

CLIMATE CHANGE IN THE CENTRAL COAST: *A STATUS REPORT*

December 6, 2018

Dominic Roques

Central Coast Water Board

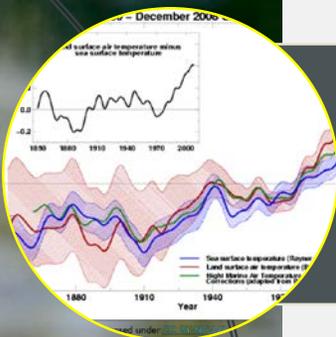
TODAY'S PRESENTATIONS

1. Water Board Staff: Water Board's Response to Climate Change
2. US Geological Survey: Sea Level Rise
3. Central Coast Climate Collaborative: Stakeholder Collaboration
4. San Luis Obispo County: Integrated Water Resource Management
5. Panel Discussion

CENTRAL COAST WATER BOARD RESPONSE TO CLIMATE CHANGE

1. Regional Effects
2. Water Board Response
3. Regional Stakeholder Response
4. Next Steps

EXPECTED IMPACTS IN THE CENTRAL COAST REGION from CALIFORNIA'S 4TH CLIMATE ASSESSMENT REGIONAL REPORT



Temperature

- Will continue to increase through next century with greater increases in the inland region



Precipitation

- Precipitation is expected to increase slightly, but its variability will increase substantially



Water Supply Shortages

- Increases in groundwater extractions may result in increased saltwater intrusion
- Lower surface flows will lead to higher pollutant concentrations impacting aquatic species

EXPECTED IMPACTS IN THE CENTRAL COAST REGION from CALIFORNIA'S 4TH CLIMATE ASSESSMENT REGIONAL REPORT **SEA LEVEL RISE**



Observed and projected acceleration in sea level rise (SLR) poses a significant threat to the regions' coastal communities

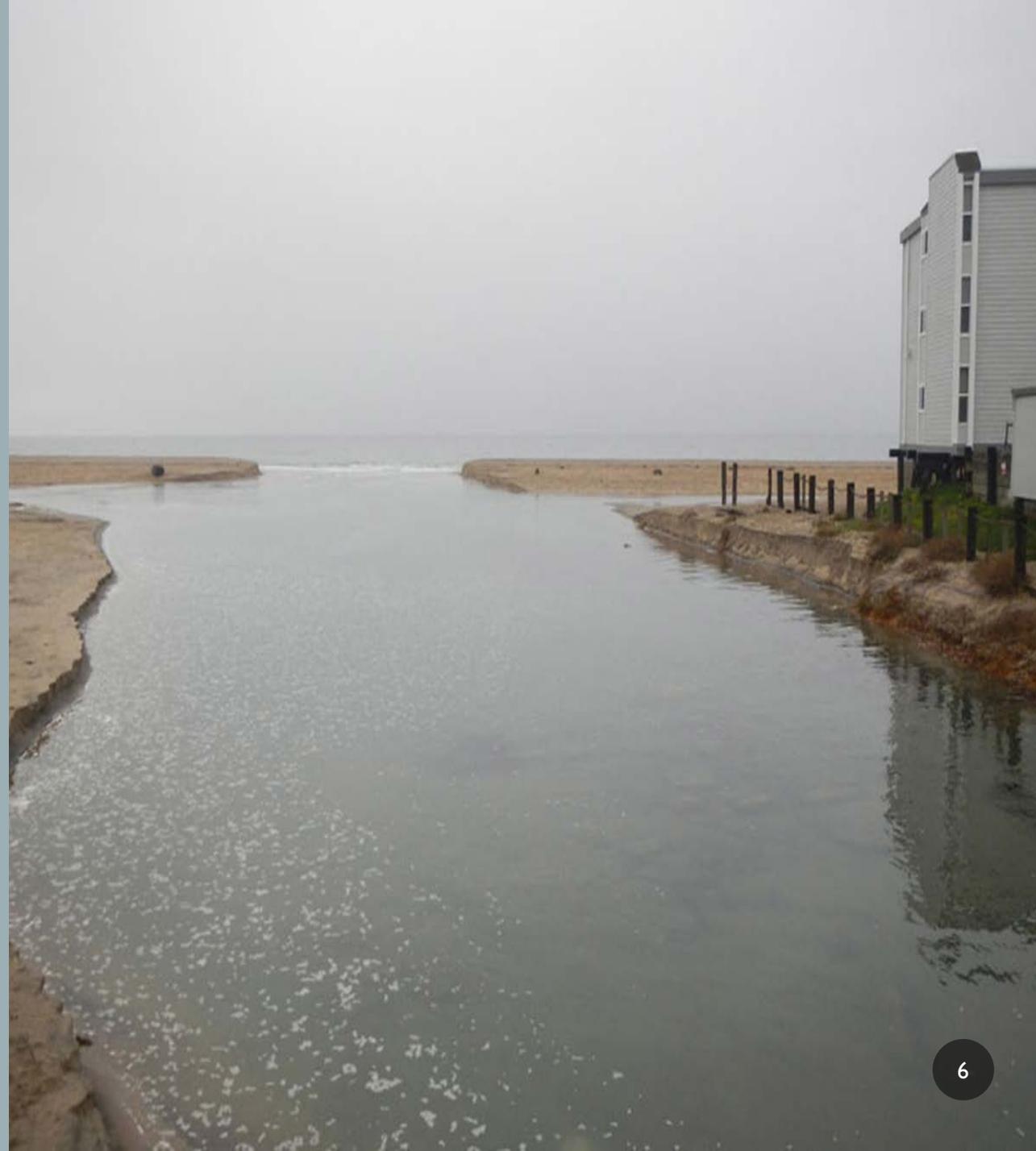
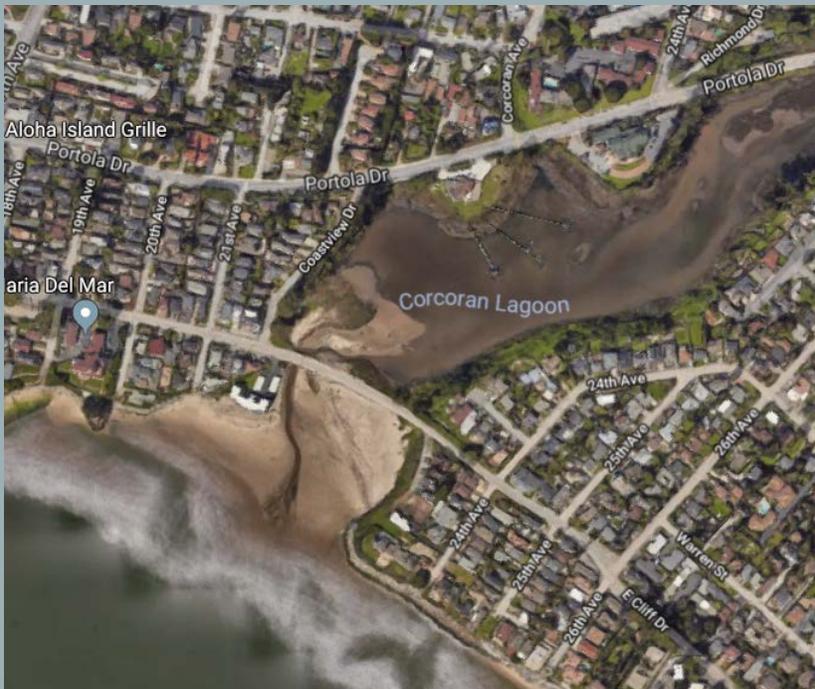


Approximately 12,000 residents and \$2.4 Billion in property could be exposed to flooding due to SLR and storms in Santa Barbara County by the end of the century



Some Central Coast marshes may drown or become shallow mudflats, leading to a loss of ecosystem services, including carbon sequestration. Two-thirds of California's beaches will be lost by end of century

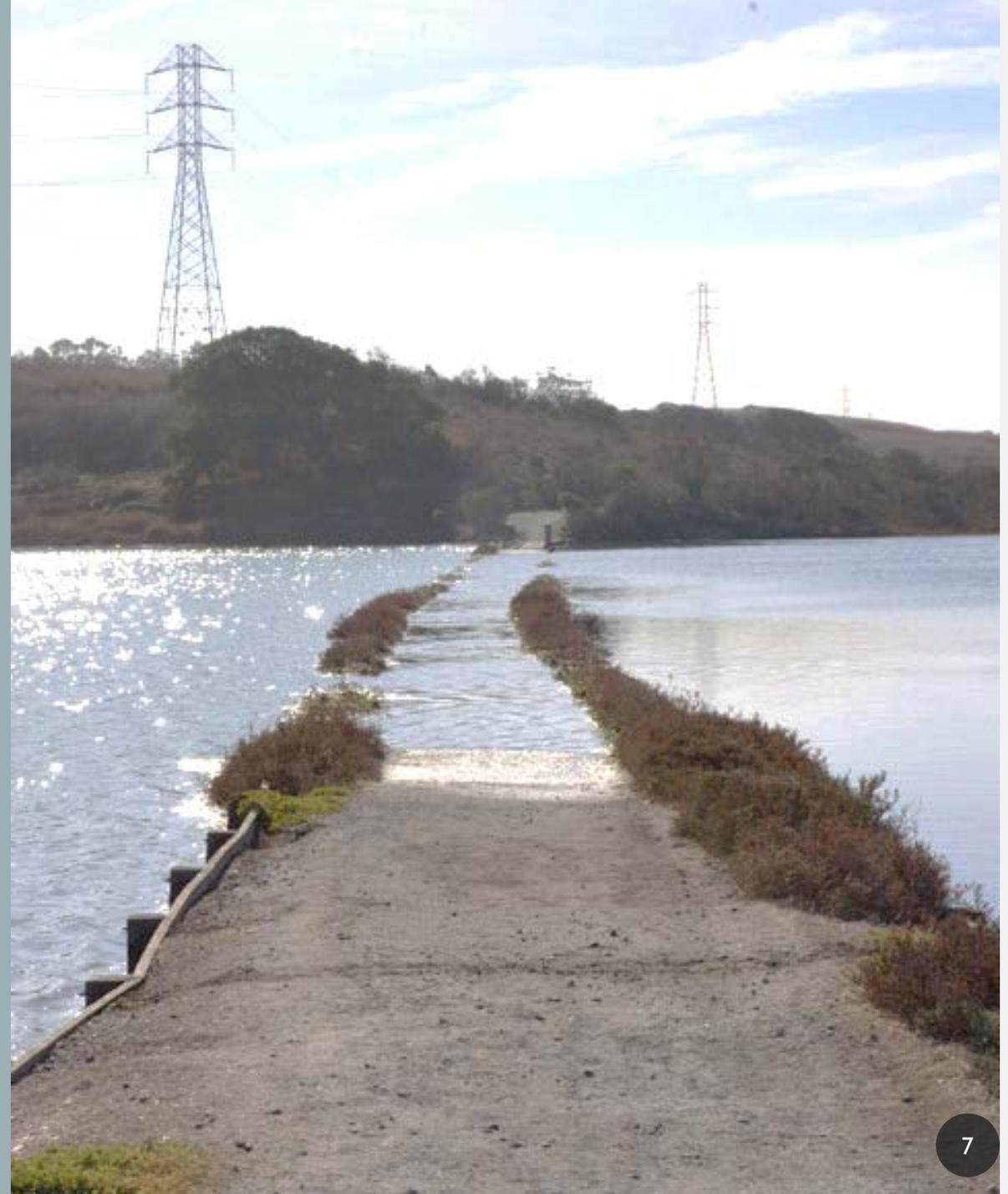
CORCORAN LAGOON KING TIDES 12/14/16



ELKHORN SLOUGH
1 JAN 2014

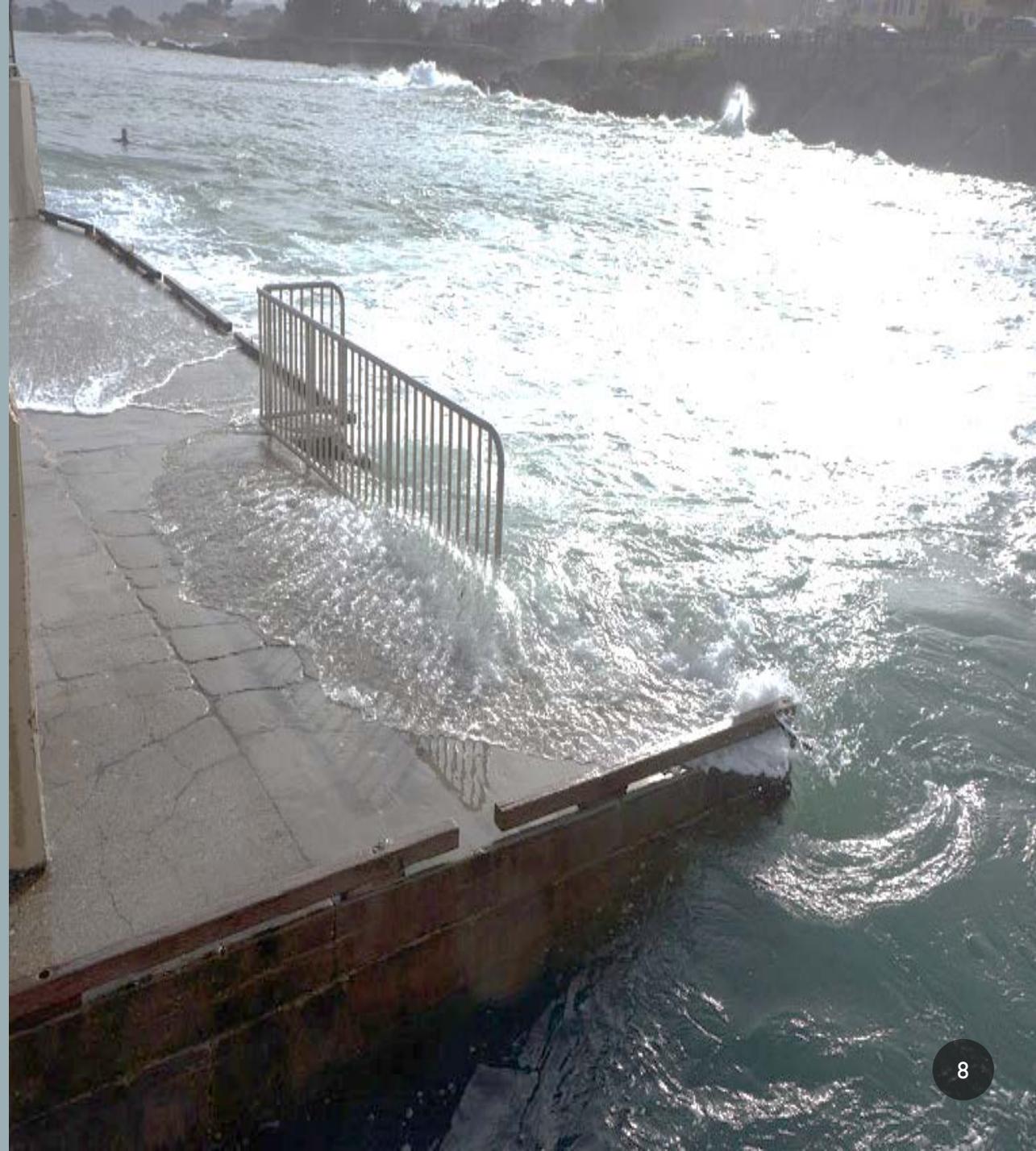
PHOTO: L.A. JENSEN

After 2050, sea-level rise projections increasingly depend on the trajectory of greenhouse gas emissions



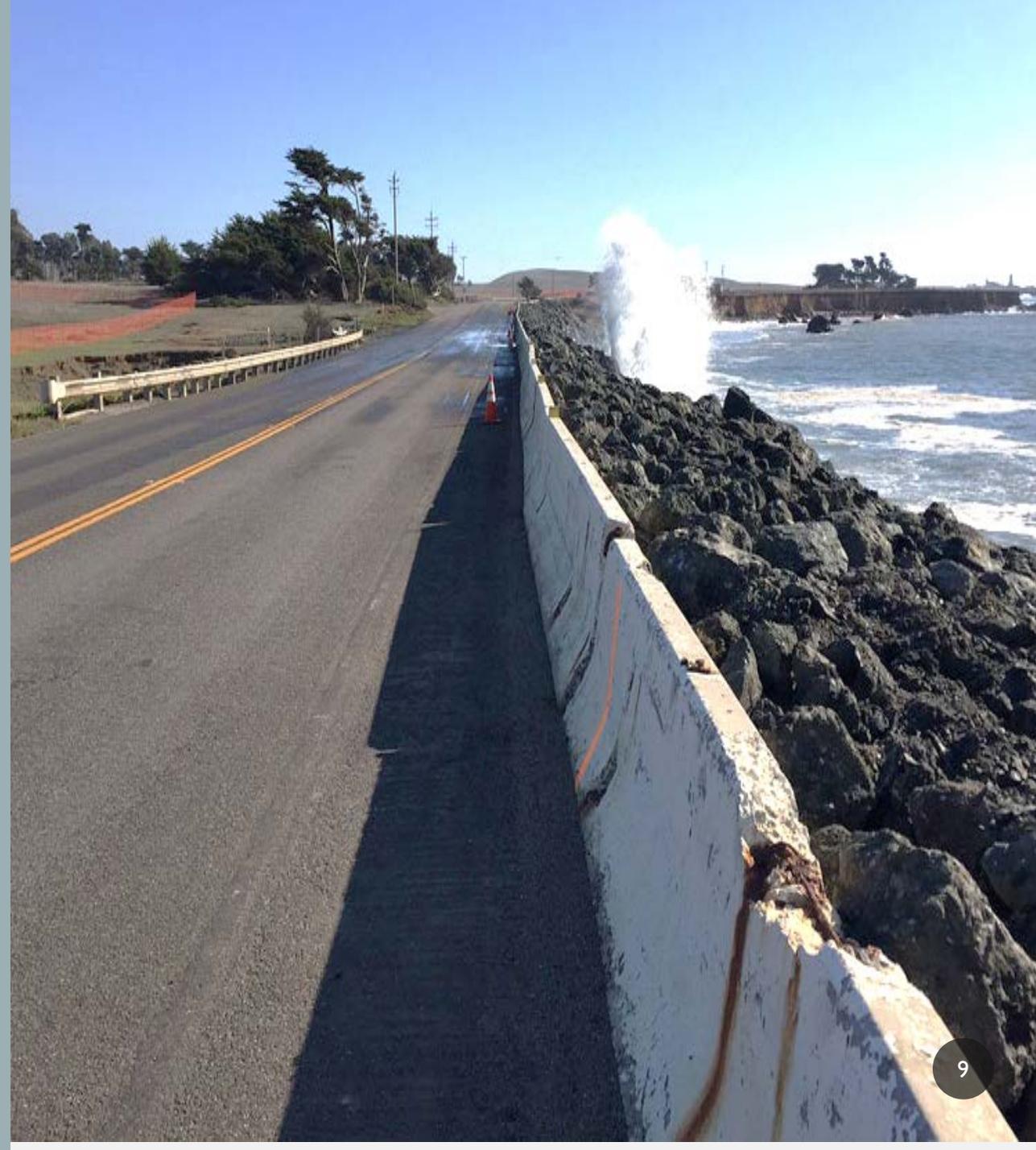
LOVERS POINT, CALIFORNIA
KING TIDES
DECEMBER 2014

PHOTO: L. A. JENSEN

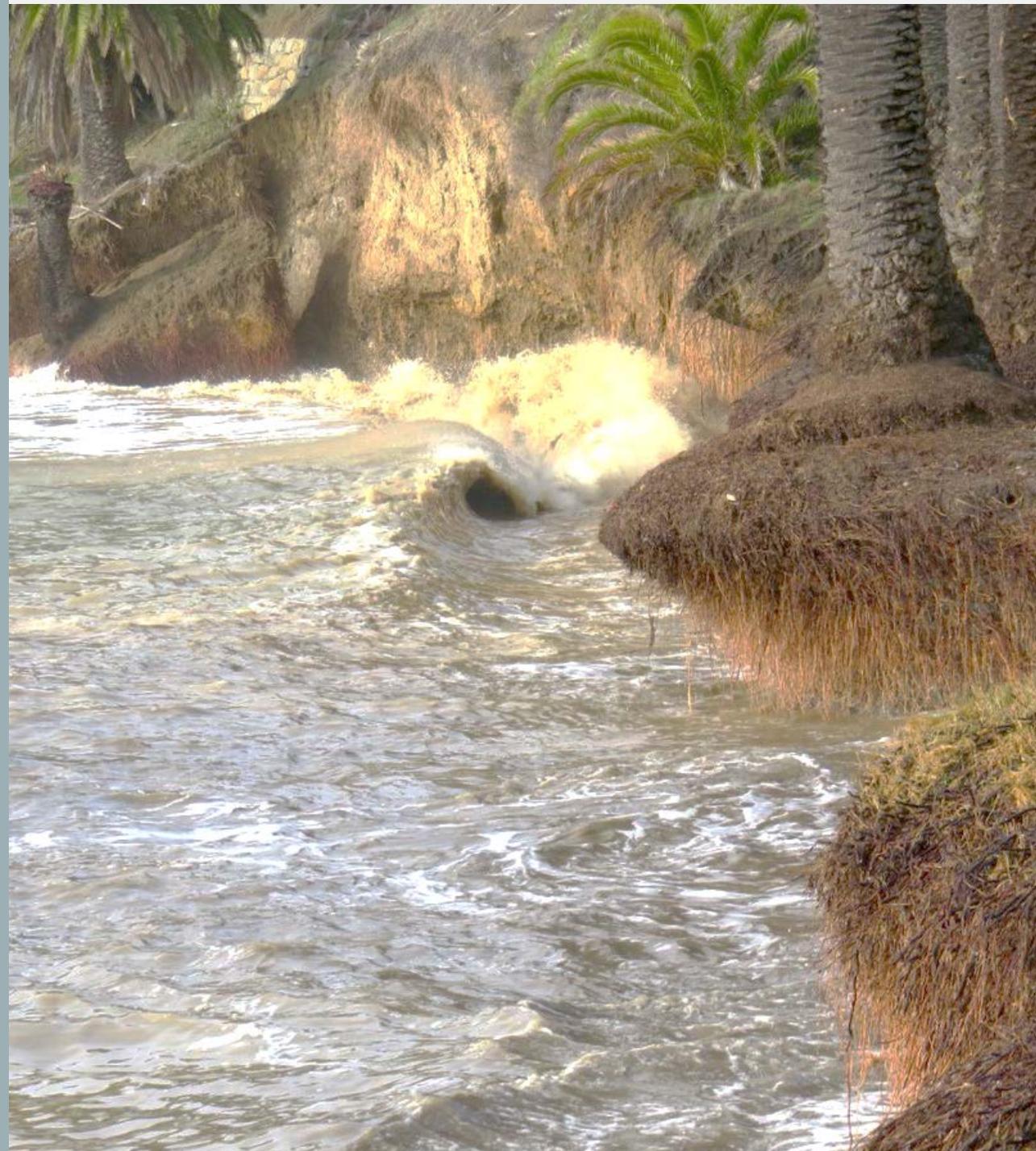


PIEDRAS BLANCAS
29 NOVEMBER 2015

PHOTO: SHANNON FIALA



REFUGIO STATE BEACH
28 APRIL 2016



EXPECTED IMPACTS IN THE CENTRAL COAST REGION

from CALIFORNIA'S 4TH CLIMATE ASSESSMENT REGIONAL REPORT

WILDFIRE

Frequent and sometimes large wildfires will continue to be a major disturbance and post-fire recovery time may be lengthened

FIRE	DATE	COUNTY	ACRES
Thomas	December 2017	Santa Barbara/Ventura	281,893
Zaca	July 2007	Santa Barbara	240,207
Basin Complex	June 2008	Monterey	162,818

EXPECTED IMPACTS IN THE CENTRAL COAST REGION

from CALIFORNIA'S 4TH CLIMATE ASSESSMENT REGIONAL REPORT



Agriculture

- Highly sensitive to climate change (precipitation, temperature, and increased frequency and intensity of climate extremes)
- Salinas Valley is identified as one of the most vulnerable agricultural regions



Public Health

- Increases in heat-related illnesses for agricultural workers
- Increase in harmful particulate matter from wildfires
- Increase in ground-level ozone

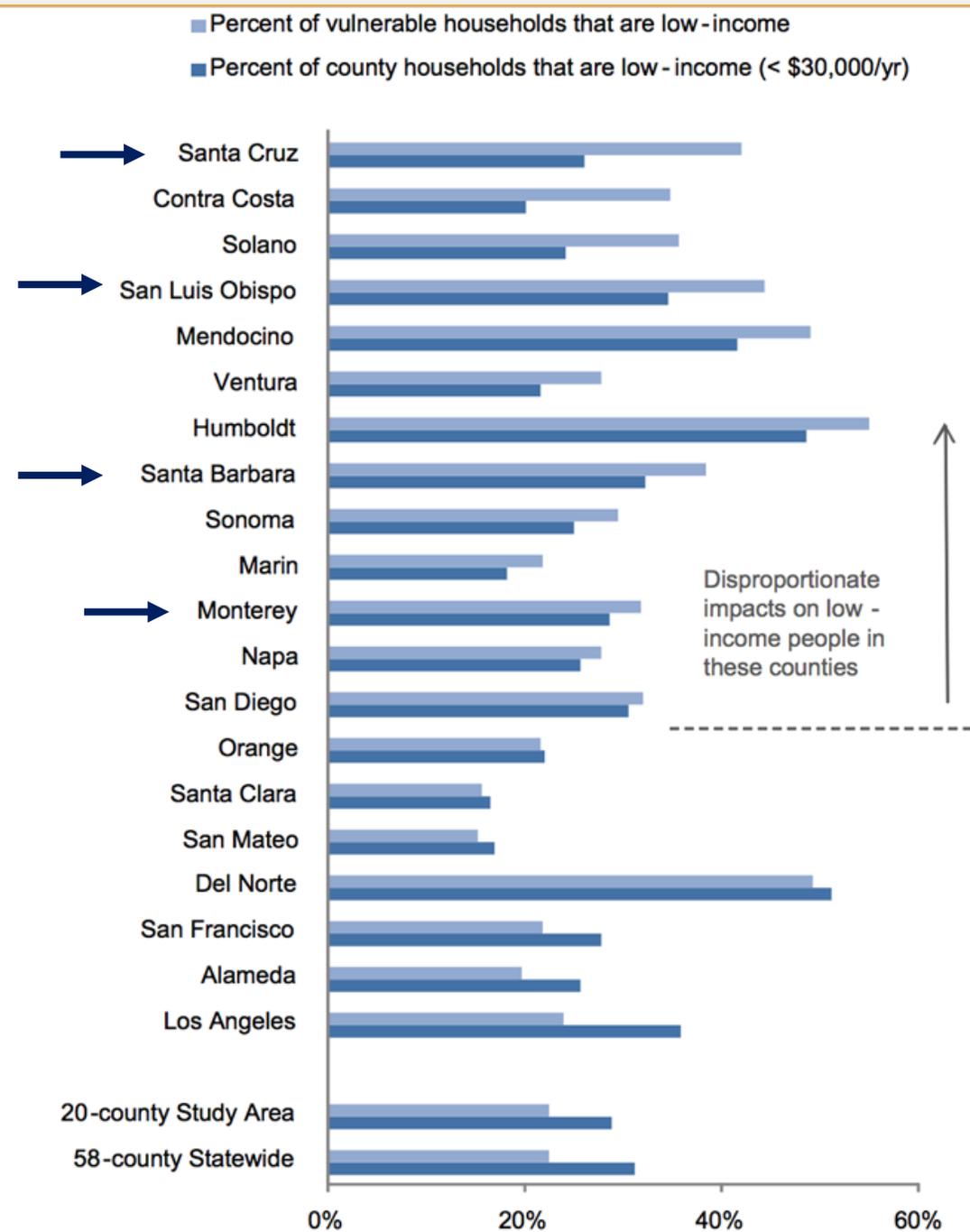


Public Health

- Increase in harmful algal blooms will have detrimental effects on animals and people exposed to toxins
- Increase infectious/vector-borne diseases (Valley Fever and Pacific Coast tick fever)

CLIMATE CHANGE EFFECTS ON LOW INCOME HOUSEHOLDS

Low-income households vulnerable to a 100-year flood with a 1.4-meter sea-level rise compared with the county total



DEFINITIONS

Mitigation:

Actions taken to reduce the concentrations of greenhouse gases in the atmosphere

Adaptation:

Anticipating the adverse effects of climate change and taking action to prevent or minimize the damage they can cause

CENTRAL COAST WATER BOARD ACTIVITY IN RESPONSE TO CLIMATE CHANGE

- Increase coordination with Water Board counterparts
- Compile/review regional climate change information
- Raise Water Board staff awareness
- Internal consultation with program managers
- Engage with experts and stakeholders in the region
- Board Informational Item

ADAPTING PROGRAM STRATEGIES



Modify orders to require planning and assessment for sea level rise



Implement improved emergency orders and permits



Implement more protective strategies



Adjust remediation strategies at clean-up sites



Modify or develop new orders for land disposal of debris from wildfires

ADAPTING PROGRAM STRATEGIES



Facilitate changes to water management strategies



Shape State and local policy to accelerate adaptation



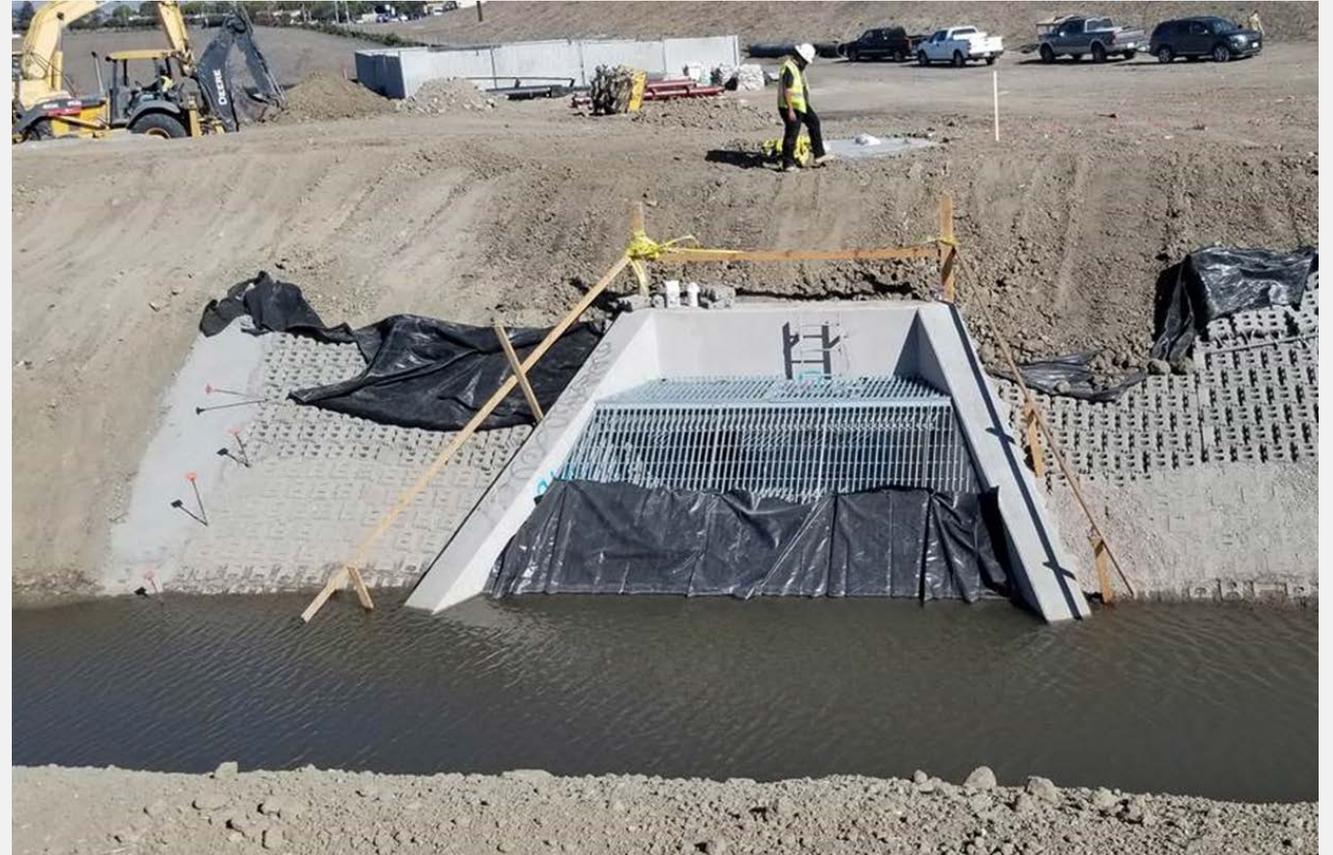
Provide assistance in bringing grants and loans to region



Aid in developing the collective political will to implement expensive, long-term actions

HOW WE ARE RESPONDING: *STORMWATER*

- Requiring Low Impact Development
- Supporting Loading and Runoff Volume Modeling
- Facilitating recharge of urban runoff
- Promoting multi-benefit projects in Stormwater Resource Plans



HOW WE ARE RESPONDING: IRRIGATED LANDS REGULATORY PROGRAM

- Fostering modernization of irrigated agriculture by promoting:
 - *Mitigation* through management practices that store carbon: cover crops, healthy soils
 - *Adaptation* through irrigation and nutrient management



HOW WE ARE RESPONDING: WATER SUPPLY PORTFOLIO DIVERSIFICATION

- 11 billion gallons of treated wastewater discharged to ocean in 2015
- 85% recycling = 30% coastal urban water use



Inventory of Municipal Wastewater Discharges to California Coastal Waters

HEAL THE OCEAN

Project Manager: James Hawkins, MPP

Research Assistants: Corey Radis, ME / Alex Bennett, MESM

HOW WE ARE RESPONDING: WATER SUPPLY PORTFOLIO DIVERSIFICATION

- Promoting groundwater recharge with recycled wastewater
- Six groundwater recharge projects:
 - 1 in operation
 - 1 in construction
 - 4 in planning or design
- Integrated program response: NPDES, Stormwater, WDRs



STATE AND LOCAL AGENCY RESPONSE

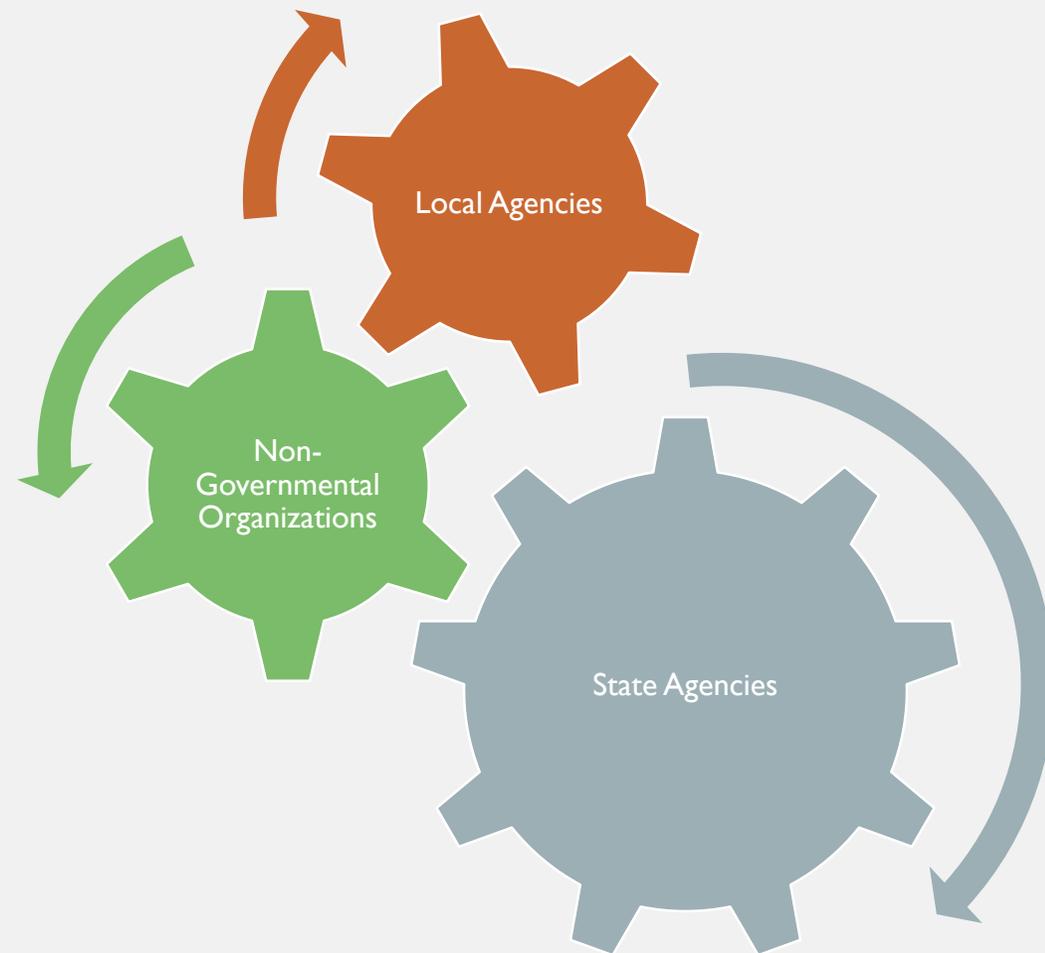
**A COLLECTIVE RESPONSE IS NEEDED
CALIFORNIA LEGISLATION KEY TO
PROMOTING ACTION:**

2006 Climate Action Plans (AB 32)

2014 SGMA (AB 1739, SB 1168, SB 1319)

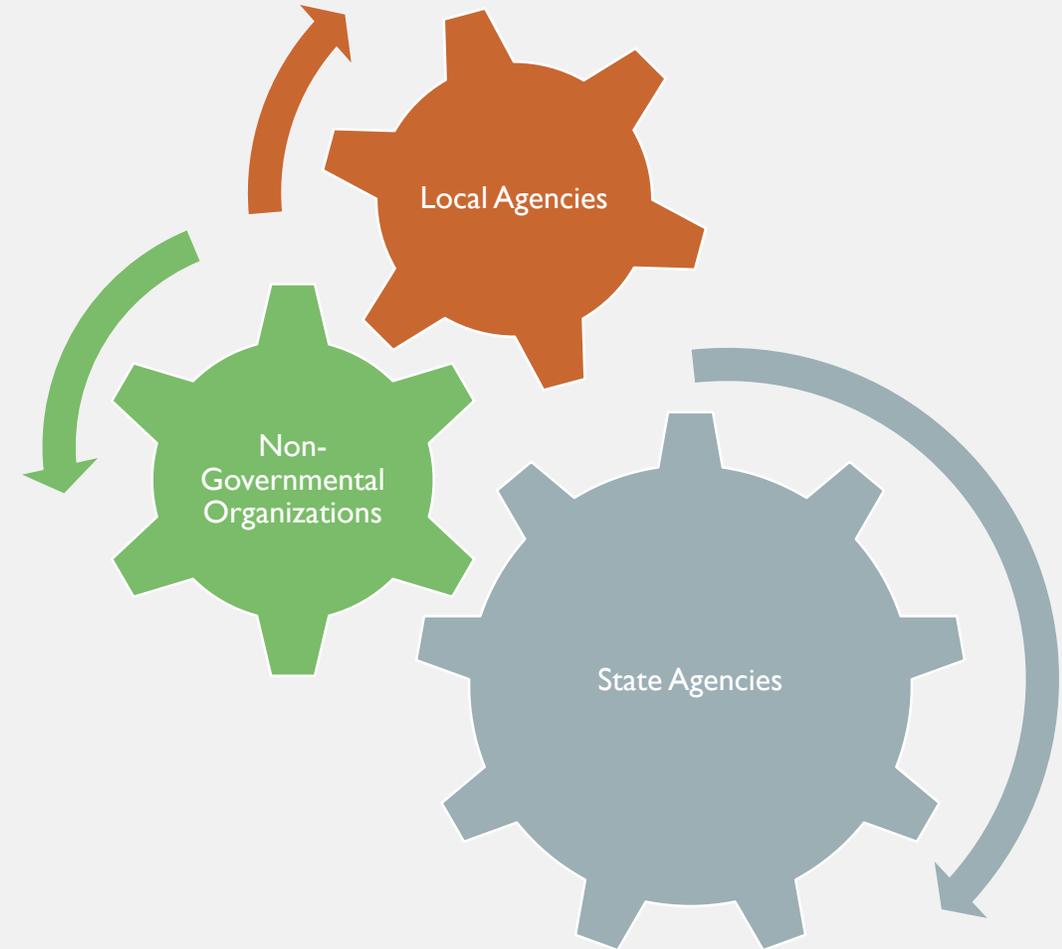
2018 Climate Change: Infrastructure Planning
(AB 2800)

Proposition 84, I, 10



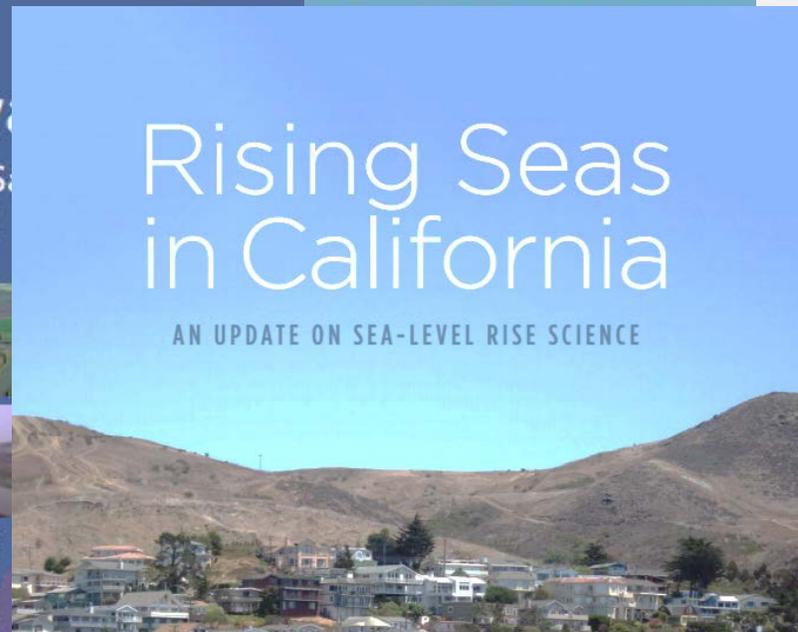
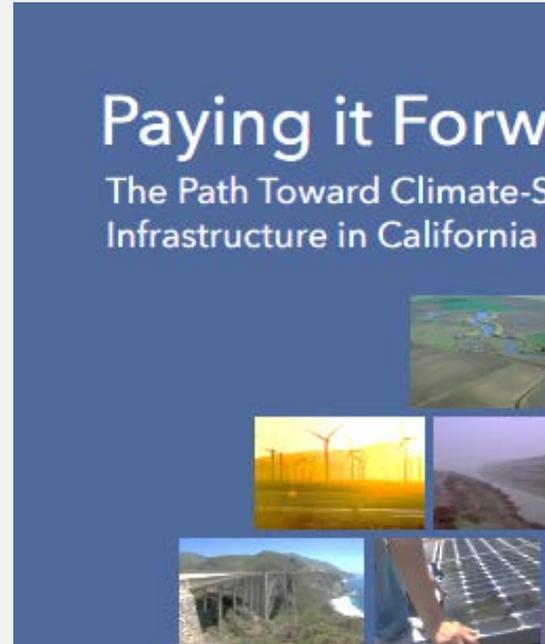
STATE AND LOCAL AGENCY RESPONSE

State Board Divisions: Water Quality, Water Rights, Financial Assistance, Drinking Water
State Coastal Conservancy
State Coastal Commission
Ocean Protection Council
Department of Water Resources
Cal Fish and Wildlife
Department of Food and Agriculture
Office of Emergency Services
Office of Planning and Research
California Natural Resources Agency
California Energy Commission
Universities



STATE AND LOCAL AGENCY RESPONSE

- STATE AGENCIES PROVIDE GUIDANCE



NON-GOVERNMENTAL ORGANIZATIONS

Educate

Guide

Research

Facilitate

Grants

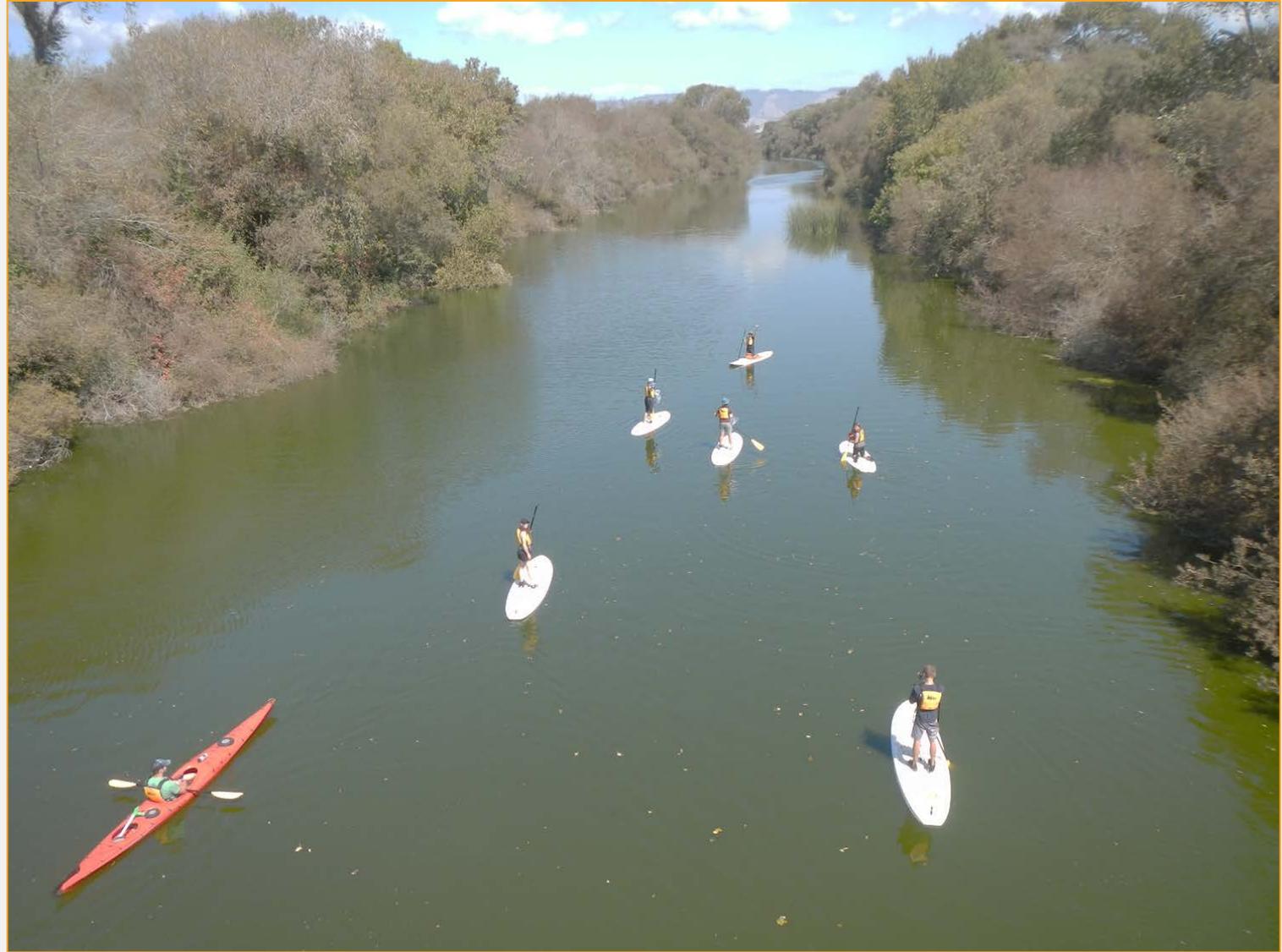
Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act

GUIDANCE FOR PREPARING GROUNDWATER
SUSTAINABILITY PLANS



NEXT STEPS

- Staff is alert to effects of climate change
- Addressing effects in current work
- Prioritizing climate-related work to align with overall priorities
- Developing work plan around 3 Strategies



NEXT STEPS

- I. Facilitate adaptation through direct regulatory authority and associated influence and assistance



NEXT STEPS

2. Collaborate with climate change stakeholders

Central Coast Regional Climate Symposium

Monday, December 10, 2018 | 10:00am – 4:00pm
Central Coast Water Board Hearing Room (895 Aerovista Lane, Suite 101) | San Luis Obispo, CA
UC Santa Cruz – University Center – Alumni Room | Santa Cruz, CA

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- 10:00** **Welcoming Remarks**
Mayor Heidi Harmon | City of San Luis Obispo
Dominic Roques | Senior Engineering Geologist, Central Coast Water Board
Ruth Langridge | Researcher/Continuing Lecturer, University of California, Santa Cruz
- 10:20** **Overview of California's Fourth Climate Change Assessment**
Laurie ten Hope | Deputy Director, Energy Research and Development Division, California Energy Commission (CEC)
- 10:30** **Key Climate Impacts in the Central Coast Region**
Ruth Langridge | Researcher/Continuing Lecturer, UC Santa Cruz
- 11:00** **Risks and Opportunities for California's Coast and Ocean**
Gary Griggs | Geologist/Professor, UC Santa Cruz
Li Erikson | Research Oceanographer, U.S. Geological Survey
Jennifer Phillips | Senior Scientist, Governor's Office of Planning and Research (OPR)
- 11:45** **Connecting the Dots between Water, Agriculture, and Ecosystems**
Moderator: **Kif Scheuer** | Climate Change Director, Local Government Commission
Ruth Langridge | Researcher/Continuing Lecturer, UC Santa Cruz
Jenn Phillips | Senior Scientist, OPR
Melissa Rohde | Groundwater Scientist, The Nature Conservancy
Dominic Roques | Senior Engineering Geologist, Central Coast Water Board

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NEXT STEPS

3. Improve understanding of effects of climate change, and effectiveness of mitigation and adaptation





CONCLUSION

Patrick Barnard



Research Geologist

Pacific Coastal and Marine
Science Center