



# **Status Update on a Pathway to Water Quality Restoration in the Santa Margarita River Estuary**

Hiram Sarabia, Environmental Scientist

San Diego Water Board  
September 13, 2017



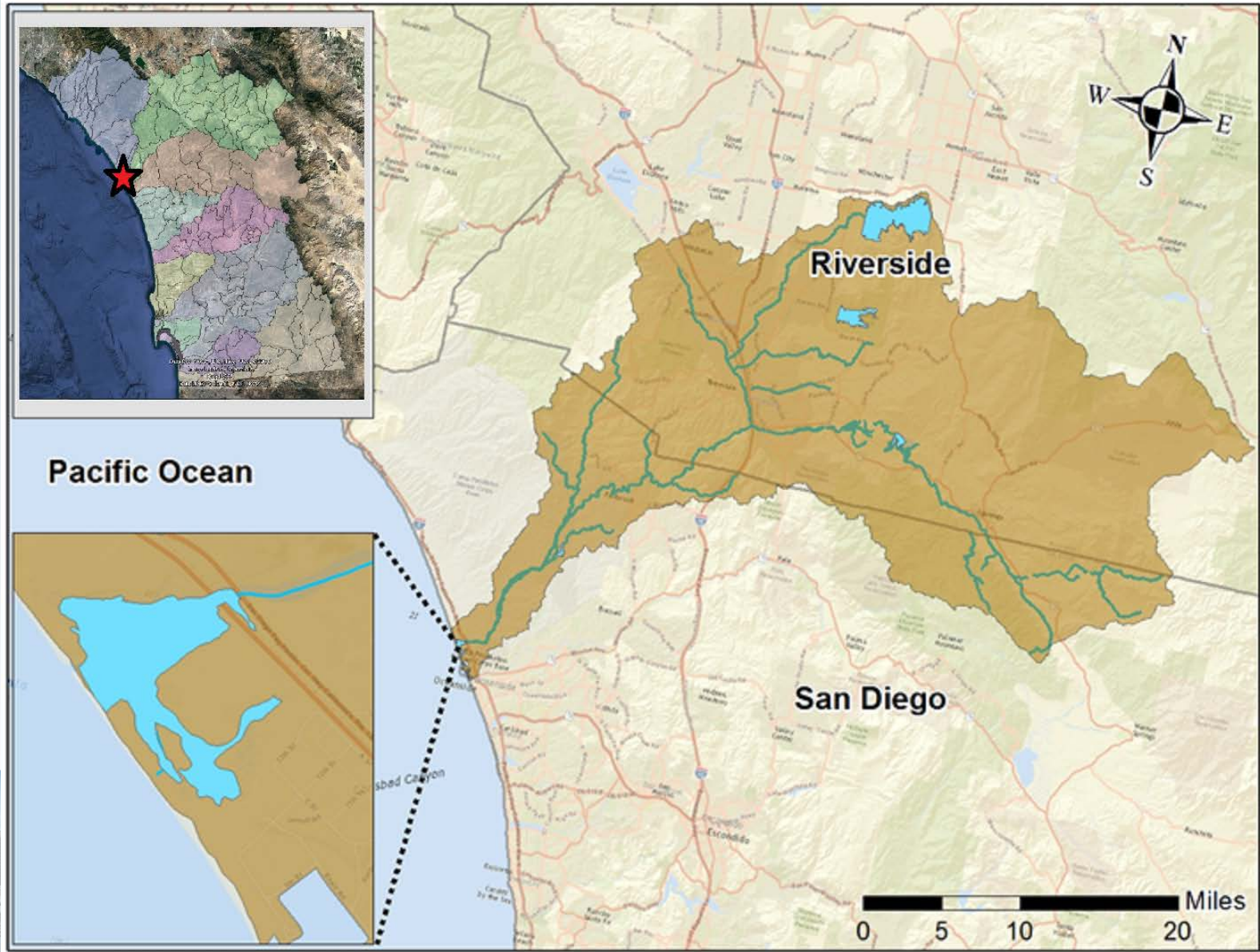


# Outline

- 1) Importance of Santa Margarita River Estuary
- 2) Impairment and Causes
- 3) Restoration Strategy



# Santa Margarita River Estuary



# Wild River



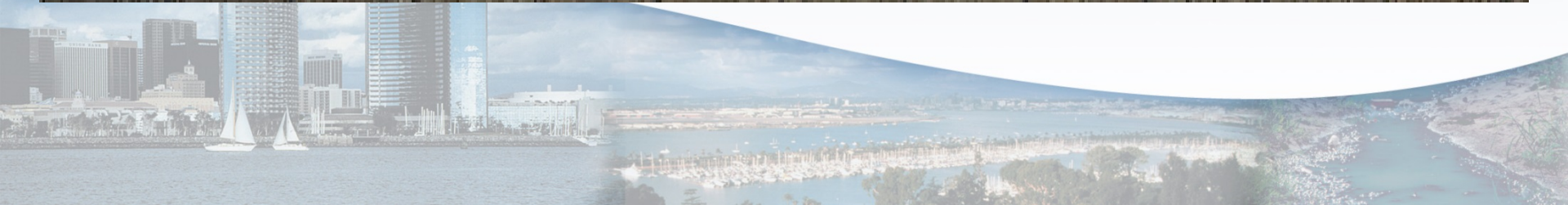
# 192 Acres of Estuarine Habitat



# Rare and Endangered Species



# Drinking Water

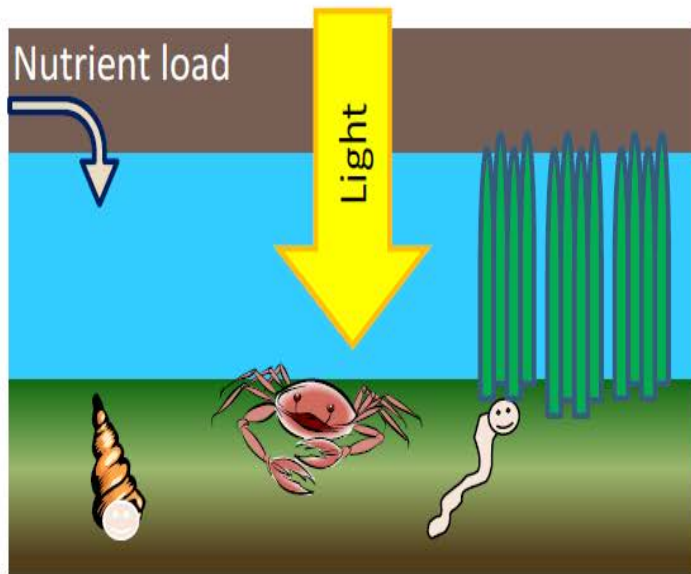


# Eutrophic Conditions

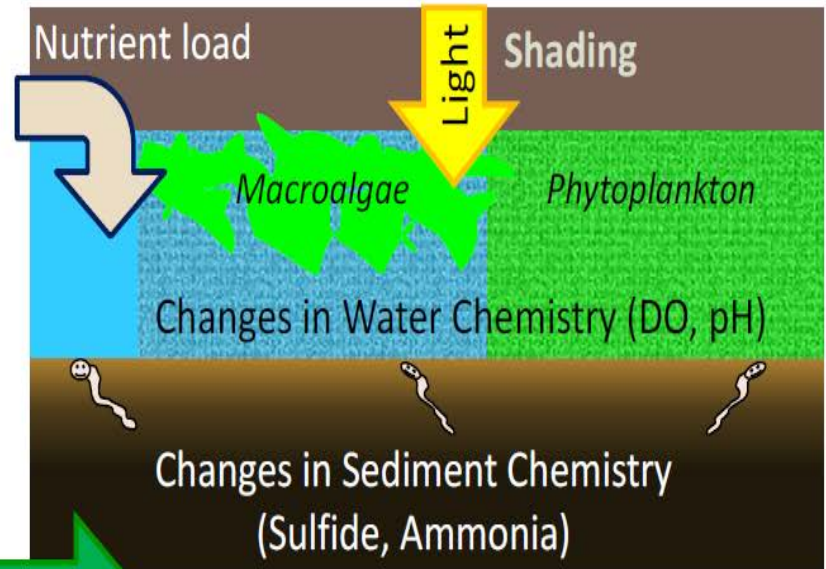




# Process of Eutrophication



**Minimally Disturbed**



**Eutrophic- Hypertrophic**

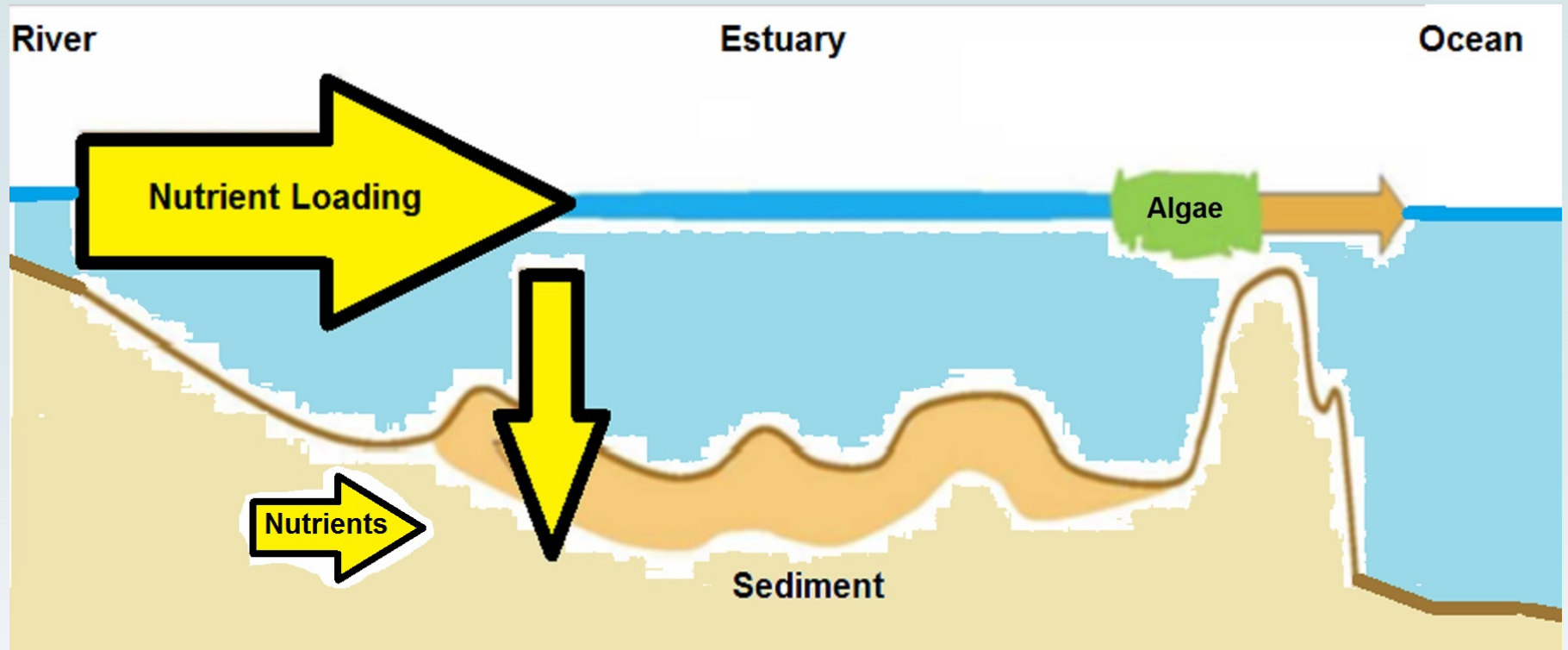
Increased Nutrient Loading



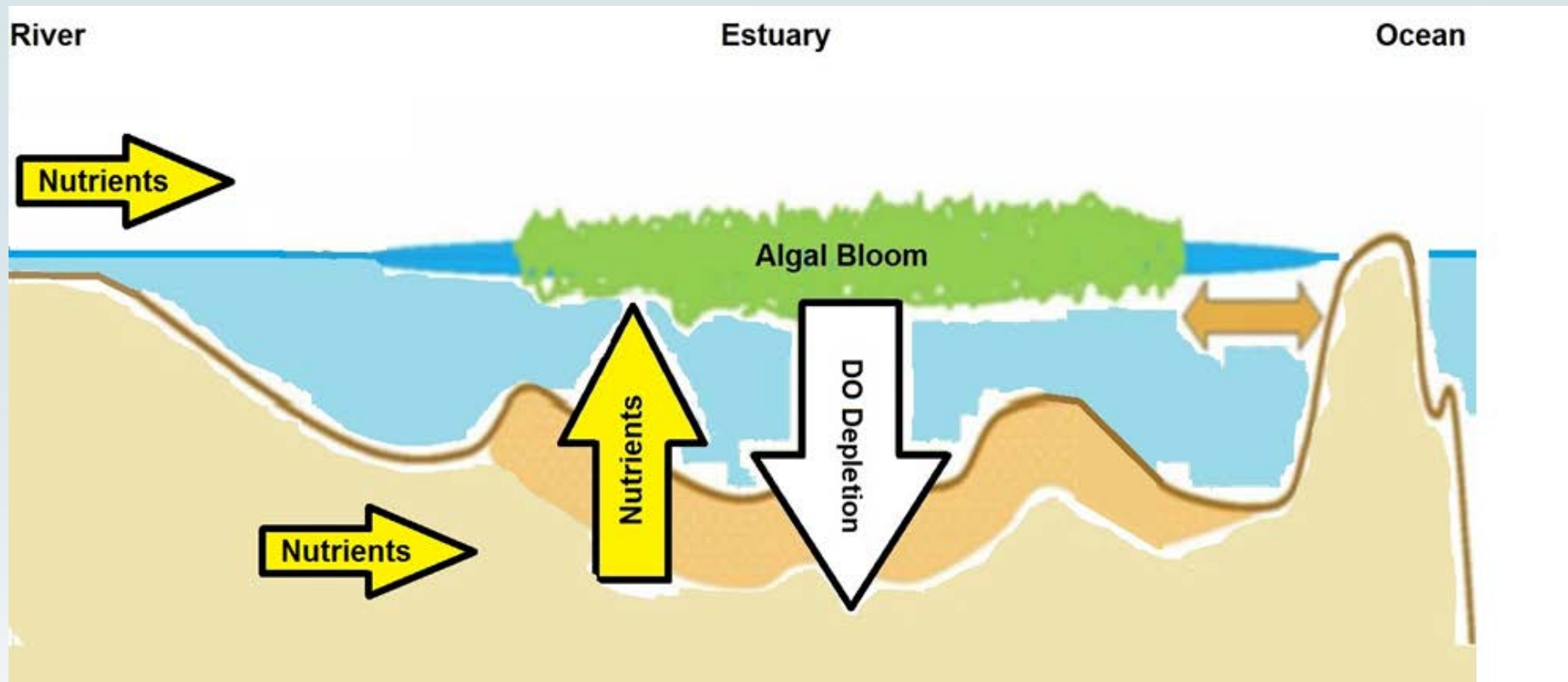
# Eutrophication



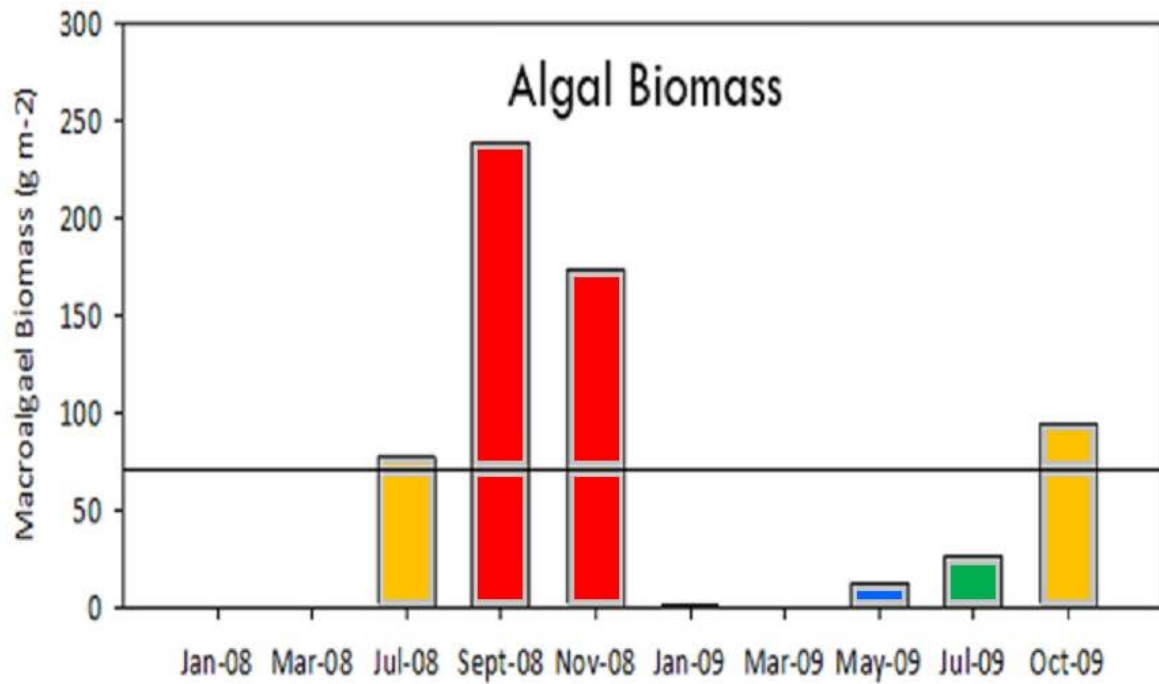
# Santa Margarita River Estuary Wet Weather Conditions



# Santa Margarita River Estuary Dry Weather Conditions



# Santa Margarita River Estuary Algal Blooms



## Ecological Condition

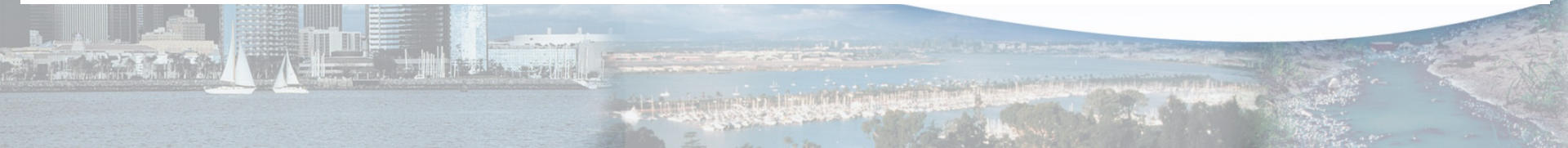
Very High

High

Moderate

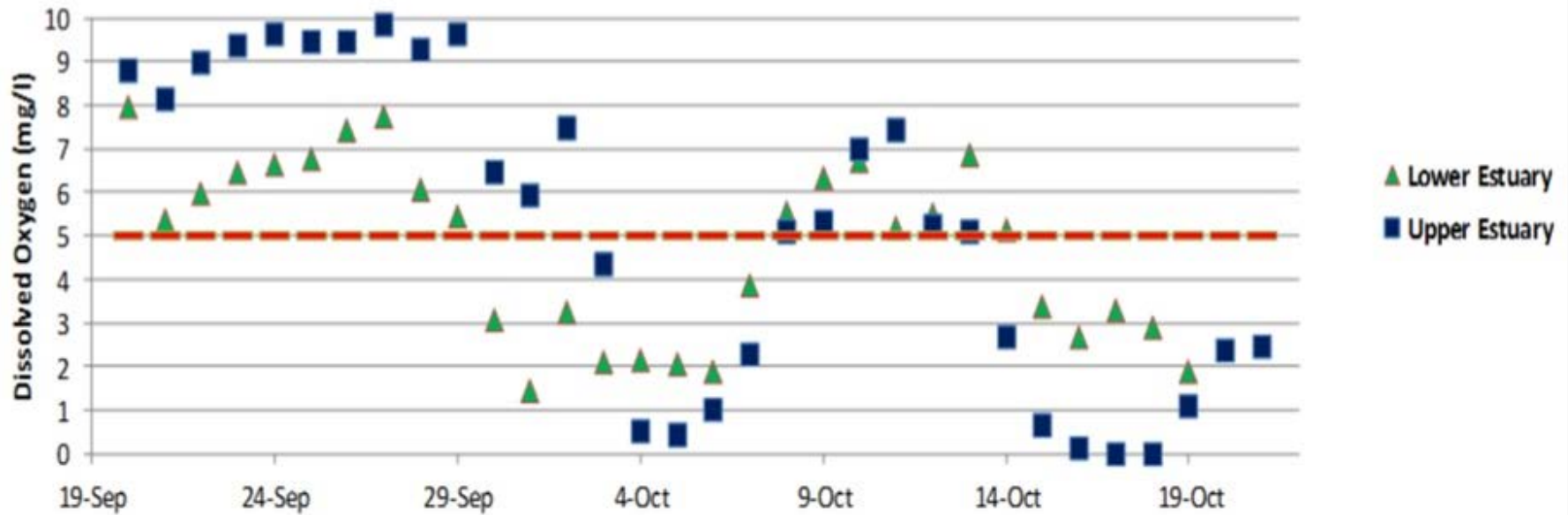
Low

Very Low

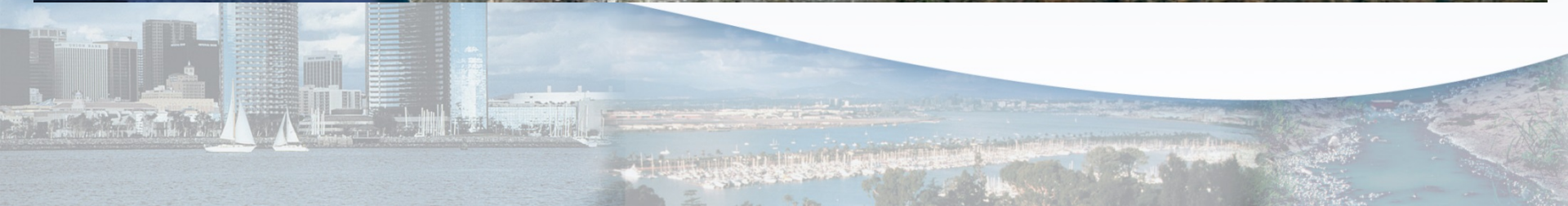
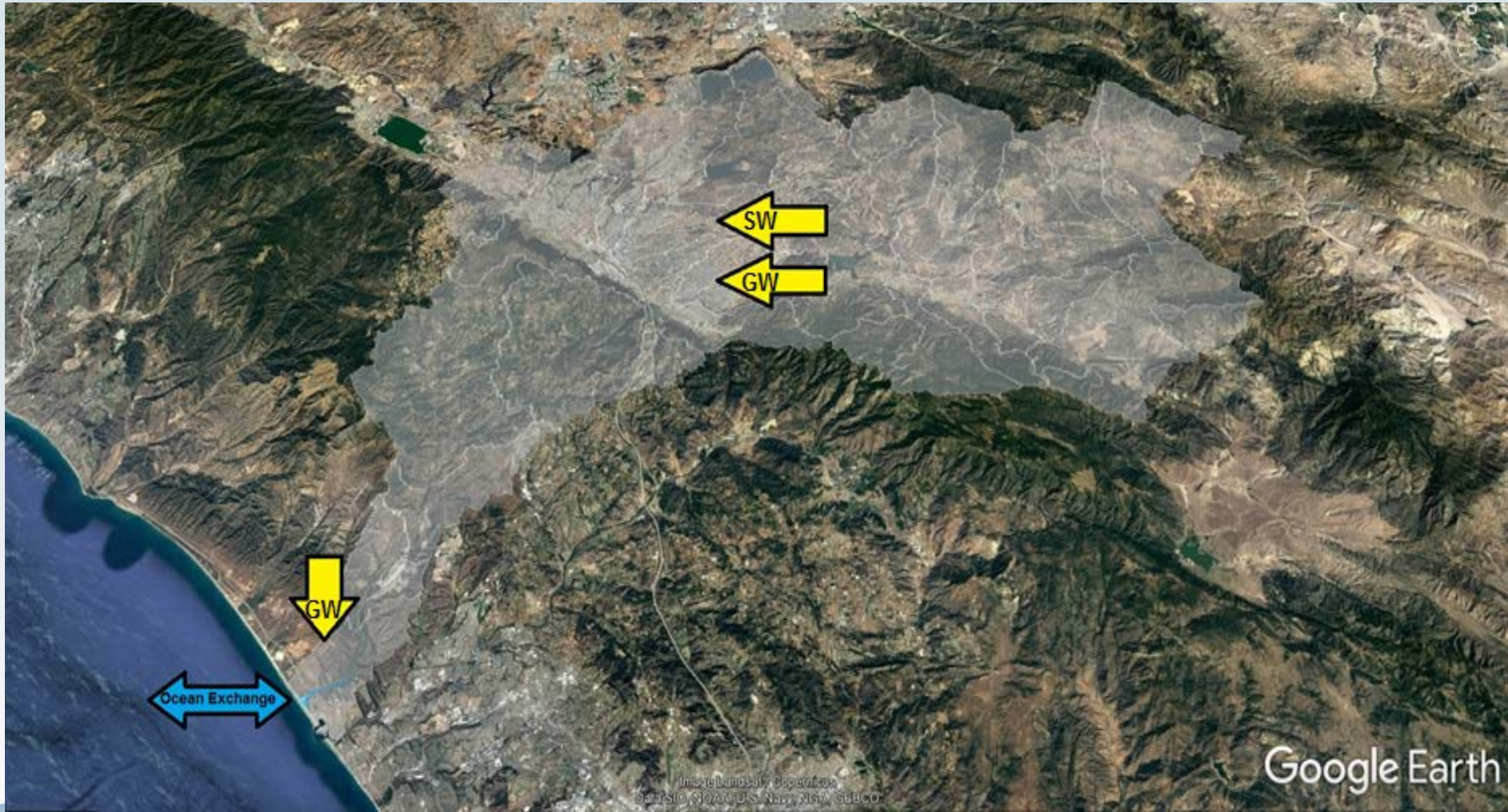


# Santa Margarita River Estuary Depressed Dissolved Oxygen

## Daily Average Dissolved Oxygen (DO) Concentrations



# Nutrient Sources

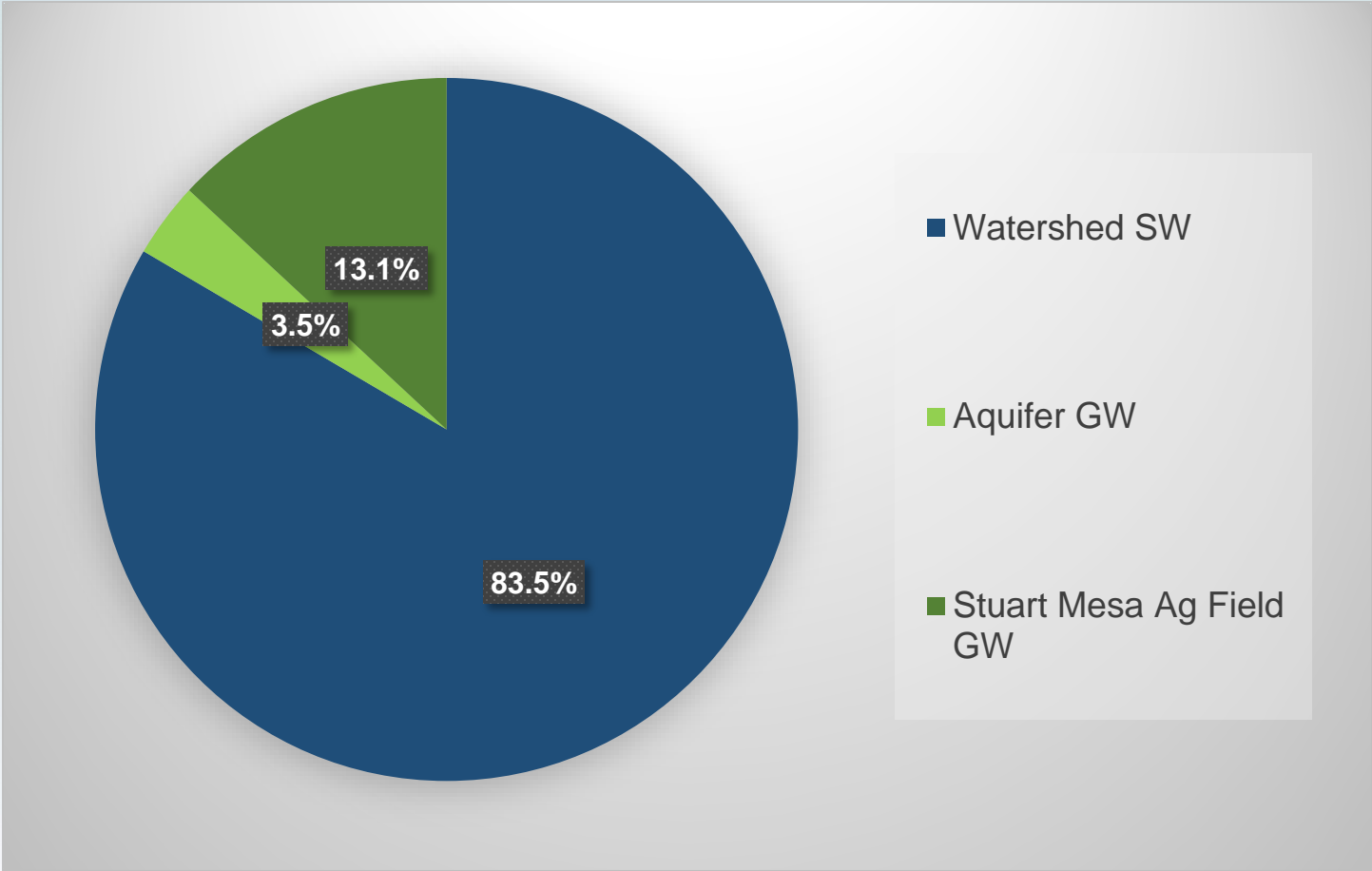


# Historic Nutrient Sources

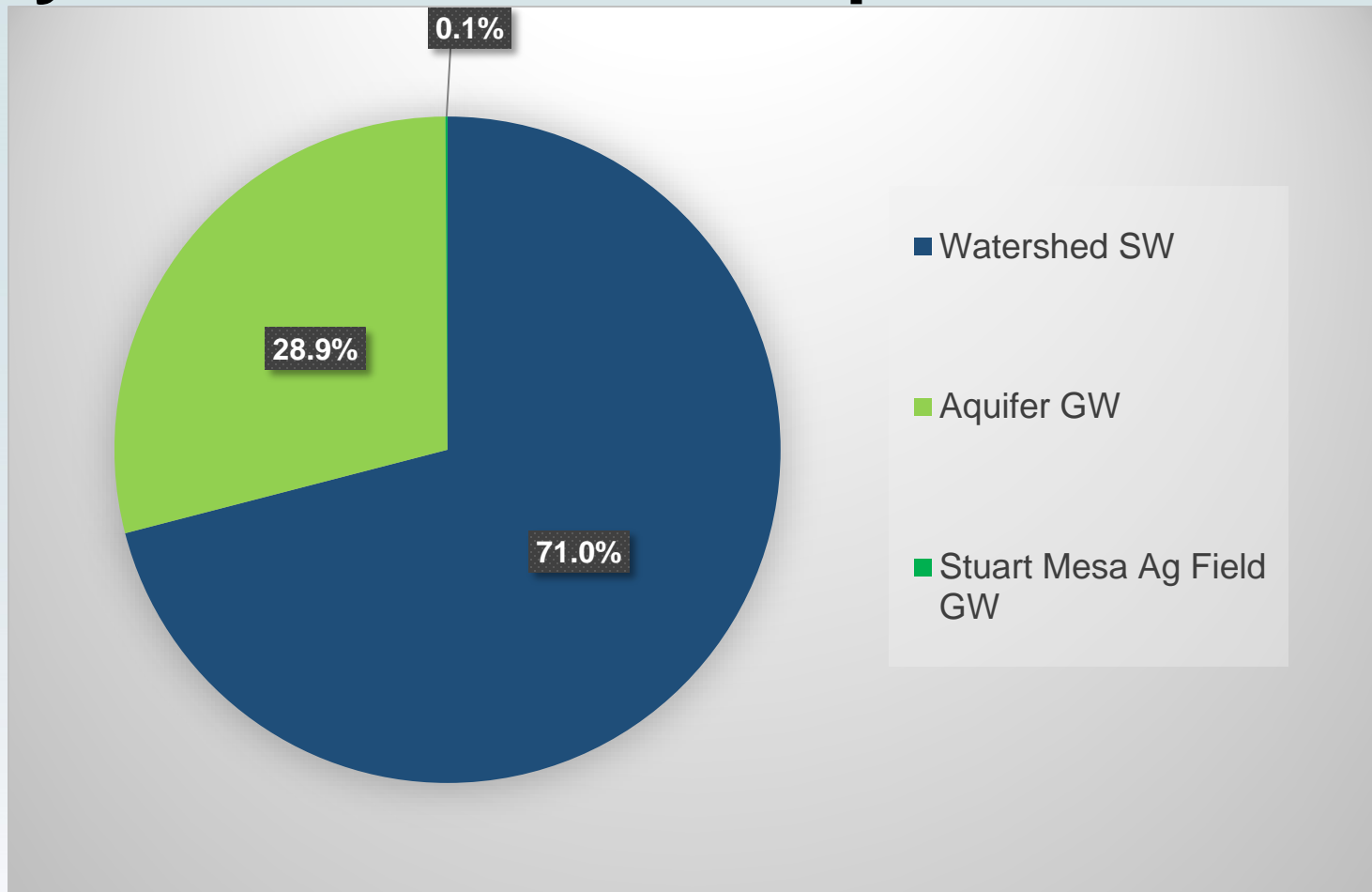




# Dry Weather Total Nitrogen Sources



# Dry Weather Total Phosphorus Sources





# Stakeholder Group Restoration Strategy

- **Santa Margarita River Nutrient Initiative Stakeholder Group (Stakeholder Group)**

**County of San Diego**

**Riverside County Flood Control and Water Conservation District**

**County of Riverside**

**Rancho California Water District**

**City of Temecula**

**City of Murrieta**

**City of Wildomar**

**U.S. Marine Corps Base Camp Pendleton**

**NAVY Space and Naval Warfare Systems – Systems Center Pacific**

**Pechanga Band of Luiseno Indians**

**Sierra Club**

**Cal Trout**

**Tetra Tech, Inc.**

**Stetson Engineers**

**Larry Walker and Associates**

**Southern California Coastal Water Research Project**

**United States Environmental Protection Agency**

# Stakeholder Group Restoration Strategy

Point Sources	Non-point Sources	Background
<ul style="list-style-type: none"><li>• MS4s</li><li>• Industrial Sites</li><li>• Construction Sites</li><li>• Municipal Sewer Spills</li><li>• Private Sewer Lateral Spills</li><li>• Groundwater Dewatering Discharges</li><li>• Recycled Water Discharges</li></ul>	<ul style="list-style-type: none"><li>• Agricultural Discharges</li><li>• Polluted Groundwater from Former Agricultural Fields on Stuart Mesa</li><li>• Rising Polluted Groundwater from Watershed</li><li>• Leaking Septic Systems</li></ul>	<ul style="list-style-type: none"><li>• Open Space</li><li>• Ocean Water</li></ul>

# Nutrient Numeric Endpoint (NNE):

Ambient Nutrient Concentration(s)

**VS.**

## Multiple Lines of Evidence

- Dissolved Oxygen
- Macroalgal Biomass
- Benthic Community Condition

## Numeric Modeling

- Receiving Water Body Modeling
- Watershed Loading Model
- Groundwater Model



# NNE- Based Numeric Targets

Numeric Targets	Metric
	Macroalgal Biomass
	Dissolved Oxygen
	SQO Benthic Condition Category Score





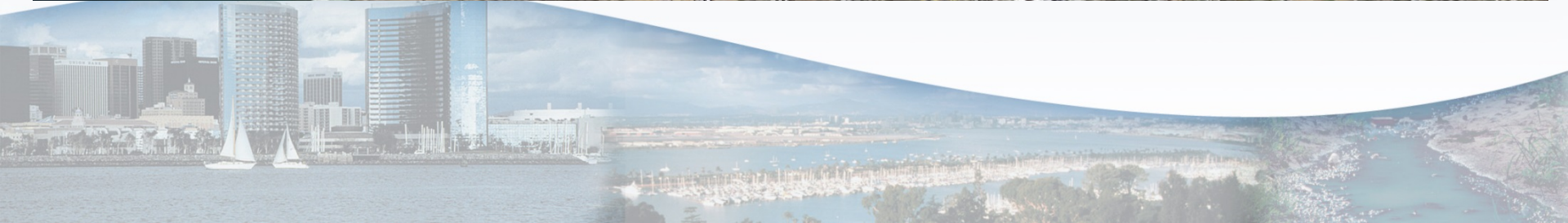
# Implementation of Stakeholder Group Restoration Strategy

- **The San Diego Water Board has issued new or revised permits that are more stringent**
  - **Regional Municipal Separate Storm Water (MS4) Permit**
  - **Statewide Phase II Small MS4 Permit**
  - **Regional Commercial Agricultural WDRs**



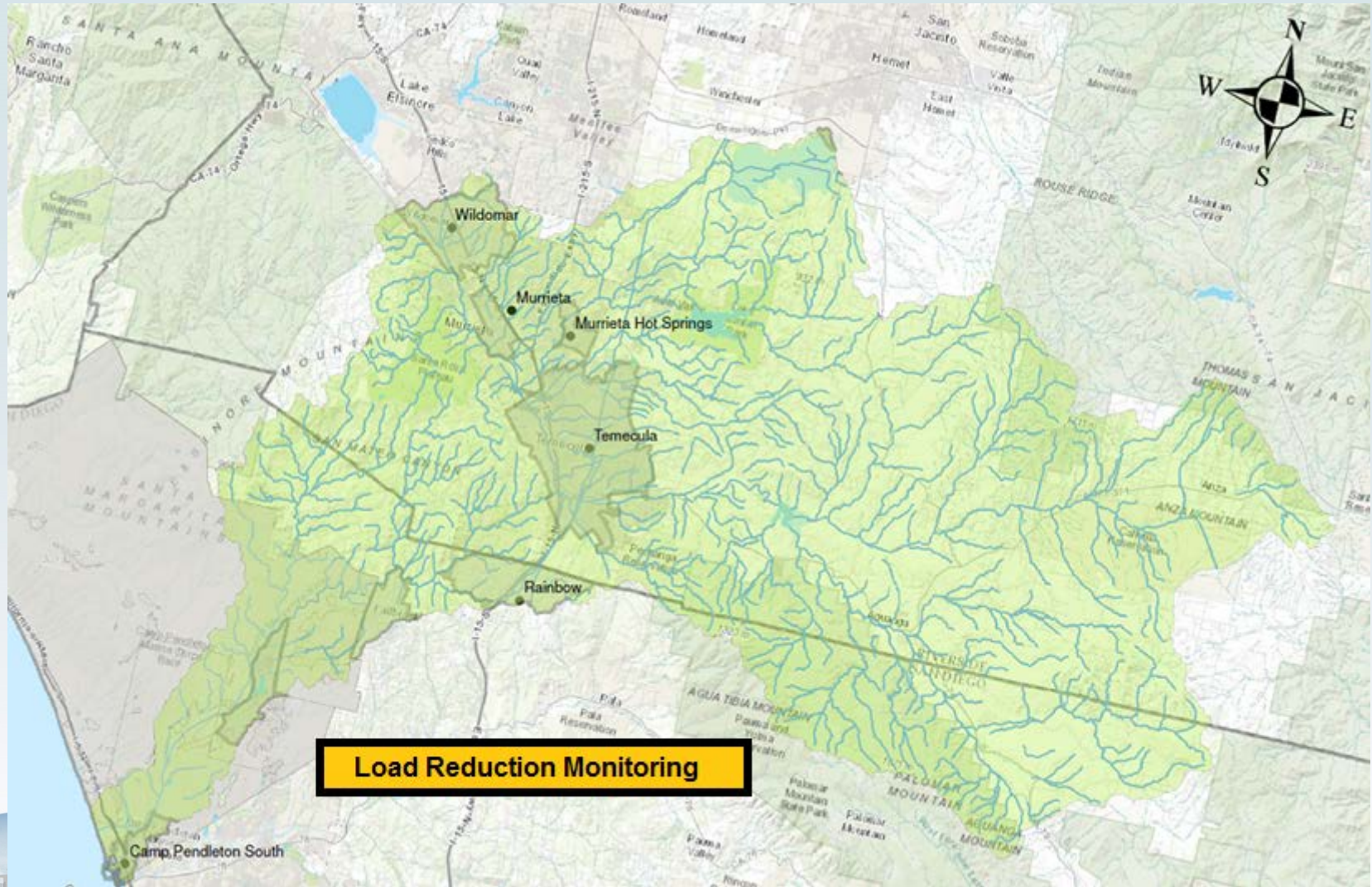
# Monitoring and Assessment

- Implement New and Robust Monitoring and Assessment Program
  - Monitoring and Assessment Framework





# Monitoring and Assessment





# Schedule

- **Public Workshop : Early 2018**
- **San Diego Water Board Hearing: Spring 2018**
- **Estimated attainment: 2038**





# Questions

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**Santa Margarita Project Lead**

**Environmental Scientist**

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**Cynthia Gorham**

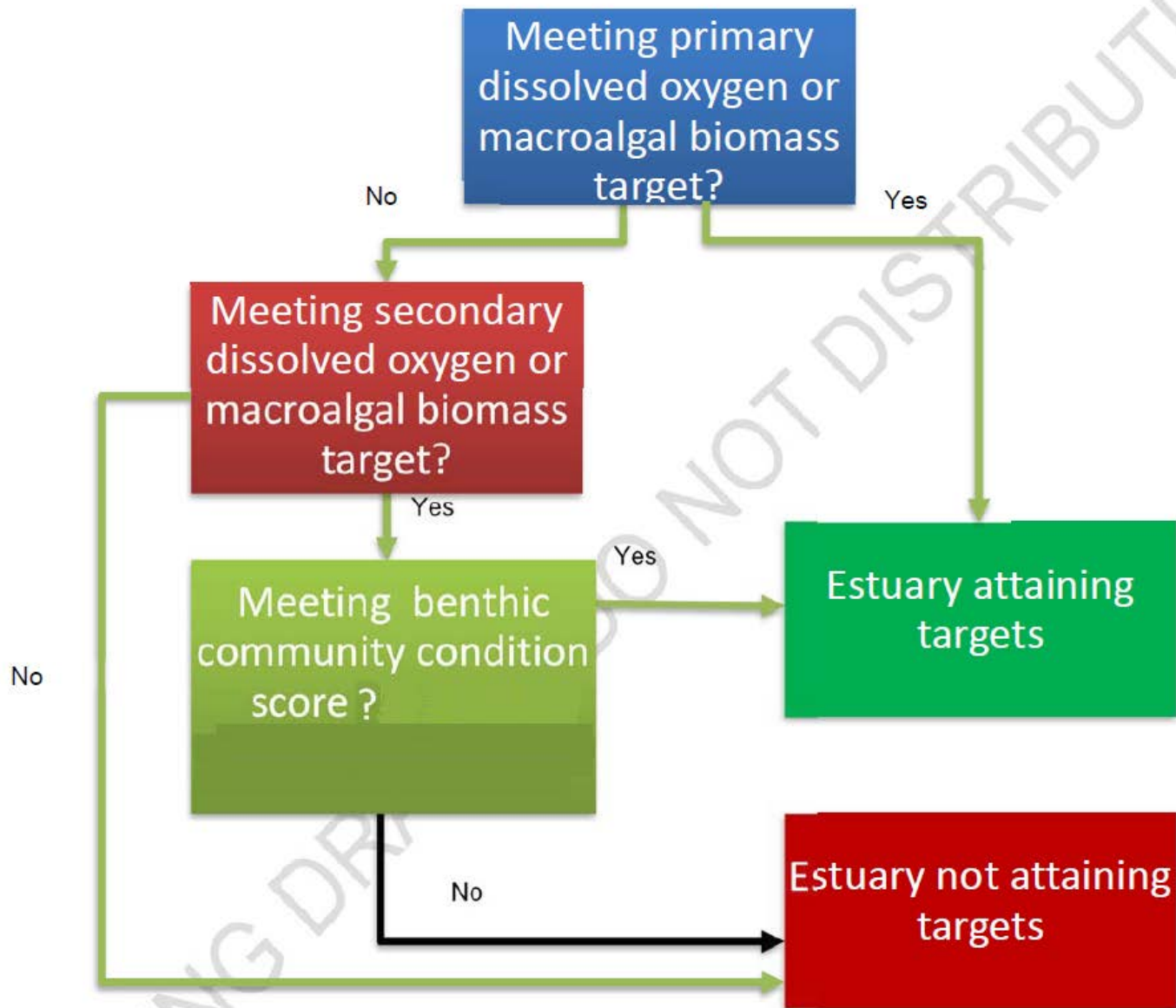
**(Supervisor)**

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**[cynthia.gorham@waterboards.ca.gov](mailto:cynthia.gorham@waterboards.ca.gov)**

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# Implementation: Secondary Permits

- **Supporting-Role Permits:**
- **Caltrans General Permit (2012-0011-DWQ);**
- **Construction General Permit (2009-0009-DWQ);**
- **Industrial General Permit (2014-0057-DWQ);**
- **General Discharge Requirements for Sanitary Sewer**
- **Systems Permit (Order No. 2006-0003-DWQ); and**
- **Small Domestic Wastewater Treatment Systems Permit (Order No. WQ 2014-0153-DWQ).**



Source	2008 Total Nitrogen Loads (lbs/yr)	2008 Total phosphorus Loads (lbs/yr)
<b>Point Sources</b>		
San Diego County MS4	74	5
Riverside County MS4	9,932	990
U.S. Marine Corps Base Camp Pendleton Phase II MS4	530	52
Caltrans MS4	404	46.2
<b>Nonpoint Sources</b>		
Commercial Agricultural Dischargers - SD County	30,421	1,156
Commercial Agricultural Dischargers – Riverside	43,916	2,166
Commercial Agricultural Dischargers - Federal Lands	353	13
Dairy Farms	49	5
<b>Background Sources</b>		
Natural Sources	16,184	1,351
<b>Total</b>	<b>101,863</b>	<b>5,784</b>



# Monitoring and Assessment

