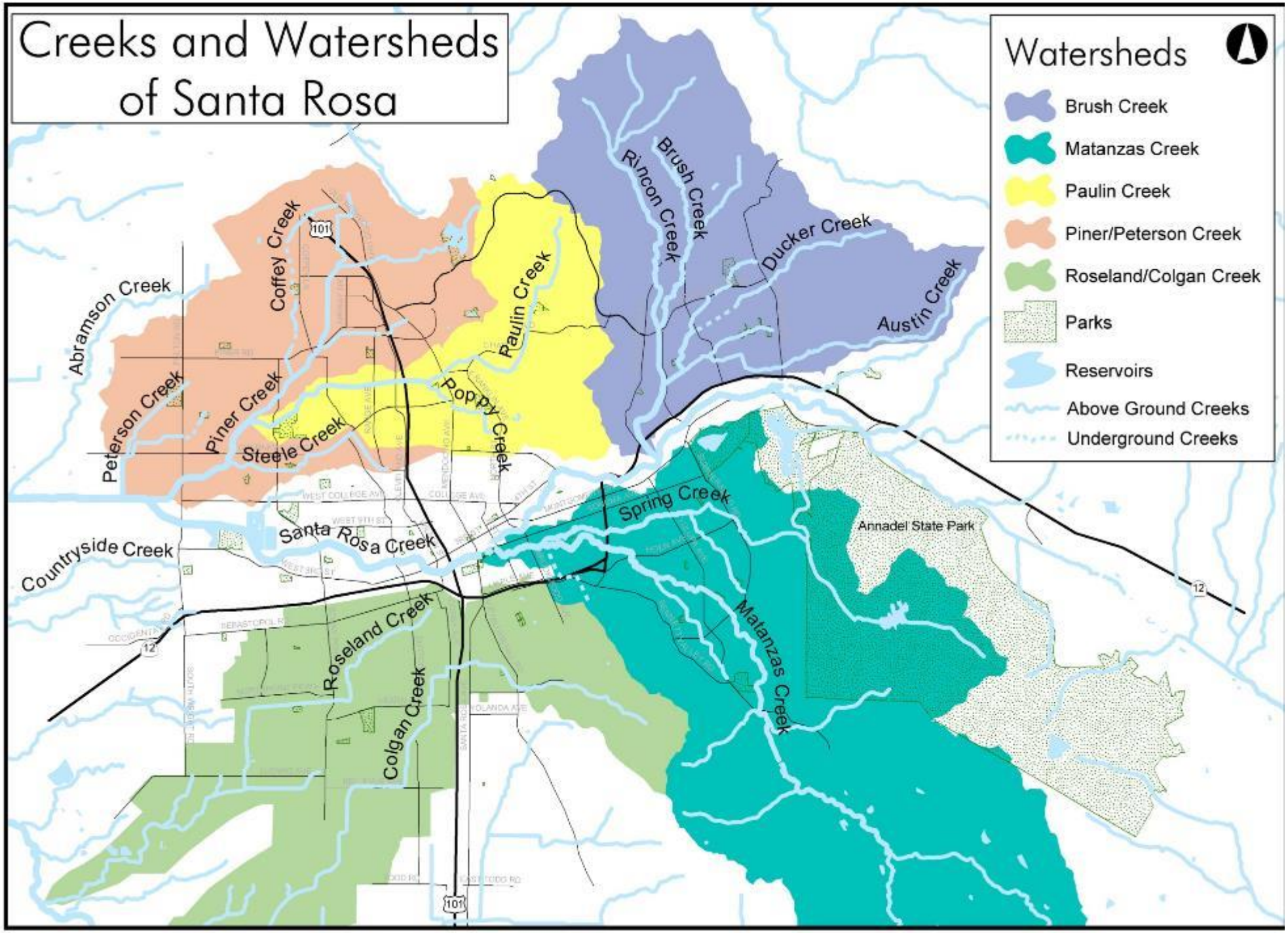
- City of Santa Rosa Storm Water and Creeks
- Citywide Creek Masterplan
- City's Restoration Projects
- Sonoma Water Stream Maintenance Program
- Water Quality Trading Projects
- Funding Restoration

Storm Water & Creeks Mission

"Making Santa Rosa a better place by enhancing creek health through restoration and community involvement, providing biological and engineering services, and managing storm water runoff to preserve and restore water quality and minimize flooding."

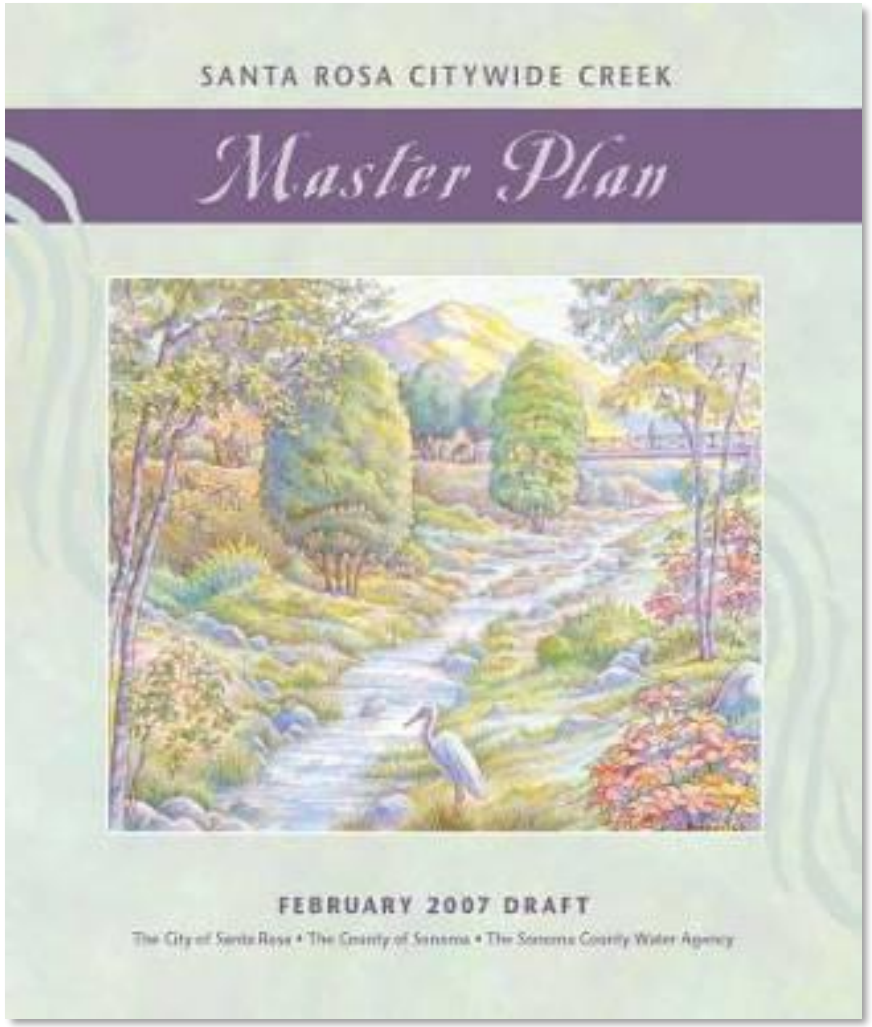
City of Santa Rosa
WATER

Creeks and Watersheds of Santa Rosa



Citywide Creek Master Plan

- Santa Rosa Creek Masterplan 1993
- Santa Rosa Waterways Plan 1996
- Citywide Creek Masterplan 2007 and 2013
- Assessed habitat of creeks
- Identify restoration potential



Eleven Masterplan Goals

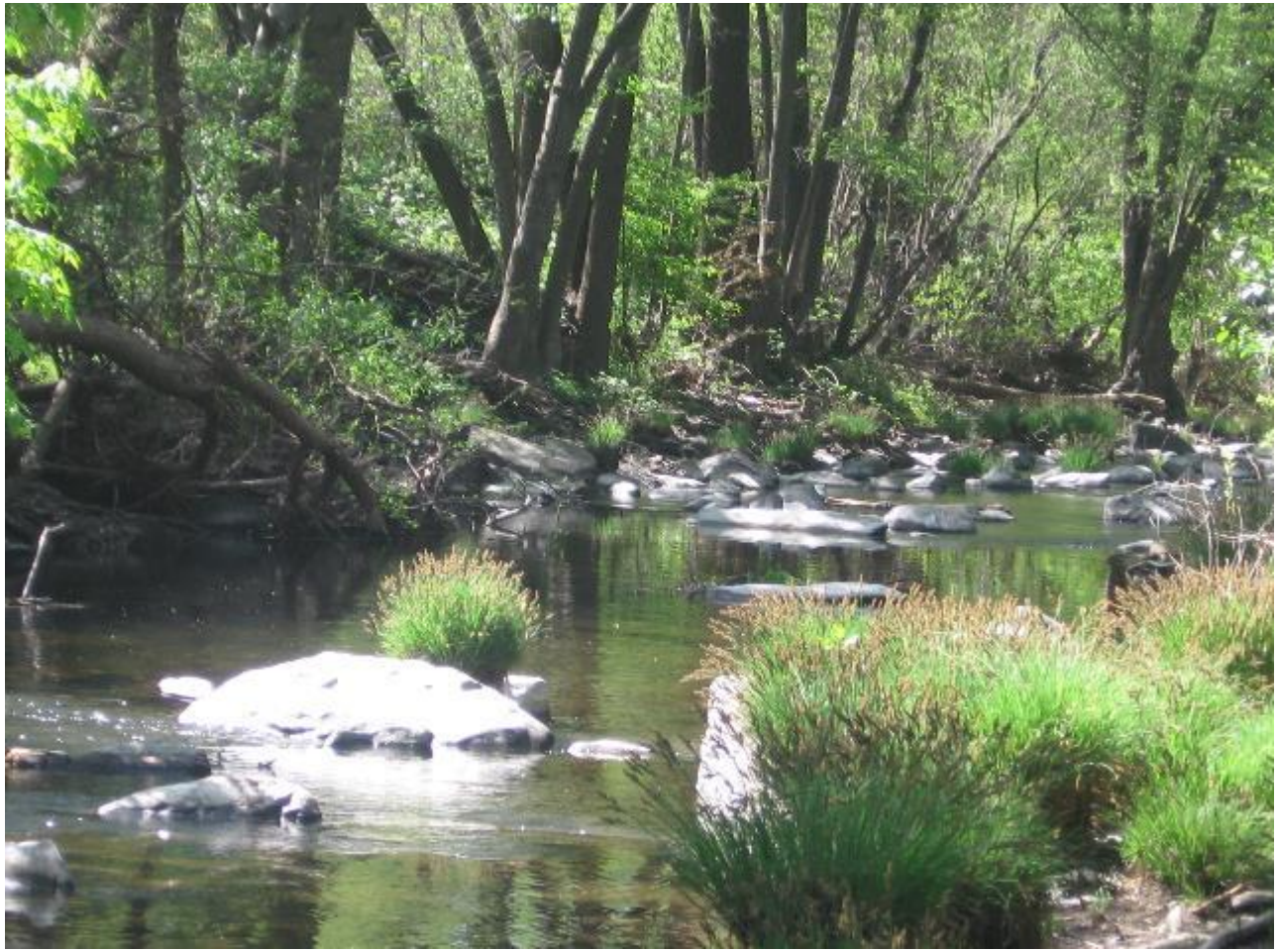
Habitat	Recreation	Economic
Stormwater	Education	Aesthetics
Water Quality	Health and safety	Private Property
Open Space	Cultural Resources	

Habitat Goal has Seven Objectives

- Preserve healthy and/or sensitive creek areas
- Enhance creek areas that require remediation
- Restore degraded creeks
- Maintain creeks to support fish and wildlife as well as hydraulic capacity
- Focus restoration on habitat for special status species
- Obtain and comply with regulatory agency permits
- Use best available science

Stormwater and Creeks Enterprise

- 1996 City Council created the enterprise to:
  - Comply with storm water permit (MS4)
  - Creek restoration
- Annual increase is based on Consumer Price Index (CPI)
- Current fees are $39.98 per equivalent residential unit
- $3.0 million for 23/24 budget



Implementation of Plan

- Creek Stewardship
- Creek Restoration

Creek Stewardship 2023

- Work with volunteers and students
- Events attendees 9,697
- Volunteer Hours 5,190
- Trash 923 yards

Partnership with Sonoma Water

City of Santa Rosa WATER

Creek Enhancements

- Tree and understory plantings
- Invasive species removal
- Restoration plantings
- Re-contour channel and add instream habitat features

Completed Large-Scale Projects

- Prince Memorial Greenway (4 phases)
- Brush Creek Restoration
- Lower Colgan Creek Restoration Phase 1 and 2
- Irwin Creek Restoration (Stone Farm)
- Gravenstein Creek (Brown Farm)

Creek Restoration Project Examples

- Prince Memorial Greenway
- Lower Colgan Creek Restoration

Santa Rosa Creek – Prince Memorial Greenway

Restored in 4 Phases (2000-2005)

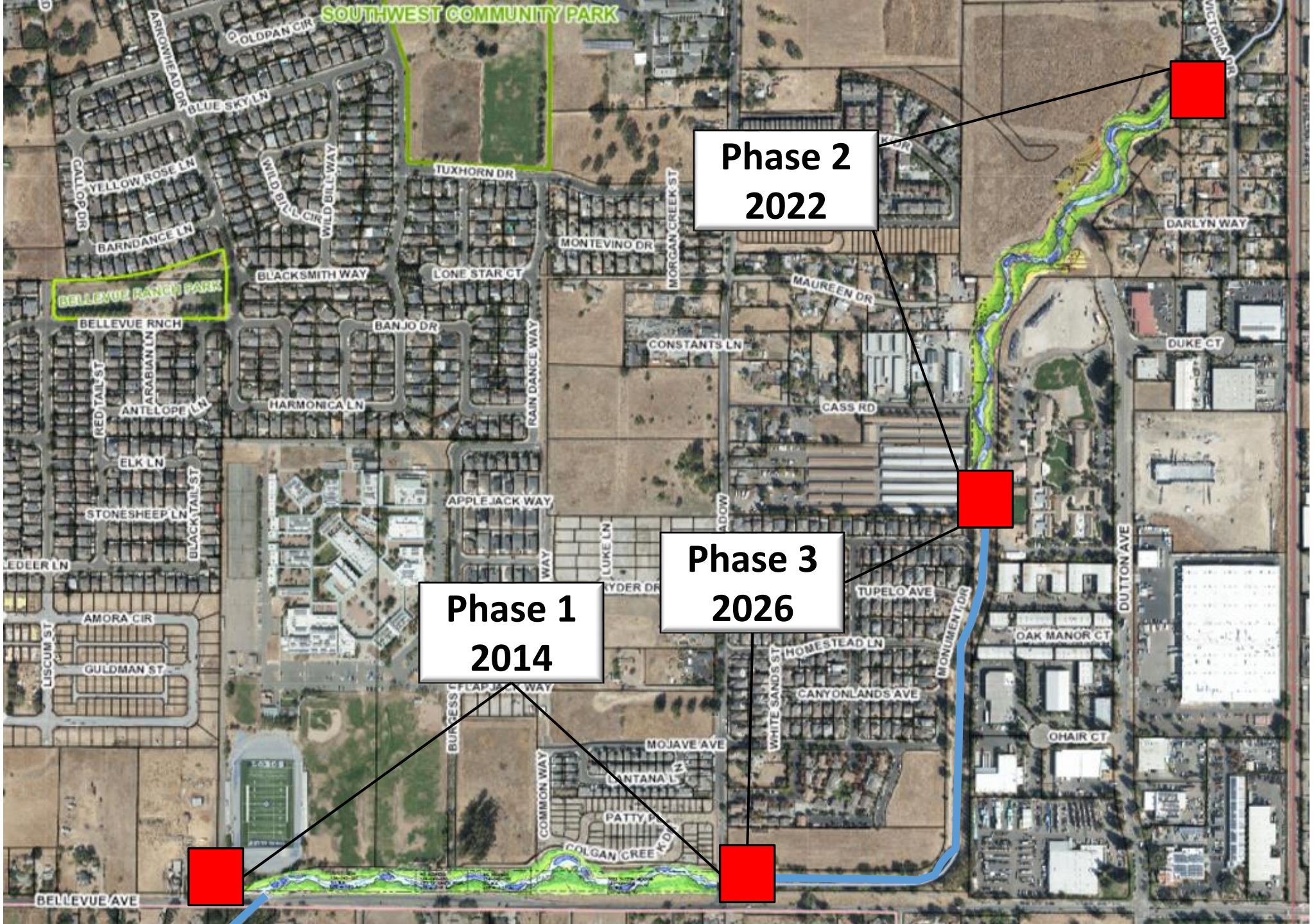
3,900 feet long 110 feet wide Approx. 10 acres

From Concrete Lined Flood Control Channel

To Wildlife Habitat

LOWER COLGAN CREEK

RESTORATION PROJECT


Phase 2
2022
Phase 3
2026
Phase 1
2014
SOUTHWEST COMMUNITY PARK
BELLEVUE RANCH PARK
OLDPAN CIR
ARROWHEAD DR
BLUE SKY LN
YELLOW ROSE LN
CALLOPE DR
WILD BILL CIR
WILD BILL WAY
BARNDANCE LN
TUXHORN DR
MONTEVINO DR
MORGAN CREEK ST
BLACKSMITH WAY
LONE STAR CT
BELLEVUE RNCH
BANJO DR
RAIN DANCE WAY
MAUREEN DR
CONSTANTS LN
DARLYN WAY
DUKE CT
CASS RD
RED TAIL ST
ARABIAN LN
ANTELOPE LN
HARMONICA LN
ELK LN
STONESHEEP LN
BLACK TAIL ST
APPLEJACK WAY
LUKE LN
KYDER DR
TUPELO AVE
DUTTON AVE
MONUMENT DR
AMORA CIR
LISCUM ST
GULDMAN ST
HOMESTEAD LN
WHITE SANDS ST
CANYONLANDS AVE
OAK MANOR CT
OHAIR CT
BURGESS
COMMON WAY
MOJAVE AVE
PATTY
COLGAN CREE
BELLEVUE AVE


KAPWING


KAPWING

Future Projects

- Lower Colgan Creek Phase 3
- Roseland Creek
- Upper Colgan Creek
- Pierson Reach (Santa Rosa Creek)
- E Street Culvert Removal

Sonoma Water

City of Santa Rosa

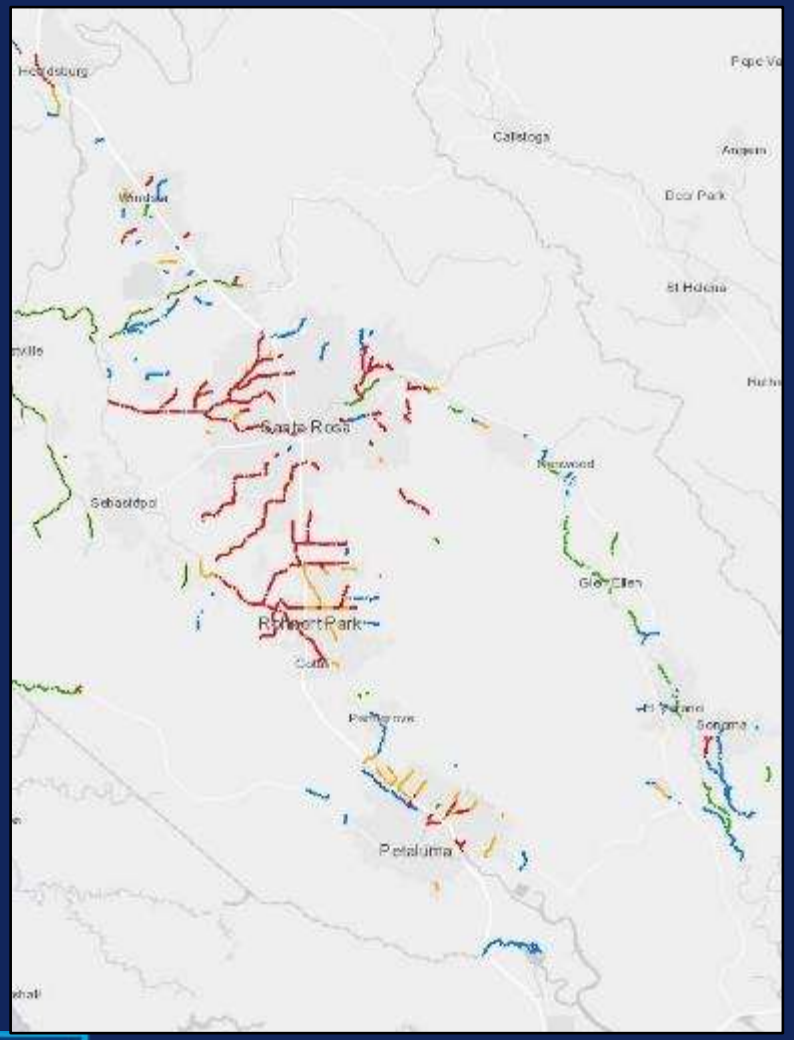
Projects and Policies in the Lower Laguna Watershed Designed to Support Habitat Restoration

SALMONID RESTORATION FEDERATION
LAGUNA FOUNDATION, HERON HALL
MARCH 27, 2024

Neil Lassettre, PhD, Sonoma Water

Sean McNeil, City of Santa Rosa

Stream Maintenance Program



Sonoma Water

- **Background**
  - 75 miles of engineered flood control channels
  - easements to conduct flood control work along 100 miles of modified and natural streams
- **Three main activities**
  - vegetation management
  - sediment removal
  - bank repair
- **Program Goals**
  - maintain channel flood capacity
  - maintain and enhance the habitats our channels support

SMP 2023: Sediment Removal

- 17 projects along 13 creeks
- 3 miles of channel
- 33,000 cubic yards removed

Crane Creek 2023, Rohnert Park

Fife Creek 2023, Guerneville

Colgan Creek 2023, Santa Rosa

Sonoma Water

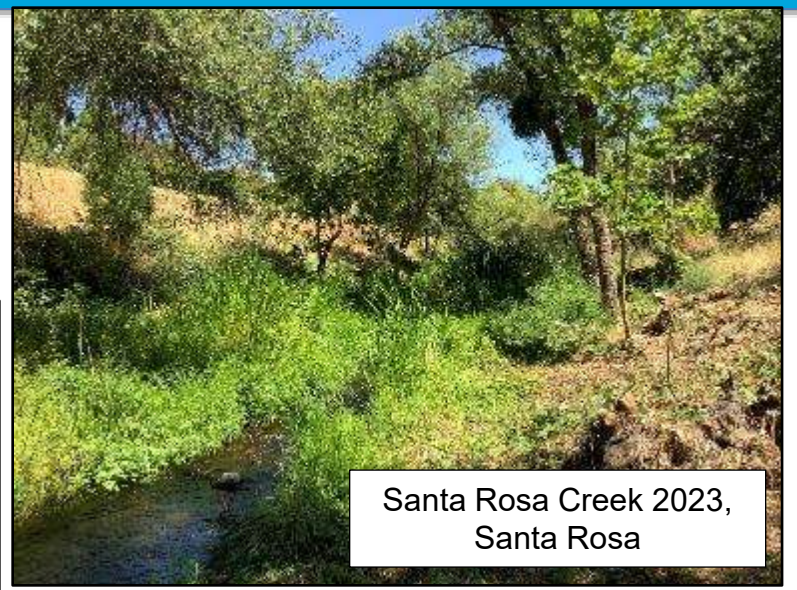
SMP 2023: Sediment Removal

Adobe Creek 2023, Petaluma

SMP 2023: Vegetation Management

- 17 projects along 23 creeks
- 2,260 cubic yards removed

Lynch Creek 2023, Petaluma



Santa Rosa Creek 2023, Santa Rosa

Lichau Creek 2023, Penngrove

Sonoma Water

SMP 2023: Vegetation Management

College Creek 2023, Santa Rosa

Sonoma Water

SMP 2023: Mitigation Monitoring

2023 Tier 1 Monitoring

- 473 trees monitored
- 18,200 linear feet
- 76% of initial installs
- 10 out of 15 sites met success criteria (75%)
- Monitoring complete for 4 sites

Sonoma Water

Water Quality Credit Trading in the Laguna de Santa Rosa

2017

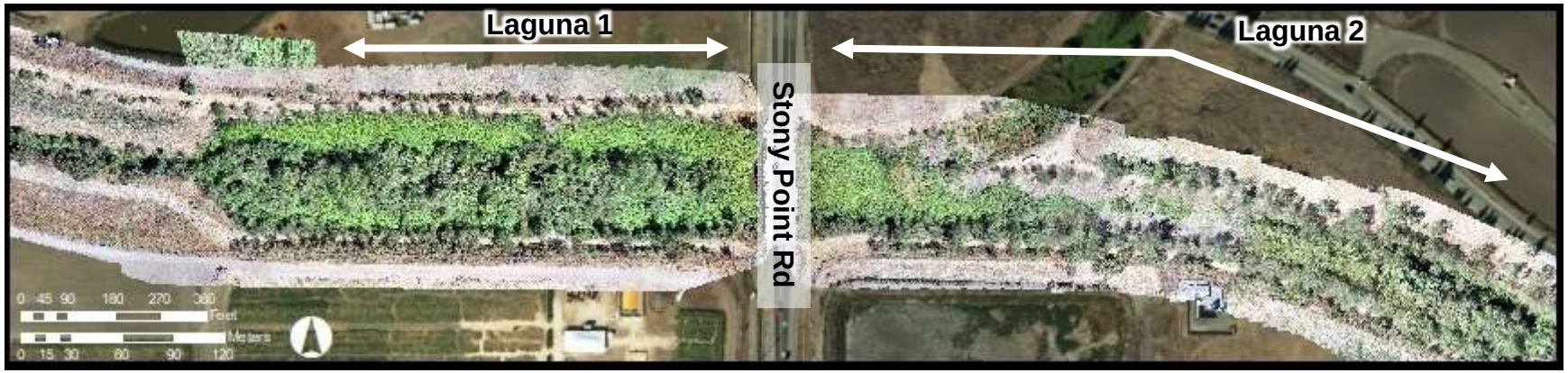
- Sonoma Water proposed sediment removal project in Laguna de Santa Rosa Reaches 1 and 2
- Fund voluntary project by selling nutrient credits to City under Nutrient Offset Program

2019

- Sonoma Water implemented project
- Credits approved under Nutrient Offset Program (2008) and Water Quality Credit Trading Framework (2018)
- *Portion to Town of Windsor*

Sonoma Water

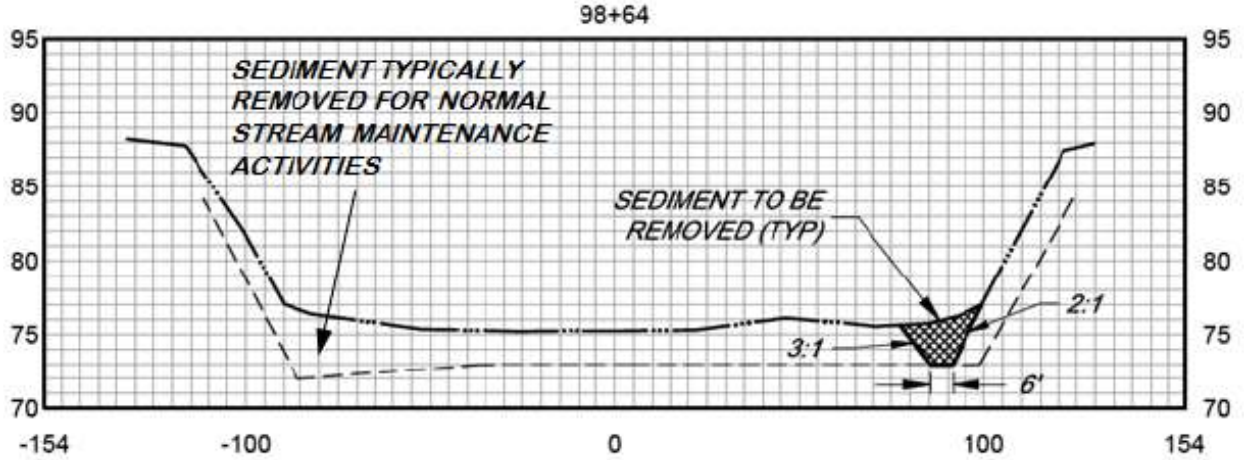
Laguna 1 and 2 WQCT



	Laguna 1	Laguna 2	TOTAL
Length (ft)	1,223	3,053	4,267
Area (ft^2)	29,352	73,272	102,624
Volume (yd^3)	2,174	5,156	7,330

Sonoma Water

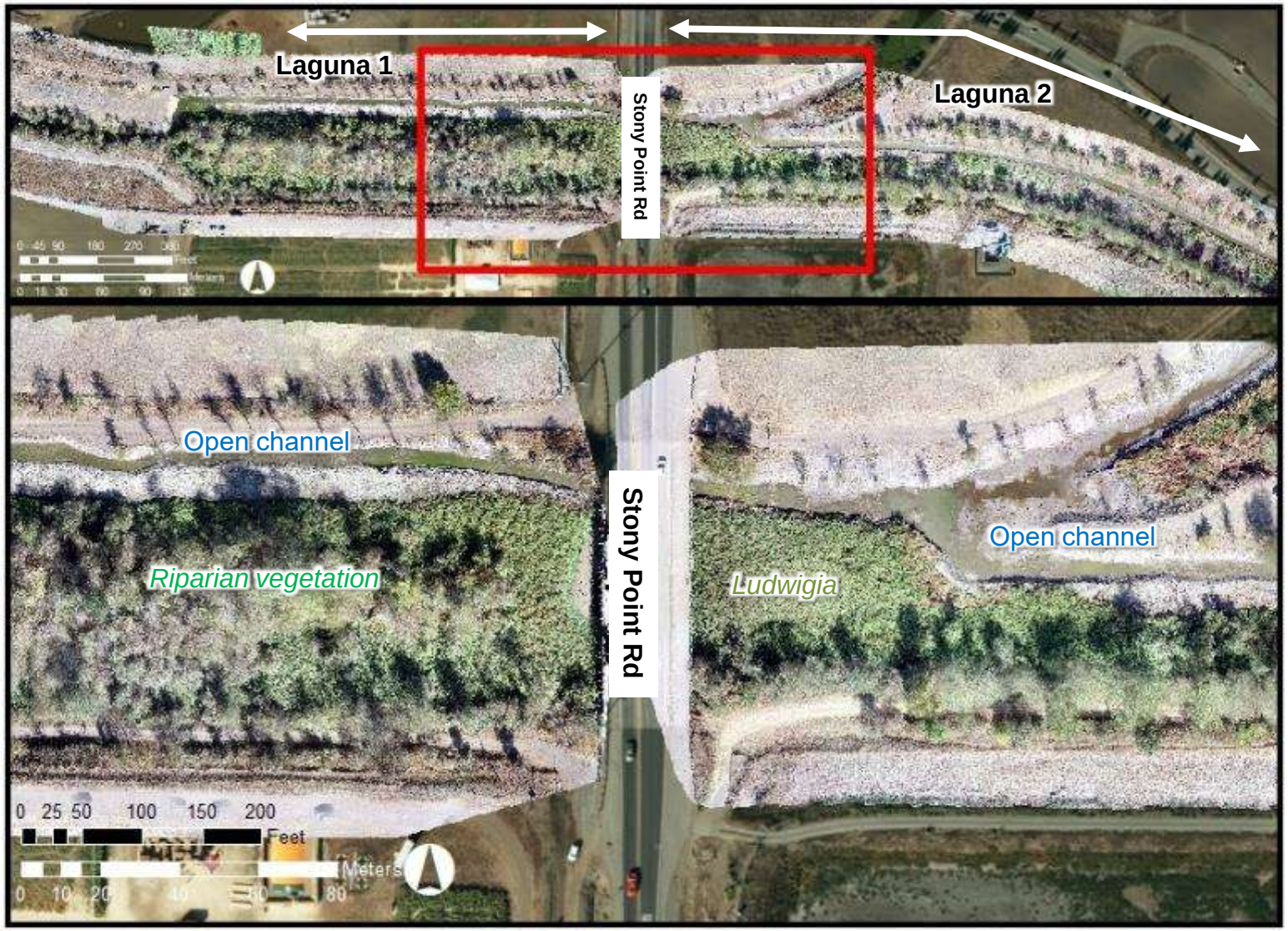
Laguna 1 and 2 WQCT



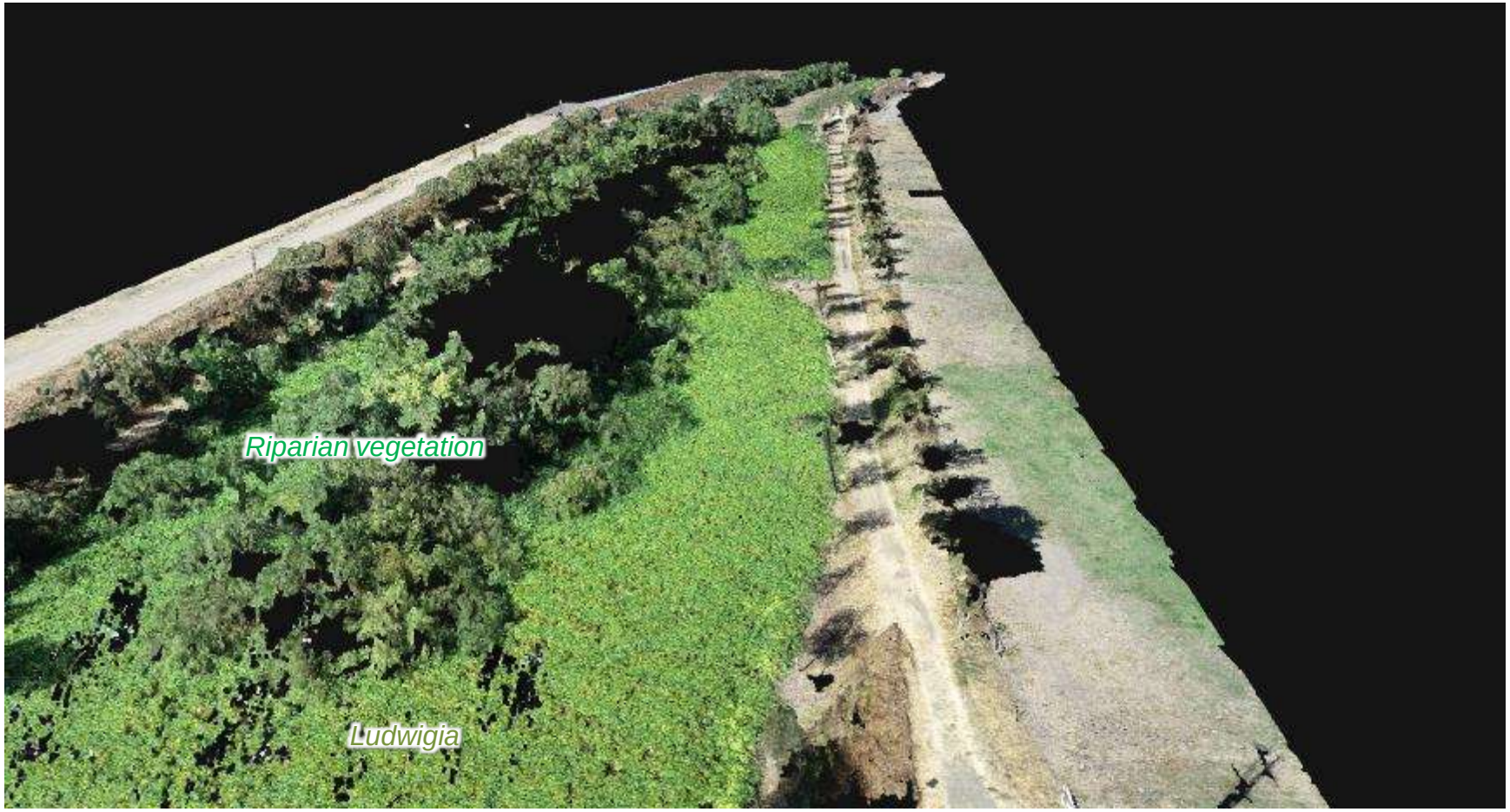
Laguna 1 and 2 WQCT

Sonoma Water


Laguna 1
Laguna 2
Stony Point Rd
Riparian vegetation
Ludwigia
Stony Point Rd
0 25 50 100 150 200
Feet
0 10 20 40 60 80
Meters

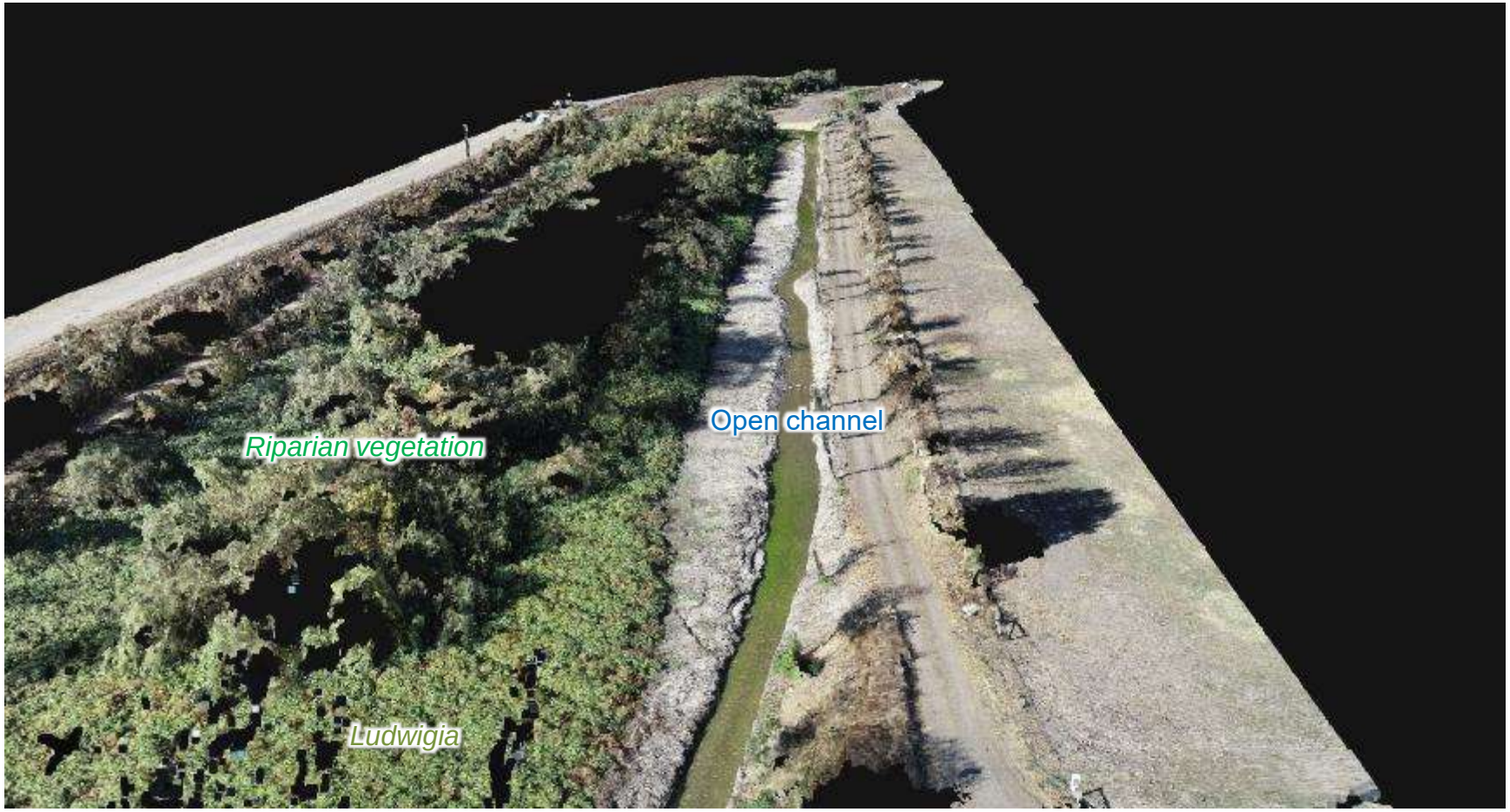

Laguna 1
Stony Point Rd
Laguna 2
Open channel
Riparian vegetation
Stony Point Rd
Ludwigia
Open channel
0 25 50 100 150 200
Feet
0 10 20 40 60 80
Meters

Laguna 1 Before



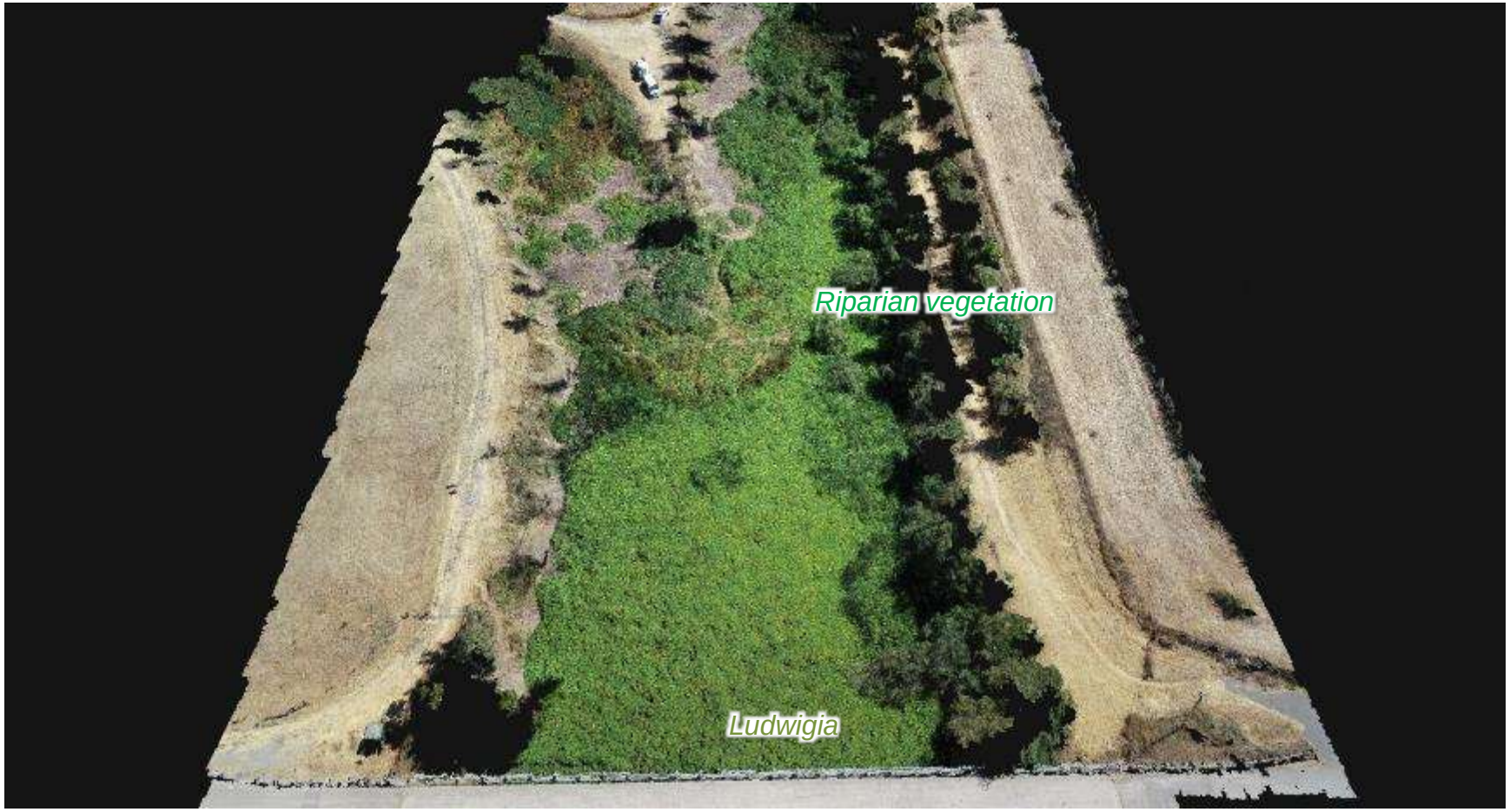
Sonoma Water

Laguna 1 After



Sonoma Water

Laguna 2 Before



Sonoma Water

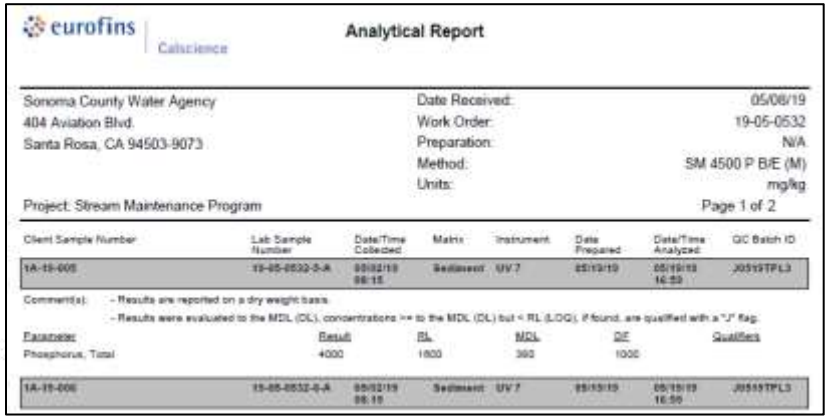
Laguna 2 After

Sonoma Water

Estimated Phosphorus Credits

Quantification Method	Total P Credits total lbs (yrs)
Reduced Internal loading	**1,000 (10 years)**
Direct Removal (estimated)	**9,000 (3 years)**

Testing



eurofins | Calscience

Analytical Report

Sonoma County Water Agency
404 Aviation Blvd.
Santa Rosa, CA 94503-9073

Date Received: 05/08/19
Work Order: 19-05-0532
Preparation: N/A
Method: SM 4500 P B/E (M)
Units: mg/kg

Project: Stream Maintenance Program

Page 1 of 2

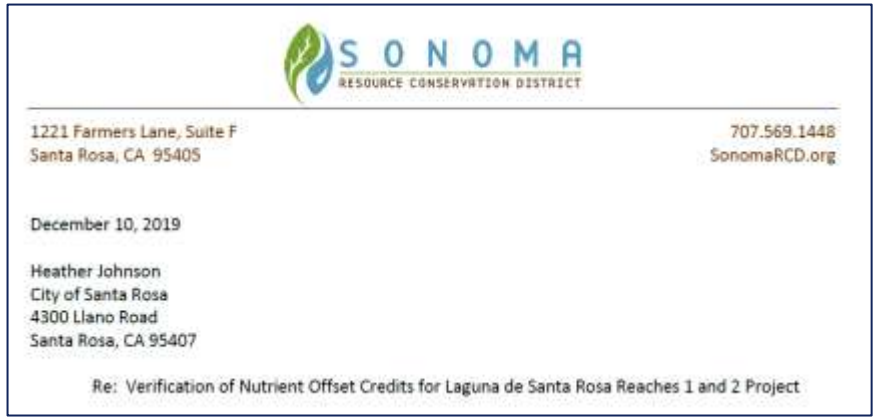
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
1A-19-005	19-05-0532-3-A	05/02/19 08:15	Sediment	UV 7	05/13/19	05/13/19 16:50	J05137PL3

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Phosphorus, Total	4000	1600	360	1000	

1A-19-005	19-05-0532-3-A	05/02/19 08:15	Sediment	UV 7	05/13/19	05/13/19 16:50	J05137PL3

Verification



SONOMA RESOURCE CONSERVATION DISTRICT

1221 Farmers Lane, Suite F
Santa Rosa, CA 95405

707.569.1448
SonomaRCD.org

December 10, 2019

Heather Johnson
City of Santa Rosa
4300 Llano Road
Santa Rosa, CA 95407

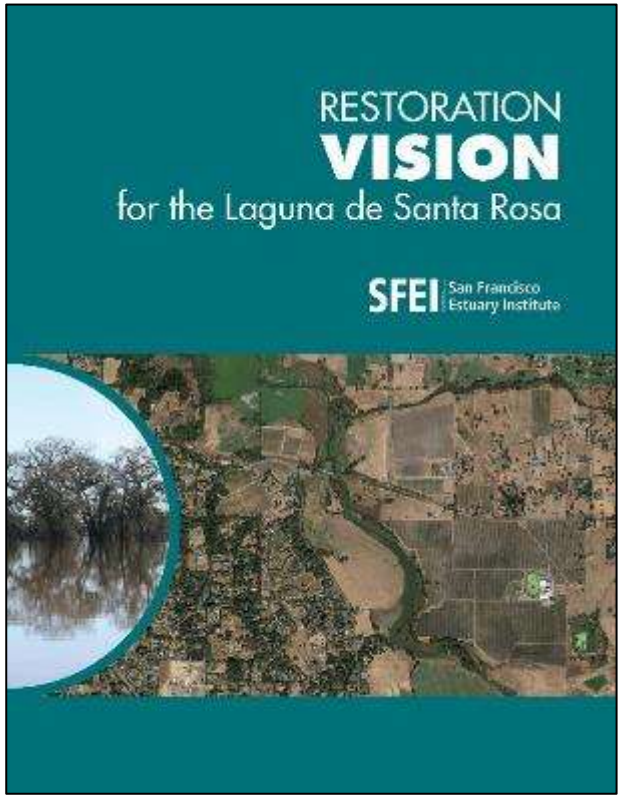
Re: Verification of Nutrient Offset Credits for Laguna de Santa Rosa Reaches 1 and 2 Project

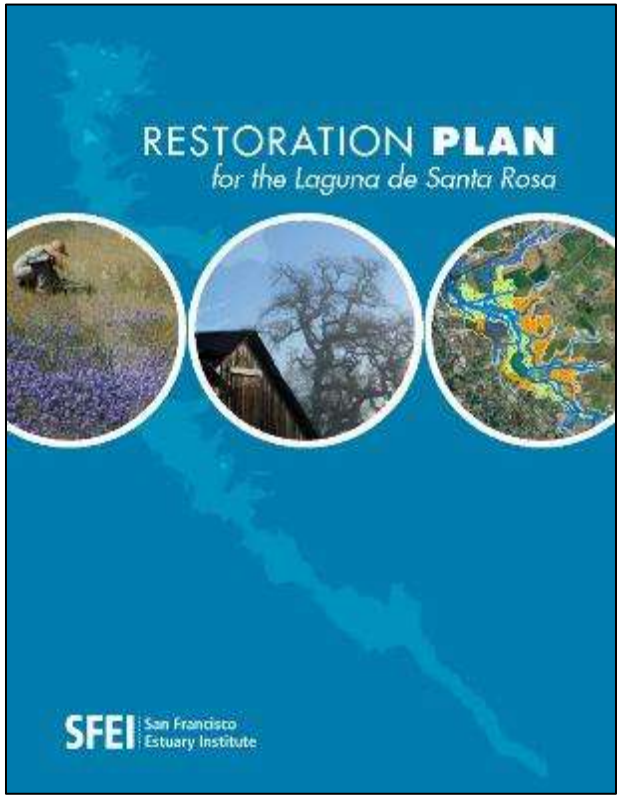
Verified Phosphorus Credits

Quantification Method	Total P Credits total lbs (yrs)
Reduced Internal loading	**1,000 (10 years)**
Direct Removal (estimated)	**9,000 (3 years)**
Direct Removal (verified)	**14,742 (3 years)**

Sonoma Water

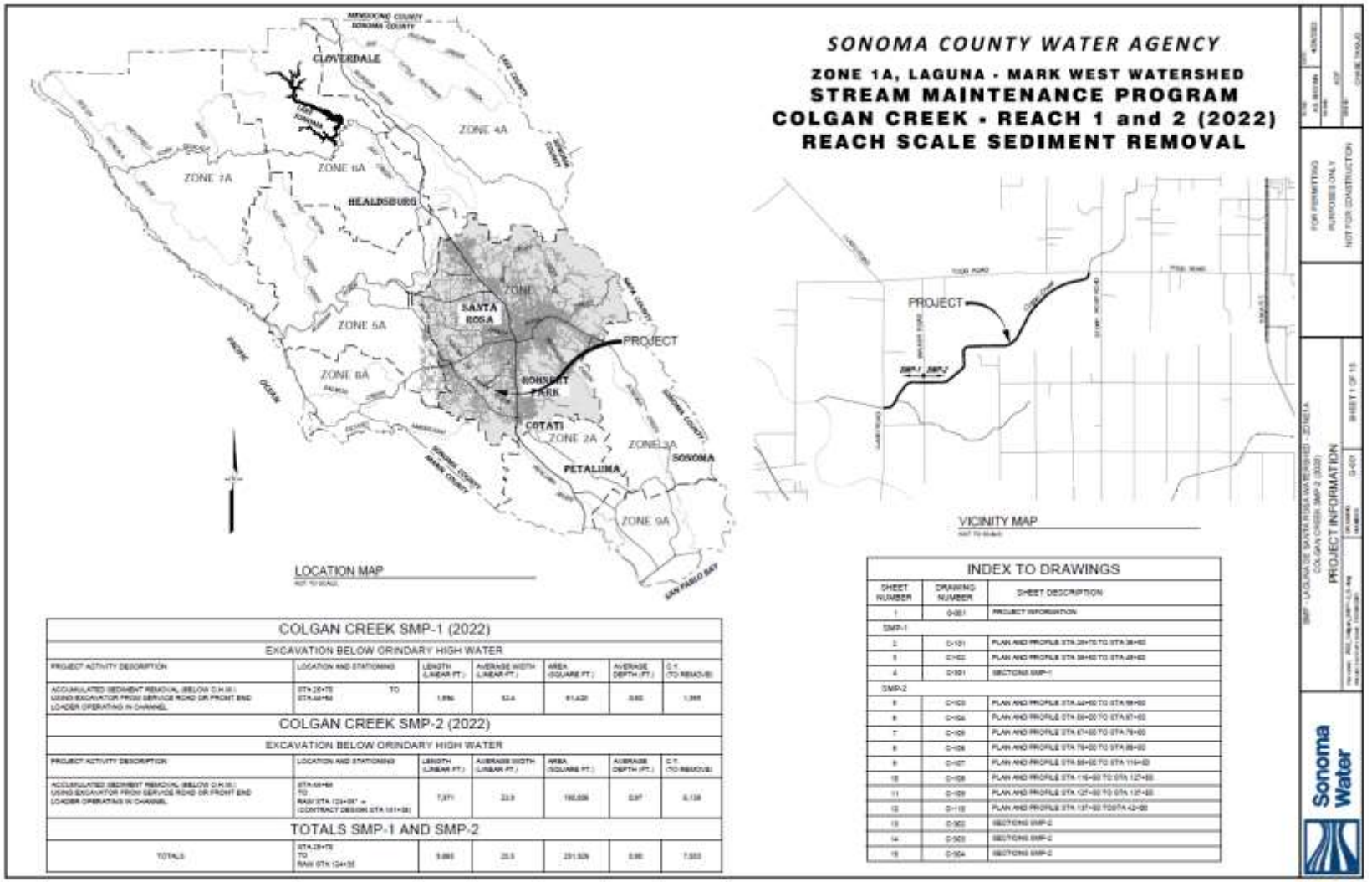
CDFW Prop 1 Grant





Sonoma Water

Colgan Creek WQCT



Sonoma Water

Sonoma Water

Neil Lassettre, PhD
Principal Environmental Specialist
neil.lassettre@scwa.ca.gov

sonomawater.ca.gov

STREAMFLOW AND BEYOND: THE MULTIPLE BENEFITS OF SMALL-SCALE WATER STORAGE AND FORBEARANCE PROJECTS

Jessica Pollitz, P.E., Sonoma Resource Conservation District
Mary Ann King, Trout Unlimited
Troy Cameron, Trout Unlimited

March 27th, 2024

TROUT UNLIMITED

SONOMA RESOURCE CONSERVATION DISTRICT

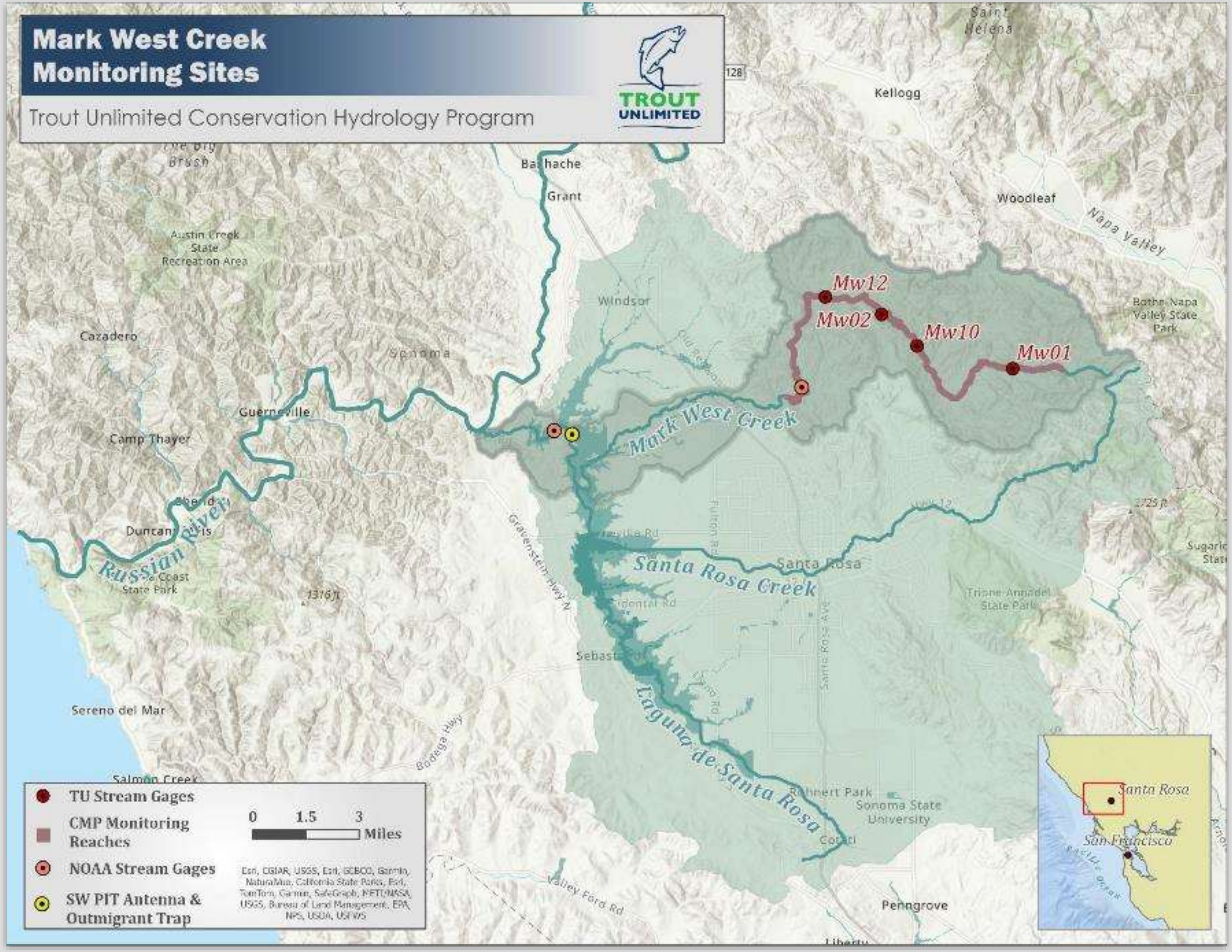
Sea Grant California

INTRO

OUTLINE

- Fish
- Flow
- Tanks
- Beyond
- Q&A

FISH


Mark West Creek
Monitoring Sites
Trout Unlimited Conservation Hydrology Program
TROUT UNLIMITED
Mw12
Mw02
Mw10
Mw01
Mark West Creek
Santa Rosa Creek
Russian River
Laguna de Santa Rosa
Windsor
Santa Rosa
Guerneville
Sebastopol
Rohnert Park
Cotati
Penngrove
Kellogg
Woodleaf
Napa Valley
Cazadero
Camp Thayer
Sereno del Mar
Salmon Creek
Sonoma State University
Trione-Annadel State Park
Bothe-Napa Valley State Park
Austin Creek State Recreation Area
TU Stream Gages
CMP Monitoring Reaches
NOAA Stream Gages
SW PIT Antenna & Outmigrant Trap
0 1.5 3 Miles
Santa Rosa
San Francisco

Coho Salmon Stocking

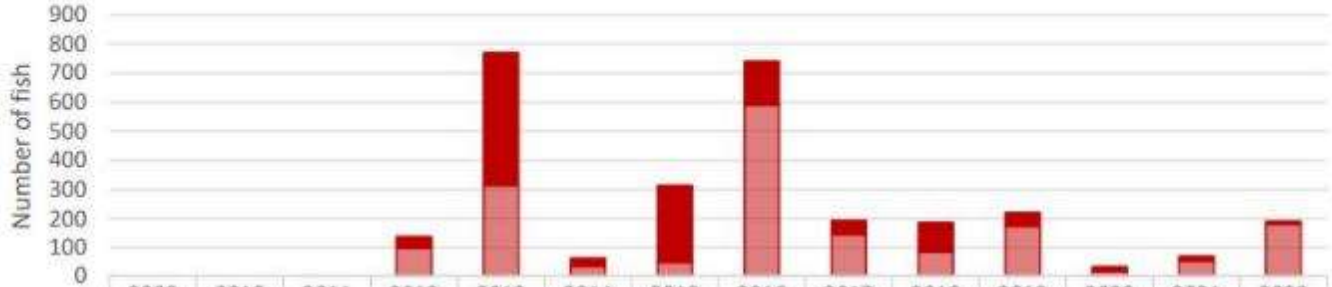
Cohort (Hatch year)	Total coho salmon released in Mark West Creek	Total coho salmon released in the Russian River	Proportion of total coho salmon released
2016	25,211	158,382	15.92%
2017	0	133,849	0%
2018	7,135	133,014	5.36%
2019	32,709	194,039	16.86%
2020	23,721	214,432	11.06%
2021	7,991	133,100*	6%
2022	6,615	85,800*	7.7%

*approximate number of fish

Sonoma Water
Clean. Reliable. Essential. Every Day

Downstream Migrant Trapping

Steelhead

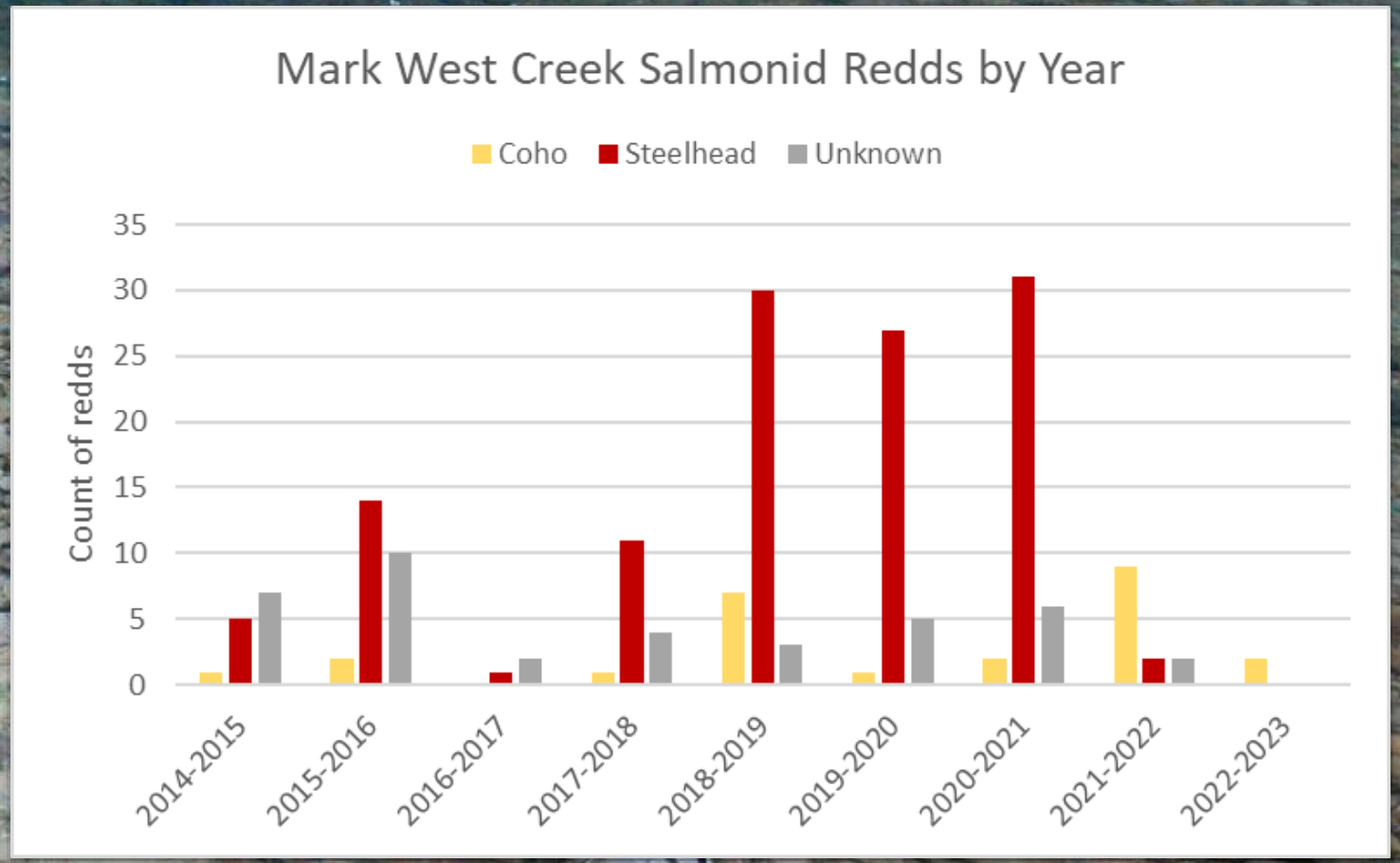


	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Smolt				44	454	29	268	150	46	104	45	15	16	9
Parr				95	316	32	47	590	147	82	175	16	52	182

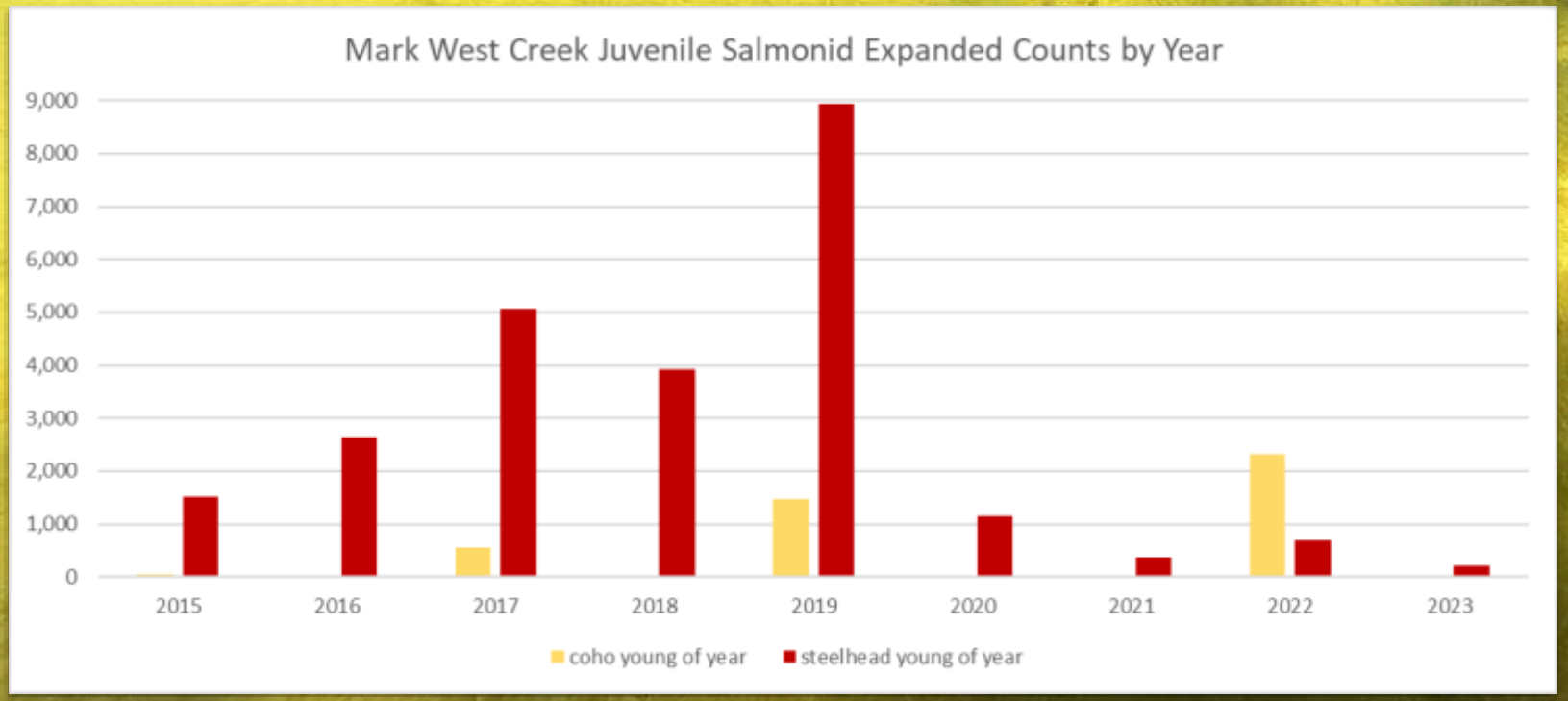
Coho Salmon

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
YOY/parr-unknown													1	2
YOY/parr-wild	0	0	0	7	66	0	0	5	0	0	0	0	15	2
smolt-hatchery				357	2258	375	967	37	1065	23	273	530	865	159
smolt-wild				28	32	84	80	16	17	50	3	14	67	10
smolt-unknown	0	0	0	0	0	18	4	0	44	1	0	0	8	1

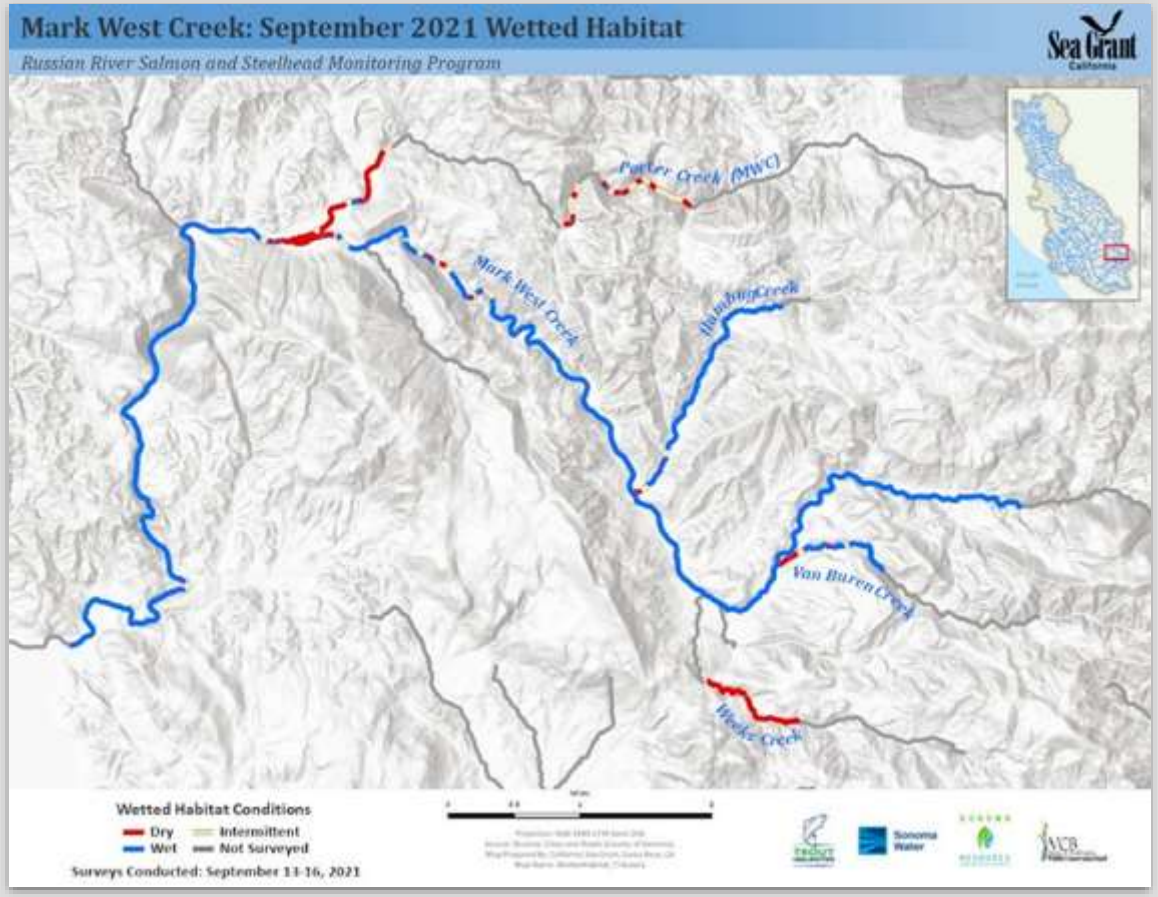
Adult Spawning

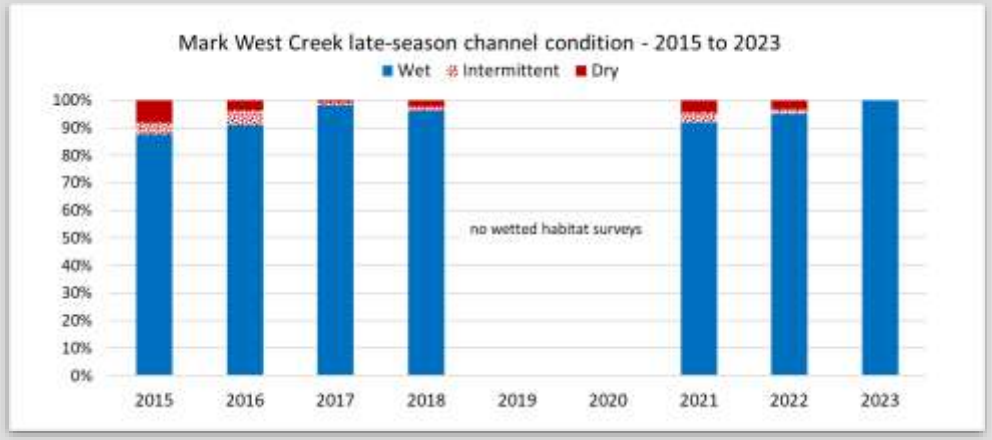


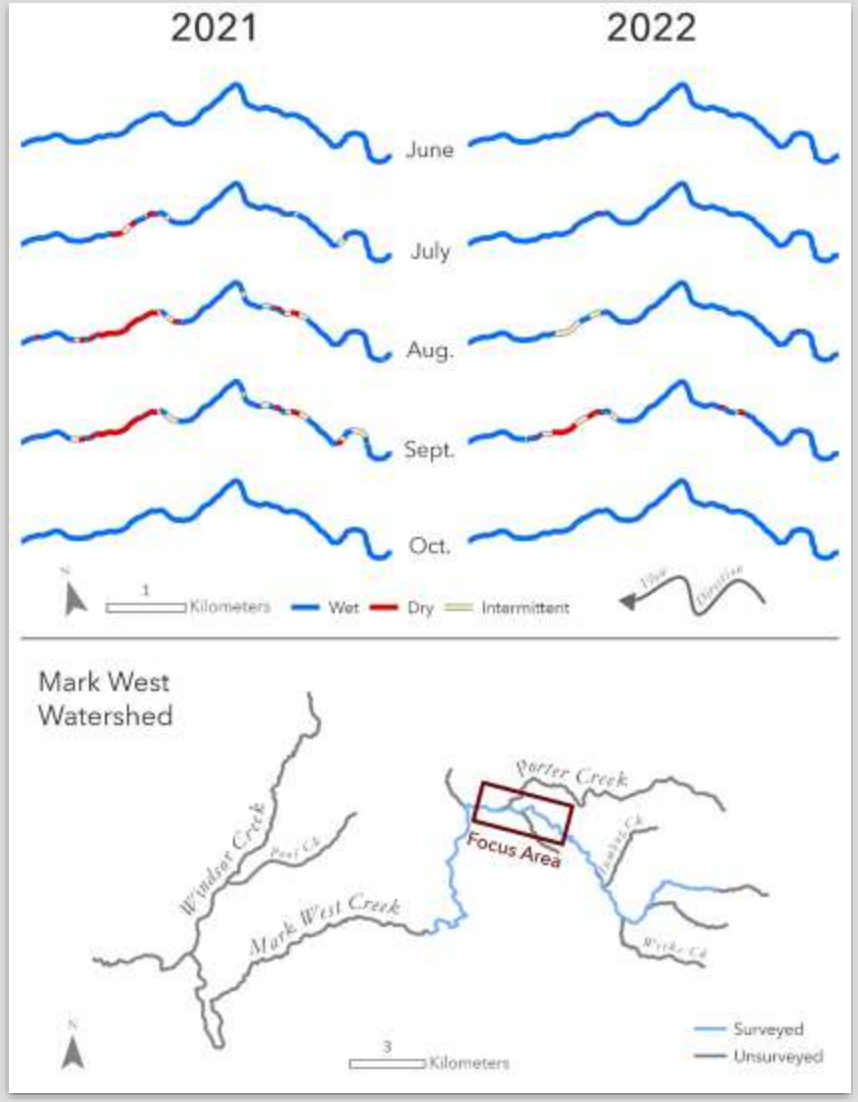
Juvenile Snorkel Surveys



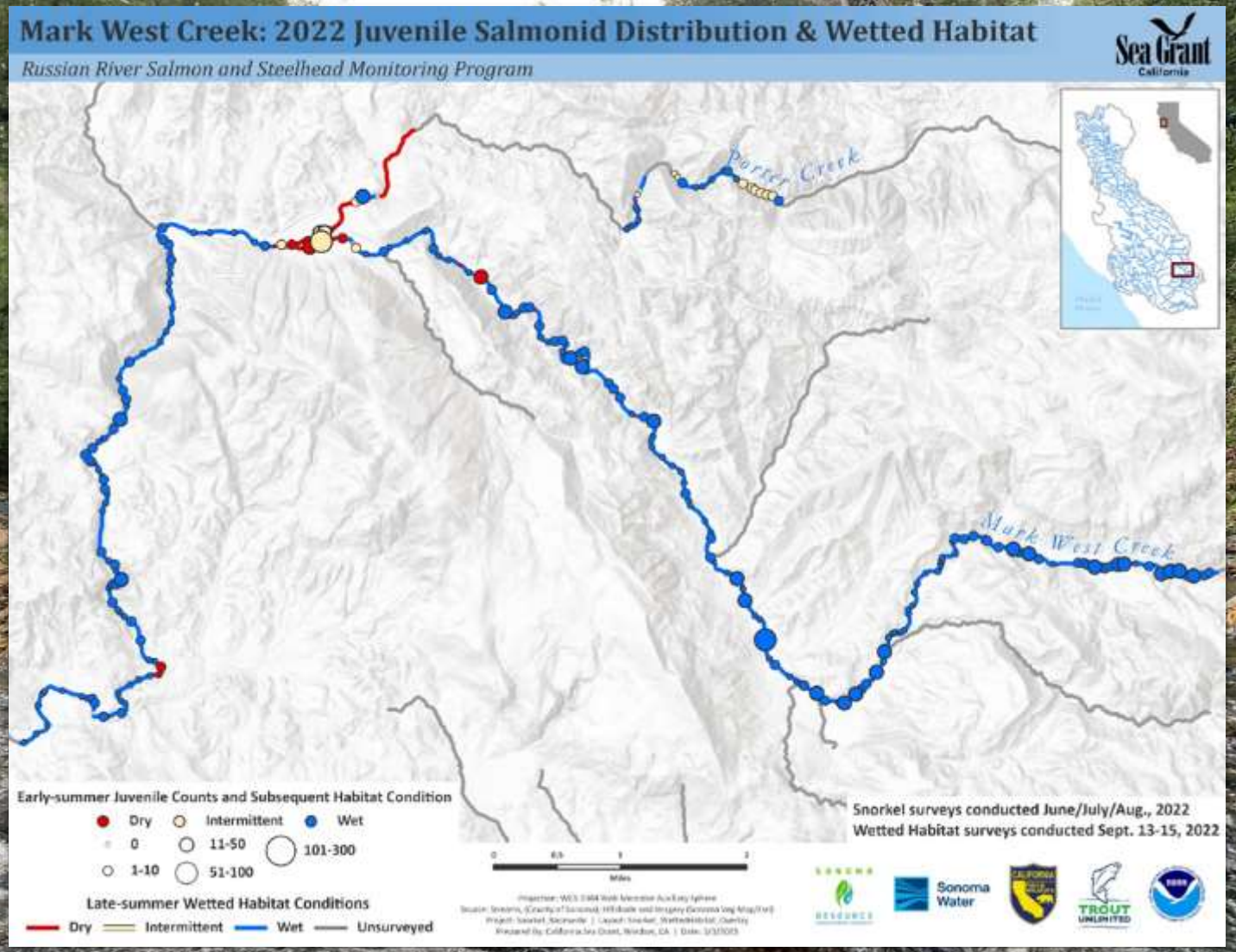
Wetted Habitat Surveys



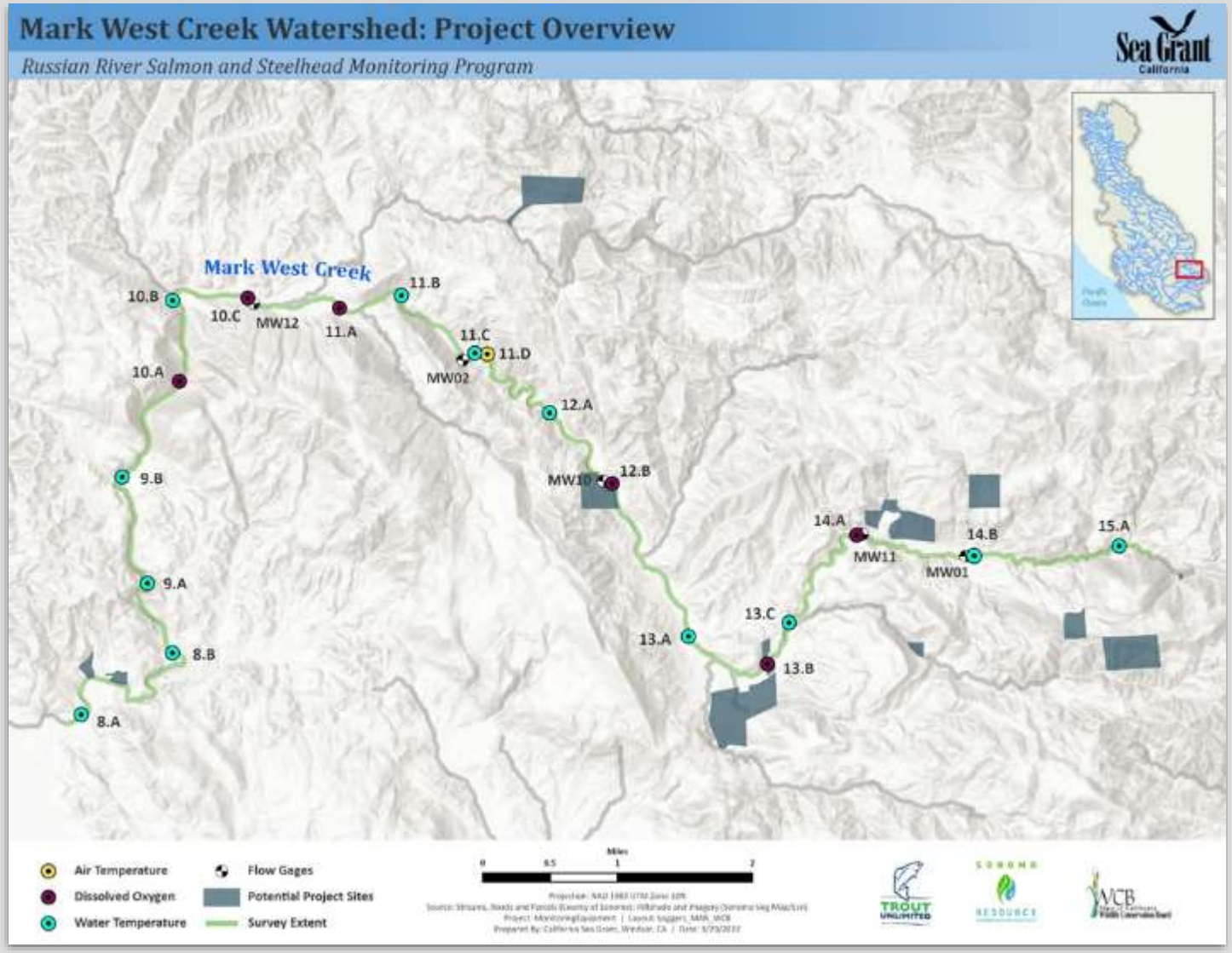




Juvenile Salmonids & Wetted Habitat



Water Quality Monitoring



Wetted Habitat by Sample

Use the buttons on the left side to display data on map, zoom in on map to view water quality pool data, click on features in map to display survey date, Pool metrics are discrete samples and shouldn't be used for analysis

Select Year

Clear Selection | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023

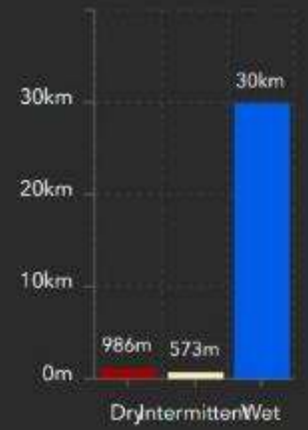
Select Stream

Austin Creek | Bearpen Creek | Crane Creek | Dead Coyote Creek | Devil Creek | Dutch Bill Creek | East Austin Creek | Felta Creek | Freezeout Creek | Gilliam Creek

Select Sample Number

Clear Selection | 1 | 2 | 3 | 4 | 5

Wetted habitat proportions for selected streams



Survey Date

09-13... 09-15...

Pools in map extent

Avg Pool Temp

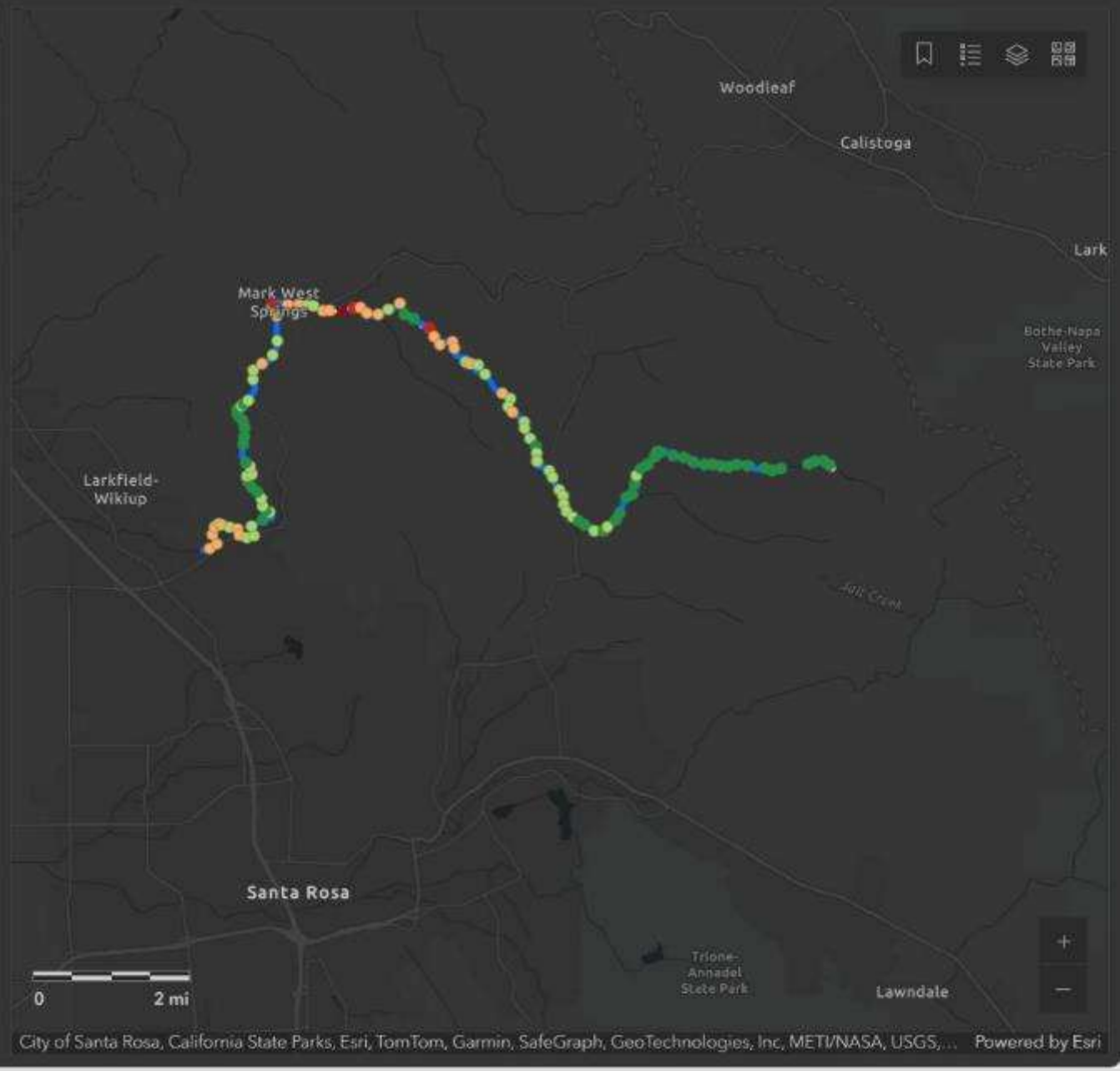
17.2 C

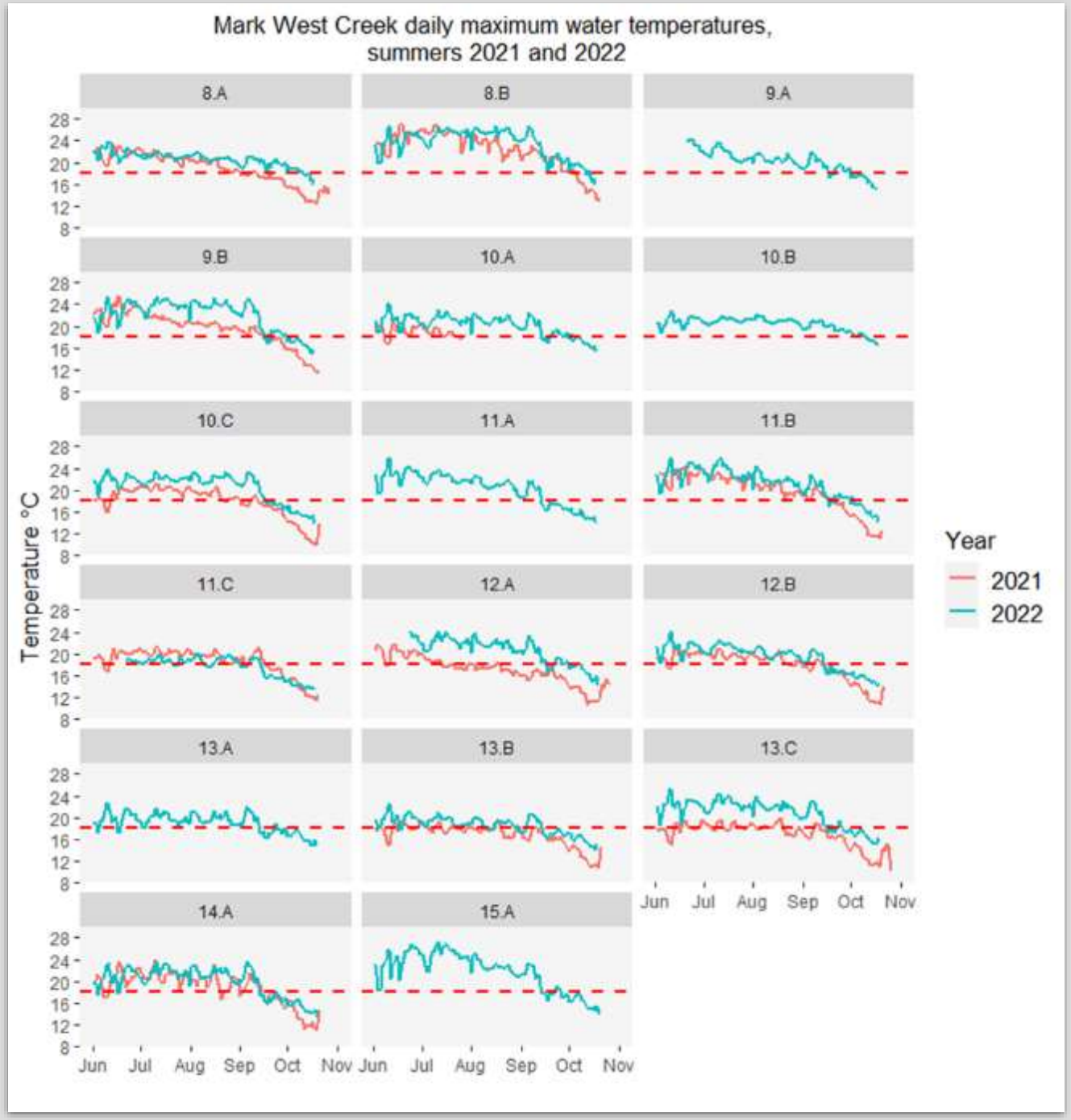
Avg. Pool DO

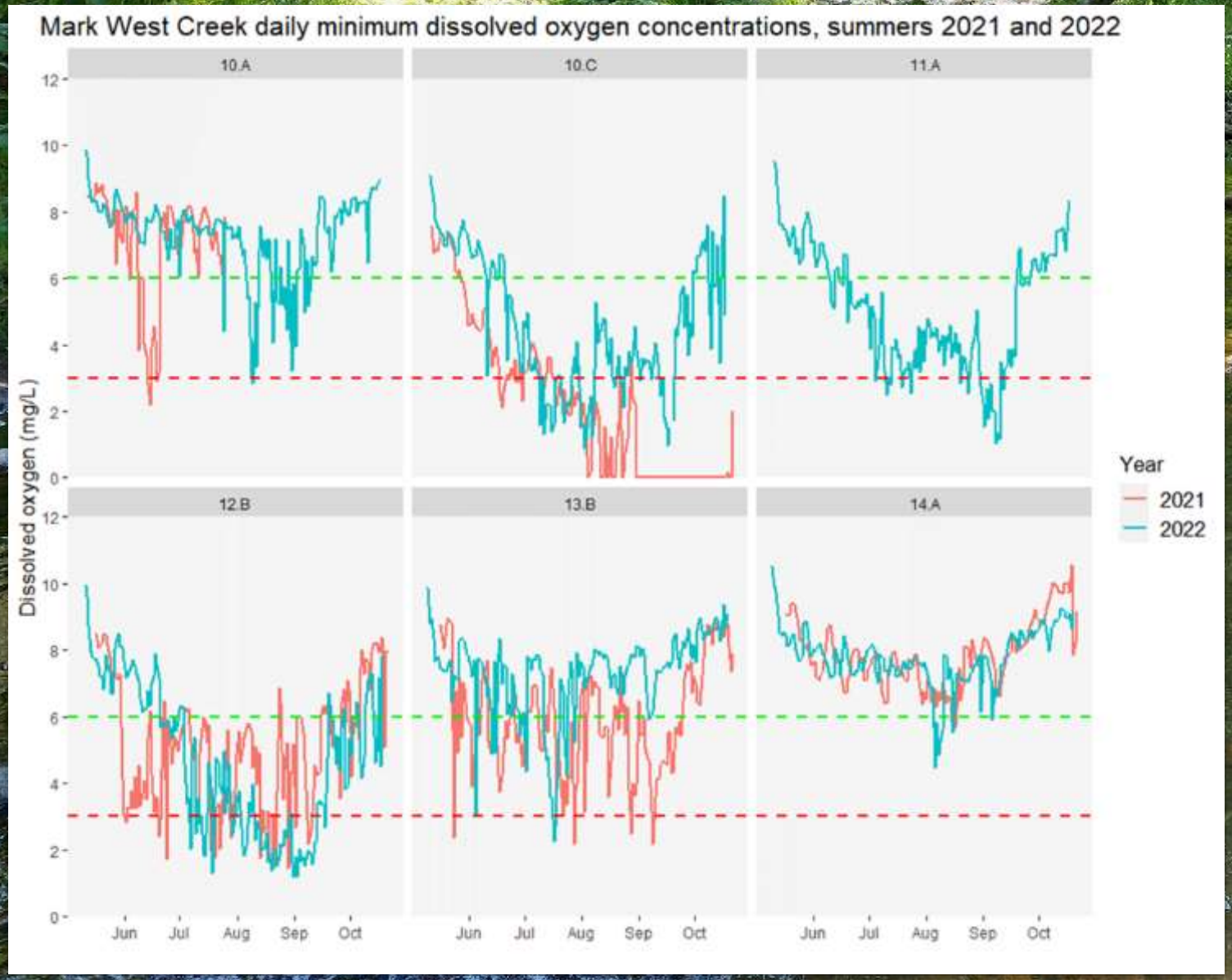
7.7 mg/L

Avg. Pool RCT

0.2 ft



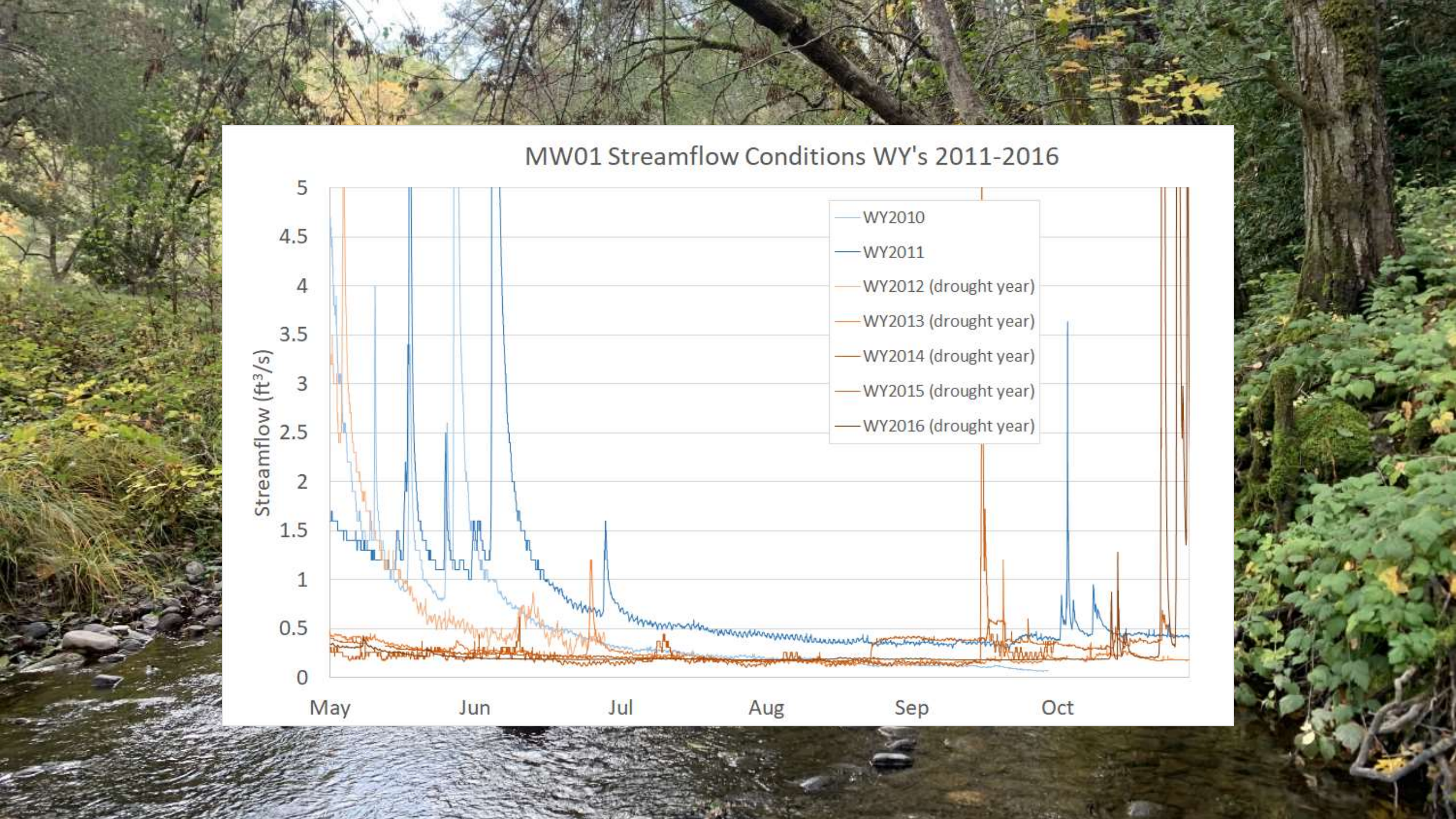

Mark West Creek daily maximum water temperatures,
summers 2021 and 2022
8.A
8.B
9.A
9.B
10.A
10.B
10.C
11.A
11.B
11.C
12.A
12.B
13.A
13.B
13.C
14.A
15.A
Temperature °C
28
24
20
16
12
8
Jun
Jul
Aug
Sep
Oct
Nov
Year
2021
2022

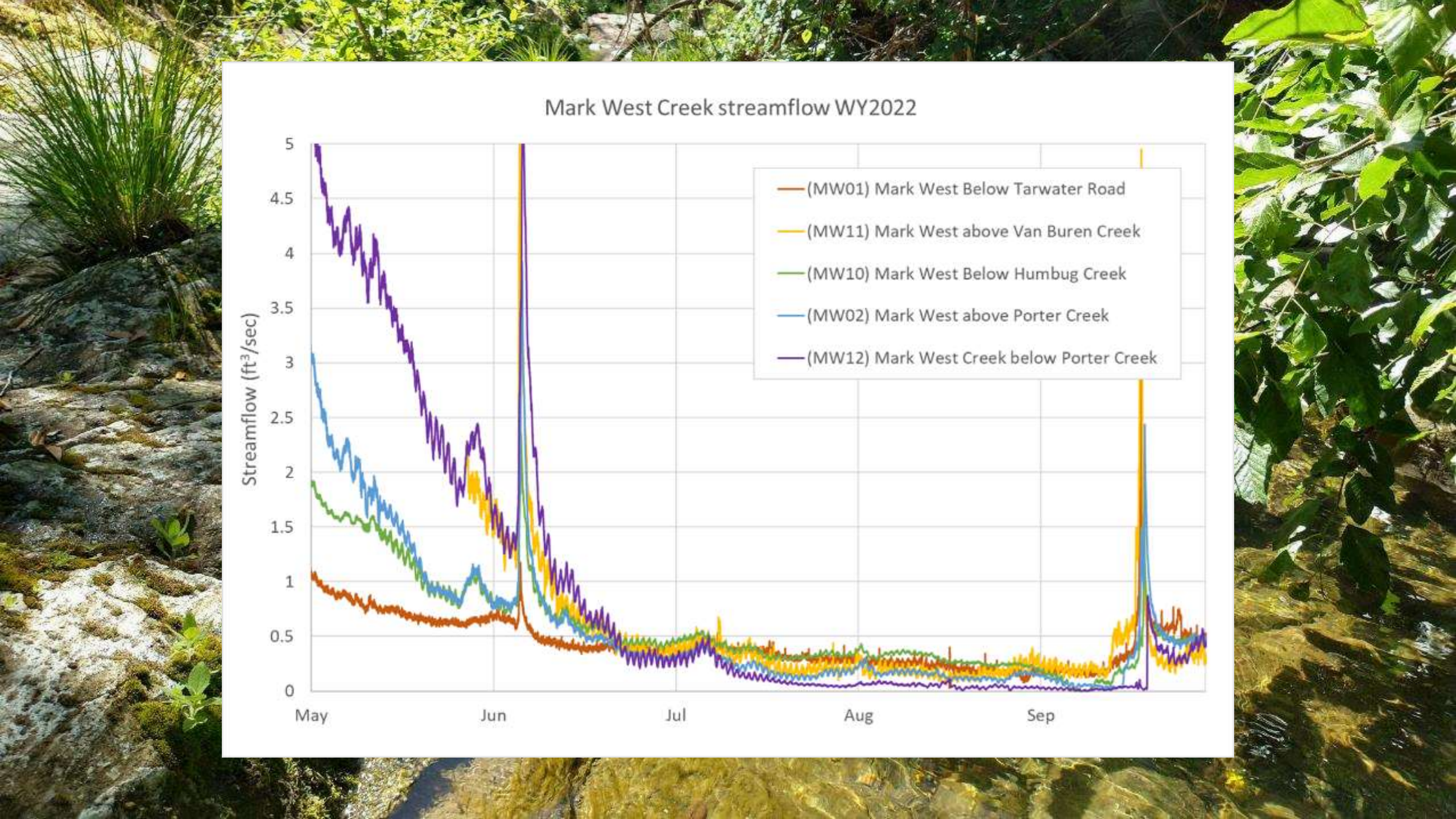


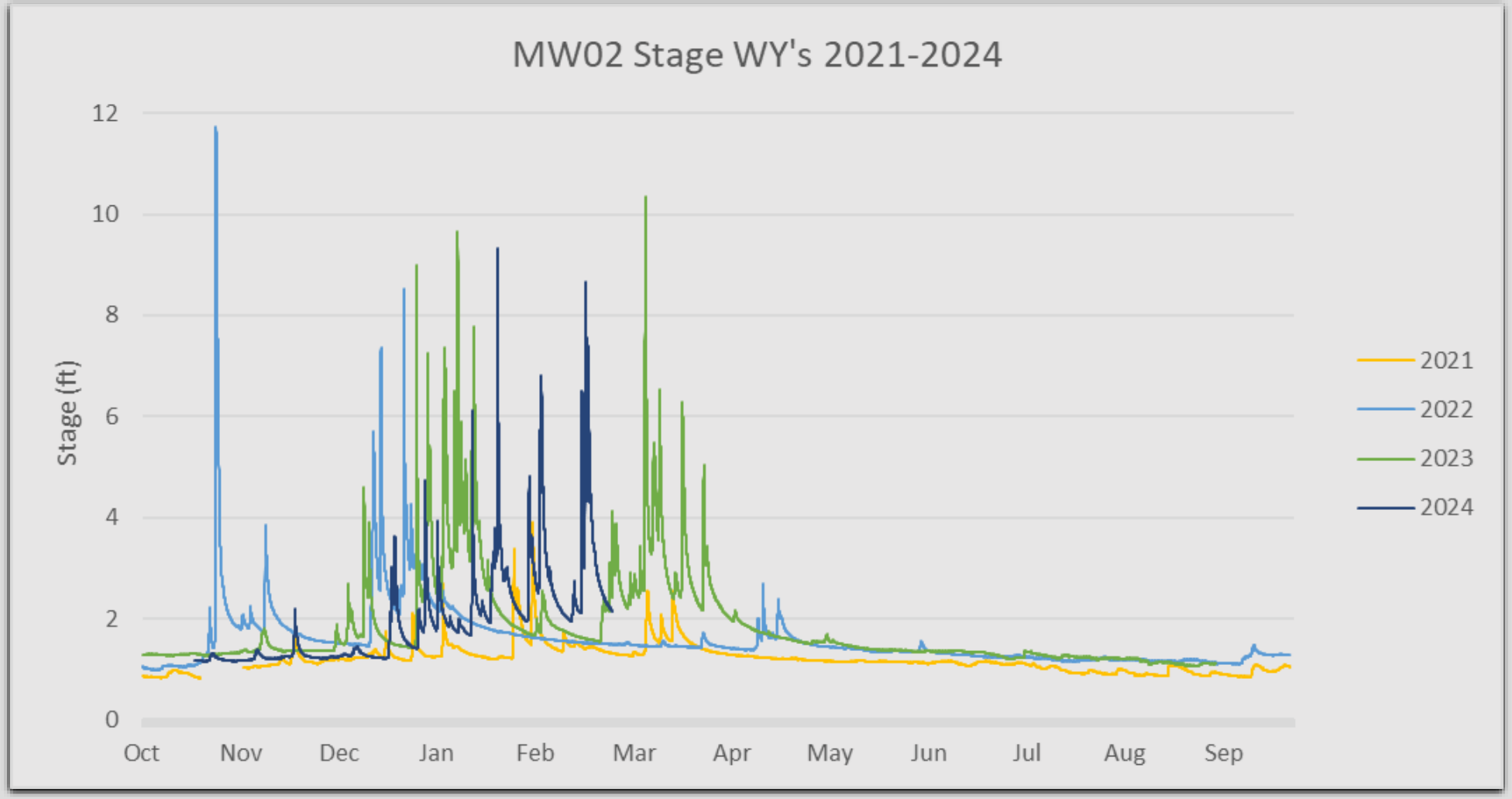
Site name	2021		2022	
	Days sampled	% of days DO objective met	Days sampled	% of days DO objective met
10.A	76	86%	161	87%
10.C	164	10%	161	31%
11.A	N/A	N/A	161	37%
12.B	159	29%	162	35%
13.B	159	46%	163	88%
14.A	159	99%	164	96%

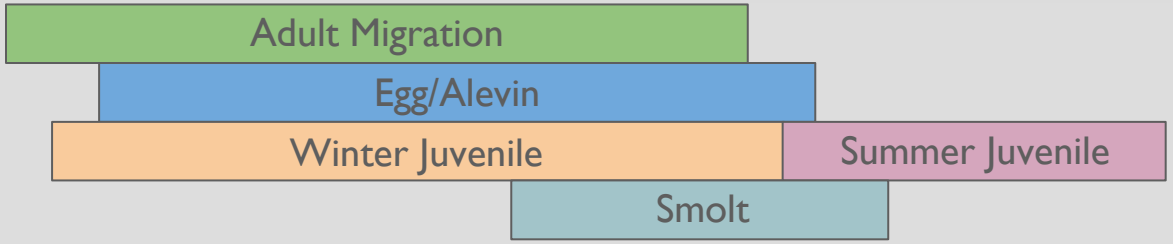
FLOW

Stream Gage Network

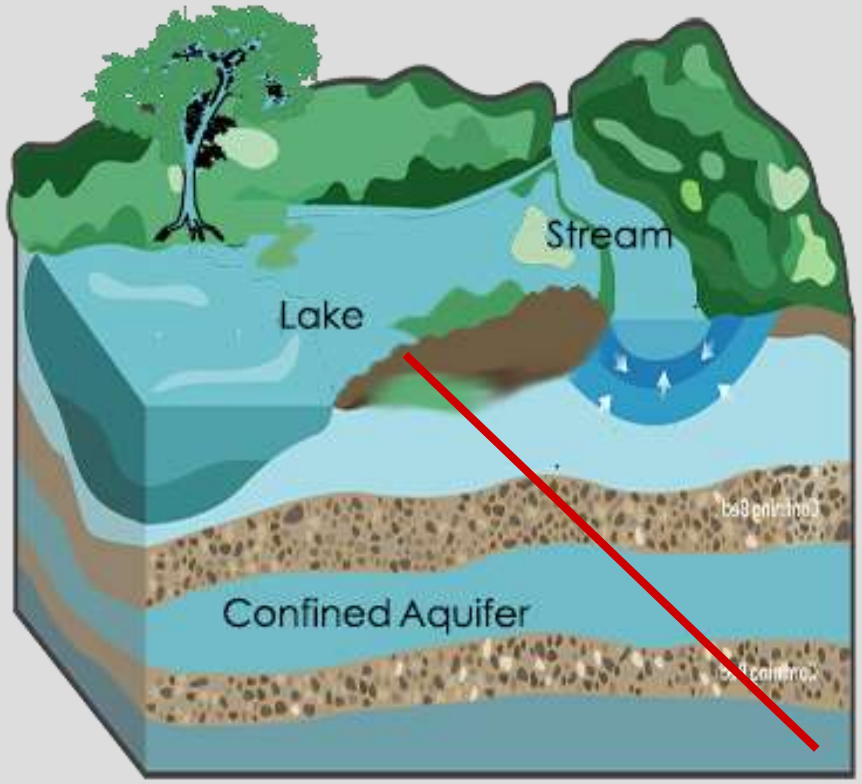

MW01 Streamflow Conditions WY's 2011-2016
Streamflow (ft³/s)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
May
Jun
Jul
Aug
Sep
Oct
WY2010
WY2011
WY2012 (drought year)
WY2013 (drought year)
WY2014 (drought year)
WY2015 (drought year)
WY2016 (drought year)

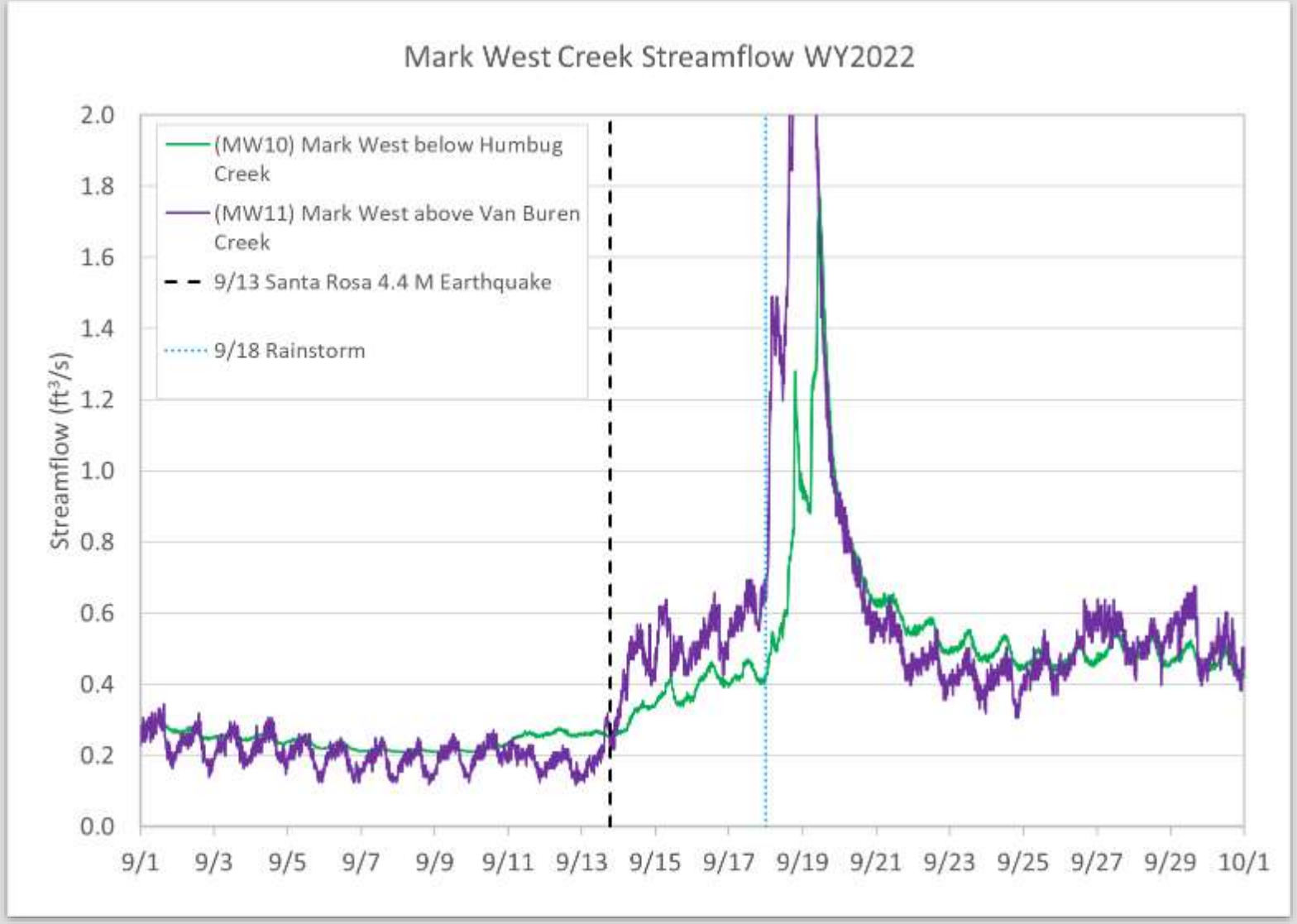

Mark West Creek streamflow WY2022
Streamflow (ft³/sec)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
May
Jun
Jul
Aug
Sep
(MW01) Mark West Below Tarwater Road
(MW11) Mark West above Van Buren Creek
(MW10) Mark West Below Humbug Creek
(MW02) Mark West above Porter Creek
(MW12) Mark West Creek below Porter Creek


MW02 Stage WY's 2021-2024
Stage (ft)
12
10
8
6
4
2
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
2021
2022
2023
2024


Adult Migration
Egg/Alevin
Winter Juvenile
Summer Juvenile
Smolt

Earthquake!


Stream
Lake
Confined Aquifer


Mark West Creek Streamflow WY2022
(MW10) Mark West below Humbug Creek
(MW11) Mark West above Van Buren Creek
9/13 Santa Rosa 4.4 M Earthquake
9/18 Rainstorm
Streamflow (ft³/s)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
9/1
9/3
9/5
9/7
9/9
9/11
9/13
9/15
9/17
9/19
9/21
9/23
9/25
9/27
9/29
10/1

TANKS

Gateway to landowner/manager engagement

Tank Projects in Mark West

Water Source

- Rainwater
- Well water
- Spring water
- Direct diversion water

Uses

- Non-potable/Potable
- Irrigation
- Fire Protection
- Livestock
- Dust Control
- Misc. Farm Operations

Benefits

- Streamflow Enhancement
- Water security
- Fire protection
- Landowner/manager engagement

Key Projects

Coho Partnership (2009-2022)

- NFWF
- 5 projects
- 125,000 gallons

WCB Streamflow Enhancement Model

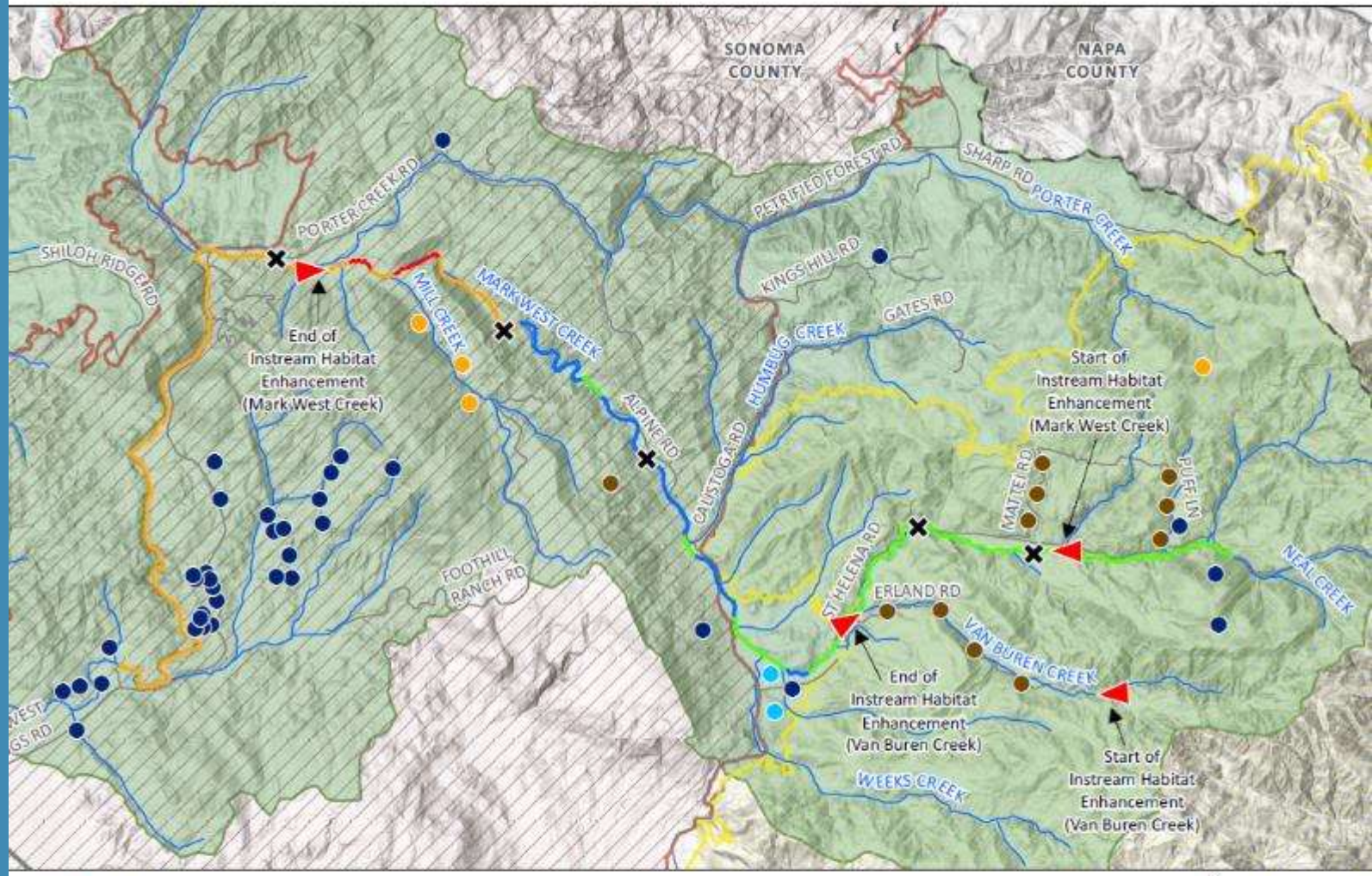
- Detailed flow model of upper Mark West
- Identified key Coho habitat reaches

WCB Streamflow Enhancement (2020-2023)

- 7 projects
- 160,000 gallons

BEYOND

- Tanks as a gateway
- Fire - fish - flow
  - Flow enhancement & emergency preparedness
  - Storage & fire resilient landscapes



THANK YOU!
Q&A

TROUT UNLIMITED

SONOMA RESOURCE CONSERVATION DISTRICT

Sea Grant California

Collaboration in the Laguna de Santa Rosa Watershed

Regulators and the Regulated Community

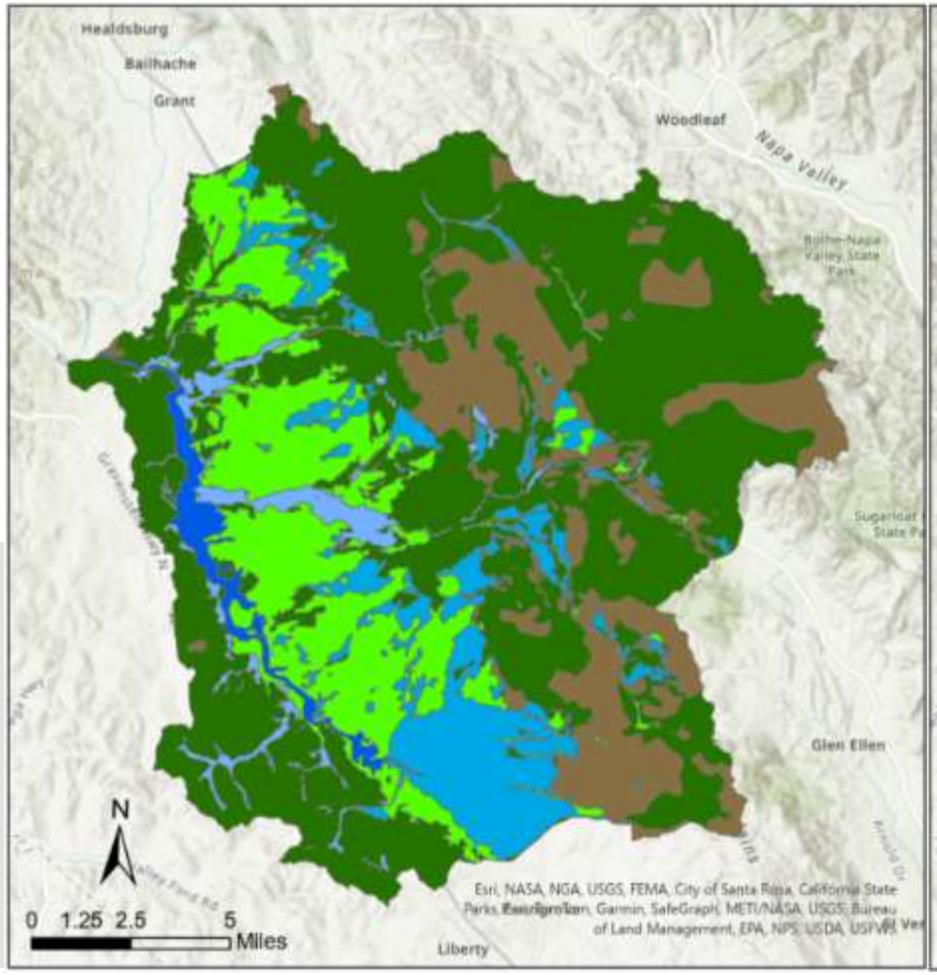
Realizing a Vision of Multi-Benefit Restoration in the Laguna de Santa Rosa/Mark West Creek Watershed workshop

March 27, 2024

Outline

- Recap of Watershed Impairments
- Water Quality Trading
- Benefits of Credit Trading
- Project Funding
- Collaborative Next Steps

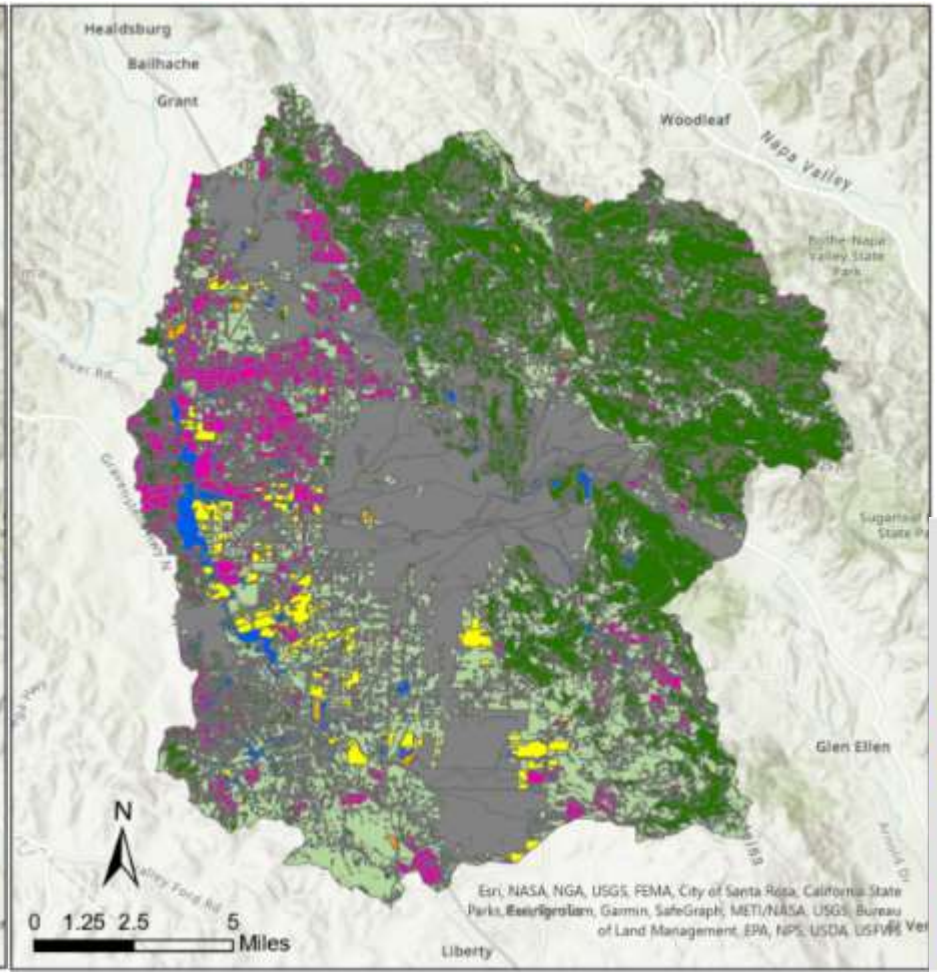
Drivers of Impairment



Pre-Colonization

Land Cover

- Forest
- Shrubs & Grasses
- Oak Savanna & Vernal Pool Complex
- Riparian Wetland
- Perennial Wetland
- Open Water

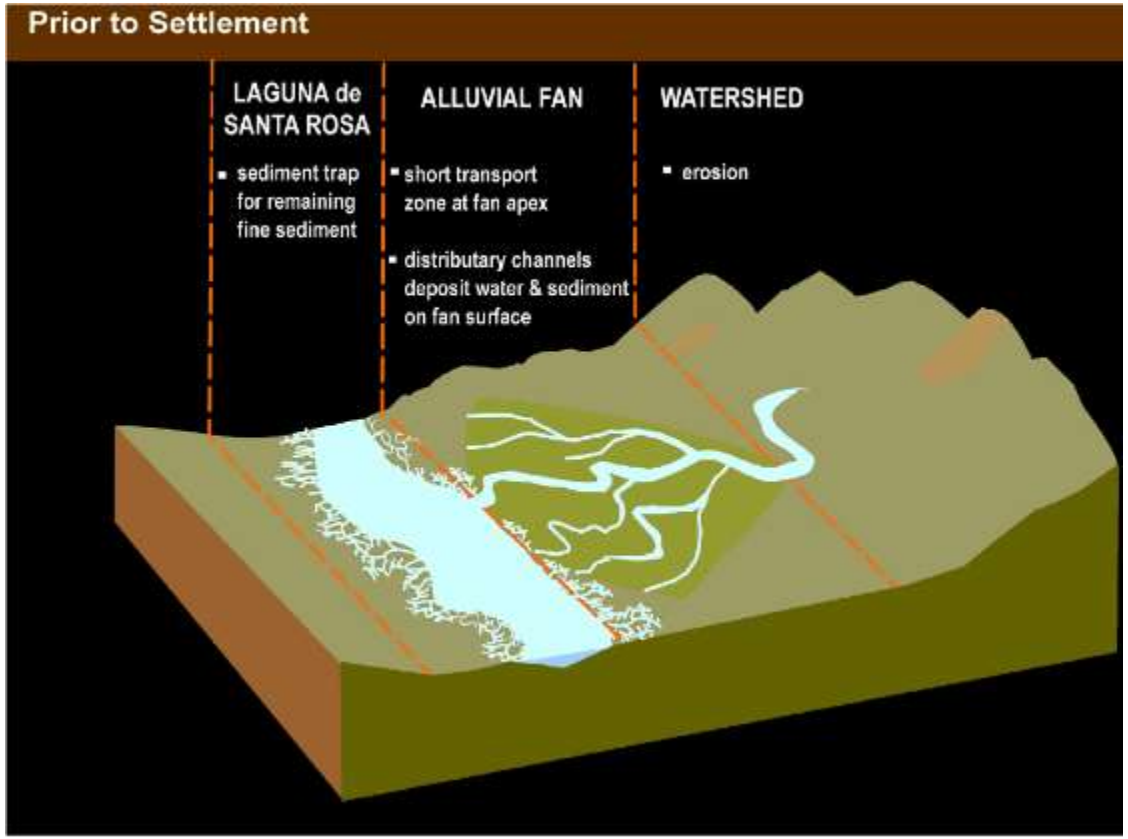


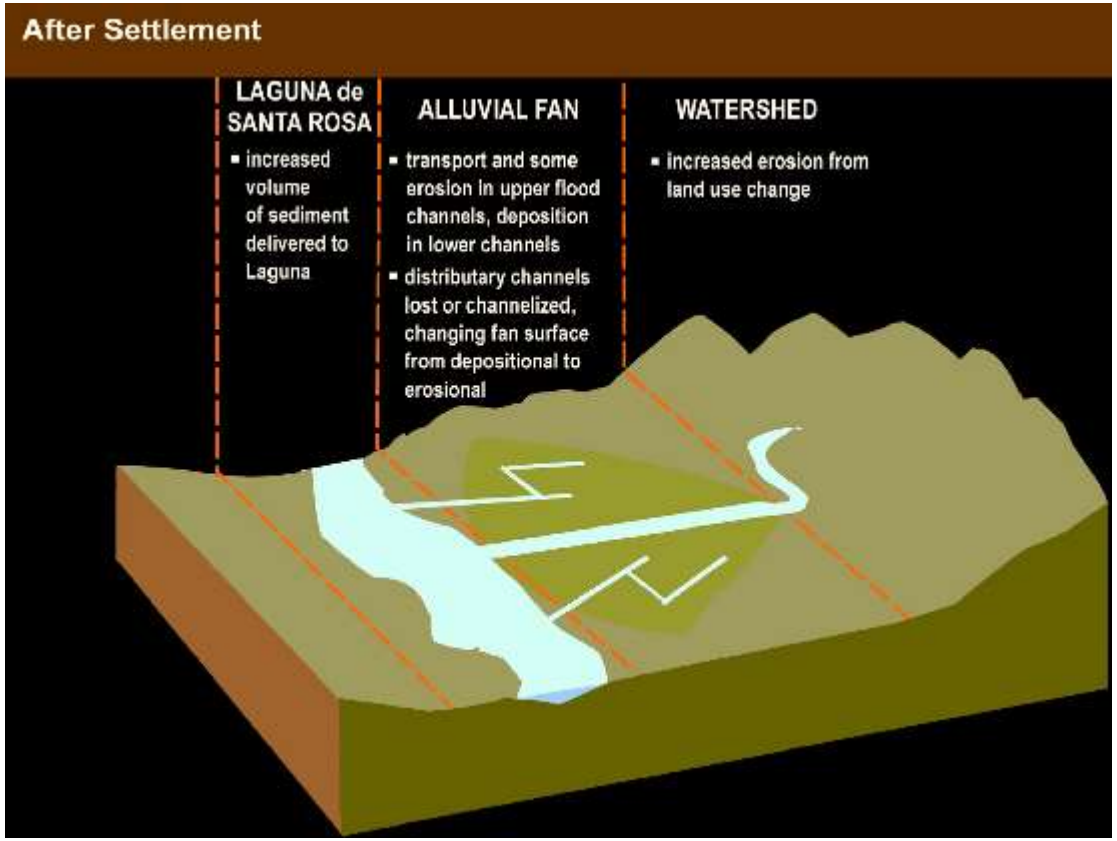
Modern

Land Cover

- Developed
- Barren
- Cropland
- Pasture/Hay
- Shrub
- Herbaceous
- Forest
- Water/Wetland

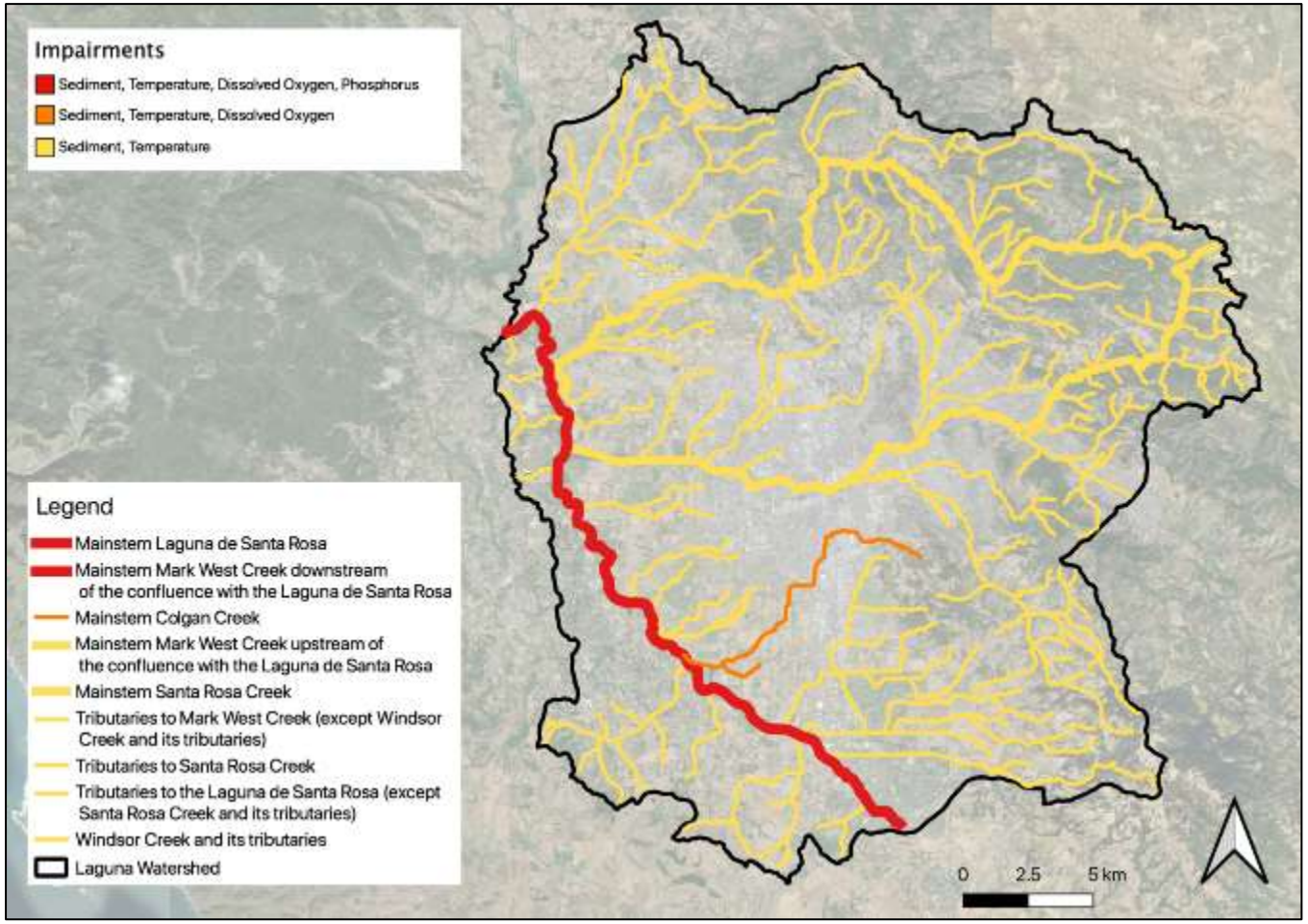
Drivers of Impairment





From Sloop et al., 2007

Scope of Impairment



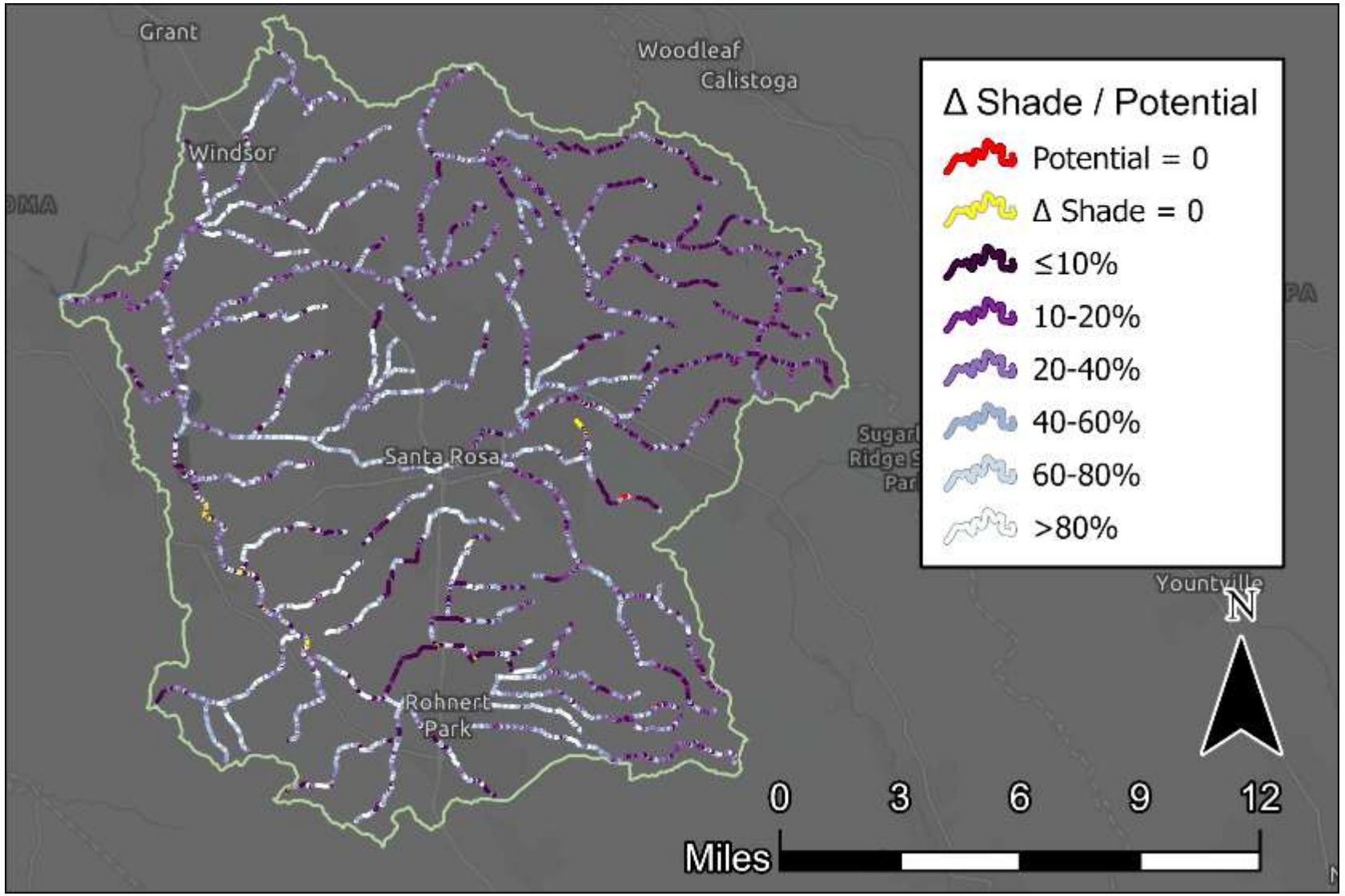
Pollutants

- Sediment
- Phosphorus
- Temperature
- Dissolved Oxygen
- Nitrogen (not mapped)

Scope of Impairment

	Sediment (ton/yr)	Phosphorus (kg/yr)	Nitrogen (kg/yr)
Total Load	91, 368	93,734	367,210
Loading Capacity	9,573	17,883	96,919
Reduction Needed	81,796	75,852	270,291
% Reduction Needed	**89.5 %**	**80.9 %**	**73.6 %**

Shade


Grant
Woodleaf
Calistoga
Windsor
Santa Rosa
Rohnert Park
Yountville
Δ Shade / Potential
Potential = 0
Δ Shade = 0
≤10%
10-20%
20-40%
40-60%
60-80%
>80%
N
0
3
6
9
12
Miles

Addressing Impairment

Why is a Trading Framework Necessary?

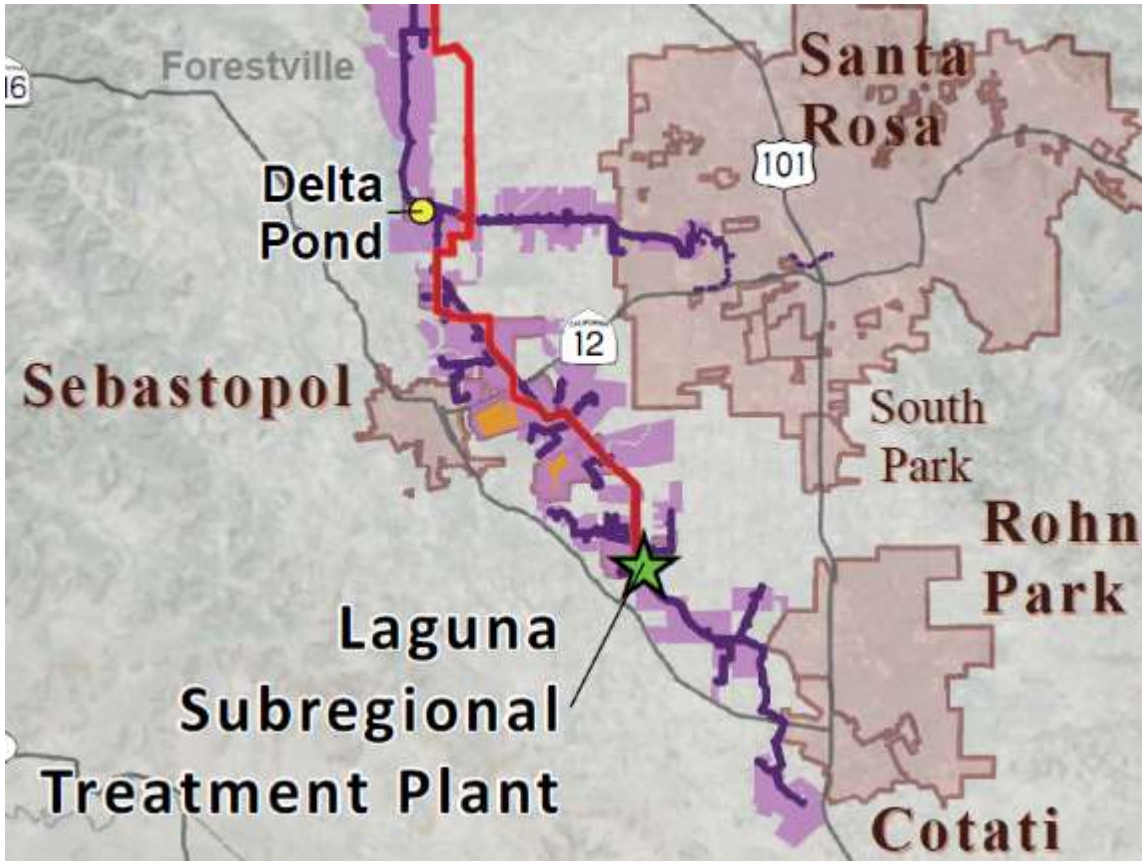
- Diet and exercise
- Provides early implementation opportunities
- Multi-benefit restoration
- Provides ecological uplift
- Potential for cost efficient compliance tool

Laguna Treatment Plant

- Generate 6-8 billion gallons of recycled water per year
- Have 1.4 billion gallons of recycled water storage
- Beneficially reuse all created recycled water
- In wet years amount of water needing treatment increases and may necessitate a discharge into the Laguna Watershed

Discharge Compliance Strategy

1. Maximize reuse/minimize discharges
2. Decrease phosphorus in recycled water
3. Offset discharges via water quality trading



Recycled Water Program

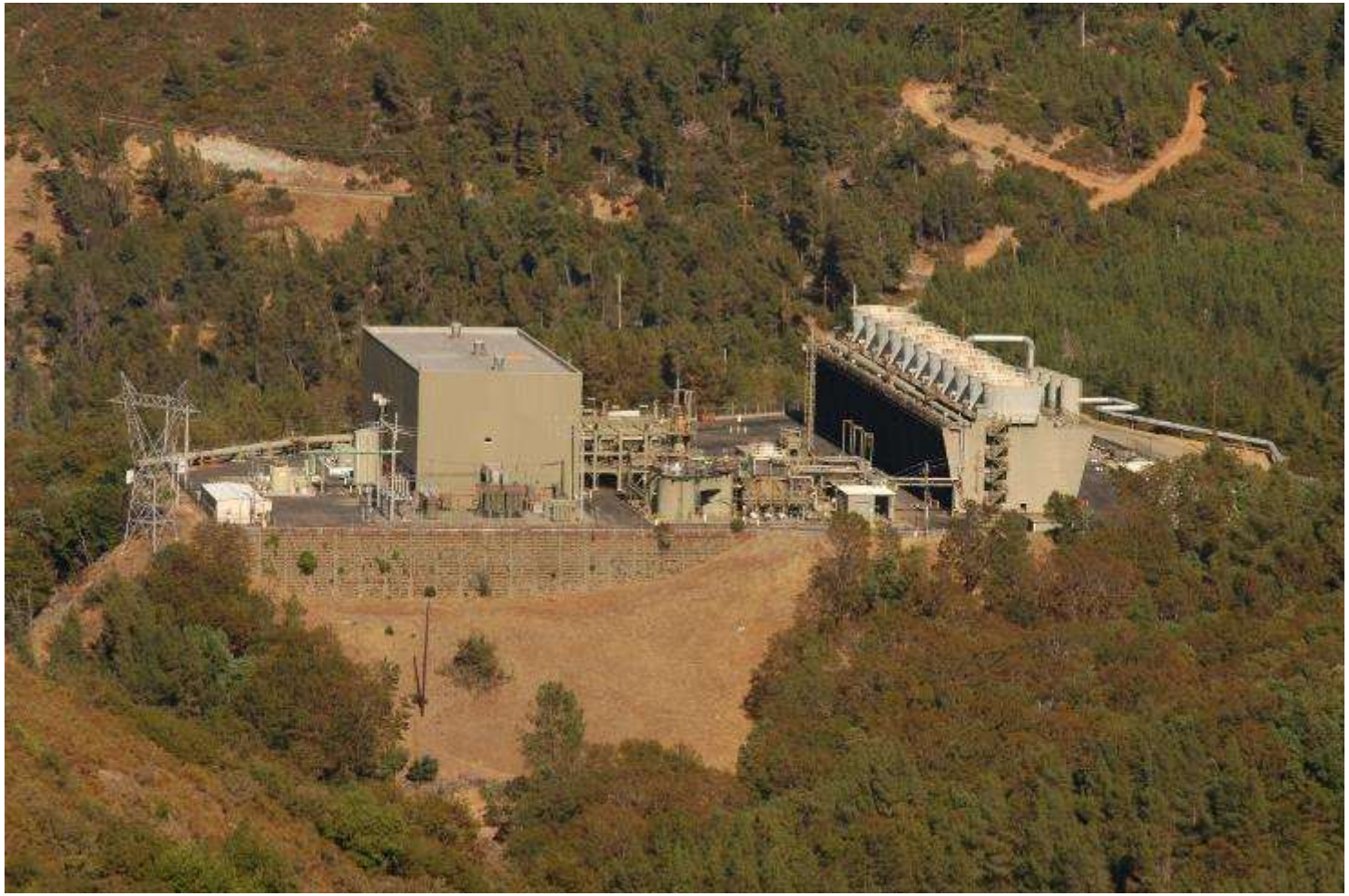
75%: Geysers Steamfields

(All Year)

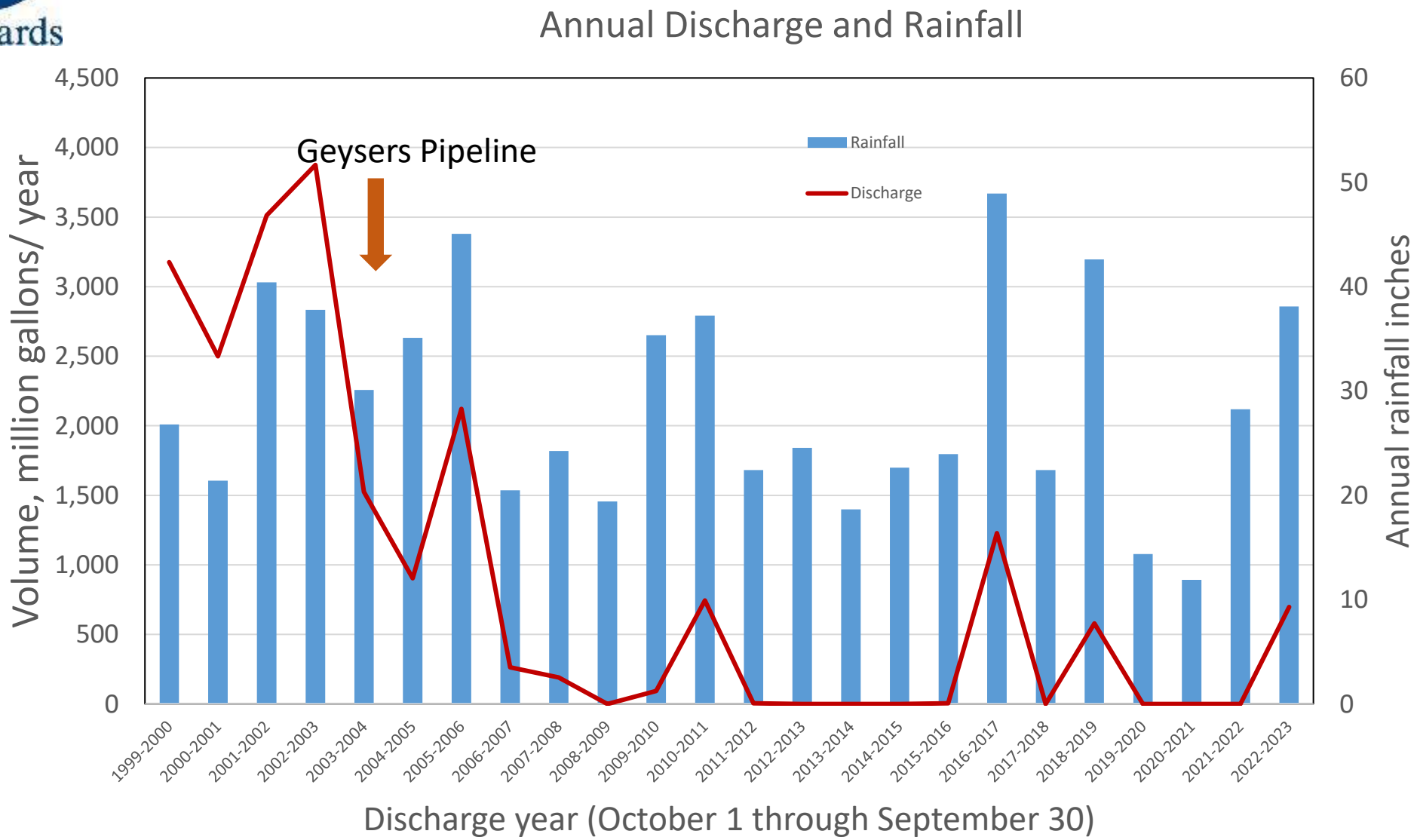
25%: Irrigation

- Agriculture
- Urban
  - ~ Santa Rosa
  - ~ Rohnert Park

(Growing Season)

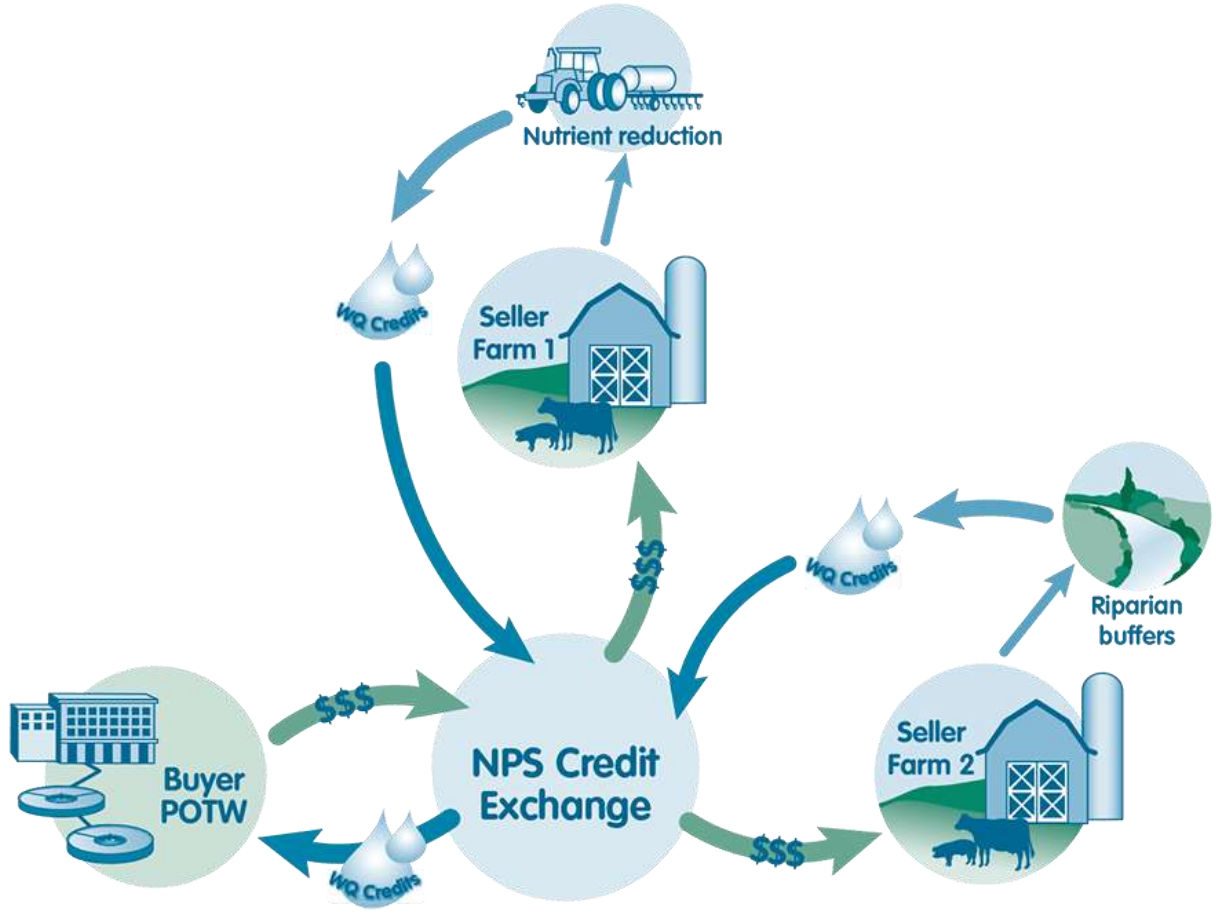


Recycled Water Discharge



What Is Water Quality Trading?

- Discharger has limits they cannot meet through process changes
- The discharger executes projects that remove pollutants from other sources “controlled pollutants”
- Compare discharged pollutant loads to controlled pollutant loads
- No-net loading: amount controlled > amount discharged



Nutrient Regulations Water Quality Trading 1.0

- 2006 NPDES Permit for Wastewater Discharge no net load for Nitrogen and Phosphorus
- 2008 City and Regional Board Developed Nutrient Offset Program

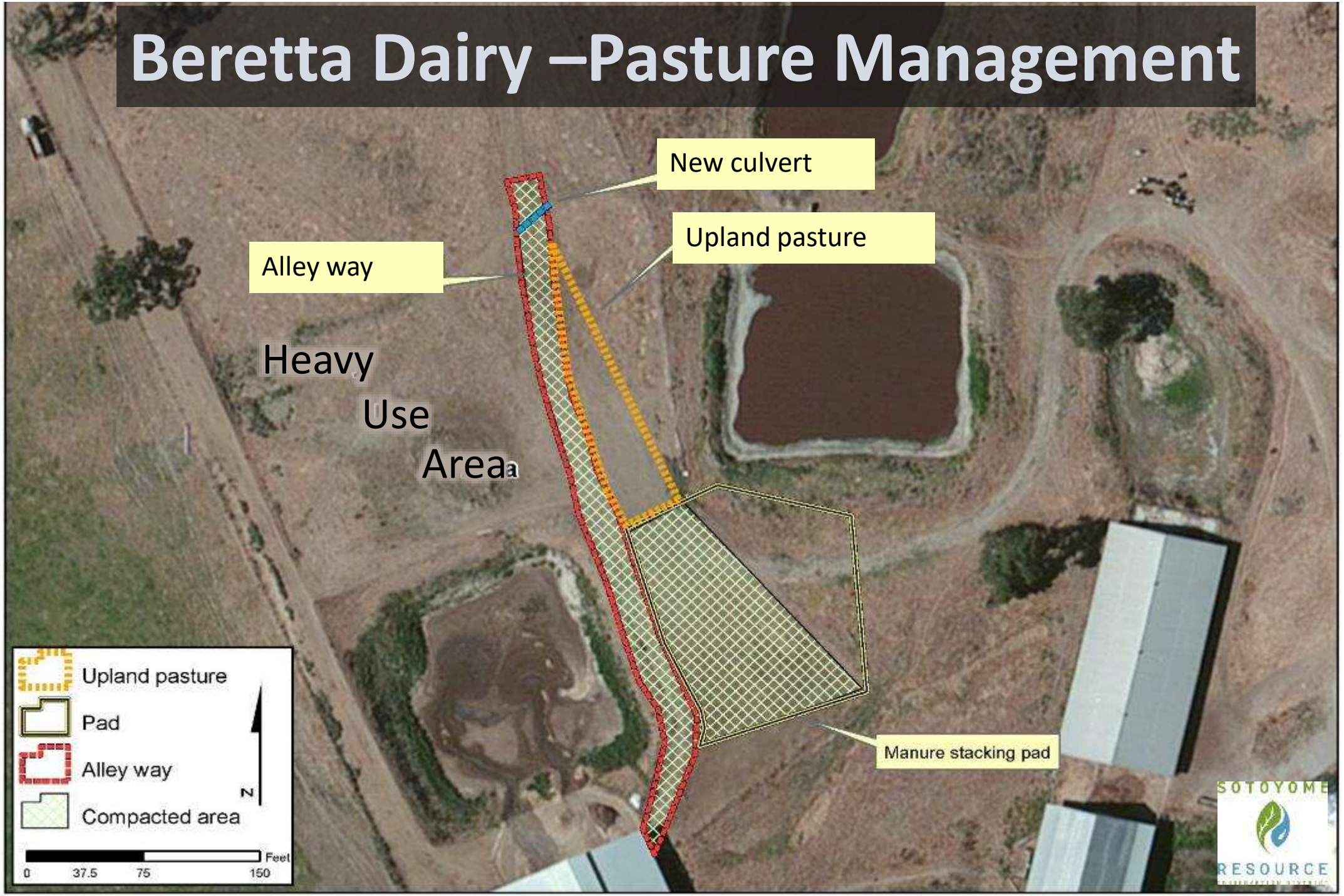
3 Nutrient Offset Projects Implemented

1) **Beretta Dairy –**
   Manure & Pasture Management

2) **Pepperwood Nature Preserve –**
   Road & Drainage Improvements

3) **Ocean View Dairy –**
   Manure Removal & Land Application

Beretta Dairy –Pasture Management



Beretta Dairy – Alley Way

Impairments ● WQTF ● Next Steps

Before

After

Pepperwood Preserve – Road & Drainage Improvements

Pepperwood Preserve – Road & Drainage Improvements

Ocean View Dairy - Manure

Costs of WQT 1.0

Project	Cost	Total Phosphorus Credits	Cost per Credit
Beretta	$508,250	7,600	$67
Pepperwood	$512,850	10,964	$47
Ocean View	$474,000	23,345	$20
Overhead	$375,000	0	NA
Totals	**$1,870,100**	**41,909**	NA

WQT 1.0 Drawbacks

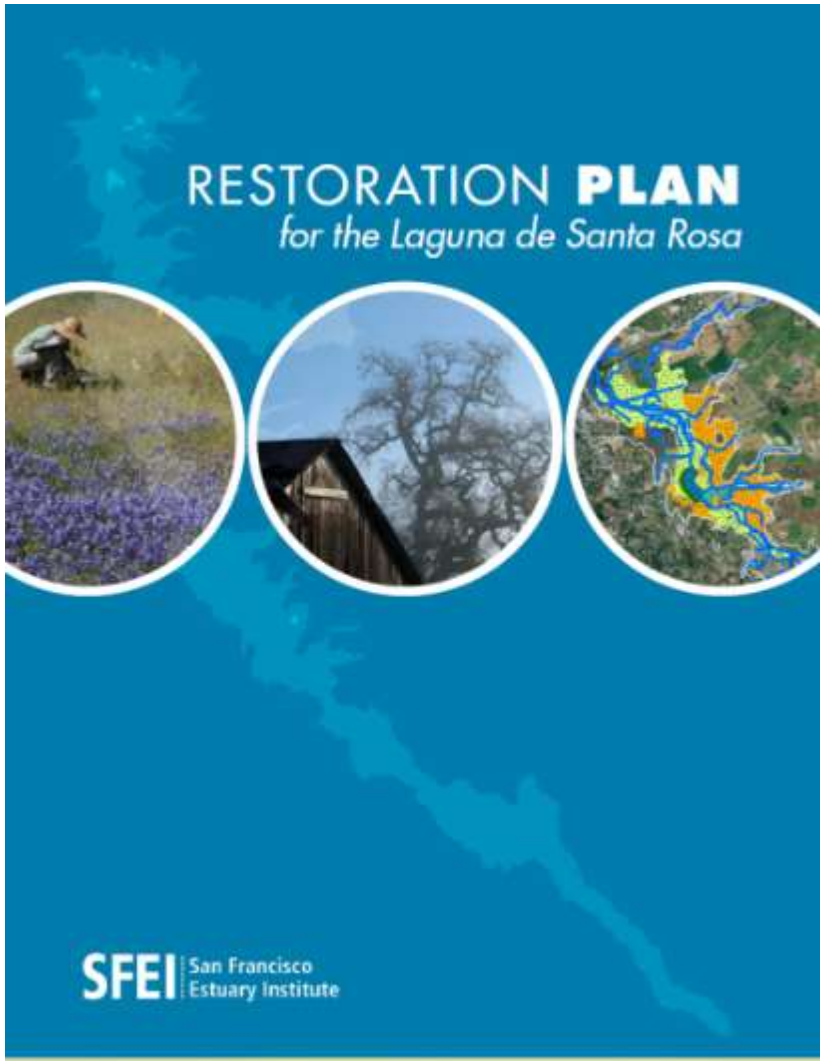
- Program took 3-8 years to develop projects
- Credits last 3 years
- Most small projects (3,000 - 23,000 credits)
- Ecological restoration projects not favored
- *Ludwigia* removal project rejected by Regional Board

Water Quality Trading Framework WQT 2.0

- Developed in coordination with EPA, Regional Board, and Sonoma RCD
- Streamlined projects by allowing a faster track for projects that already have pre-qualified practices
- Increased potential credit life from 3 to 10 years
- Still limits projects to small or medium size (8,000-25,000 credits)

2020 modifications to WQTF of 2018 WQT 3.0

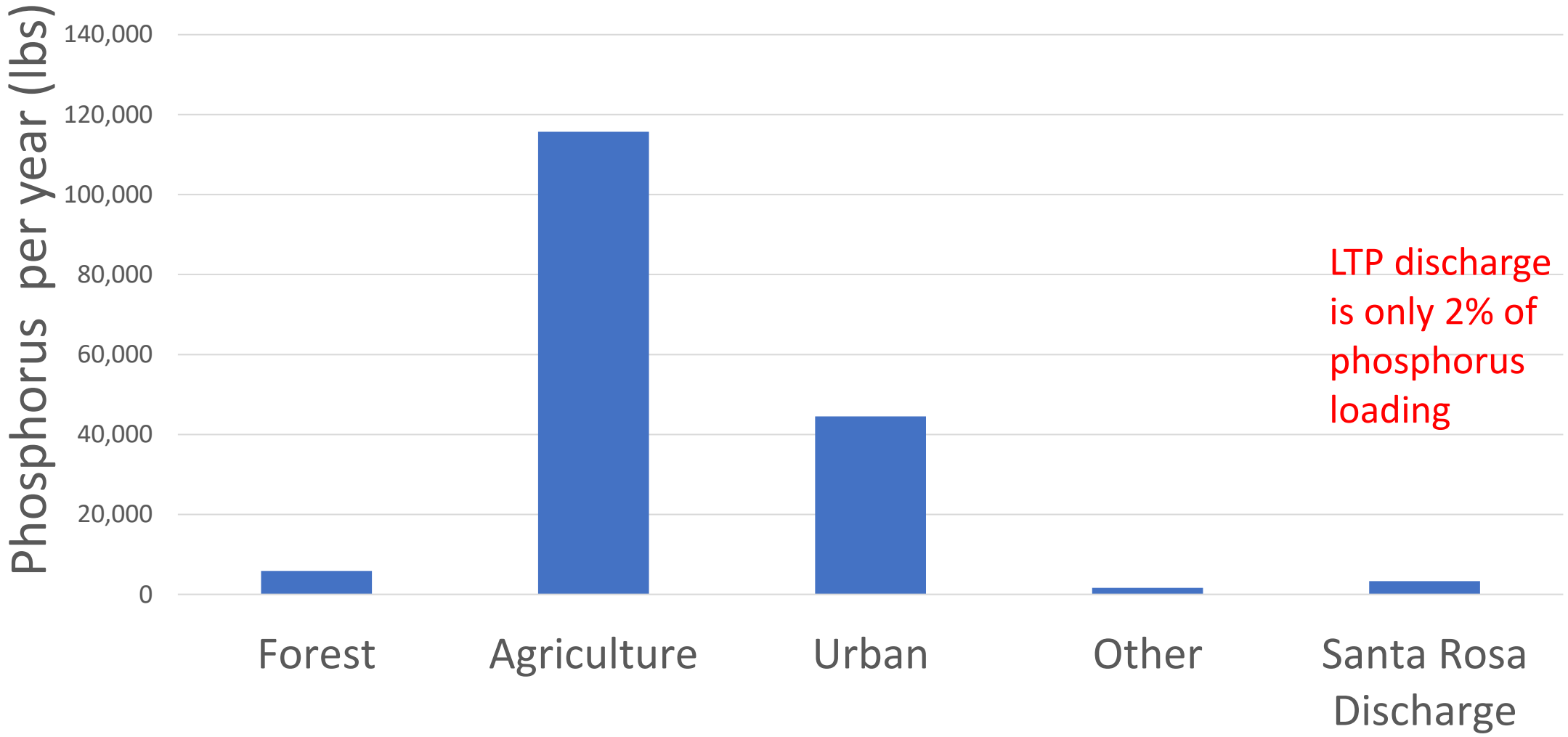
- Developed permanently protected environmental enhancement project category (PPEEP) **Credits last in perpetuity**
- Allows for large scale projects to be developed
- Creates incentives creek restoration on protected lands



Water Quality Trading Program Comparisons

WQT Type	Trading Ratios	Credit Life	Incentive for Restoration
1.0	1:1	3 years	No
2.0	2.5:1	3-10 years	Maybe small projects
3.0	Varies 2.5:1 – 1.5:1	3- in perpetuity	Yes. Long credit lives, reduced trading ratio

Annual Input of Phosphorus to Laguna



Collaboration

Evolution of Trading Programs (recap)

1. SRNOP
2. 2018 WQTF
3. 2021 WQTF
4. Upcoming Reconciliation Plan: opportunity for enhanced collaboration

Collaboration

Reconciliation Plan

- Regional Water Board's recovery plan
- Diet and Exercise

Individual Compliance Plan

- Option to focus only on-site
- Primarily diet-focused

Collaborative Compliance Plan (CCP)

- Option to include off-site projects
- Exercise-focused

Collaboration

Key Reconciliation Considerations

- Significant load reductions necessary
- Difficult to meet targets through on-site actions alone
- Collaborative approaches offer best chance for recovery

Pollutant	% Reduction Needed
Sediment	89.5 %
Phosphorus	80.9 %
Nitrogen	73.6 %
Temperature	Site-specific

Collaboration

Current Trading Program

- Project types: Only Phosphorus remediation
- Participants: Only Santa Rosa and Windsor WWTPs

Opportunity for Change

- Project types: Multi-benefit source control and restoration
  - Address Sed, P, N, Temp, DO, hydrology
- Participants: All interested partners

Timeline

Regional Water Board is seeking input from partners

- Level of interest in helping shape a CCP/form TAC
- Existing + potential resources and opportunities

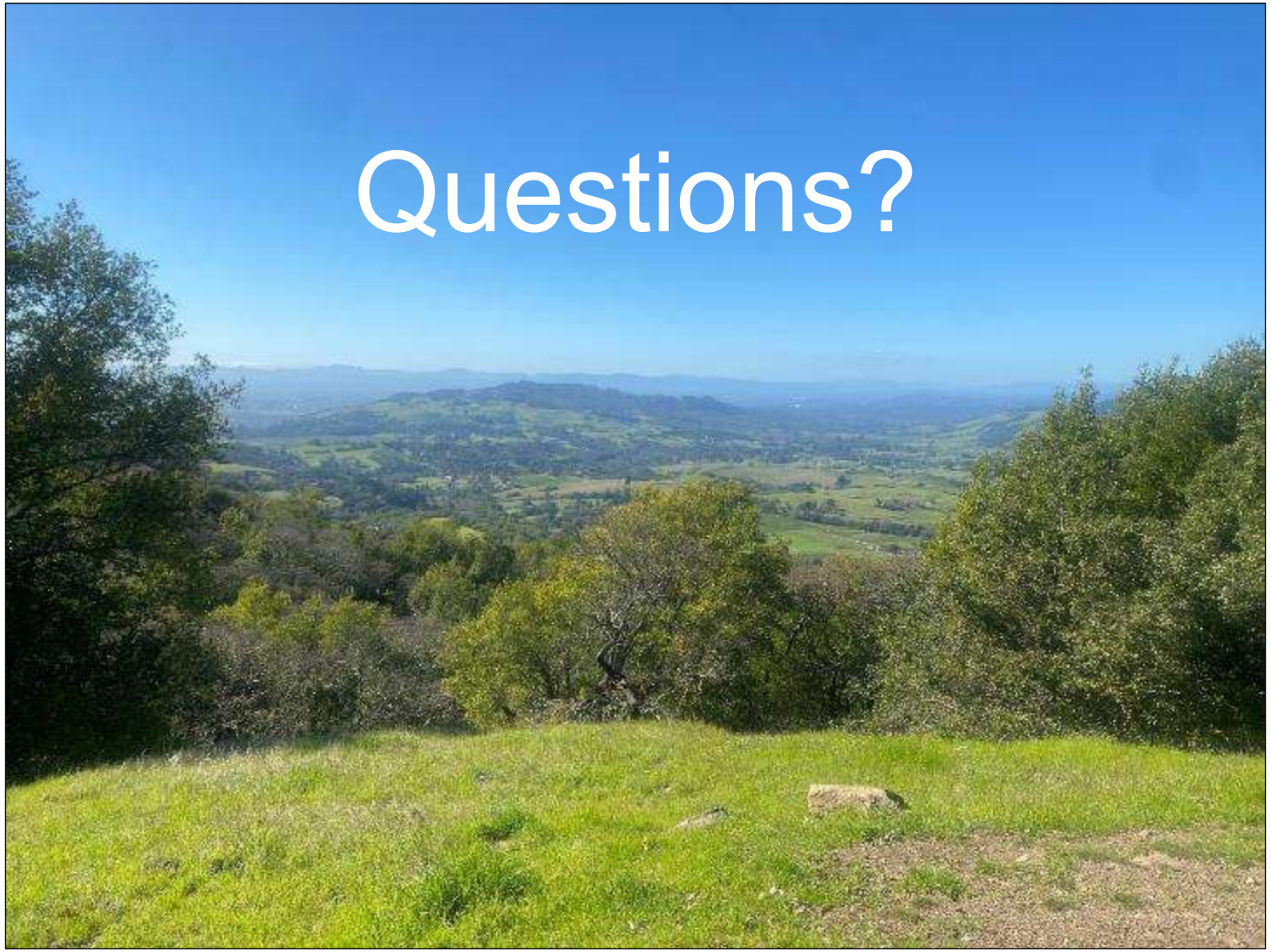
Timeline

- Regional Water Board Reconciliation Plan
  - CEQA scoping: Spring 2024
  - Form TAC: Summer 2024
  - Public review: Summer 2025
  - Regional Water Board hearing: Spring 2026
- City will continue developing projects to meet permit requirements and participate in developing future regulations

Contact Us

Regional Water Board
Matt Graves, Engineering Geologist
Tel: 707-576-2831
Email: matt.graves@waterboards.ca.gov
Email subscriptions: Use “Stay Informed” link on North Coast Water Board’s TMDL page and choose the Laguna option

City of Santa Rosa
Sean McNeil, Deputy Director of Environmental Services
Tel: (707) 543-3938
Email: smcneil@srcity.org


Questions?

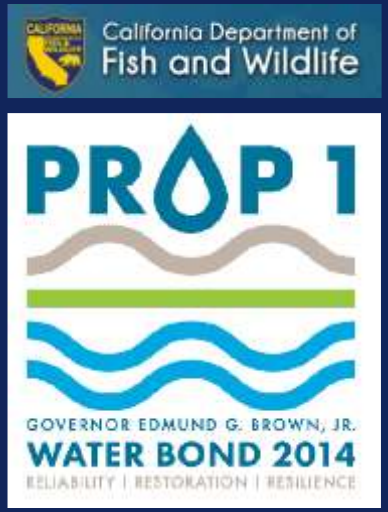
A Look to the Future: Restoration Plan for the Laguna de Santa Rosa

SALMONID RESTORATION FEDERATION
LAGUNA FOUNDATION, HERON HALL
MARCH 27, 2024

Neil Lassettre, PhD, Sonoma Water

Scott Dusterhoff, San Francisco Estuary Institute

Project Background



Sonoma Water

- **Overall Goal**
  Improve watershed functioning and restore lost ecological functions

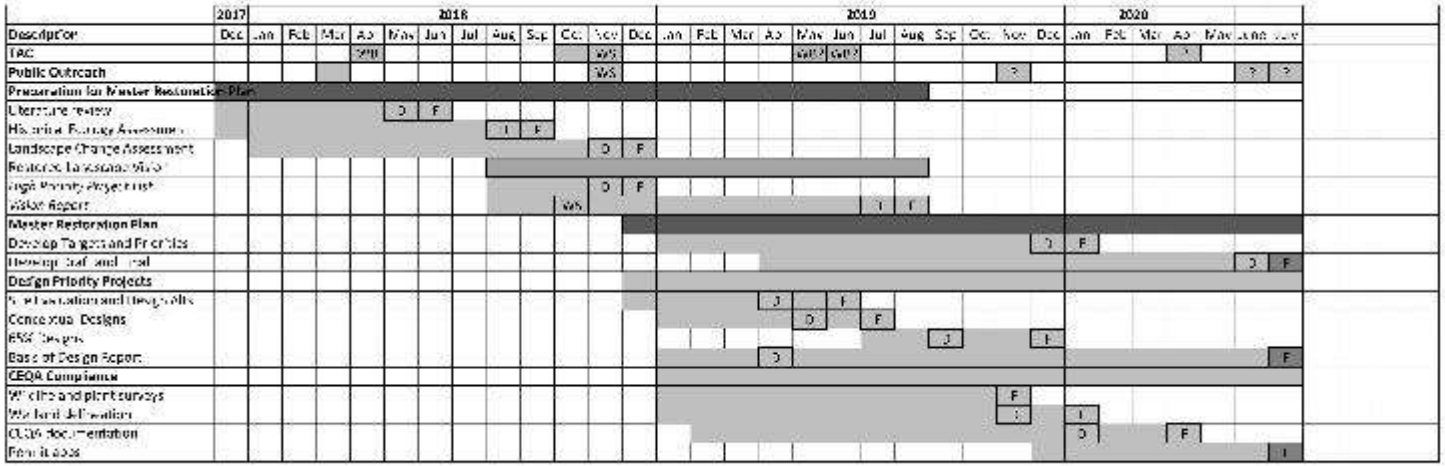
- **Funders**
  CDFW Prop 1 Grant (2016) and Sonoma Water funds

- **Partners**
  Sonoma Water, San Francisco Estuary Institute (SFEI), Laguna Foundation

- **Products**
  1) Restoration Vision
  2) Restoration Plan
  3) High Priority Project
  4) CEQA documentation

Project timeline

December 2017 → July 2020

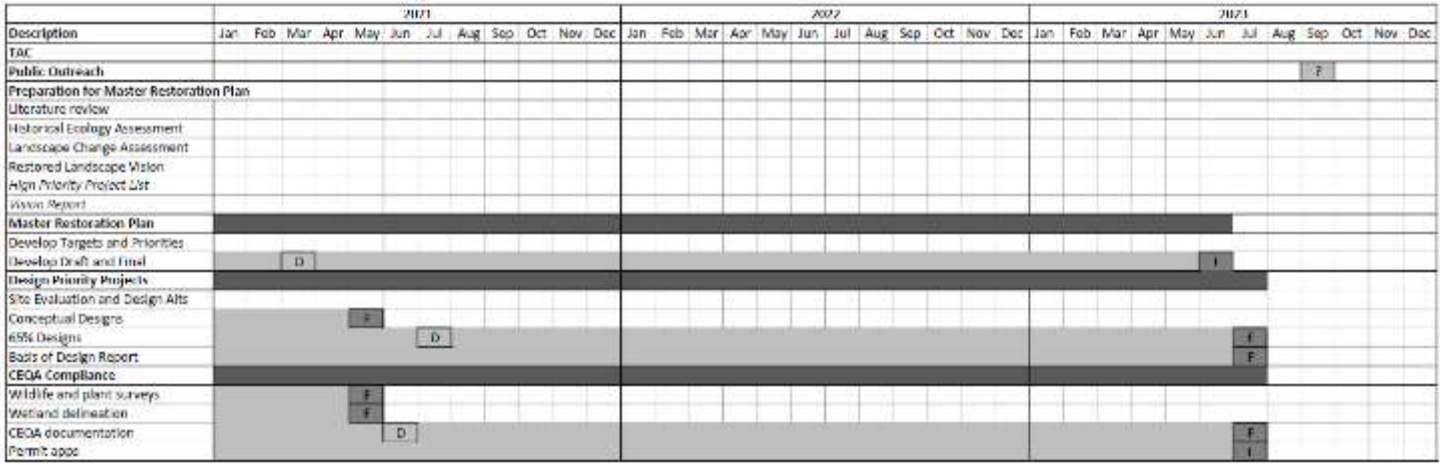


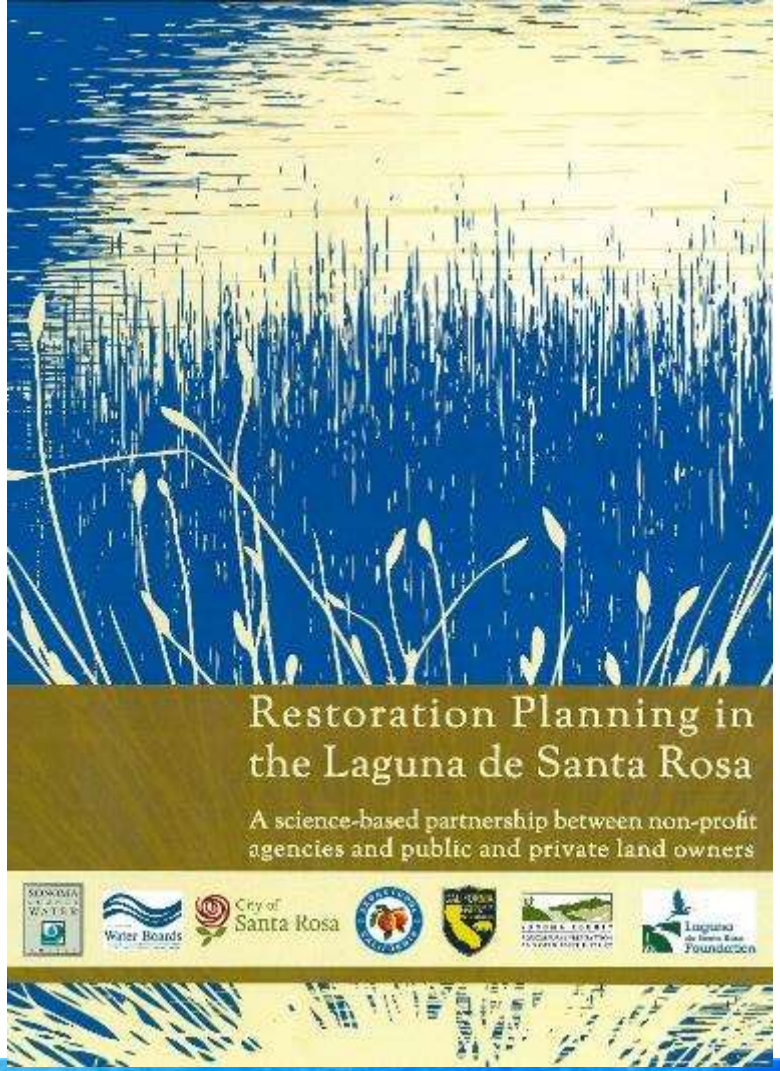
Project timeline

December 2021

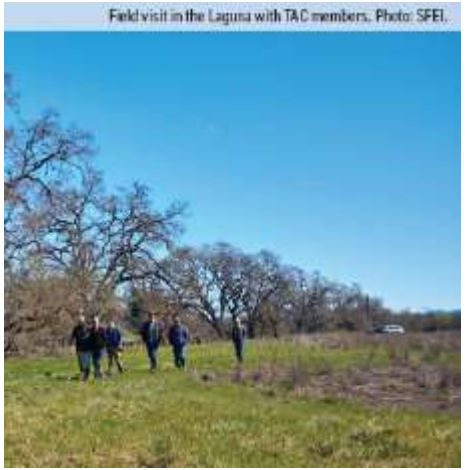
Project timeline

August 2023




Restoration Planning in
the Laguna de Santa Rosa
A science-based partnership between non-profit
agencies and public and private land owners
Water Boards
City of
Santa Rosa
Laguna
Foundation

Laguna Restoration Vision and Plan


Field visit in the Laguna with TAC members. Photo: SFEI.

Technical Advisory Committee (TAC)

- NMFS
- CSU Stanislaus
- Environmental Science Associates
- USDA and UC Davis
- UC San Diego and CA Sea Grant

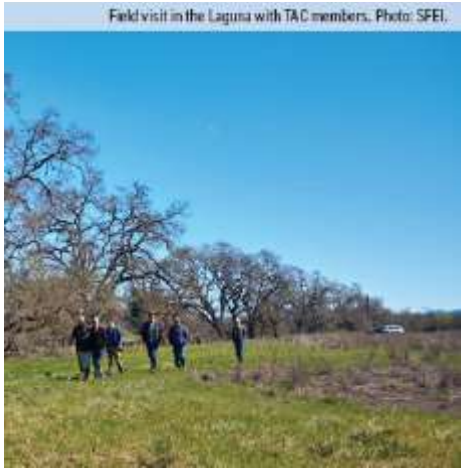
Management Advisory Committee (MAC)

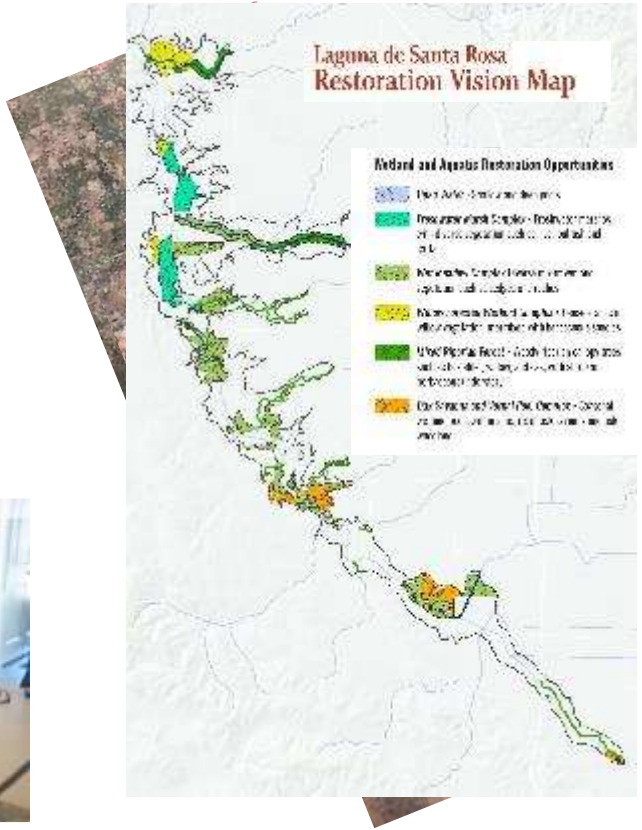
- City of Rohnert Park
- City of Santa Rosa
- Federated Indians of Graton Rancheria
- Gold Ridge RCD
- Permit Sonoma
- Sonoma County Ag + Open Space
- Sonoma County Regional Parks
- Sonoma RCD

Landowners

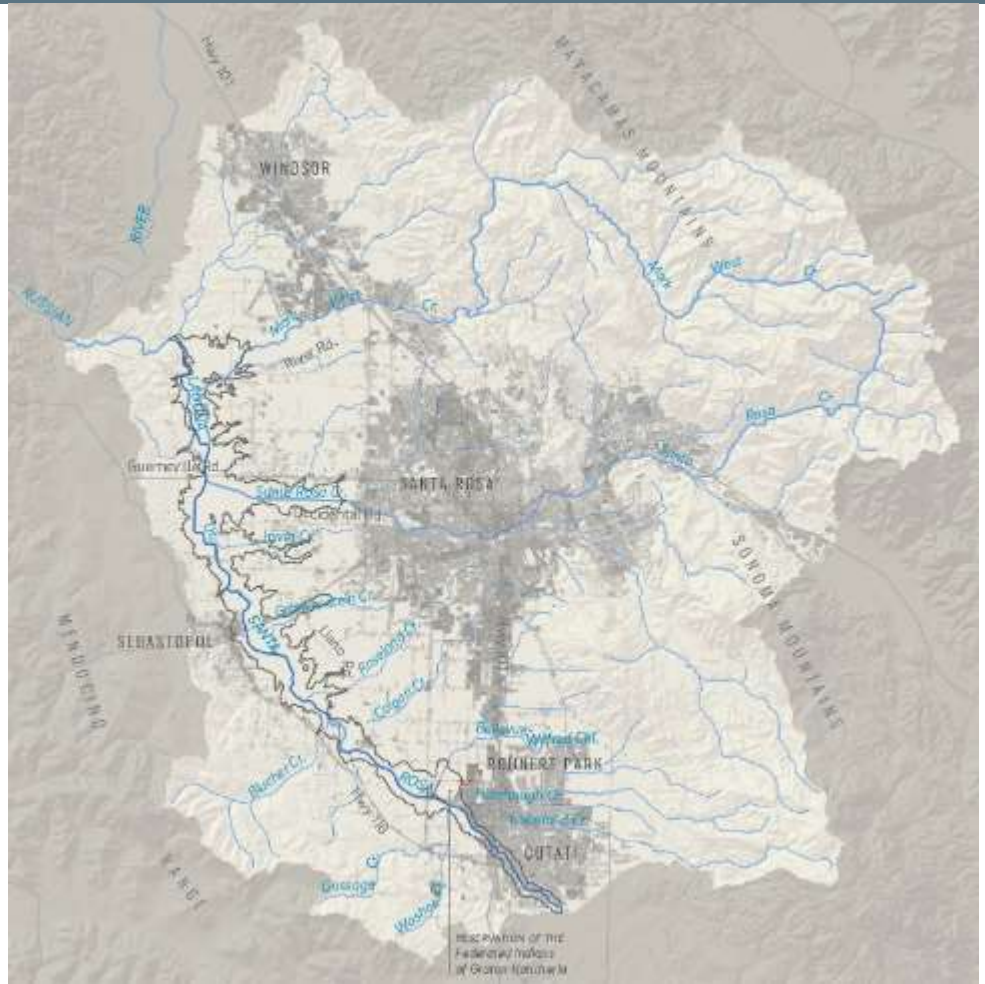
- Joe and Val Aggio
- Gene and Heather Amato
- Kathy Denner-Reese
- John Nagle
- David and Joy Koch
- Mindy Marshall
- David and Pat Schoch
- Ken Lafranchi

Laguna Restoration Collaboration





PROJECT AREA



PROJECT OVERVIEW

Management Goals Addressed

- Improve ecosystem functioning
- Establish a resilient landscape
- Enhance environmental, agricultural, and tribal benefits

PROJECT OVERVIEW

Management Plan Objectives

- Enlarge riparian and wetland habitat areas and improve their
- Decrease sediment and nutrient delivery
- Establish conditions for native plants to thrive
- Improve water quality through improved drainage and fine sediment removal

PROJECT OVERVIEW

Historical Ecology & Landscape Change

Restored Landscape Vision

Master Restoration Plan

Restoration Project Design

PROJECT OVERVIEW

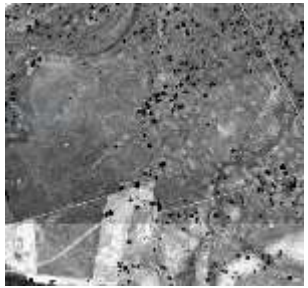
Historical Ecology & Landscape Change

Restored Landscape Vision

Master Restoration Plan

Restoration Project Design

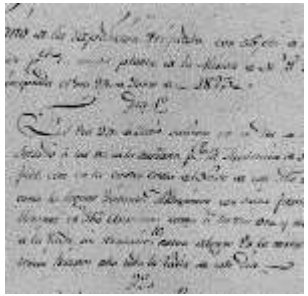
HISTORICAL ECOLOGY & LANDSCAPE CHANGE




Photographs & Drawings
600




Maps
550




Text sources
200

HISTORICAL HABITAT TYPES

Wet Meadow

Grassland

Oak Woodland

Valley Freshwater Marsh

Willow Forested Wetland

Mixed Riparian Forest

Perennial Freshwater Lake

Vernal Pool Complex

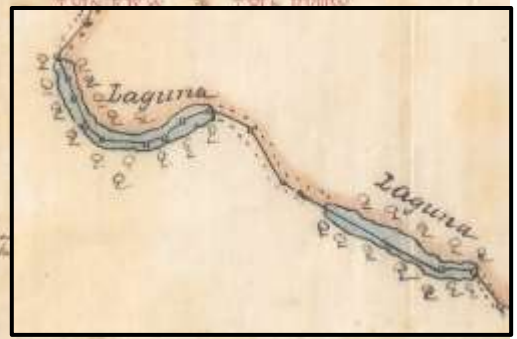
Oak Savanna/Vernal Pool Complex

1859

1840

"A lagoon and a stream with **many pools of retained water** [*una laguna y una arroyo con muchas posas de agua retenida*]" (Moraga 1810, September)

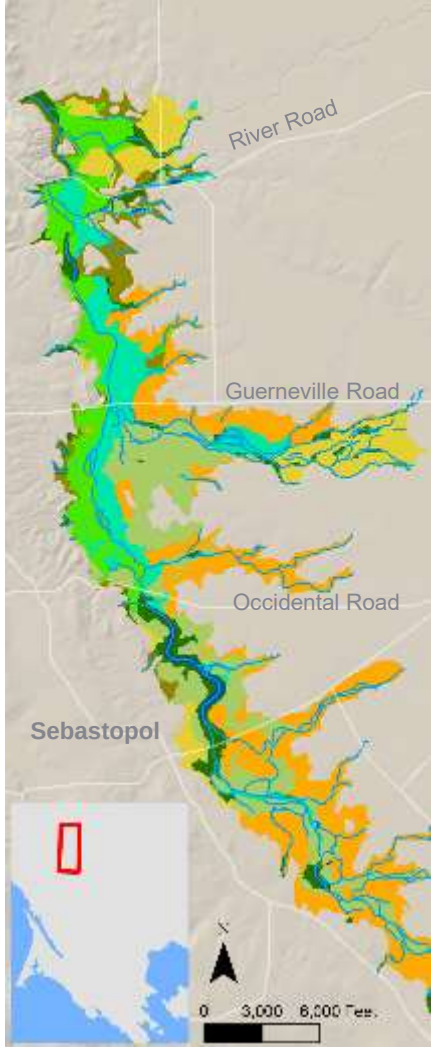
"Great **tulare lakes** teaming with beaver [*grandes lagunas tulares, y abunda de castores*]" (Vallejo 1833)

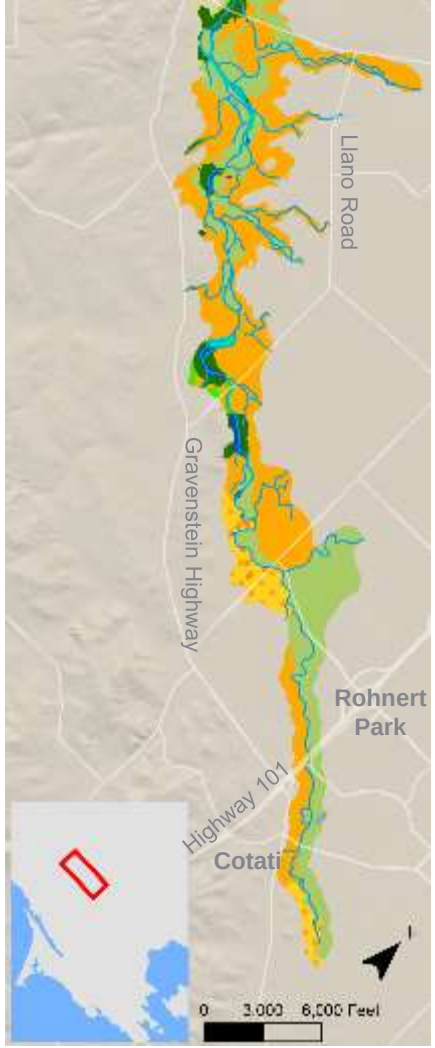


Llano de Santa Rosa (E-131)
Courtesy of The Bancroft Library

USDC ca. 1840, Rancho Llano de Santa Rosa (B-128)
Courtesy of The Bancroft Library

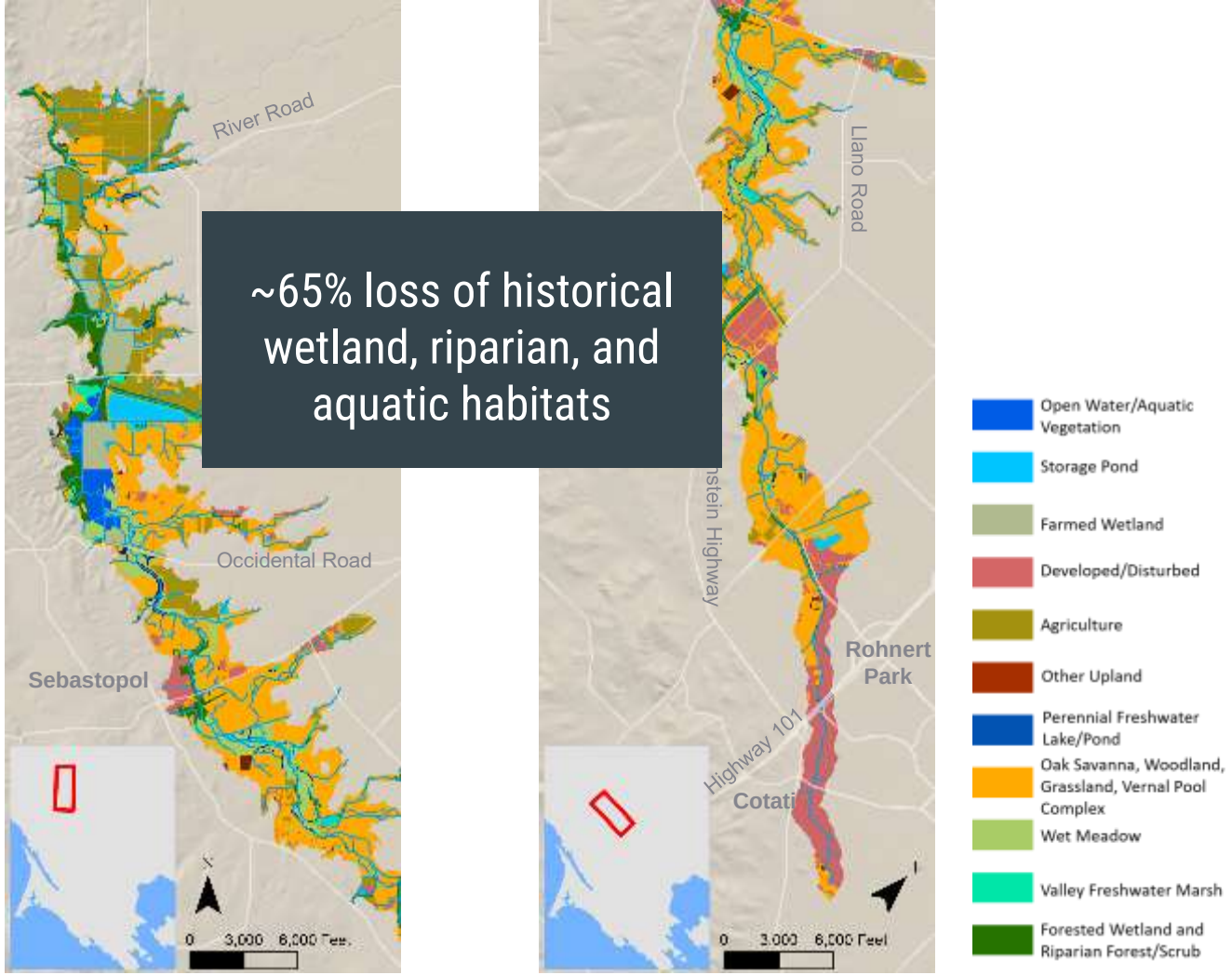
HISTORICAL HABITAT





- Grassland
- Oak Savanna
- Vernal Pool Complex
- Oak Savanna/Vernal Pool Complex
- Seasonal Lake
- Perennial Freshwater Lake/Pond
- Wet Meadow
- Valley Freshwater Marsh
- Willow Forested Wetland
- Mixed Riparian Forest

MODERN HABITAT



~65% loss of historical wetland, riparian, and aquatic habitats

PROJECT OVERVIEW

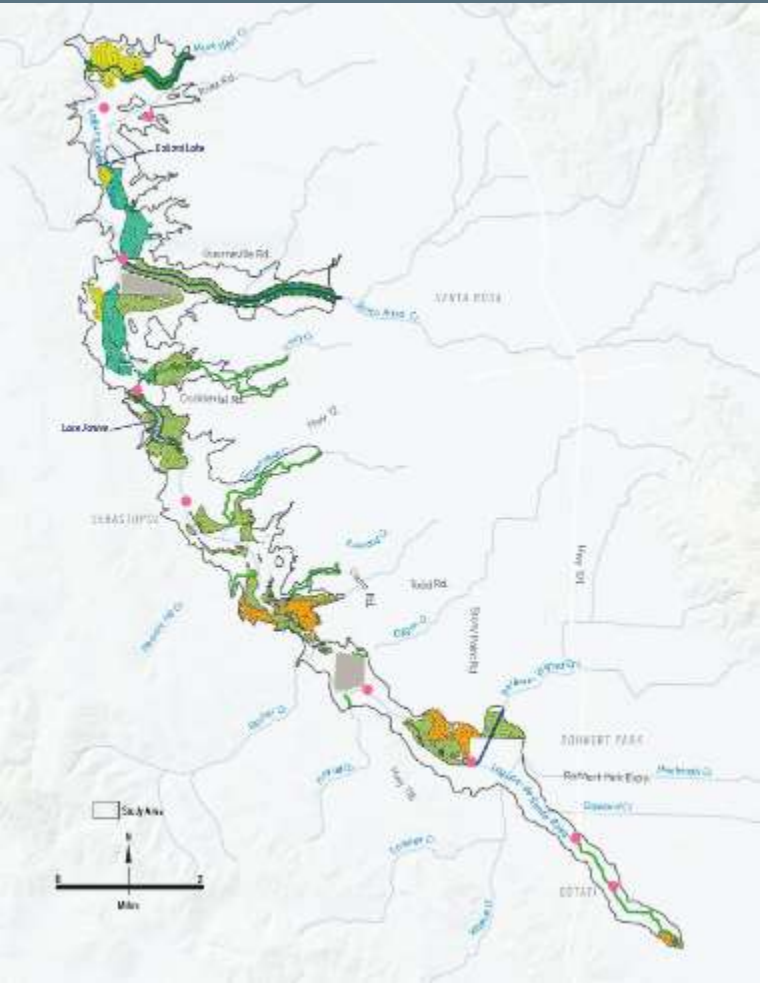
Historical Ecology & Landscape Change

Restored Landscape Vision

Master Restoration Plan

Restoration Project Design

RESTORED LANDSCAPE VISION



Wetland and Aquatic Restoration Opportunities

- Open Water
- Freshwater Marsh Complex
- Wet Meadow Complex
- Willow Forested Wetland Complex
- Mixed Riparian Forest
- Oak Savanna and Vernal Pool Complex • Seasonal

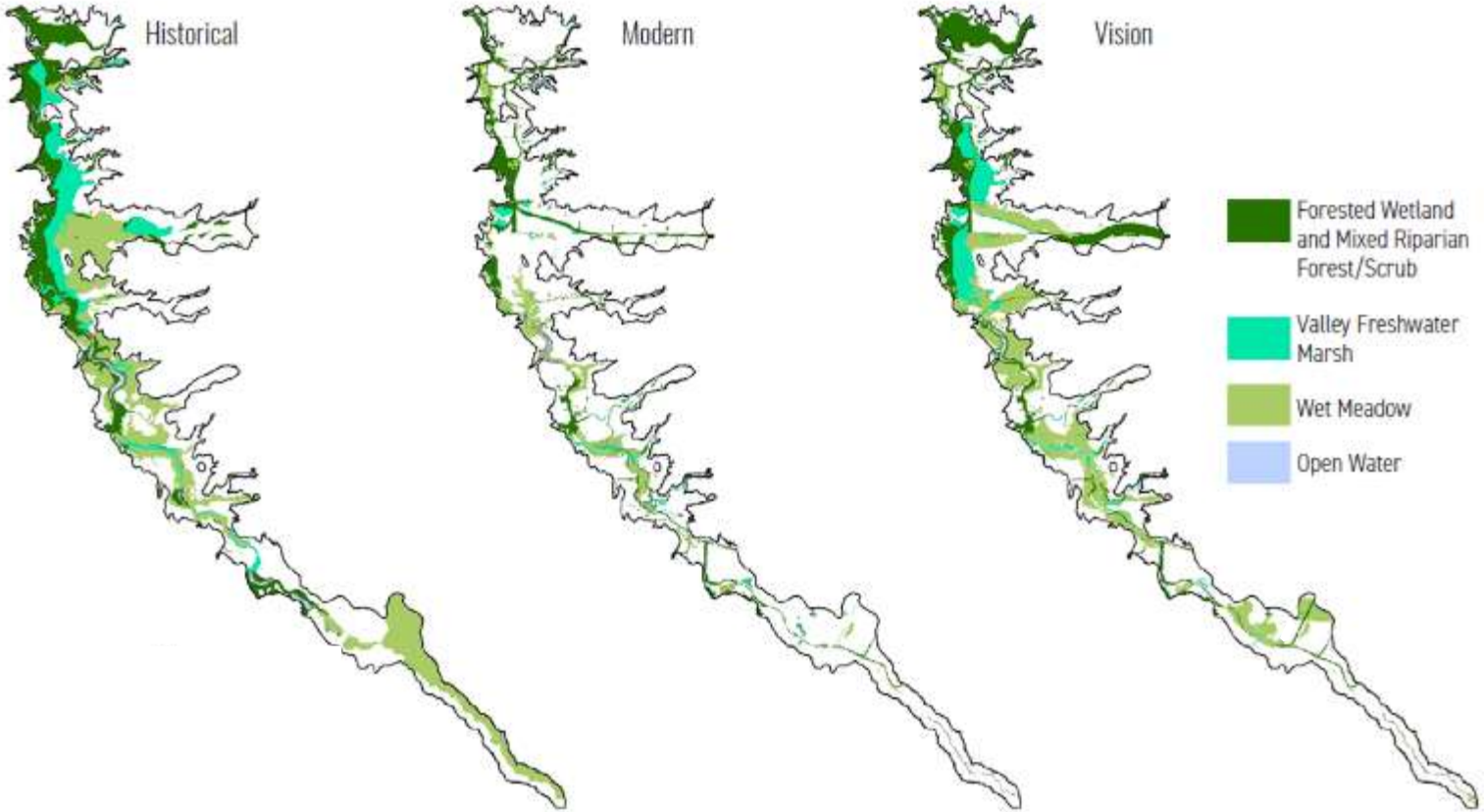
Riparian Management Opportunities

- Channel and Levee Realignment
- Riparian Enhancement

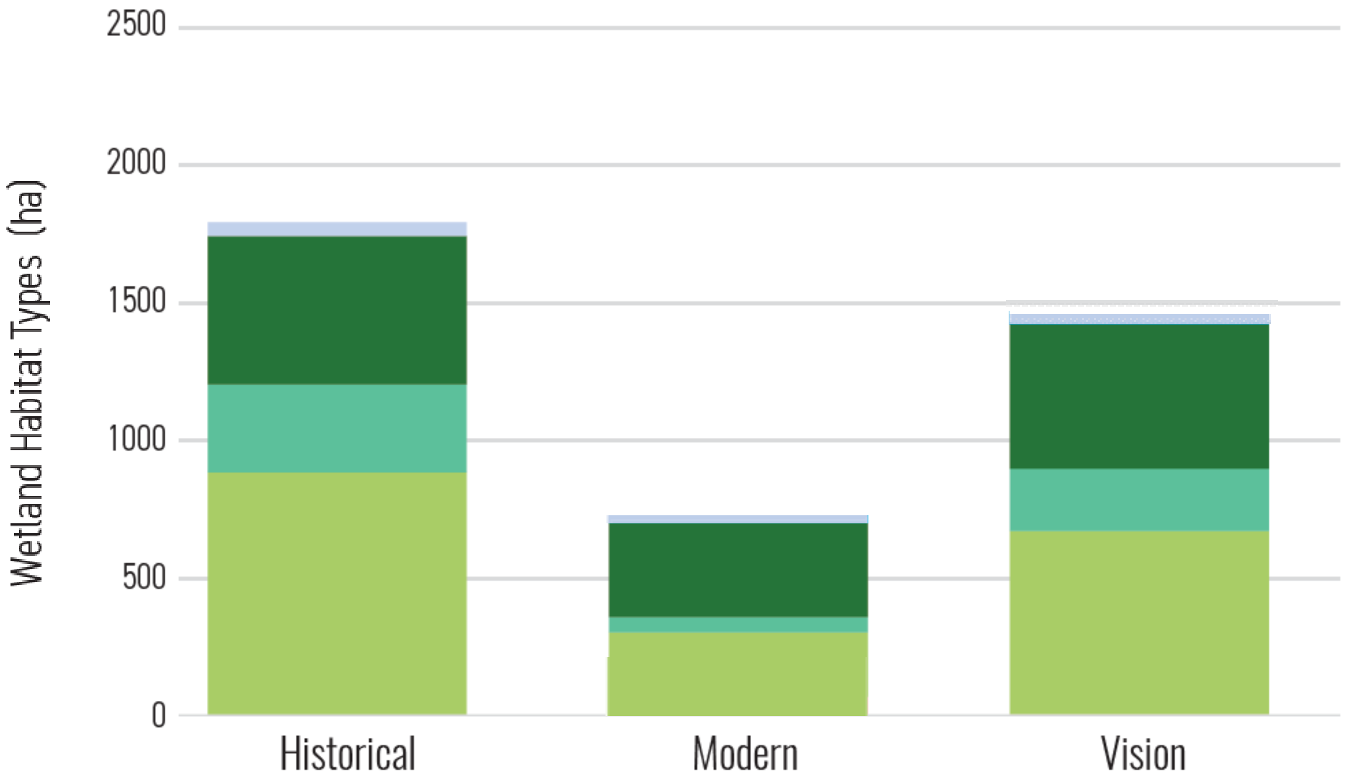
Additional Management Actions

- Bridge Crossings
- Wastewater Treatment Infrastructure

HISTORICAL, MODERN, and VISION WETLAND COVER



HISTORICAL, MODERN, and VISION WETLAND COVER



PROJECT OVERVIEW

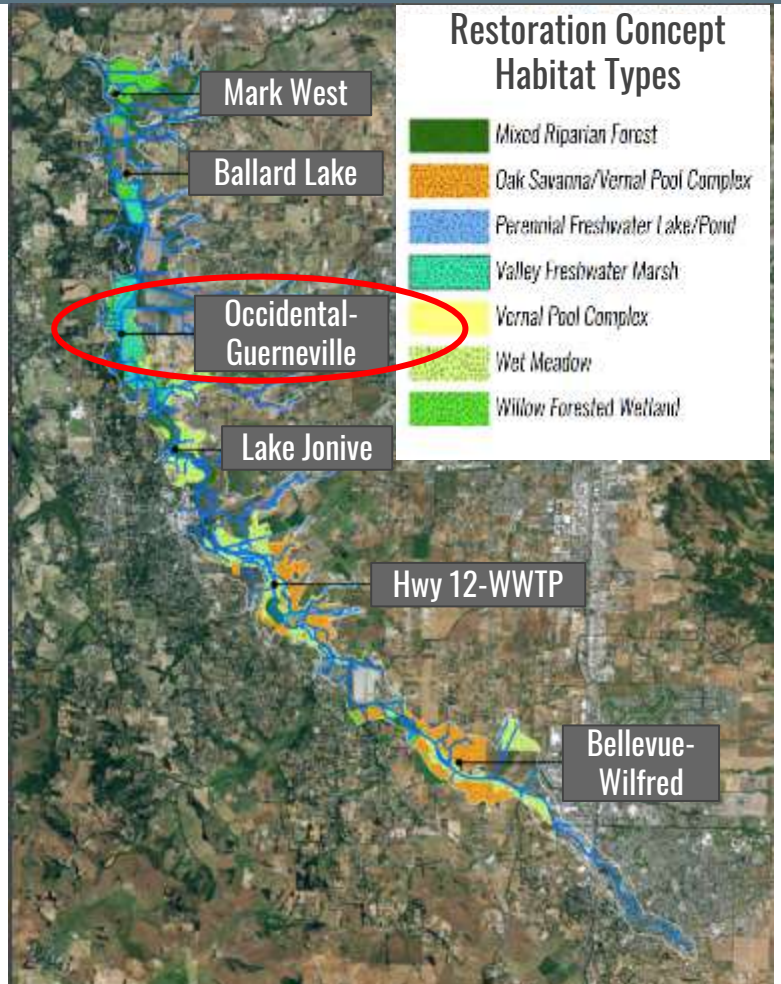
Historical Ecology & Landscape Change

Restored Landscape Vision

Master Restoration Plan

Restoration Project Design

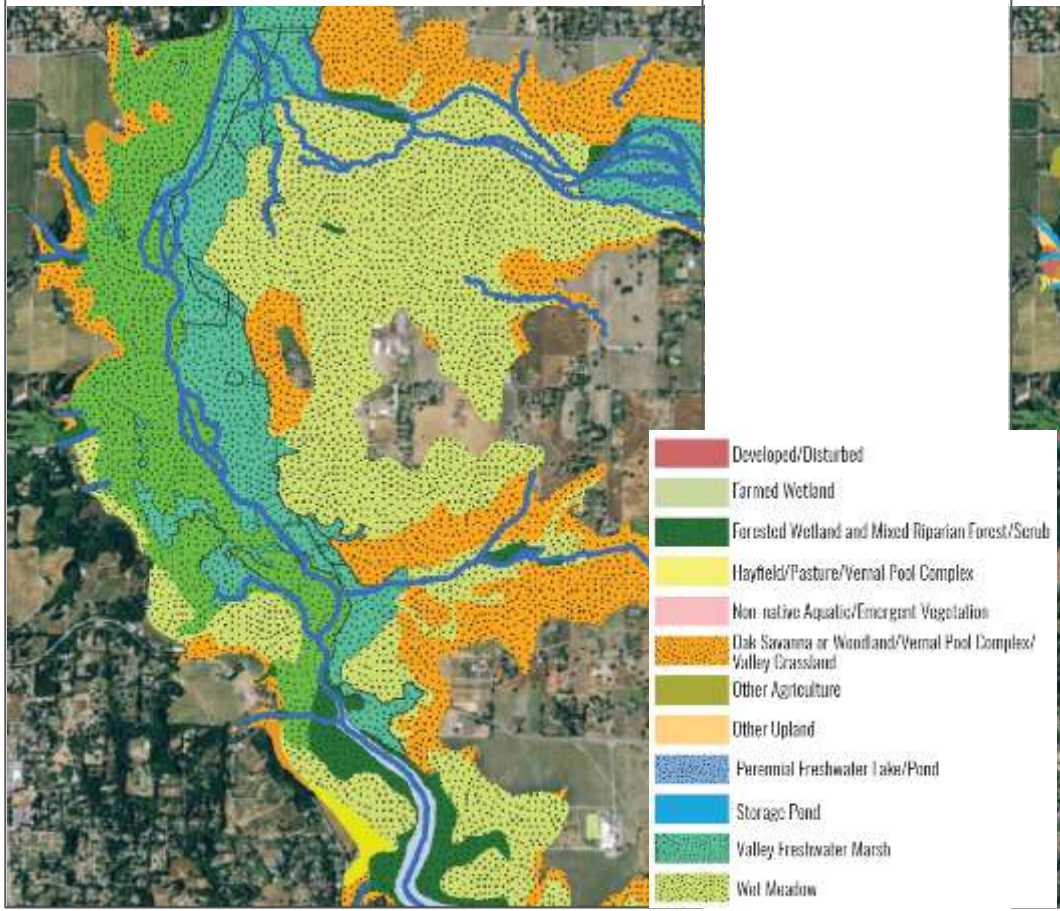
MASTER RESTORATION PLAN



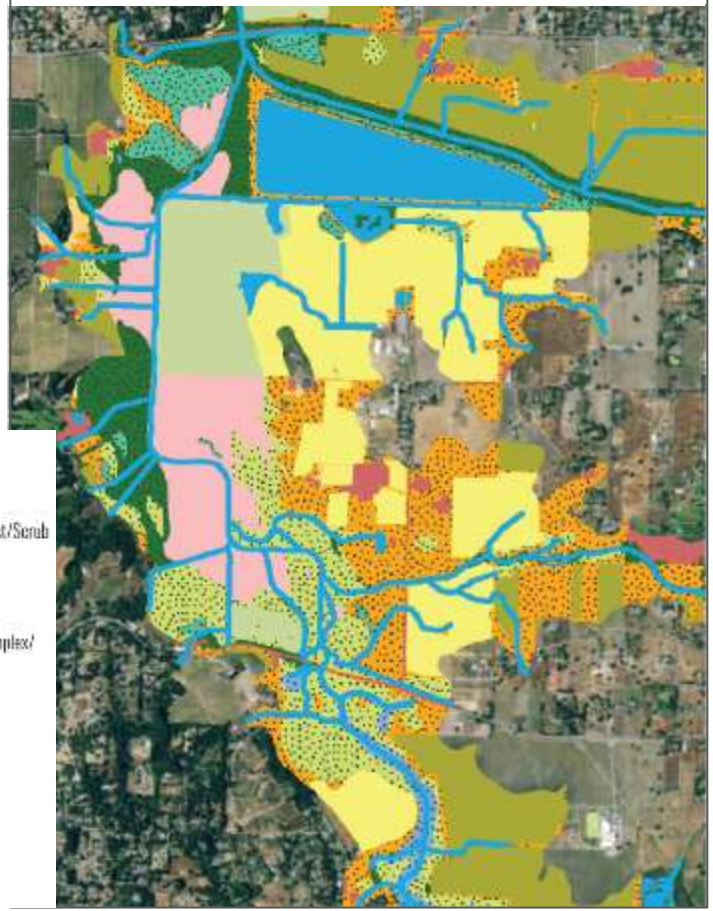
Restoration Concept Elements

- Detailed maps of historical and modern habitat
- Restored habitat maps and conceptual designs
- Overview of ecosystem benefits
- Key considerations

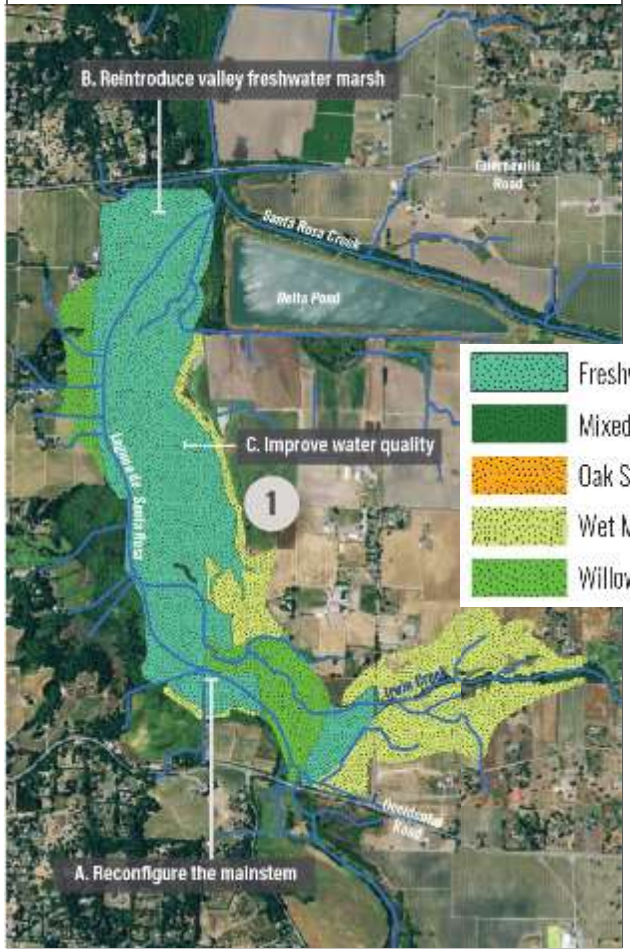
HISTORICAL HABITAT

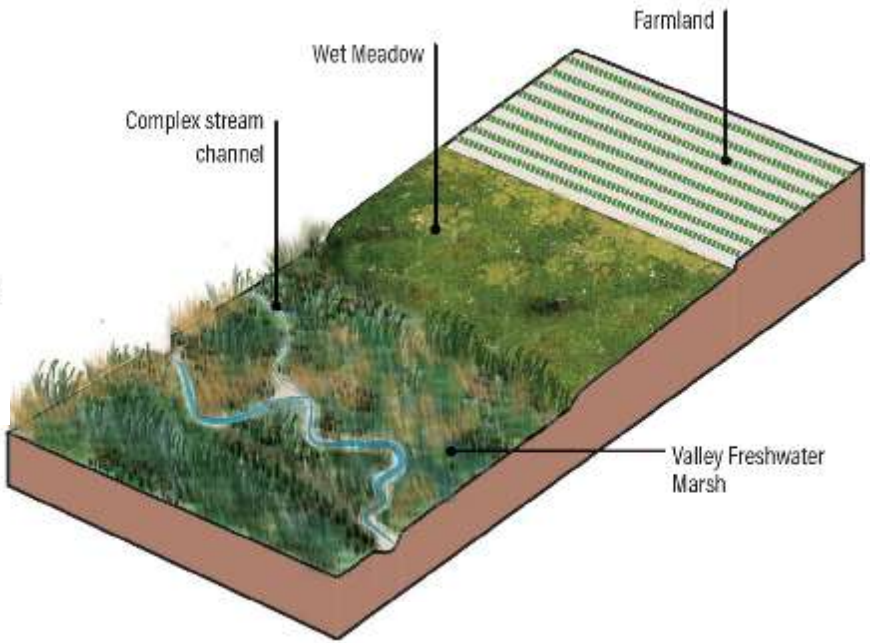


MODERN HABITAT

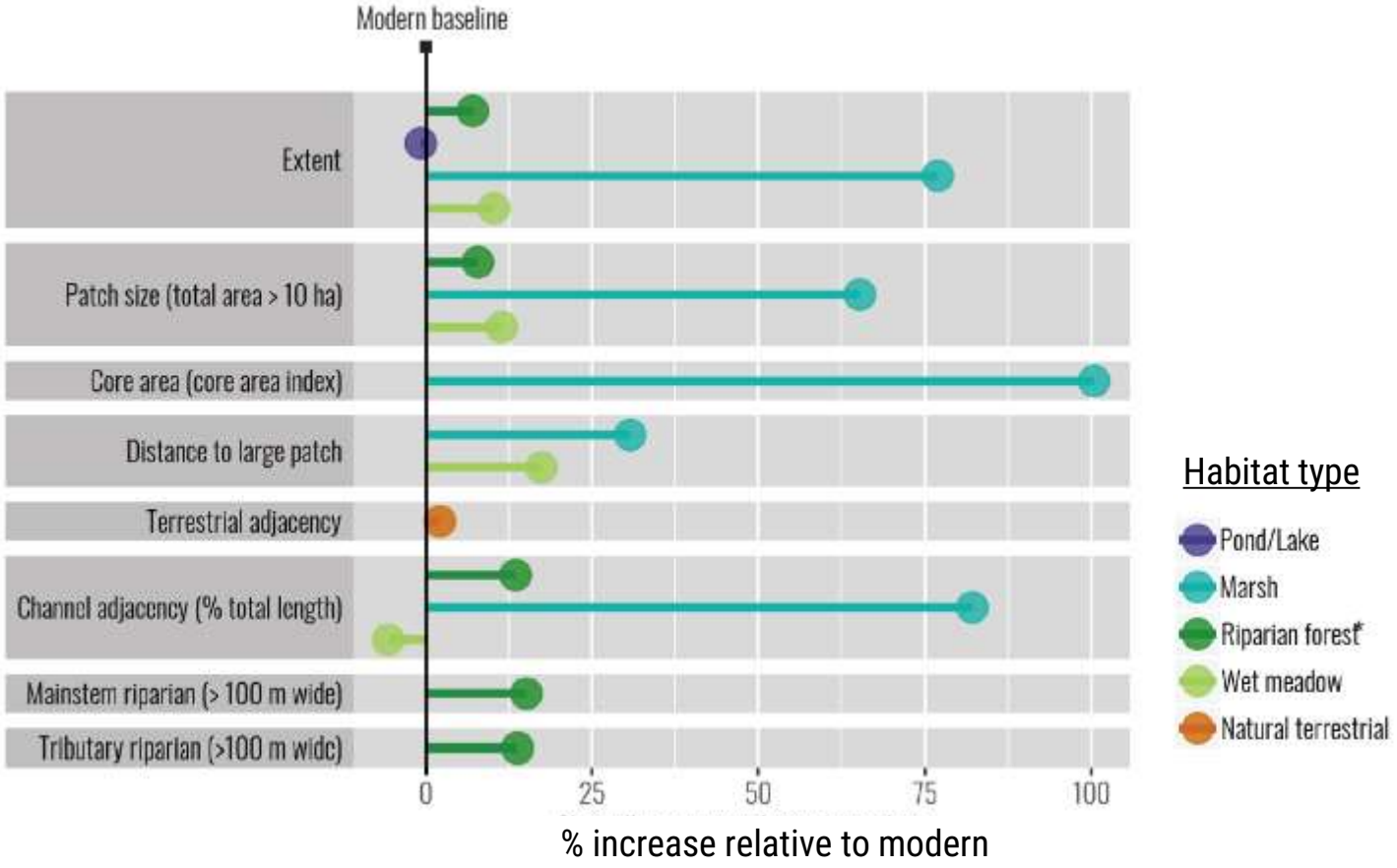


RESTORED HABITAT

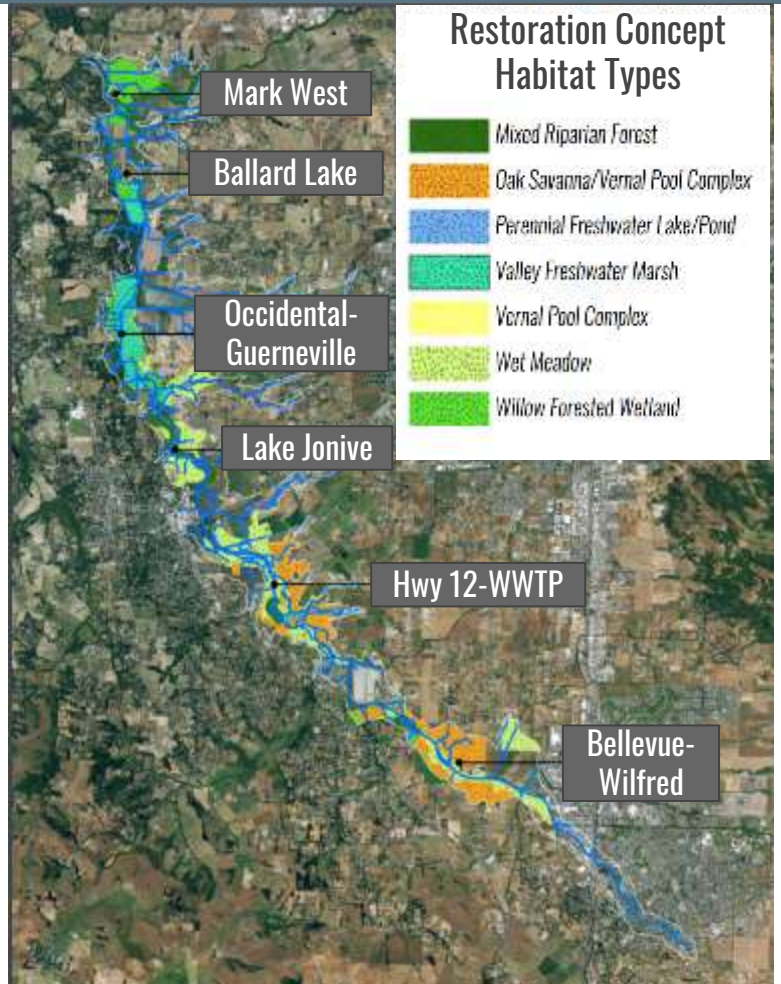




Ecosystem Benefits

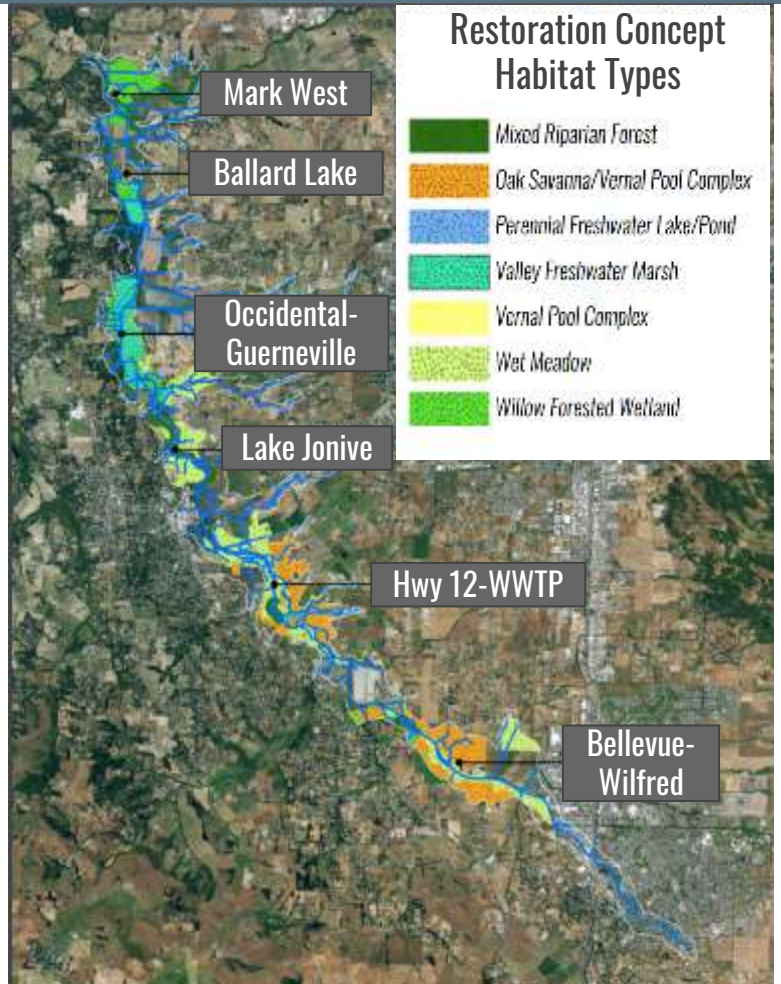


MASTER RESTORATION PLAN



Prioritization & Sequencing Considerations (i.e., what should go first?)

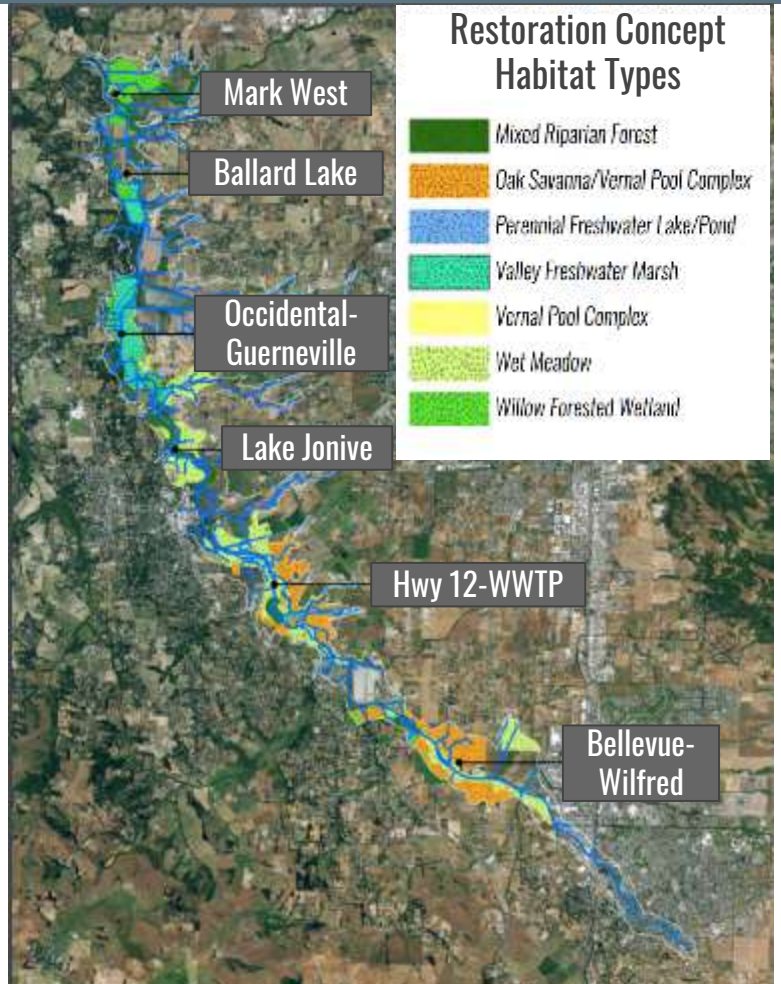
MASTER RESTORATION PLAN



Prioritization & Sequencing Considerations (i.e., what should go first?)

- Developed prioritization criteria to evaluate how each concept helps meet the Restoration Objectives

MASTER RESTORATION PLAN



Prioritization & Sequencing Considerations (i.e., what should go first?)

- Developed prioritization criteria to evaluate how each concept helps meet the Restoration Objectives
- Identified key considerations that will drive concept sequencing
  - Tribal cultural uses
  - Ecological benefits
  - Benefits to/connections with other concepts
  - Feasibility
  - Experimental and learning opportunities

PROJECT OVERVIEW

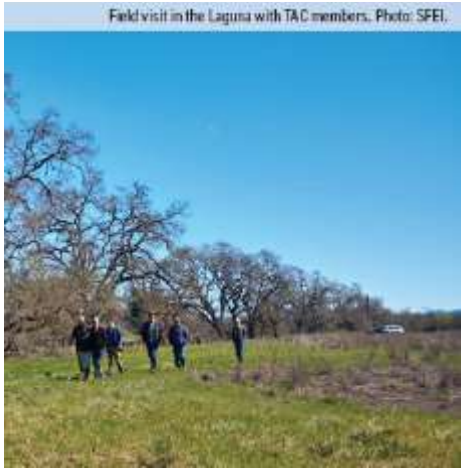
Historical Ecology & Landscape Change

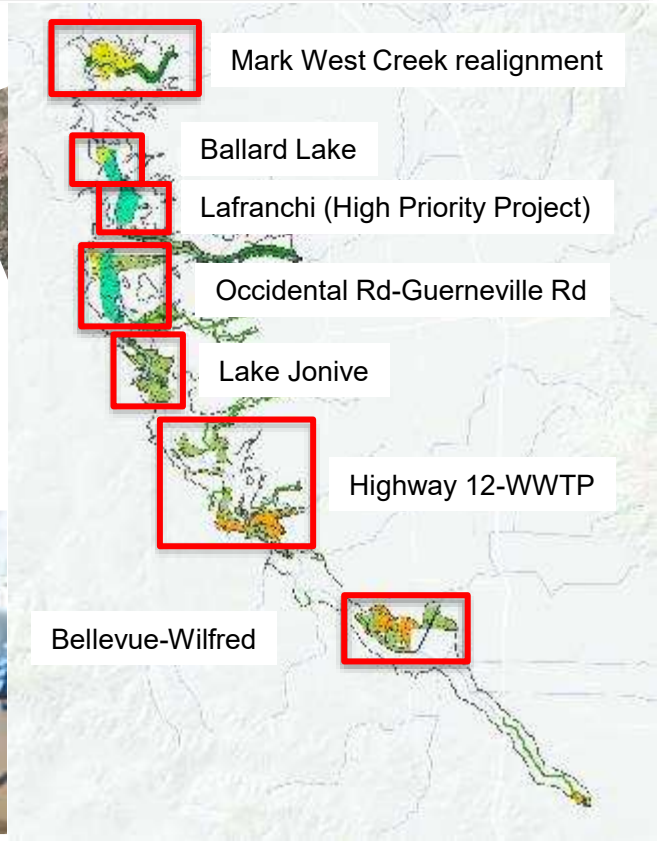
Restored Landscape Vision

Master Restoration Plan

Restoration Project Design

Laguna High Priority Project





Report for Sonoma County Water Agency

Laguna de Santa Rosa - Final Site Evaluation & Design Alternatives

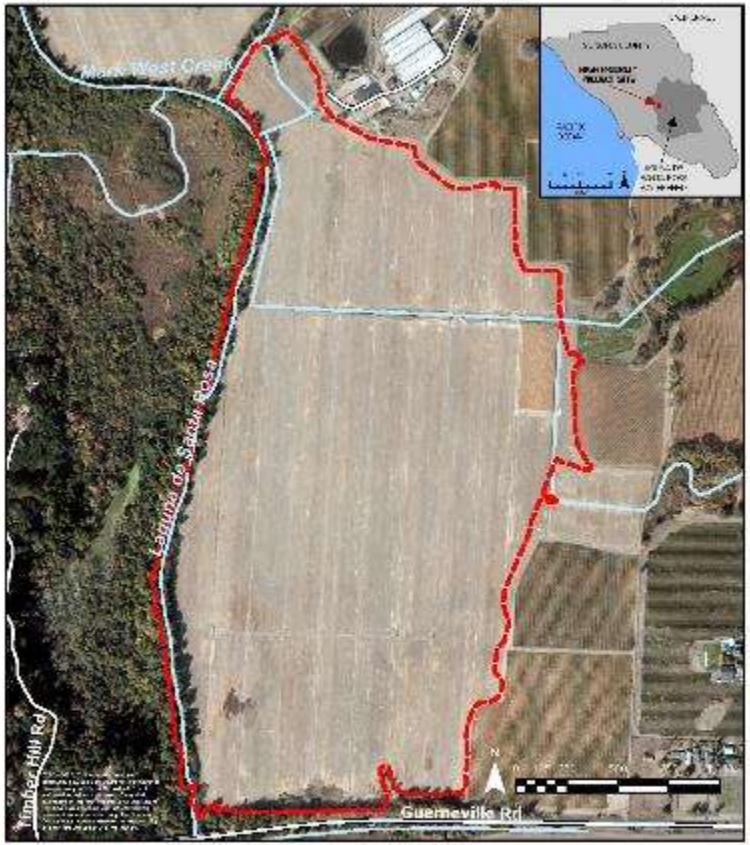
April 20, 2020

FlowWest

1624 Franklin Street Suite 901
Oakland, California
510.454.9378
flowwest.com

Sonoma Water

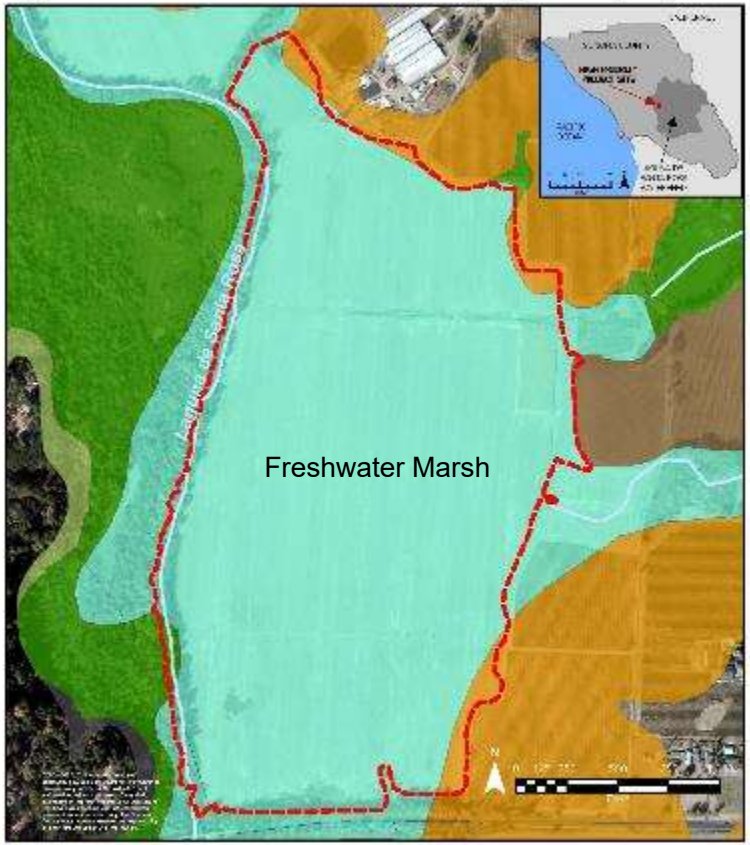
Laguna-Mark West Master Restoration Plan, High Priority Project Site



Sonoma Water

Laguna-Mark West Master Restoration Plan, High Priority Project Site

Willow Forested Wetland and Wet Meadow



Oak Savannah

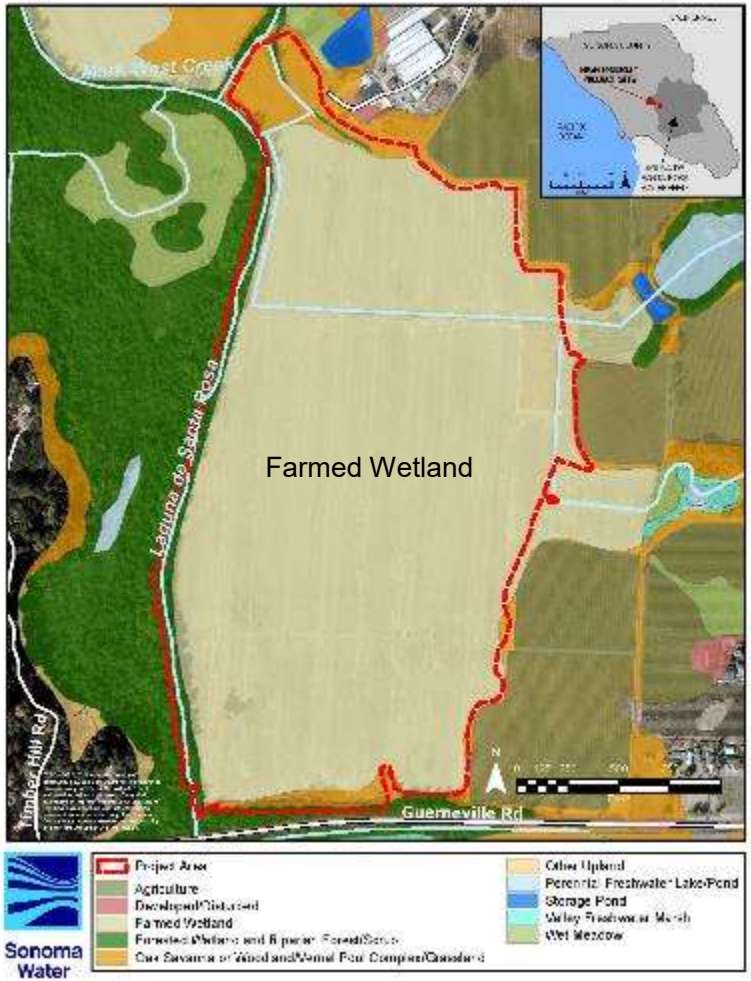
Oak Savannah/ Vernal Pool Complex

Sonoma Water

Project Area
Mixed Conifer Forest
Oak Savanna
Oak Savanna/Vernal Pool Complex
Valley Freshwater Marsh
Wet Meadow
Willow Forested Wetland

Laguna-Mark West Master Restoration Plan, High Priority Project Site

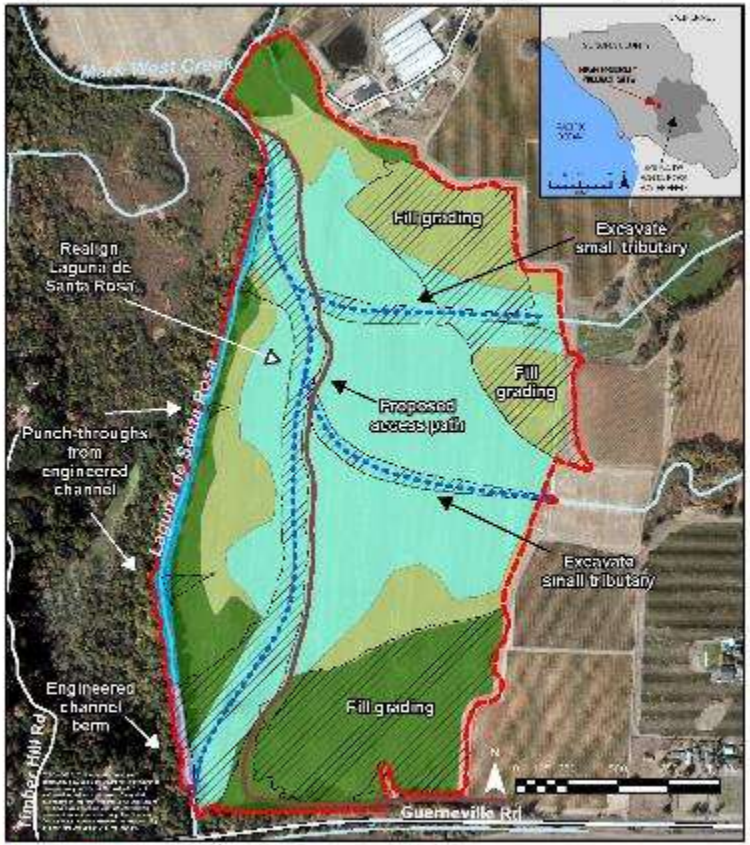
Forested Wetland and Riparian Forest Scrub and Wet Meadow



Agriculture

Oak Savannah/ Vernal Pool Complex and Freshwater Marsh

Laguna-Mark West Master Restoration Plan, High Priority Project Site

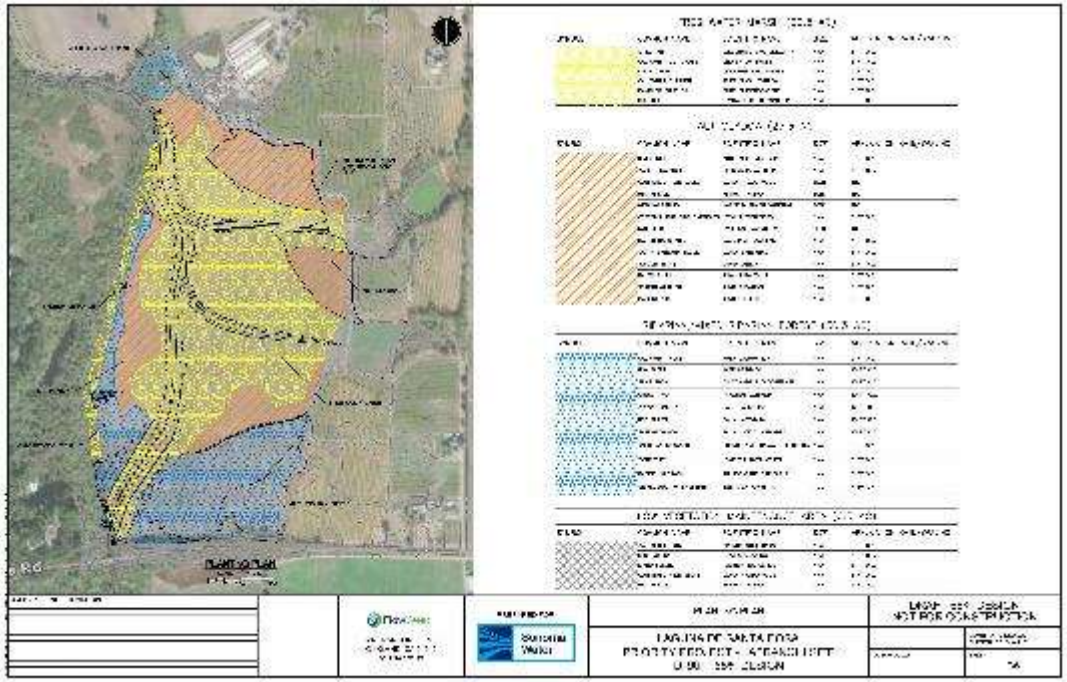


Wet Meadow

Freshwater Marsh

Mixed Riparian Forest

Laguna High Priority Project



Sonoma Water

LAGUNA-MARK WEST CREEK WATERSHED MASTER RESTORATION PLANNING PROJECT – HIGH PRIORITY PROJECT

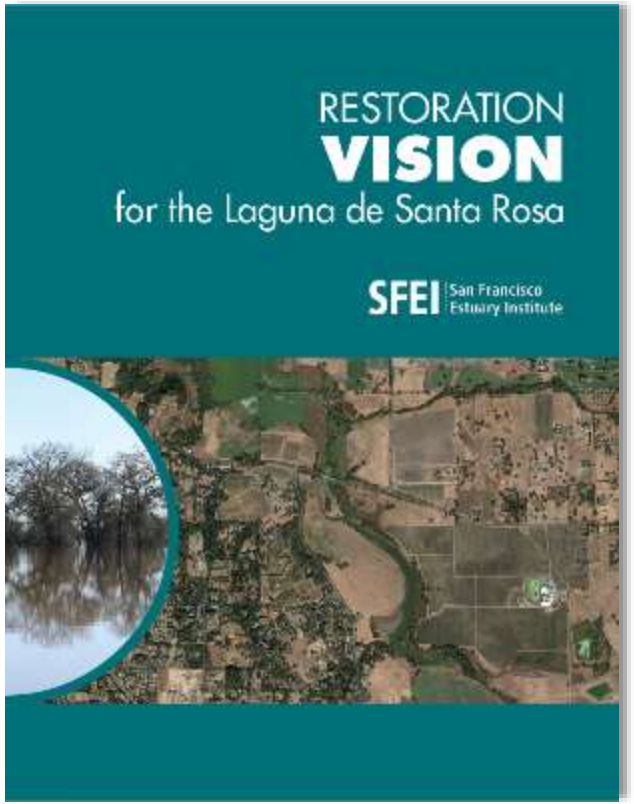
FINAL INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION OF ENVIRONMENTAL IMPACT

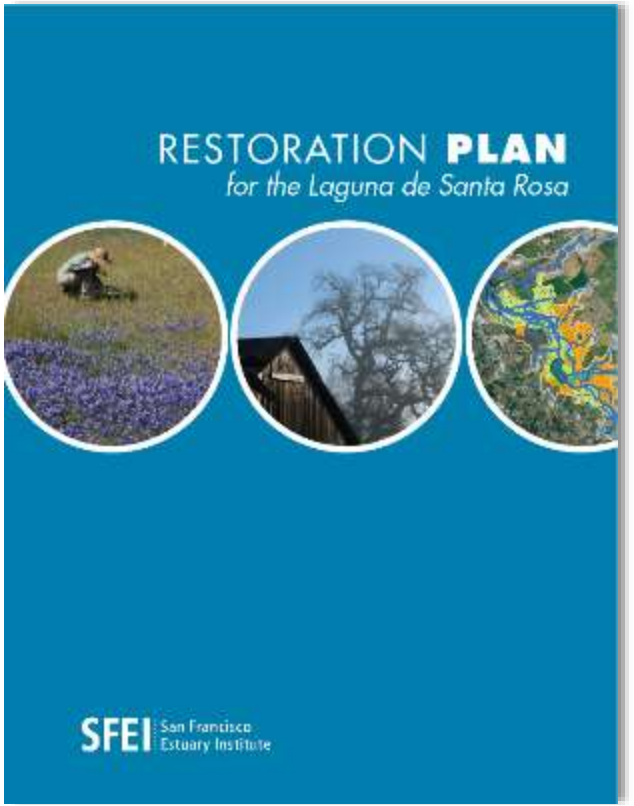
Lead Agency:
Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403

Contact: David Cook, David.Cook@scwa.ca.gov

Posted: February 23, 2023
Review Period: 32 days
State Clearhouse Number: 2023020533

Reports available at sfei.org





QUESTIONS?

Thank You!

Table 3-1. Effectiveness of each Restoration Project at addressing one of nine prioritization criteria. These criteria are tied to the management objectives introduced at the beginning of this document.

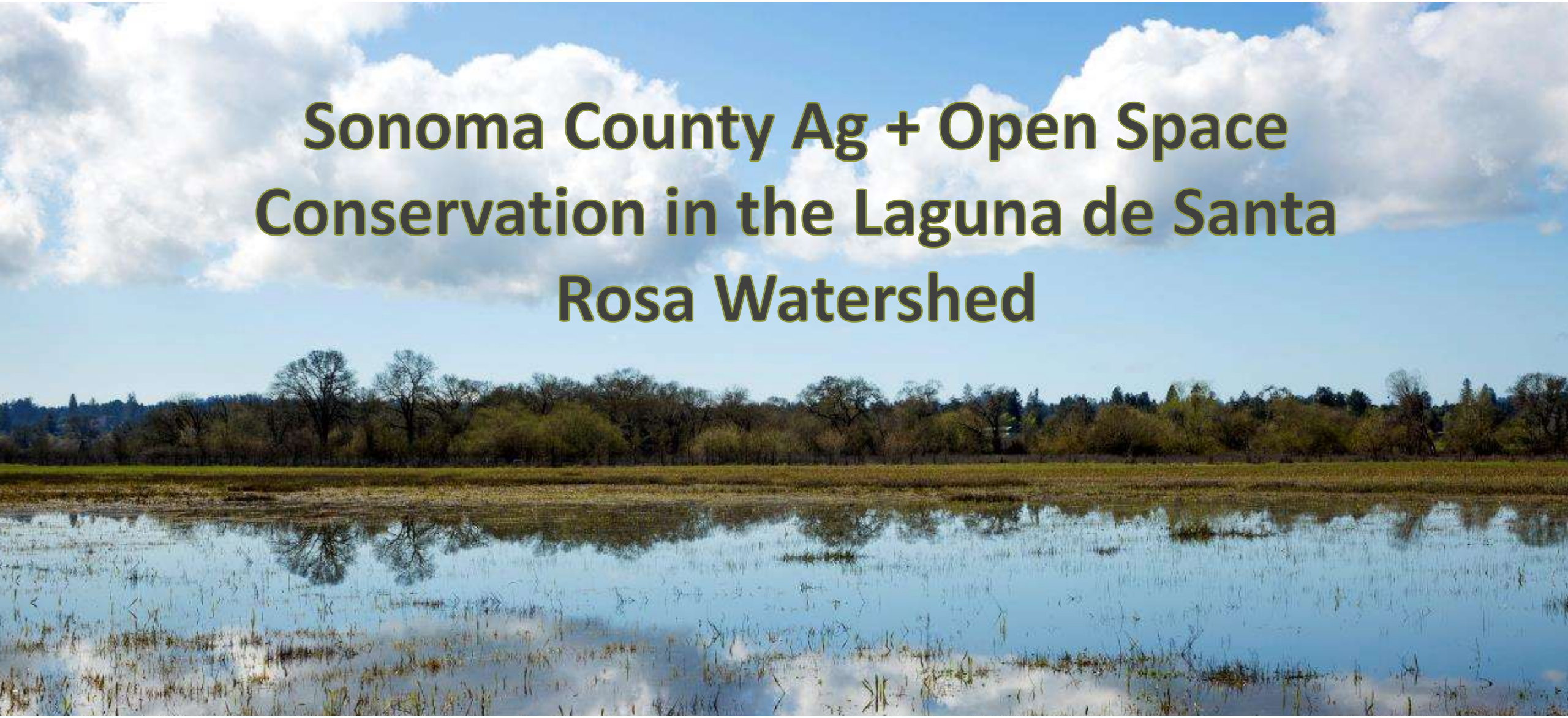
		Restoration Project Concept Rating								
MANAGEMENT OBJECTIVES	**Prioritization Criteria (Ecosystem improvements that help meet Management Objectives)***	**Mark West A**	**Mark West B**	**Mark West C**	**Mark West D**	**Ballard Lake**	**Occidental - Guerneville**	**Lake Jonive**	**HWY12-WWTP**	**Bellevue-Wilfred**
Enlarge riparian and wetland habitat patches and improve their connectedness	A. Expands valley freshwater marsh and/or enhances connectivity	None	None	None	None	Medium	High	None	Medium	Low
	B. Expands forested wetland and mixed riparian and/or enhances connectivity	High	Medium	Medium	Low	Low	Medium	High	Medium	Low
	C. Expands wet meadow and/or enhances connectivity	None	None	None	None	None	Low	Medium	High	High
Decrease sediment and nutrient delivery to the Laguna, especially at areas of high deposition/accumulation rates. **Move sediment from accumulation areas where appropriate**	D. Improves water quality through biological uptake of nutrients (in habitats with high assimilative capacity)	Medium	Low	Low	Low	Medium	High	Medium	Medium	Low
	E. Improves water quality through reduction of sediment in the main channel through natural floodplain deposition	Medium	Low	Low	Low	High	High	Low	Medium	Low
	F. Improves water quality by removal of sediment through active management (dredging)	Low	Low	Low	Low	High	Low	High	Medium	Medium
Control the extent of invasive plant species, and encourage conditions that enable native species	G. Increases shade and canopy cover through riparian enhancement	Medium	Medium	Medium	Low	Low	Medium	High	Low	None
	H. Increases competition with invasive *Ludwigia* spp. via native habitat types (wet meadow and bulrush)	None	None	None	None	Medium	High	Medium	High	High
	I. Decreases invasive *Ludwigia* spp. opportunities by increasing water depth	None	None	None	None	High	None	High	Medium	Medium
Improve late spring/summer water quality through improved drainage and flow conveyance	J. Decreases perennial shallow slow moving water	High	Medium	Medium	Medium	None	Medium	None	None	None
	K. Relieves flow constrictions and impeded flow due to channel alignment	High	Medium	Medium	Medium	Low	Medium	Low	Low	Low
	L. Expands seasonally inundated habitats while reducing late-season or perennial shallow water inundation	High	Low	Low	Low	Medium	High	Medium	High	High

Laguna High Priority Project: summary

Criteria	MWC	BL	Laf	O-G	LJ	WWTP	B-W
Landowner willingness			X				
Flood control	X		X	X	X	X	
Assimilative capacity		X	X	X	X	X	X
Recreation					X	X	
Ecological priority	X		X	X			
Restoration opportunity	X	X	X	X	X	X	X
Learning opportunity			X			X	X
Cost		X	X	X	X	X	X
Implementability	X	X	X	X	X	X	X

Criteria	Description
Landowner willingness	Willingness to at least allow project design to 65% and CEQA documentation for eventual implementation
Flood control	Anticipated increase in flood conveyance and reduction in water surface elevation and inundated area during floods
Assimilative capacity	Anticipated increase in nutrient removed via biological uptake or in nutrient removal via mechanical means (physical removal)
Recreation	Project would create or enhance recreational opportunities, including (but not limited to) boating, hiking, hunting, and birding
Ecological priority	Based upon historical and current ecology, project should occur before other projects. Current condition of project site may limit function and success of future projects
Restoration opportunity	Project is an opportunity to restore a lost habitat (habitat type that historically occurred) or create new habitat area where there is currently none. Includes removal or eradication of *Ludwigia*
Learning opportunity	Project presents opportunity for experimentation and learning beyond adaptively managing a project.
Cost	Project could be funded through CDFW implementation grant funds or through water quality credit trading
Implementability	Project could be implemented in one construction season (June 15 to October 15)

Sonoma County Ag + Open Space Conservation in the Laguna de Santa Rosa Watershed

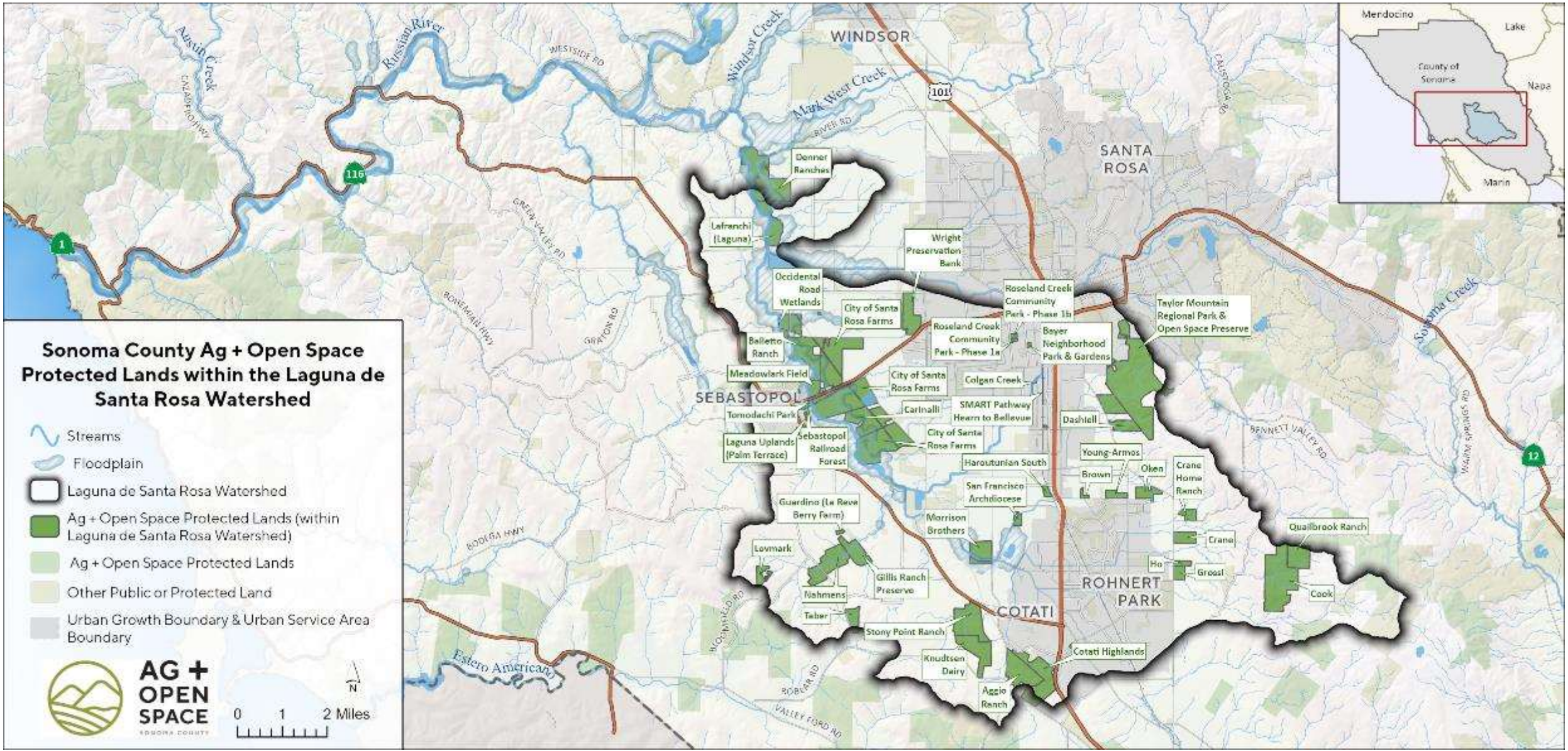


Jen Kuszmar | Acquisition Manager

AG + OPEN SPACE
SONOMA COUNTY

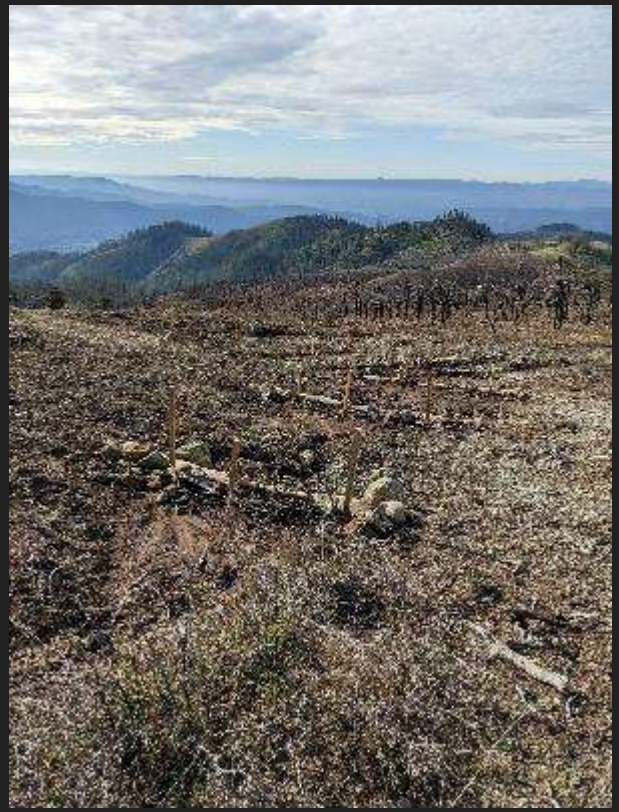
AG + OPEN SPACE
SONOMA COUNTY

LAND FOR LIFE

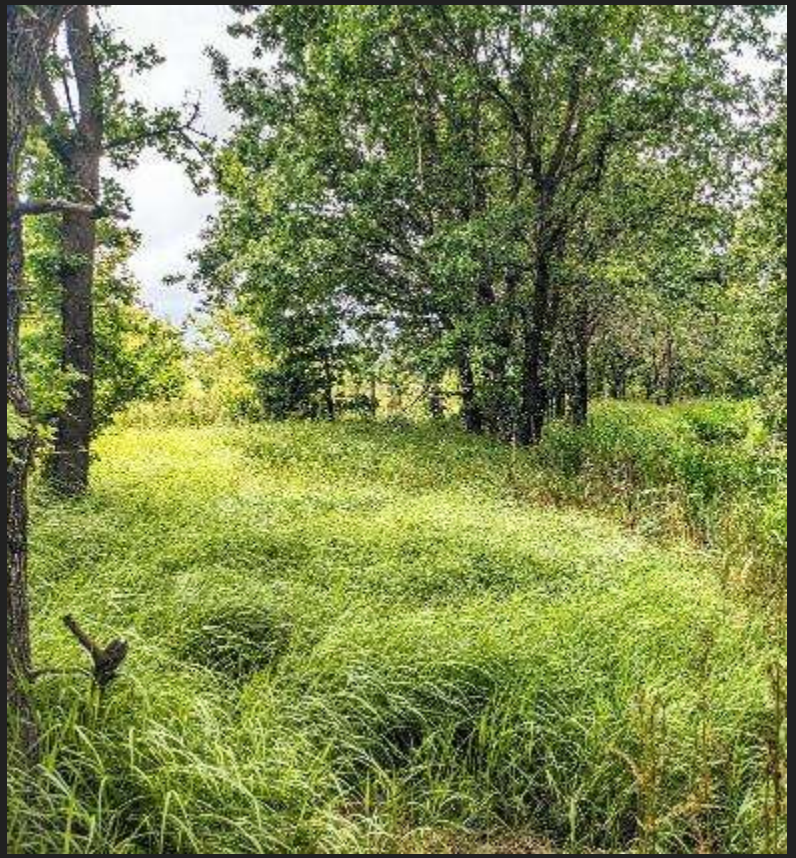



Yolo
Woodland
Davis
Sonoma
Napa
Santa Rosa
Laguna de Santa Rosa Watershed
Vacaville
Napa
Fairfield
Solano
Petaluma
Vallejo
Marin
Antioch
San Rafael
Concord
Contra Costa

Conservation and Restoration in the Laguna de Santa Rosa's Watershed



Riparian Corridors - Enhancing and Connecting Fragmented Habitats



Conservation of Unique and Rare Habitats - Vernal Pools

CLEAN Native Plant Nursery

Russian River Regional Monitoring Program Update

MOTIVATION FOR THE R3MP

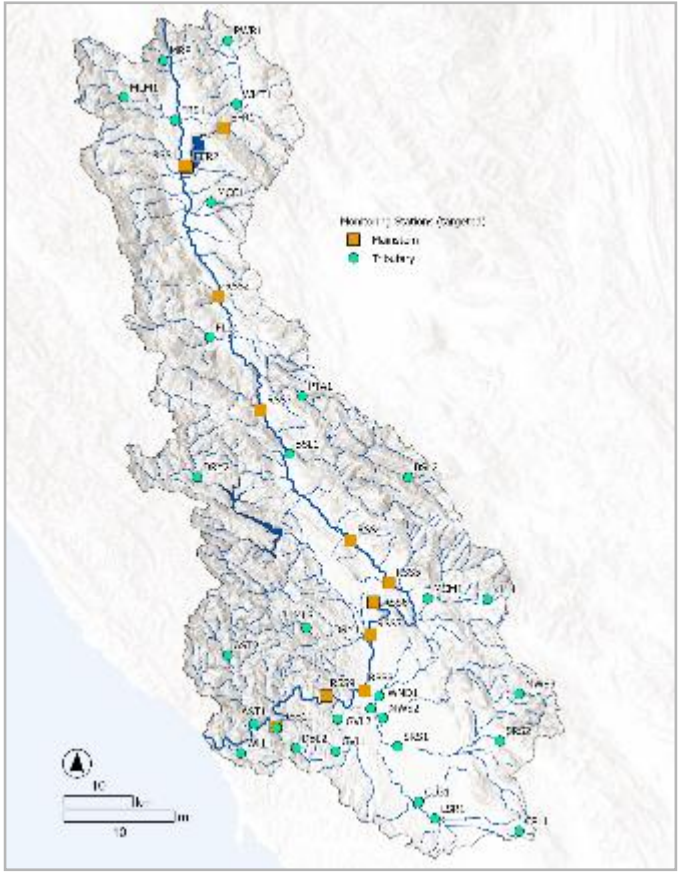
- **Watershed-scale challenges need to be addressed in a coordinated way,** which is increasingly apparent with rapid changes due to climate change
- **Monitoring activities are not well coordinated** and resulting data are not readily available, standardized, or broadly used to support decision-making
- **Need to understand baseline ecological conditions and trends** in overall watershed health to inform resource management decisions
- Recognized **need for a regional independent science program** that would coordinate entities working within the region to address specific water quality and habitat challenges at the watershed-scale

Initial Monitoring Plan – Summary of survey design

To address the initial monitoring questions 1 and 3:
“What is the status of and where is there evidence of excessive biostimulation and poor stream habitat?”

Two kinds of monitoring proposed:

- **Targeted stations** to track change over time in the long term and identify areas of concern
- **Probabilistic stations** for inferring overall ecological stream conditions (with a known level of confidence) using statistical approach



Current R3MP efforts

WAYS TO GET INVOLVED:

- Sign up for the R3MP email list
- Attend a Steering Committee meeting
- Participate in the Mapping Workgroup

Email: Alison Whipple (alison@sfei.org)

- Program Development Support

Initial Coordinated 5-yr Monitoring Plan & Data Management Processes - SC approval

Criteria for implementing entity

Program cost estimates

- R3MP Status and Trends Assessment

Data compilation

Draft report

Final report

Q1 2024 | Q2 | Q3 | Q4 | Q1 2025 | Q2

Develop stream and wetland basemap

Revised stream and wetland basemap

Riparian (RipZET) & channel edge mapping

Riparian mapping methods comparison

Note: Need to secure funding to implement the Monitoring Plan, manage data, report findings, and administer the R3MP

- US EPA Russian River Mapping Grant

Project Funding Opportunities

~~~

Jemma Williams

~~~

March 27, 2024

Mission: to protect, restore, and enhance habitats throughout the San Francisco Bay Area for the benefits of birds, other wildlife, and people.

Led by a 25-member management board (US EPA, USFWS, NOAA, CDFW, WCB, Save the Bay and others).

Five Committees:
Conservation, Science, Policy, Regional Communications, Equity/Diversity/Inclusion (EDI)

Regional Funding Opportunities

- Funding Working Group Virtual Meetings: 3PM - 4PM; 2nd Thursday of every other month

- Scan for SFBJV Funding Page
  View Available Funding button→ takes you to the spreadsheet which tracks current funding opps in the restoration, EJ, climate resilience space.

SCAN ME

Grant Opportunities

- RFP/LOI for the US Fish and Wildlife Service's National Coastal Wetlands Conservation Grant Program —> The SCC would provide some or all of match for protection and/or restoration of coastal wetlands

- Community Project Funding:
  - Specific projects that benefit the community they represent. See our new website post on our website on: *How to request money from the Federal Government: Programmatic Appropriations & Community Project Funding*

- Wildlife Conservation Board (WCB) - rolling window, Fisheries Restoration Grant Program (FRGP) - current proposal window open until April 18, 2024 at 3:00pm

Thank You!

www.SFBayJV.org

Kelli McCune, Coordinator : **kmccune@sfbayjv.org**

Jemma Williams, Conservation Coordinator: **jwilliams@sfbayjv.org**

Nikki Roach, Policy & Communications Coordinator: **nroach@sfbayjv.org**