Welcome to the Salton Sea Management Program Annual Workshop

waterboards.ca.gov/saltonsea

May 16, 2023

CALIFORNIA
Water Boards

Language Interpretation

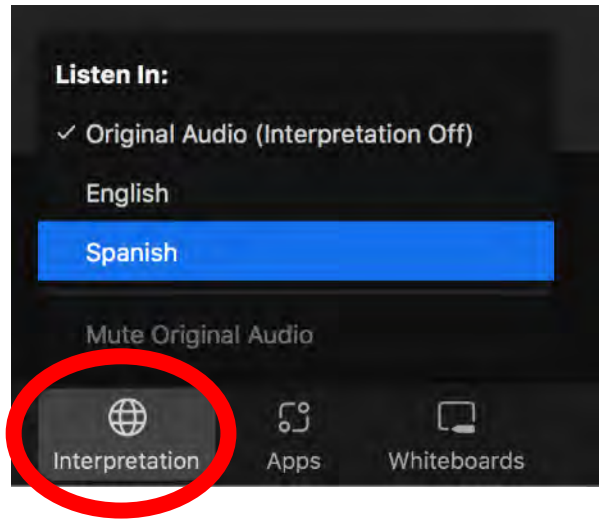
English YouTube stream: bit.ly/yt-May16

Spanish & English streams: video.calepa.ca.gov

To provide comment: bit.ly/ss-speaker-form

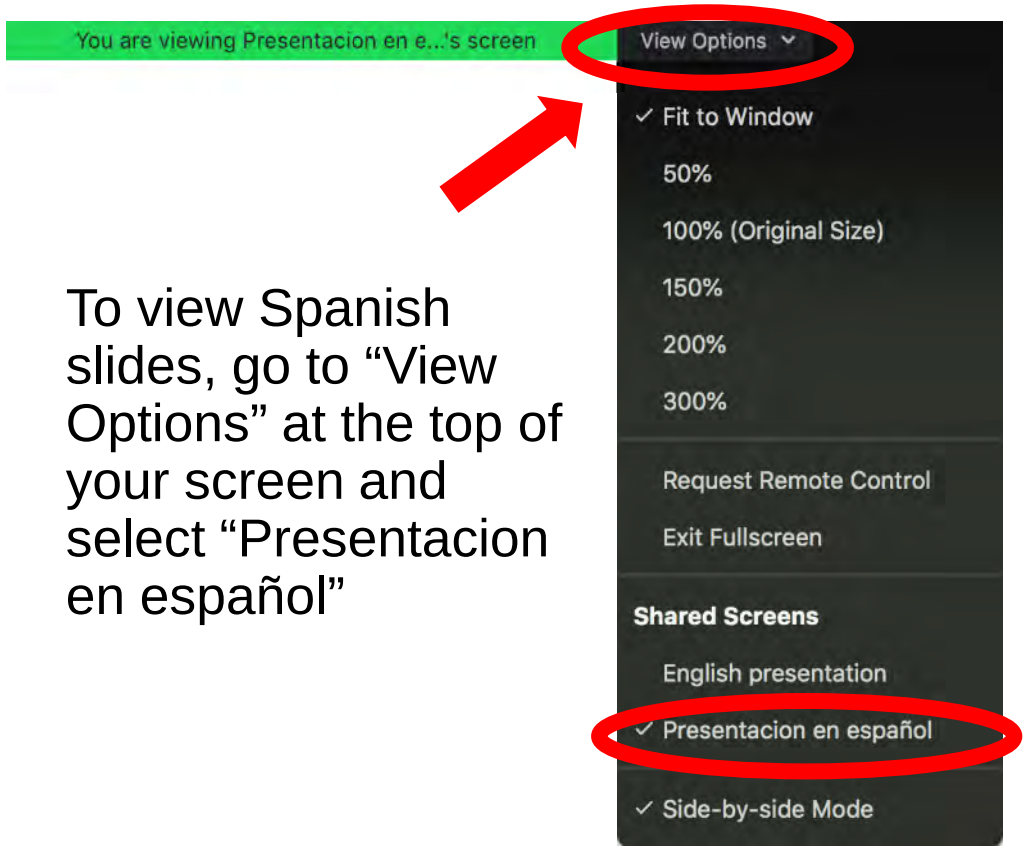
Live interpretation is available in Spanish

To hear Spanish audio, click the “Interpretation” globe button on the toolbar to switch audio channels



English audio will be on “Original audio”

To view Spanish slides, go to “View Options” at the top of your screen and select “Presentacion en español”



Welcome to the Salton Sea Management Program Annual Workshop

waterboards.ca.gov/saltonsea

May 16, 2023

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Water Boards

Opening remarks

Chairman Thomas Tortez

TORRES MARTINEZ DESERT CAHUILLA INDIANS

Opening remarks 1

Secretary Wade Crowfoot

CALIFORNIA NATURAL RESOURCES AGENCY (CNRA)

Opening remarks 2

Elected officials

The State Water Board's Role in the Salton Sea Management Program

Stephanie Holstege

Senior Environmental Scientist

May 16-17, 2023

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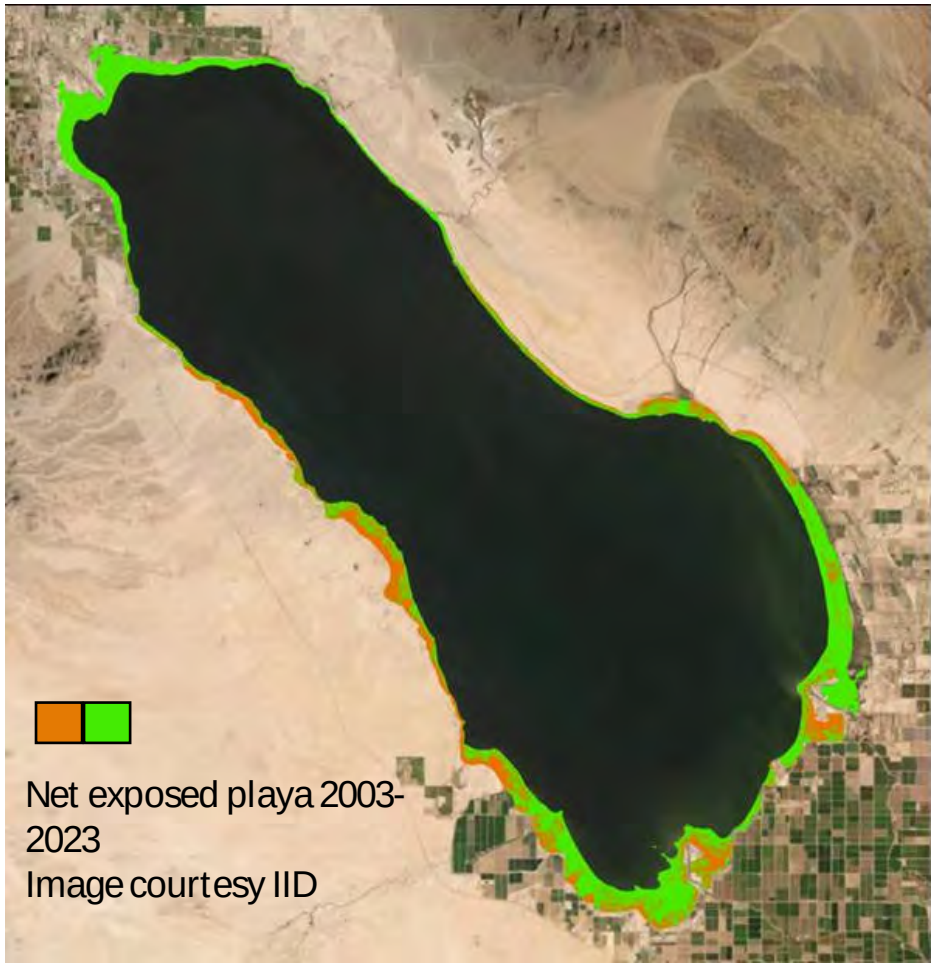
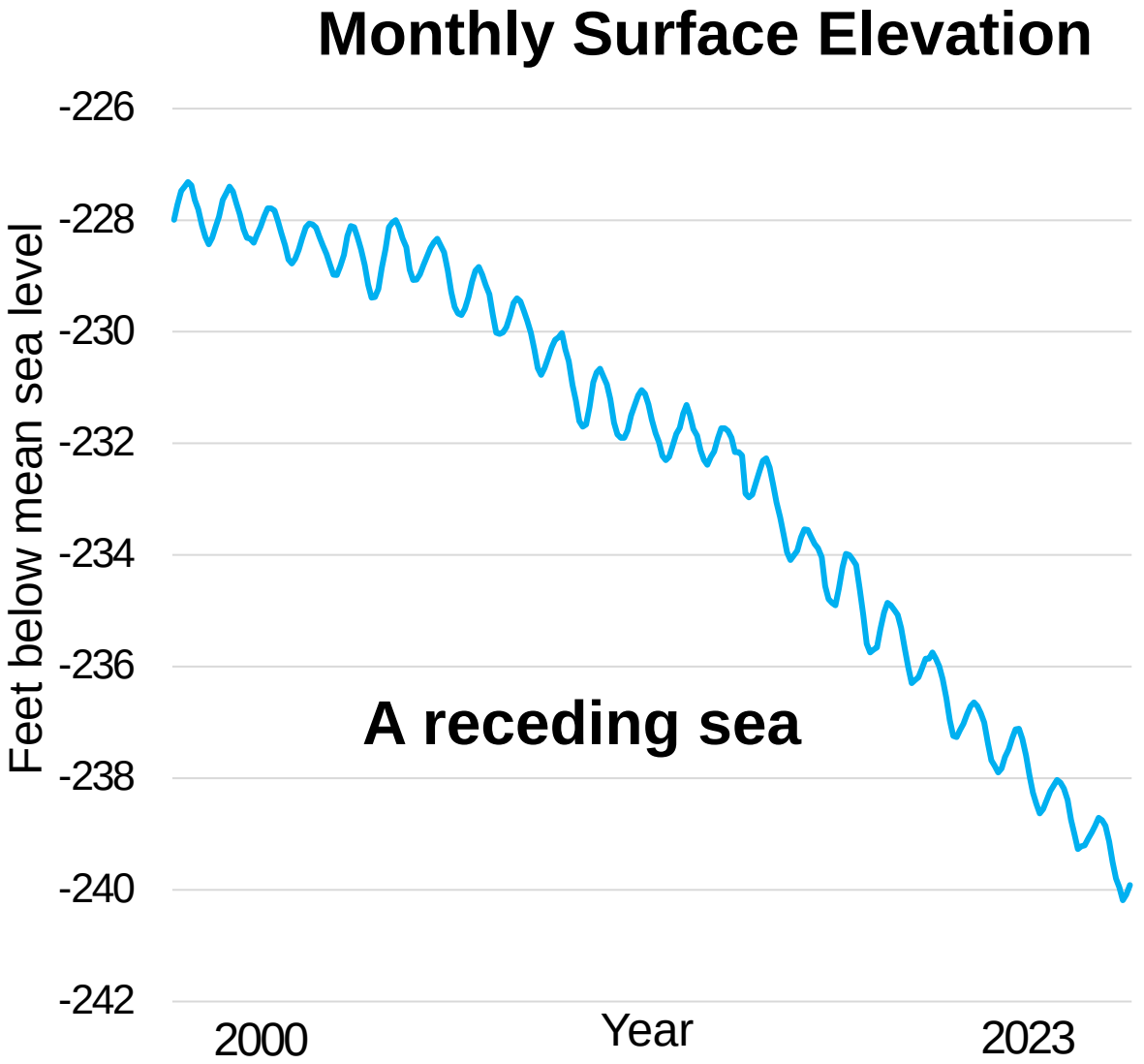
Conditions at the Salton Sea

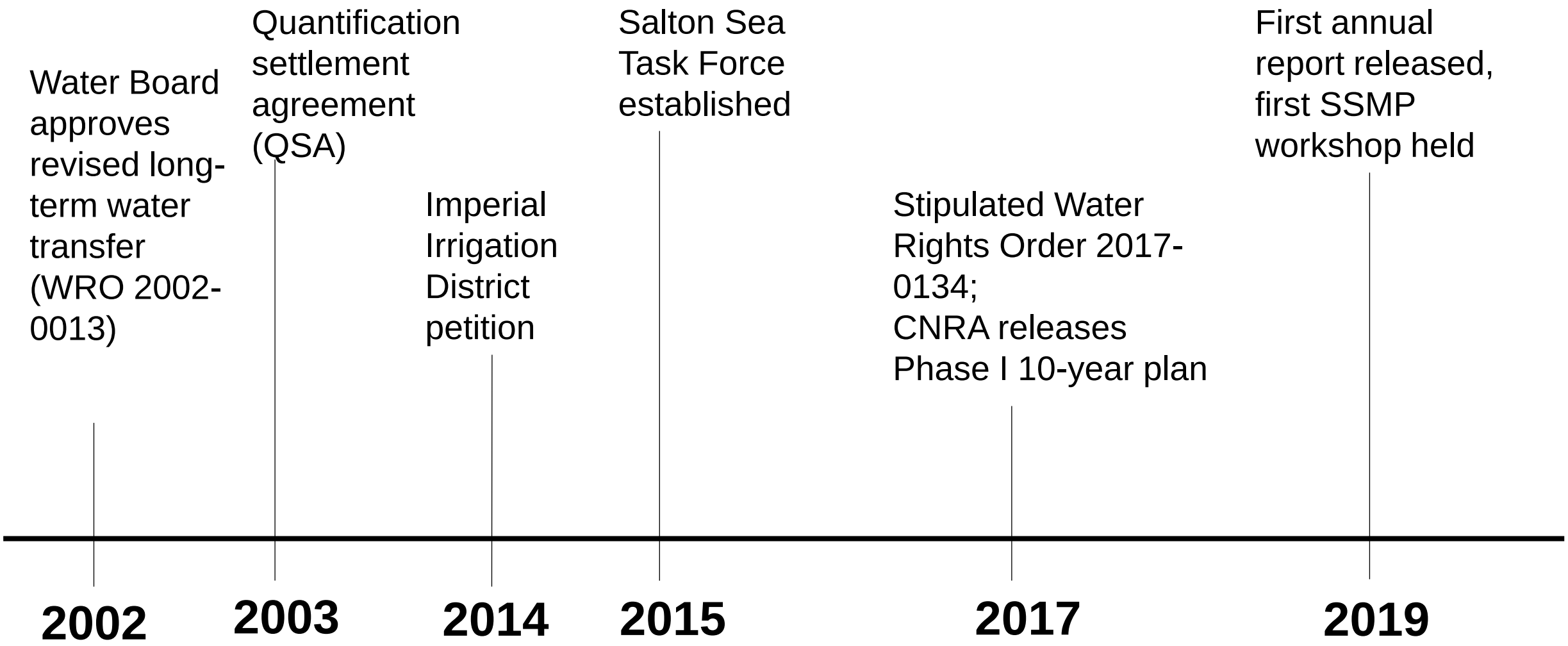


Net exposed playa: 17,400 acres (27 square miles)



Change from 2003 baseline elevation: -10.8 feet

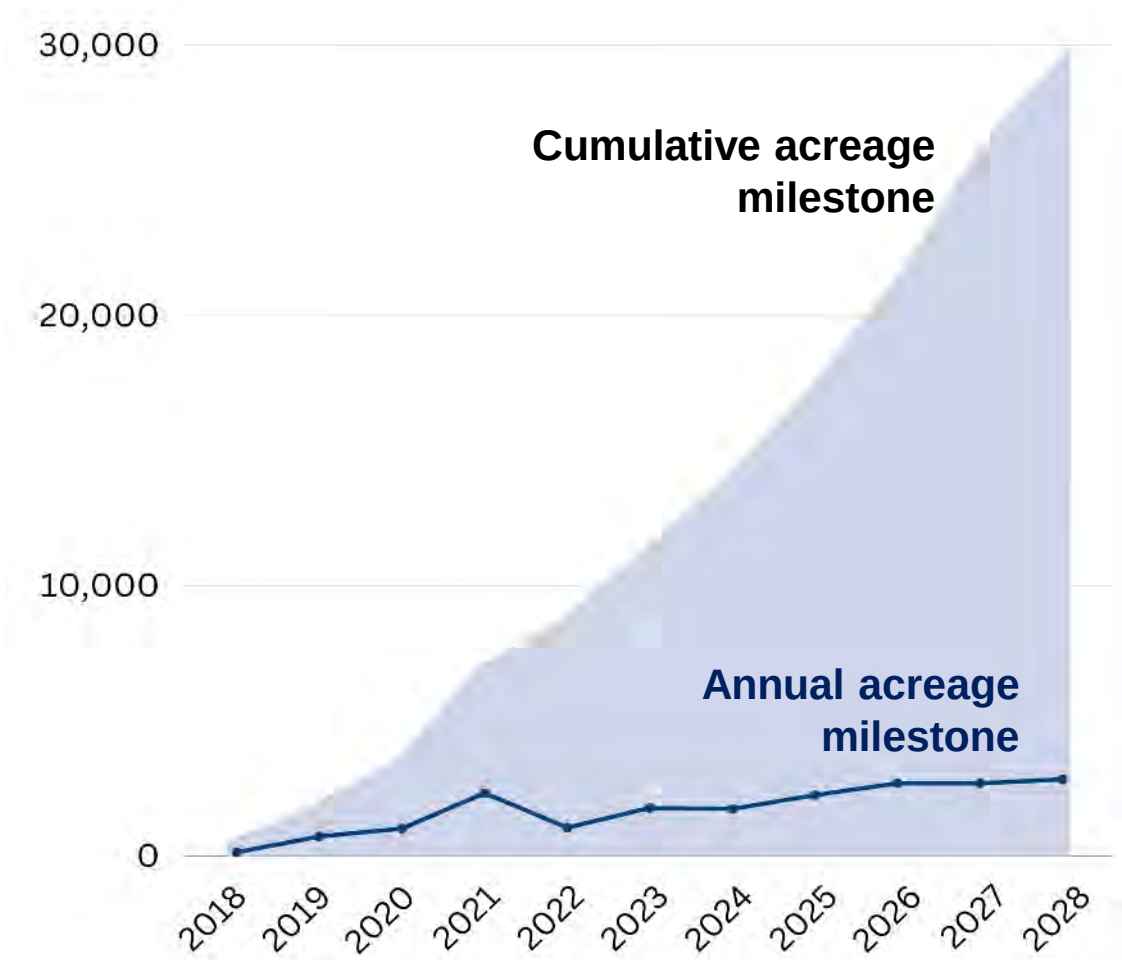
Background of Board Actions



Stipulated Order: Conditions 24 & 25

Year	Annual acreage milestone	Cumulative acreage milestone
2018	500	500
2019	1,300	1,800
2020	1,700	3,500
2021	3,500	7,000
2022	1,750	8,750
2023	2,750	11,500
2024	2,700	14,200
2025	3,400	17,600
2026	4,000	21,600
2027	4,000	25,600
2028	4,200	29,800

Total acres to be completed by the end of 2028: 29,800



Stipulated Order: Condition 26

- CNRA will develop subsequent 10-year phases of the SSMP
- CNRA will complete long-term plan by no later than December 31, 2022

Stipulated Order: Condition 28

- Requirement to Hold a Public Workshop
- Public forum of Board meetings provide opportunity for public input and brings transparency of the SSMP before the public

Required Annual Report from California Natural Resources Agency

- Completed projects and milestones achieved
- Amount of acreage of completed projects
- Upcoming projects
- The status of financial resources and permits
- Any anticipated departures from the annual milestone targets
- Progress toward development of the long-term plan

Salton Sea Management Program 2023 Annual Report

Year	Annual acreage milestone	Acres completed (wildlife & dust suppression)	Date report submitted to State Water Board
2018	500	0	March 15, 2019
2019	1,300	0	February 24, 2020
2020	1,700	755	March 5, 2021
2021	3,500	522 (1,000-2,000)*	February 24, 2022
2022	1,750	290	March 22, 2023

*Reported values differ in 2022 and 2023 reports

Written Comments

Written comments on the annual report were due by May 2nd.

We received 5 comment letters which are available on our website or by request

Workshop Agenda

May 16th, 12:00 – 4:00pm

- Opening remarks
- Salton Sea Phase 1 Update
- Panel 1: Hydrology and Colorado River Drought
- Panel 2: Habitat and Wildlife
- Overview of Monitoring Implementation Plan
- Public comments

May 17th, 5:00 – 9:00pm

- Overview of Community Needs Strategy
- Panel 3: Air Quality and Public Health
- Panel 4: Water Quality
- Panel 5: Community Voices and Projects
- Recap of Long-Range Plan
- Feasibility Study Process
- Public comments

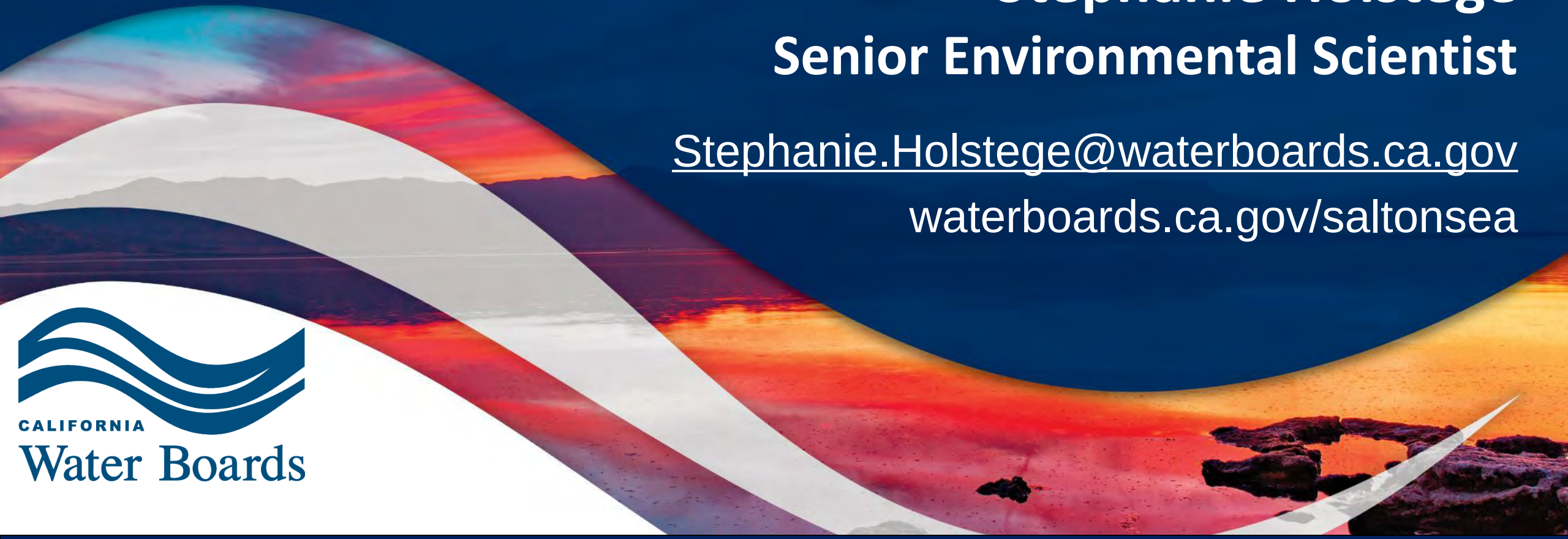
The State Water Board's Role in the Salton Sea Management Program

Stephanie Holstege

Senior Environmental Scientist

Stephanie.Holstege@waterboards.ca.gov

waterboards.ca.gov/saltonsea



CALIFORNIA Water Boards

Salton Sea Management Program

Phase 1 Update

May 16, 2023

CALIFORNIA NATURAL RESOURCES AGENCY

Presentation Overview

- SSMP General Overview
- SSMP Project Delivery
- Partnerships and Community Engagement
- Planning and Next Steps

SSMP General Overview

Salton Sea Management Program Agencies

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- Collaborative efforts with the SSMP are underway to implement projects.
- The state is committed to construct nearly 30,000 acres of habitat and dust-suppression projects by 2028 through SSMP 10-Year Plan
- Nearly 6,000 acres of project work are now underway and an additional 8,000 acres of projects are planned for implementation by 2024.
- A Long-Range Plan was developed this year to provide vision beyond the 10-year plan

What is Happening to Improve Conditions?

Key Priorities of the Salton Sea Management Program

- Drive the implementation of the Phase I: 10-Year Plan.
- Work with federal partners and the Salton Sea Authority (SSA) to develop and complete the *Imperial Streams Salton Sea and Tributaries Feasibility Study* to identify actions for long-term restoration of the Sea.
- Strengthen partnerships and institutionalize inclusive community engagement.

CALIFORNIA NATURAL RESOURCES AGENCY

CALIFORNIA NATURAL RESOURCES AGENCY

Annual Report on the Salton Sea Management Program

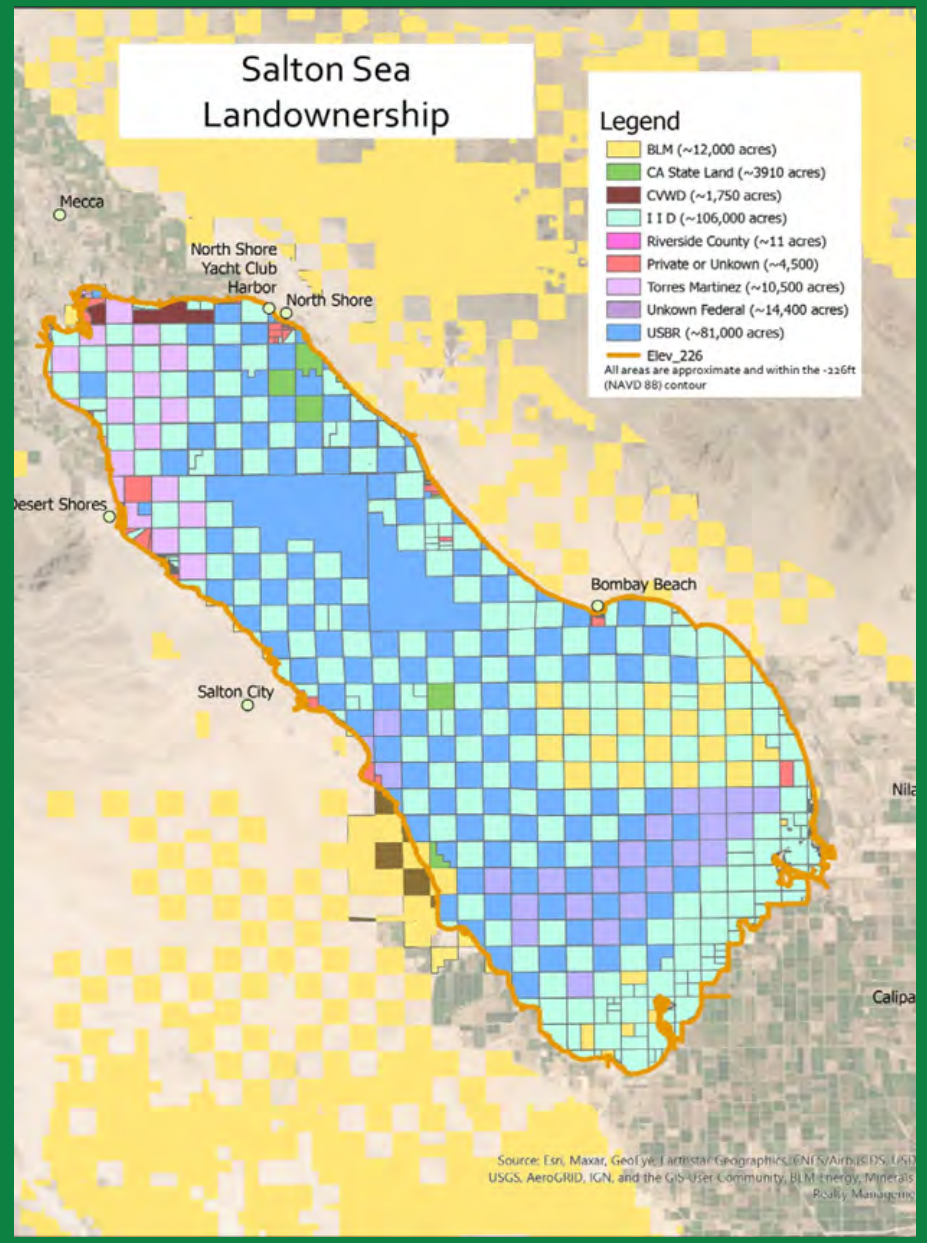
March 2023

Salton Sea Challenges

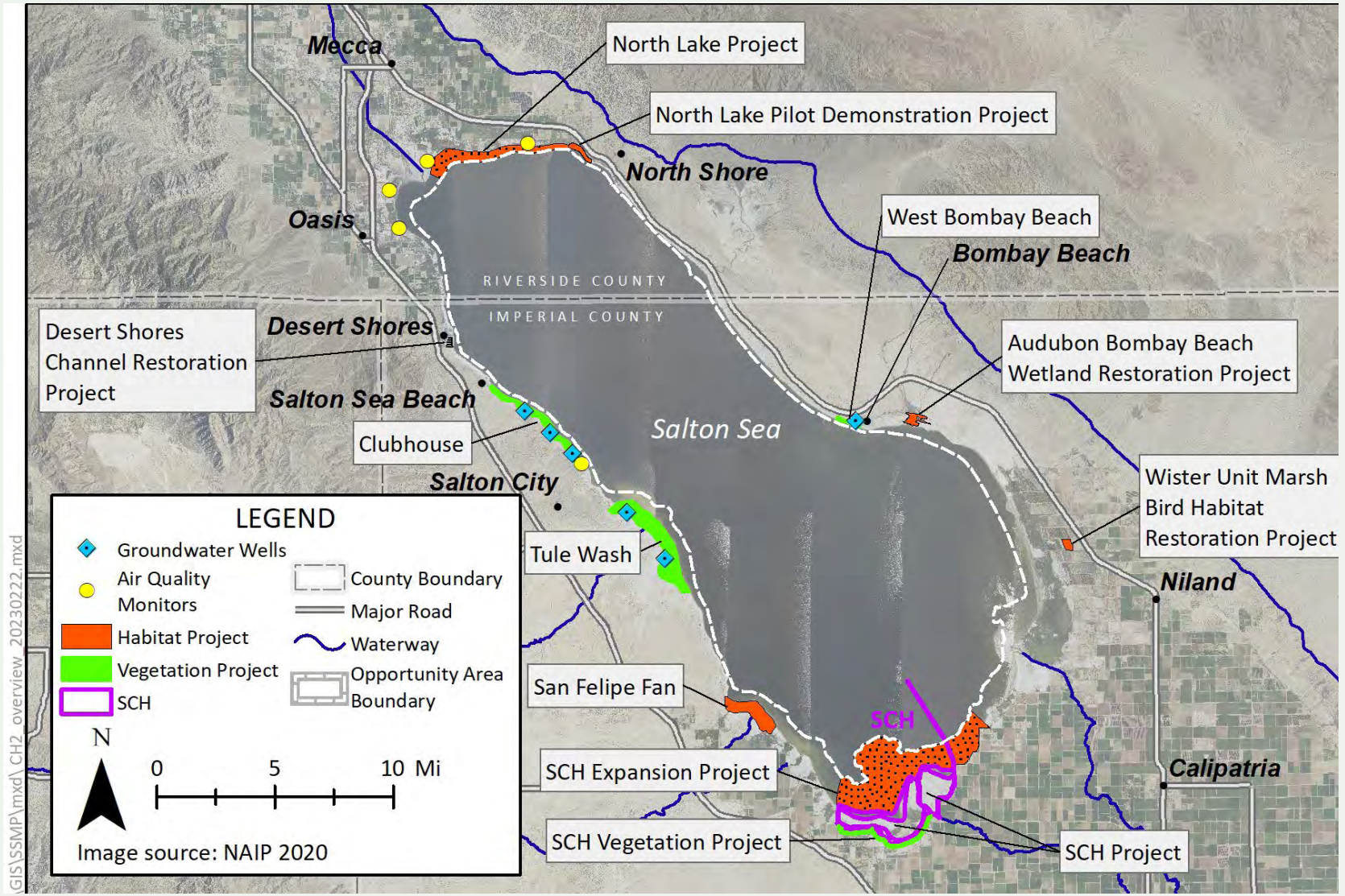
- Dust from exposed lakebed may affect air quality and public health for surrounding communities.
- Increased salinity in the waters of the Sea is unable to sustain many forms of aquatic life.
- Habitat values are being lost, including for several bird species on the Pacific Flyway.
- Drought and Water availability

Land Access remains an Important Driver of Project Timelines

- Collaboration with landowners is critical to land access.
- Lack of state-owned lands and the checkerboard land ownership creates some challenges affecting planning and project delivery
- The **Salton Sea Commitment Agreement** will allow the Department of Interior, IID, and CVWD to establish programmatic land access agreements to implement projects timely at the Sea.



Salton Sea Projects in Progress



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SSMP Project Delivery

Species Conservation Habitat (SCH) Project Overview

- State's first large-scale project at the Sea.
- 4,100-acre project will create a network of ponds and wetlands to provide important fish and bird habitat.
- Chosen because the southern end of the Sea will experience some of the earliest lakebed exposure given its shallow depth.

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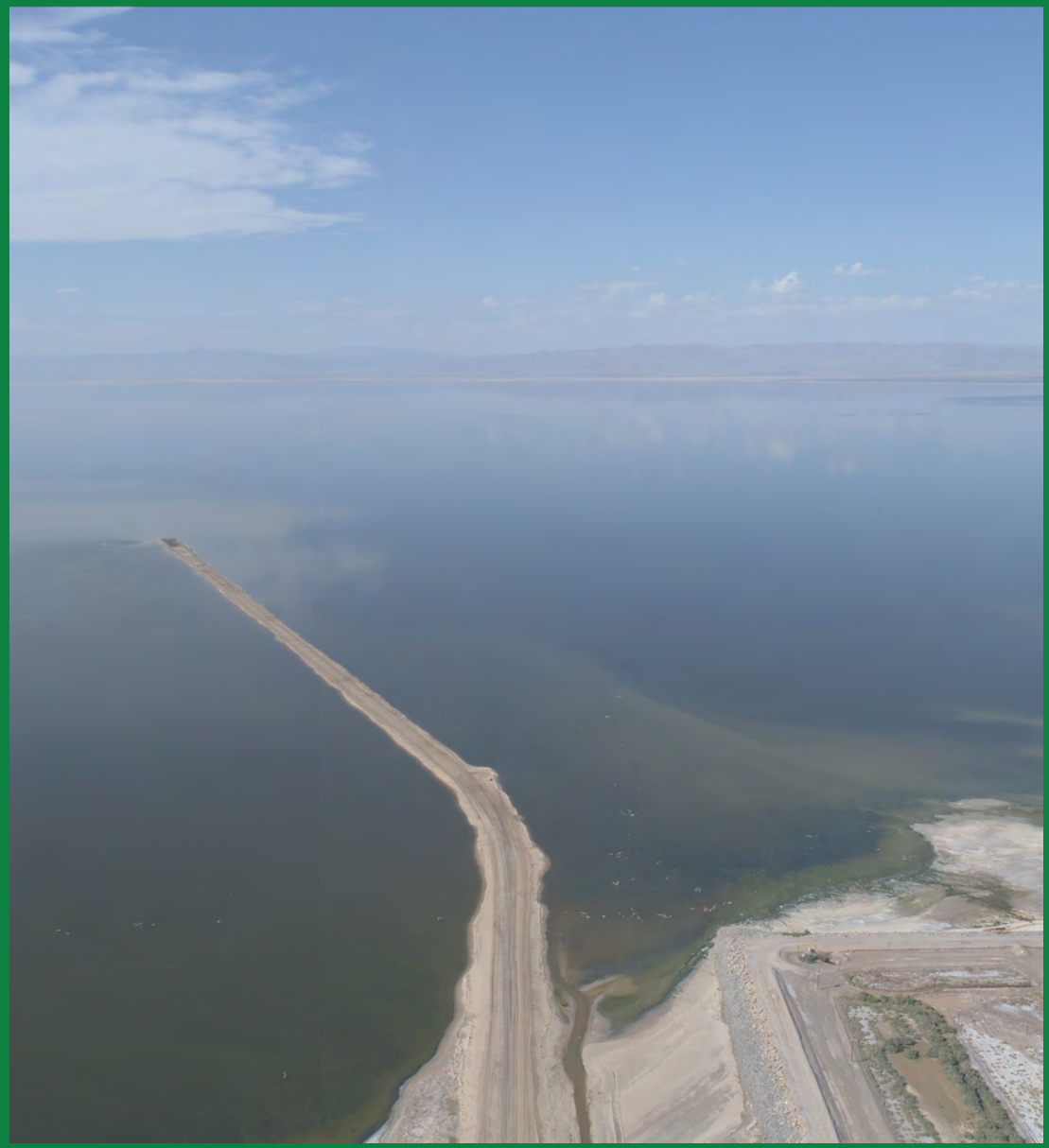
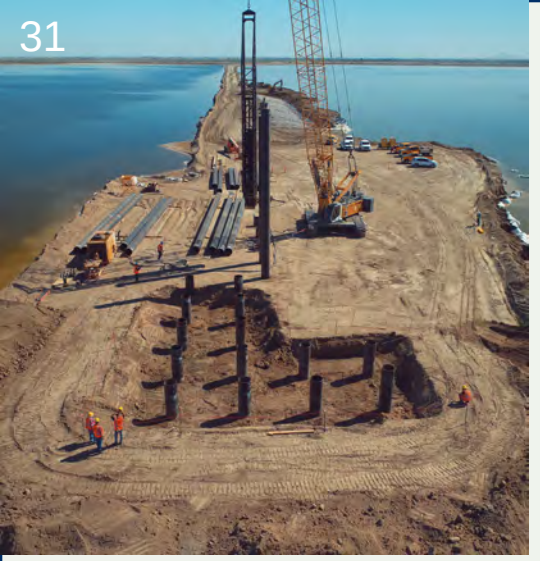
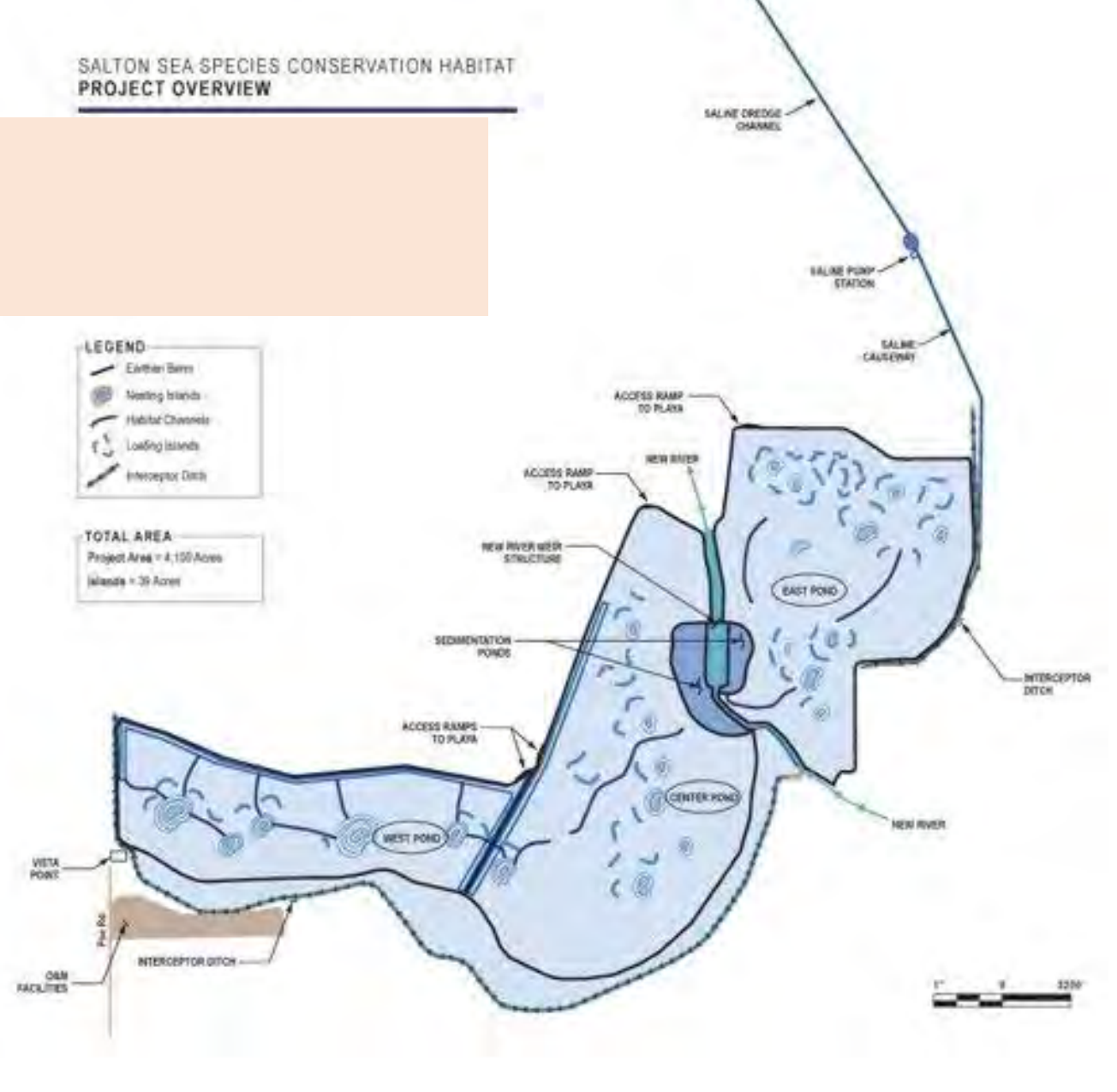
Species Conservation Habitat (SCH) Project

- State awarded contract to Kiewit Infrastructure West Co. in September 2020.
- Construction began in January 2021.
- Major construction has been completed.
- On schedule to be completed by the end of 2023.
- Dust suppression maintained during project construction.







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The causeway connecting the saline pump station to the habitat ponds has been completed.

New River Diversion Structure

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New River Diversion Structure

SCH Construction Update

All berms, nesting and loafing islands are complete.

Major earth moving activities are also complete

Vegetation Enhancement Projects

The goal of these projects is to suppress dust in exposed lakebed areas around the Salton Sea through native vegetation establishment and enhancement of existing vegetation stands.

Projects total ≈1,700 acres

- Clubhouse 400 acres
- Tule Wash 1,215 acres
- West Bombay Beach 90 acres

Vegetation Enhancement Projects 1

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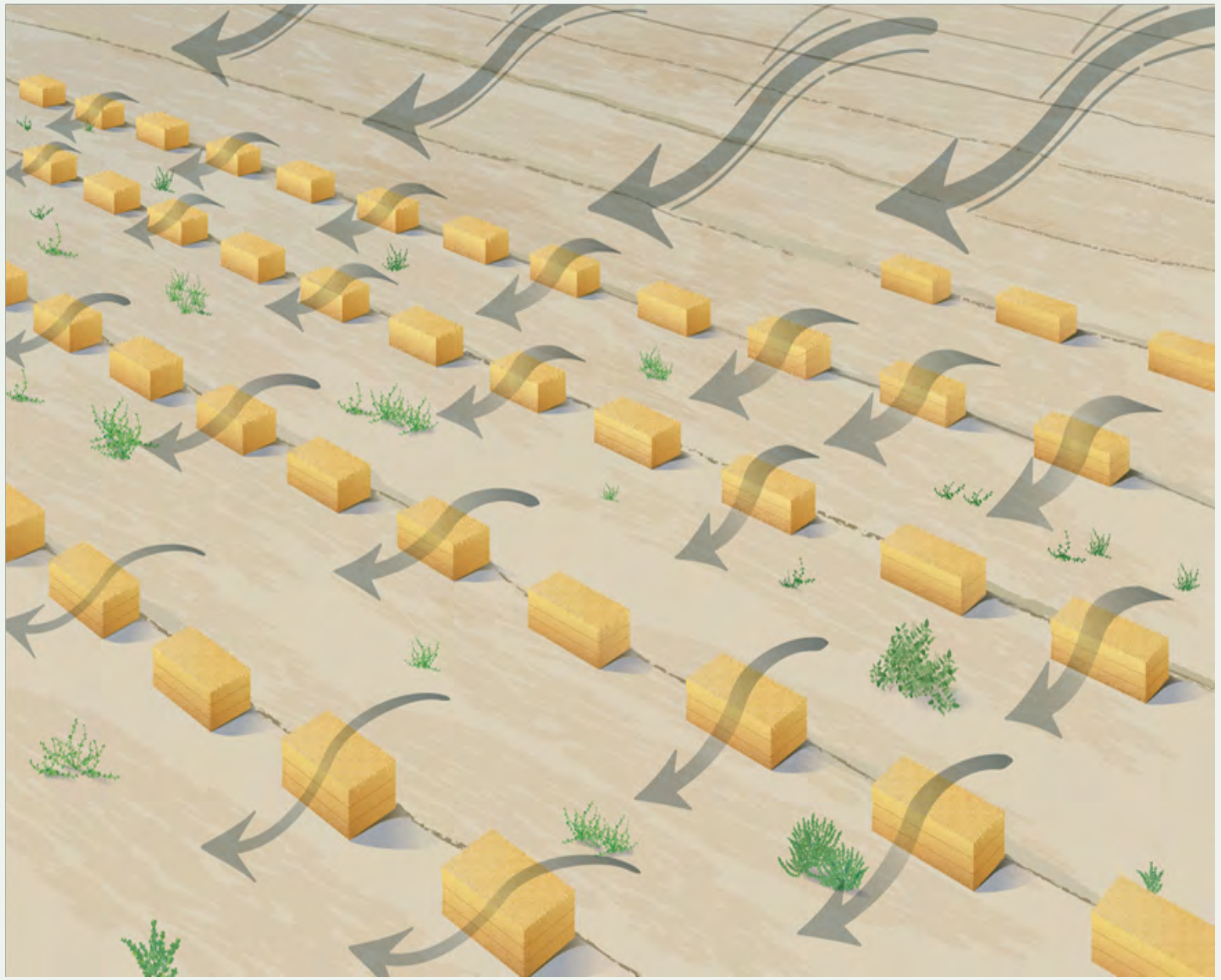
Vegetation Enhancement Project Concept



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Vegetation Enhancement Projects 2

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Projects in Planning Phases

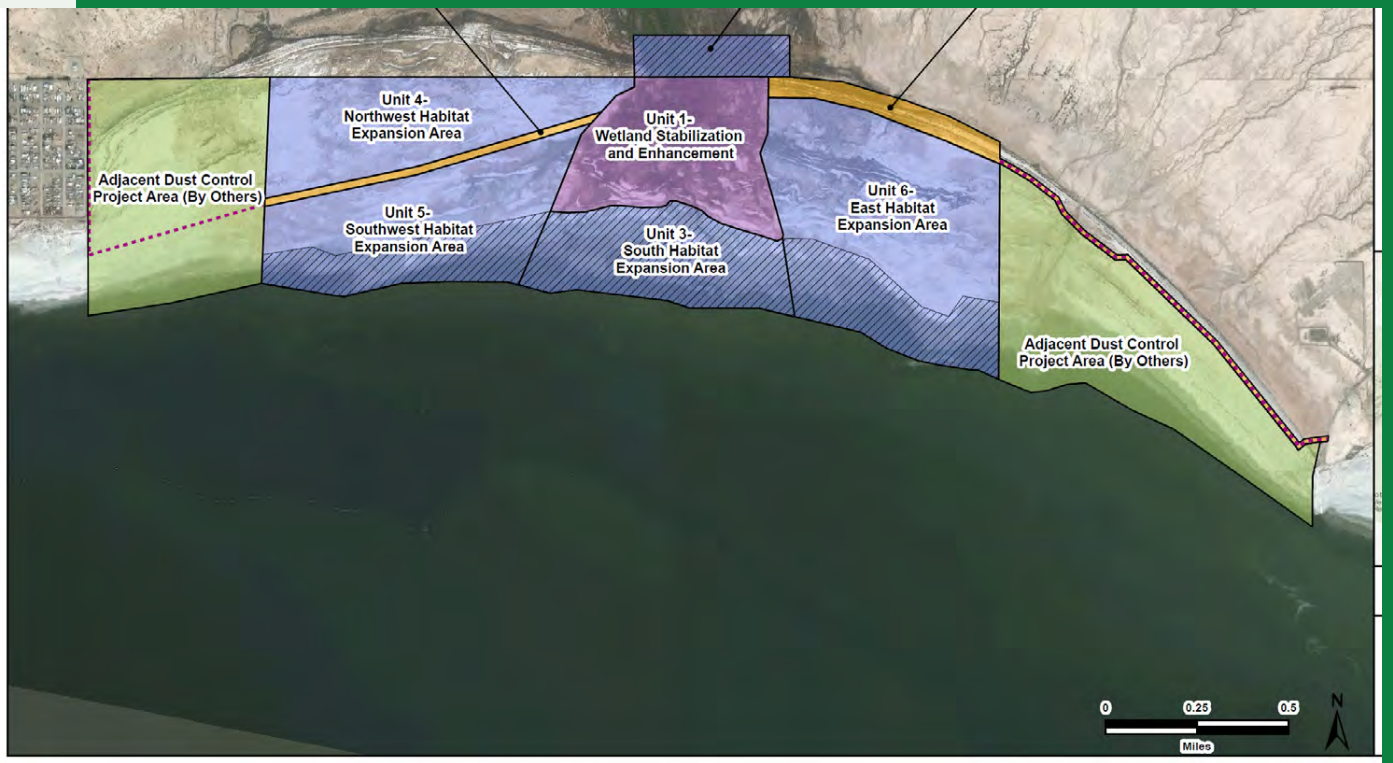
1. **SCH Expansion Project** (≈ 7,000 acres of aquatic)
2. **North Lake Project – Full Lake** (≈ 1,615 acres of aquatic)
3. **San Felipe Fan Project** (660 acres of vegetation)
4. **Wister Unit Marsh Bird Habitat Restoration Project** (≈ 150 acres of aquatic)
5. **SCH Vegetation Project** (≈ 600 acres of vegetation)

Collaborative Projects with SSMP Support

- **Audubon Bombay Beach Wetland Enhancement Project** (832 acres of aquatic)
- **North Lake Pilot Demonstration Project** (≈ 160 acres of aquatic)
- **Desert Shores Channel Restoration Project** (≈ 30 acres of aquatic)

Audubon Bombay Beach Wetland Enhancement Project (832 acres)

- In coordination with Audubon
- Located adjacent to the Bombay Beach community
- The project aims to stabilize, preserve, and enhance an existing emergent wetland
- First SSMP project to receive a CEQA statutory exemption for restoration projects
- Key next steps for this project include:
  - Audubon to secure additional funding
  - Develop design and land access agreements
  - Permitting initiated



North Lake Pilot Demonstration Project (160 acres)

- In partnership with Salton Sea Authority and Riverside County
- The project will create both shallow- and deep-water habitat near the North Shore Beach and Yacht Club Community Center
- A two-year agreement was signed with Dudek Consulting for design and engineering services
- A water supply analysis was completed, initial land access was obtained, survey work began

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Desert Shores Channel Restoration Project (≈ 30 acres)

- Collaborating with Imperial County, Reclamation, and SSA
- Located adjacent to the Desert Shores community in the marina that has become disconnected from the Sea
- The project will refill the five southernmost boat channels in the Desert Shores Marina
- Key next steps for this project include:
  - SSA to hire a consultant to develop the project
  - Gain site control
  - Complete permitting processes

- QSA Projects led by IID
- Torres Martinez Wetland and Vegetation Restoration
- New River Improvement Project (City of Calexico with State Funding)
- Middle Salt Creek Tamarisk Removal (Living Desert Zoo and Gardens)

Non SSMP Projects led by Partner Organizations

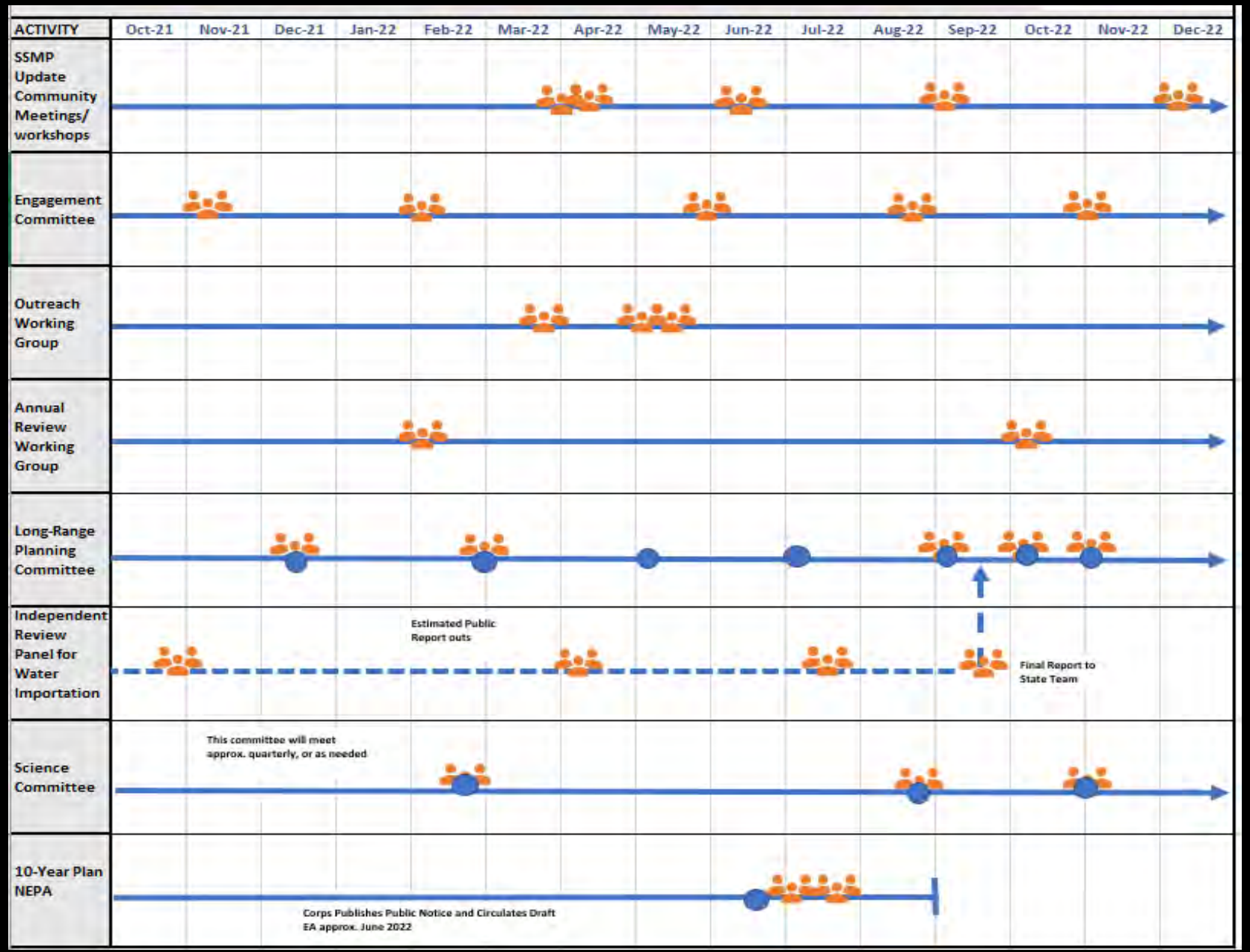
Partnerships and Community Engagement

SSMP Partners

- Alianza Coachella Valley
- Audubon California
- Cabazon Band of Mission Indians
- California Air Resources Board
- California Energy Comission
- California State Parks
- Coachella Valley Water District
- Colorado River Regional Water Quality Control Board
- Comite Civico Del Valle
- Defenders of Wildlife
- Imperial Irrigation District
- Imperial County
- Imperial County Air Pollution Control District
- Konkuey Design Initiative
- Leadership Counsel for Justice and Accountability
- Loma Linda University School of Public Health
- Natural Resources Conservation Service
- Pacific Institute
- Riverside County
- Salton Sea Action Committee
- Salton Sea Authority
- Salton Sea Coalition
- San Diego County Water Authority
- Save Our Sea/EcoMedia Compass
- Sierra Club California
- South Coast Air Quality Management District
- State Water Resources Control Board
- Torres Martinez Desert Cahuilla Indians
- US Army Corps of Engineers
- US Bureau of Land Management
- US Bureau of Reclamation
- US Fish and Wildlife Service
- US Geological Survey

CALIFORNIA NATURAL RESOURCES AGENCY

2021-2022 SSMP Public Engagement Schedule



Public Meeting

Committee Meeting

The Salton Sea Community Needs Strategy

- The Strategy identifies core needs for the Salton Sea communities and outlines recommendations for the SSMP, its state partners, local government, and others in the Salton Sea region to advance community needs.
- Vital needs identified by communities and addressed within the Strategy include the following:
  - Tribal partnerships and consultation
  - Equitable outdoor access
  - Public health
  - Workforce and economic development
  - Climate Resilience
  - Transportation
  - Broadband access

Developing the Strategy

- Informed by the community's lived experience and expertise.
- Reviewed public comments and reports from over the last decade on the Salton Sea.
- Convened a Salton Sea Regional Community Benefits Working Group.
- Direct community outreach and engagement.

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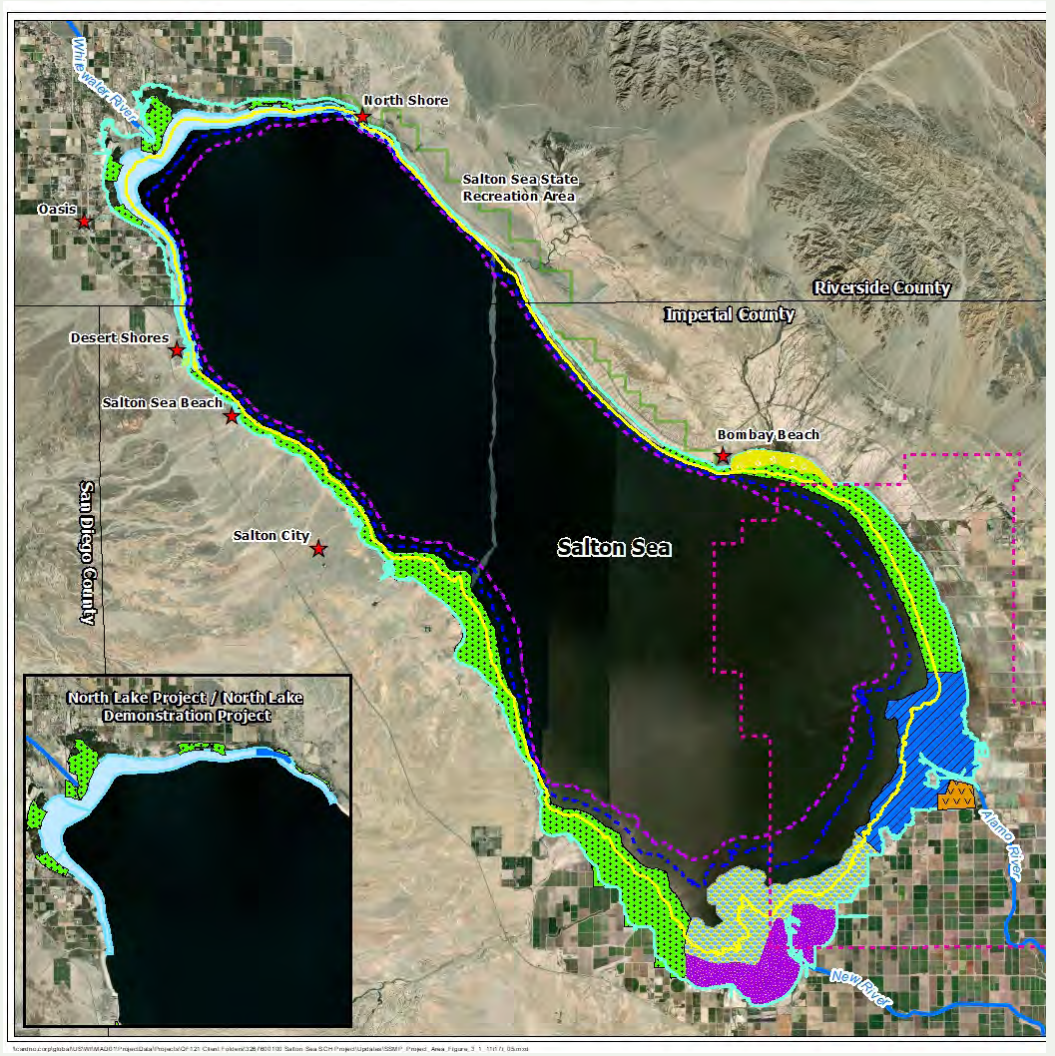
Planning and Next Steps

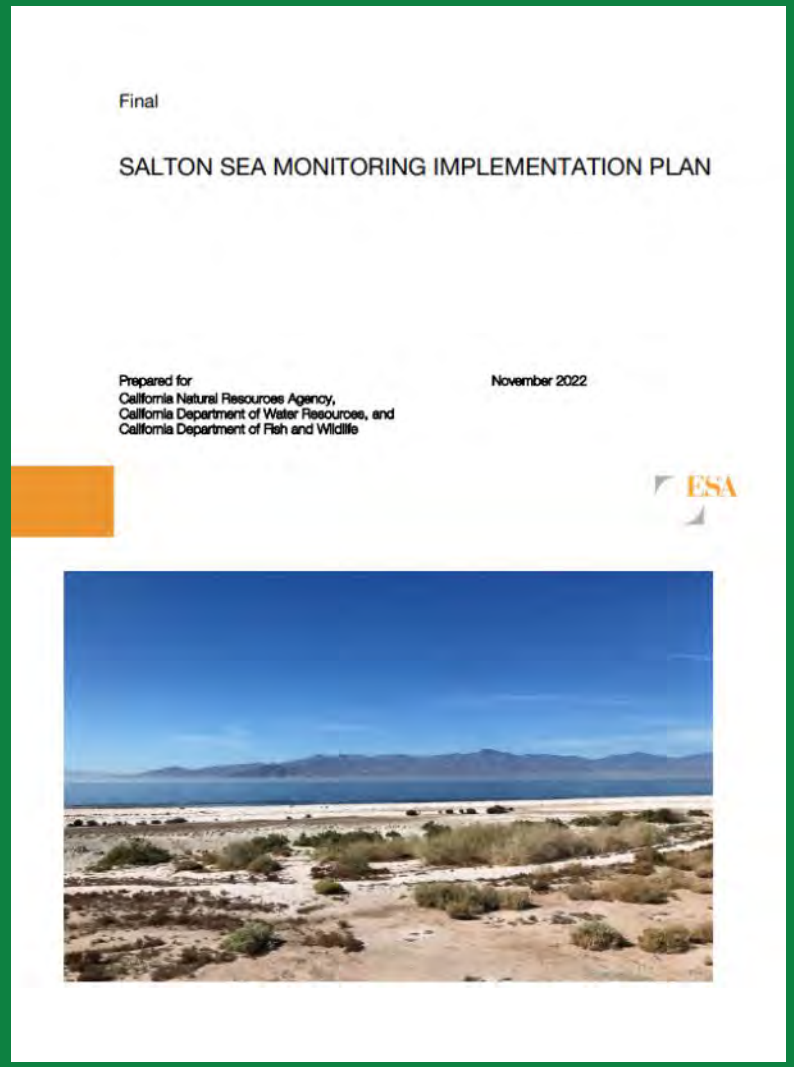
Phase 1: 10-Year Plan

- The SSMP Team continues to work with the Corps and the federal cooperating agencies to complete the NEPA EA for the Phase I: 10-Year Plan.
- Draft EA published in June 2022, and a revised final version is planned for release in Summer 2023.
- At completion of EA, we will identify the planned comprehensive suite of 29,800 acres of projects



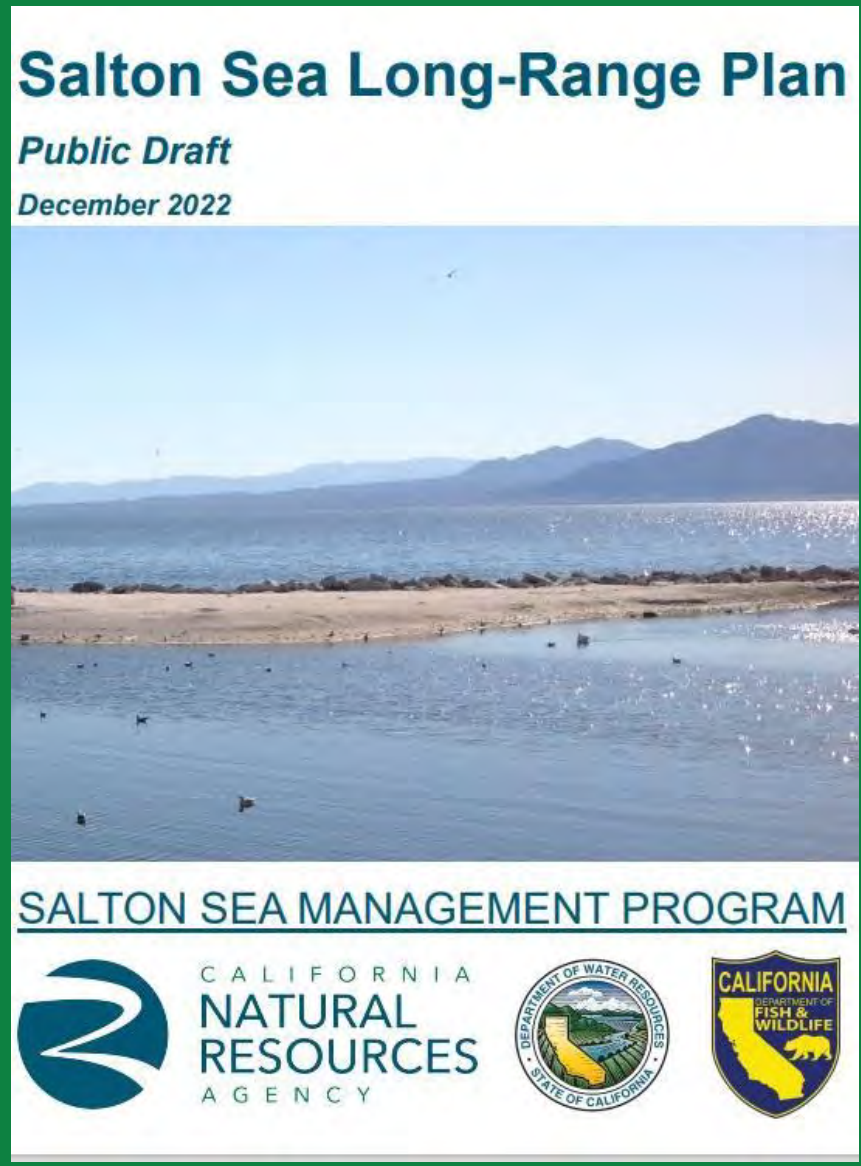
Monitoring Implementation Plan (MIP)

- Regional-scale monitoring plan for Salton Sea ecosystem
- Describe monitoring activities to measure conditions of water, air quality, land cover, biological resources, and socioeconomics
- Provides a framework for future project-scale monitoring plans
- Completed and translated
- Posted at SSMP Website



Phase 2: Long-Range Plan

- The Salton Sea Management Program prepared this draft Long-Range Plan (LRP or Plan) to comply with State Water Board Revised Order WR 2002-0013.
- Developed with support from Tribal leadership, community-based organizations, and local, state, and federal agencies, the draft plan identifies concepts for long-term restoration of the Sea beyond the scope of the SSMP's Phase 1: 10-Year Plan.



Goal and Objectives of the LRP

The goal of the LRP is to protect or improve air quality, water quality, and wildlife habitat to prevent or reduce health and environmental consequences anticipated from the long-term recession of the Salton Sea.

To achieve this goal, the following objectives must be met:

- Protect or improve air quality to reduce public health consequences
- Protect or improve water quality to provide opportunities for beneficial uses and reduce environmental consequences
- Restore long-term stable aquatic and shoreline habitat to historic levels and diversity of fish and wildlife that depend on the Salton Sea.

Cost-Share Agreement

Signatories of a Cost-Share Agreement

G. Patrick O'Dowd, Executive Director/ General Manager, Salton Sea Authority (Left); Col. Julie Balten, Commander, Los Angeles District, U.S. Army Corps of Engineers (center); Cindy Messer, Lead Deputy Director, California Department of Water Resources (Right).

CALIFORNIA NATURAL RESOURCES AGENCY

Funding Status and Planning

- Authorized for Appropriation: $682.4 million (as of 9/30/2022)
- Additional Anticipated Funding Sources
  - Salton Sea Commitment Agreement from US Department of Interior.
    - $20 million in near-term funding
    - Up to $228 million over the next four years from the U.S. Bureau of Reclamation, contingent on water conservation measures.
  - Senate Bill 125. Excise tax on lithium extraction.
    - 20% for maintenance and development of Salton Sea restoration projects.

Looking Ahead

- Completing the Phase I: 10-Year Plan projects now in progress. Advance habitat and dust suppression projects to meet the cumulative State Water Board acreage targets.
- Work will continue with the Corps and other cooperating agencies to finalize the EA and to establish the Letter of Permission procedures to start developing projects.
- Continue to work with partner landowners to expedite and develop programmatic land access agreements.
- Continue to support the Corps on the Salton Sea Feasibility Study.

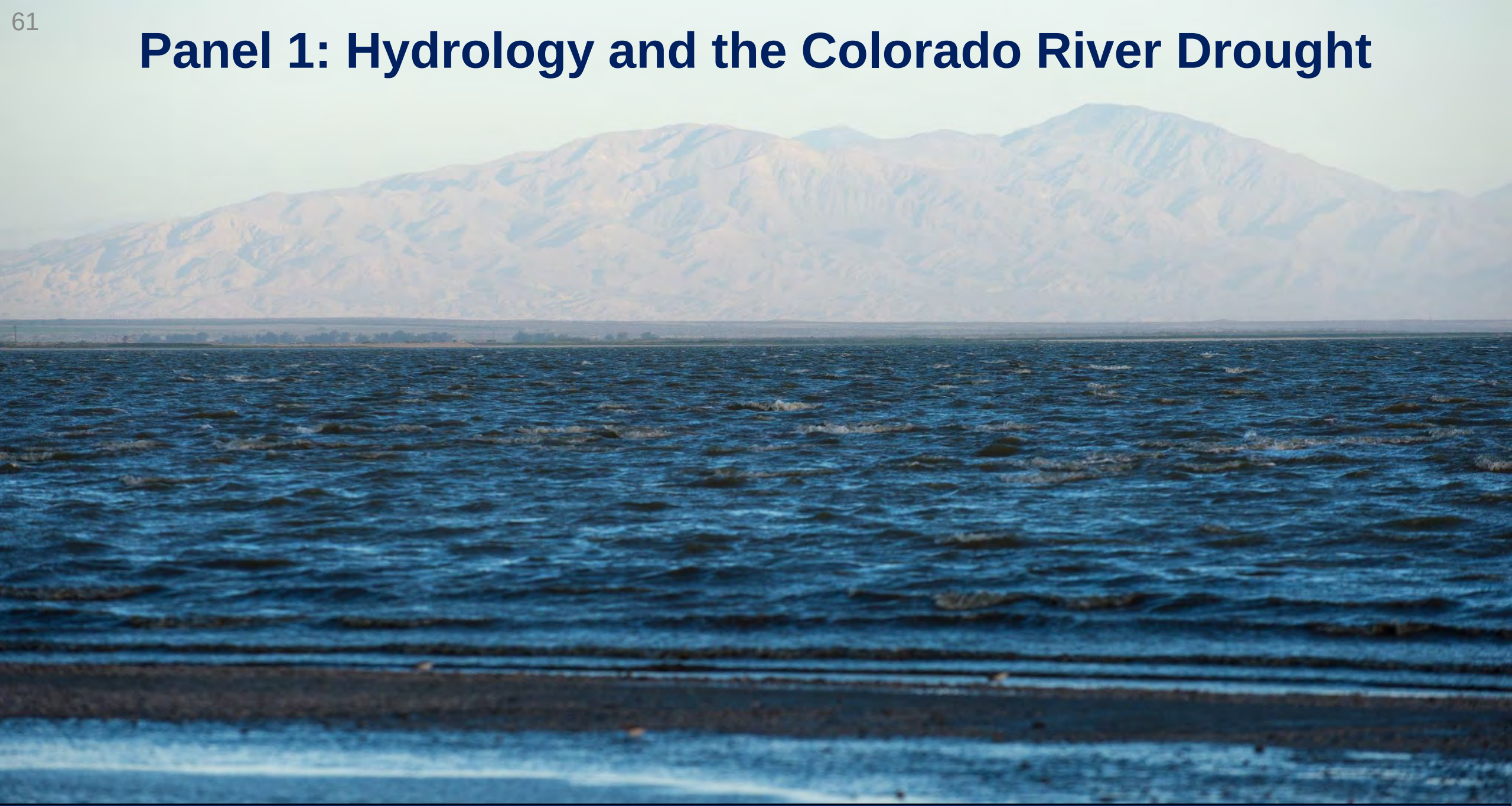
https://saltonsea.ca.gov/

Email
the SSMP team at:
cnra-saltonsea@resources.ca.gov

Thank you!

15 minute break

Panel 1: Hydrology and the Colorado River Drought



Colorado River Solutions and Challenges: The Impact of Drought and Conservation at the Salton Sea

Michael Cohen, Pacific Institute

SWRCB Salton Sea Workshop

May 16, 2023

Colorado River Solutions and Challenges

Michael Cohen Facilitator, Pacific Institute Senior Associate

Jacklynn "Jaci" Gould Lower Colorado Basin Bureau of Reclamation Regional Director

Chris Harris Colorado River Board of California Executive Director

Tina Shields Imperial Irrigation District Water Department Manager

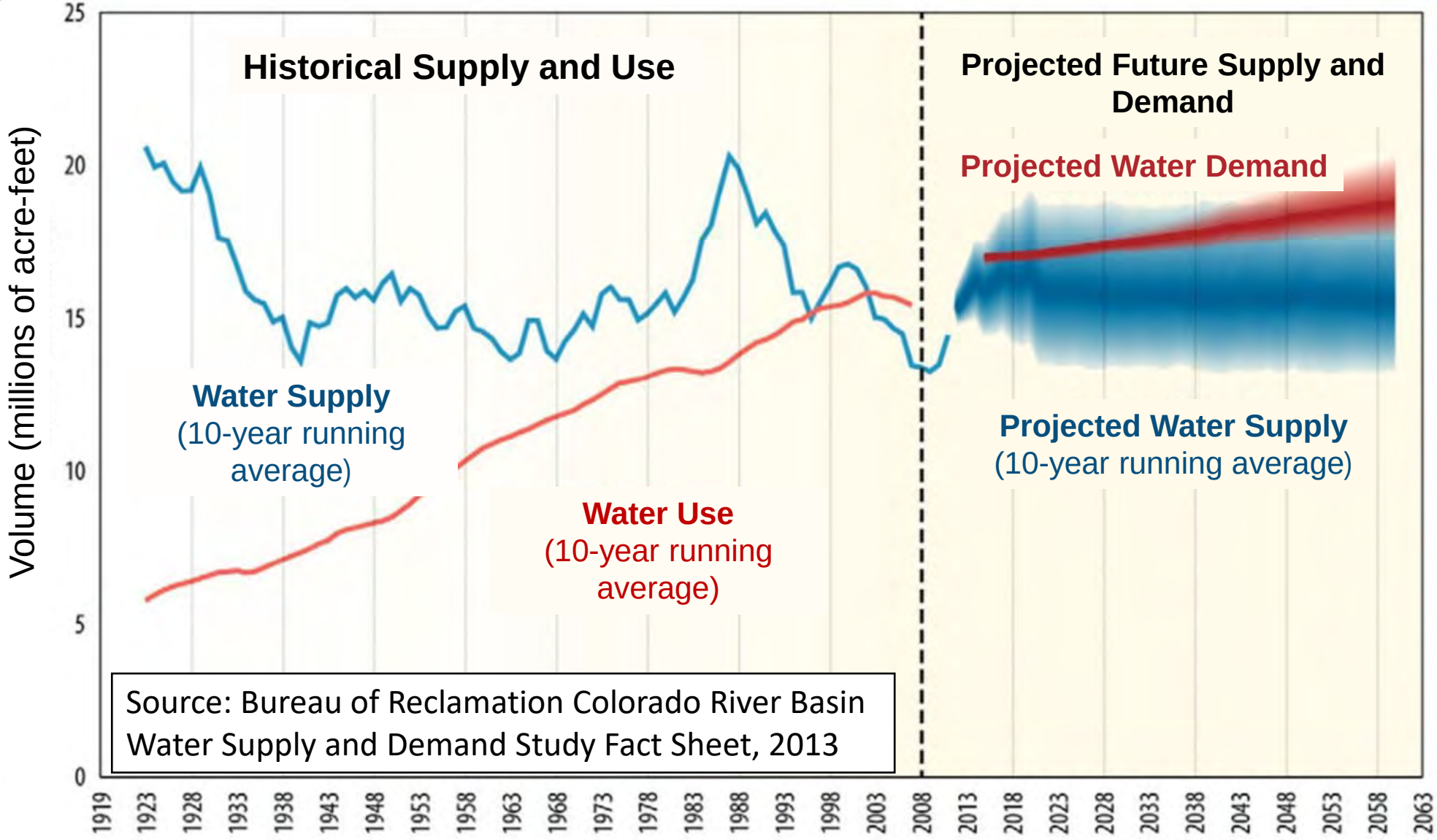
Upper and Lower Basins

BABBITT CENTER
FOR LAND AND WATER POLICY

Recent Colorado River Agreements

- Interim Surplus Guidelines (2001)
- Quantification Settlement Agreement (2003)
- Shortage Guidelines/Reservoir Operations (2007)
- IBWC Minutes 316-323 (2010-2017)
- Drought Contingency Plan (2019)
- 500+ Plan (2021)
- SEIS (spring/summer 2023)

Historical Supply and Use and Projected Future Colorado River Basin Water Supply and Demand



Source: Bureau of Reclamation Colorado River Basin Water Supply and Demand Study Fact Sheet, 2013

BUREAU OF
RECLAMATION

Jaci Gould

US BUREAU OF RECLAMATION

WY-2023 Operations, Draft SEIS, Post-2026 Process

Chris Harris, Colorado River Board

Colorado River Board of California

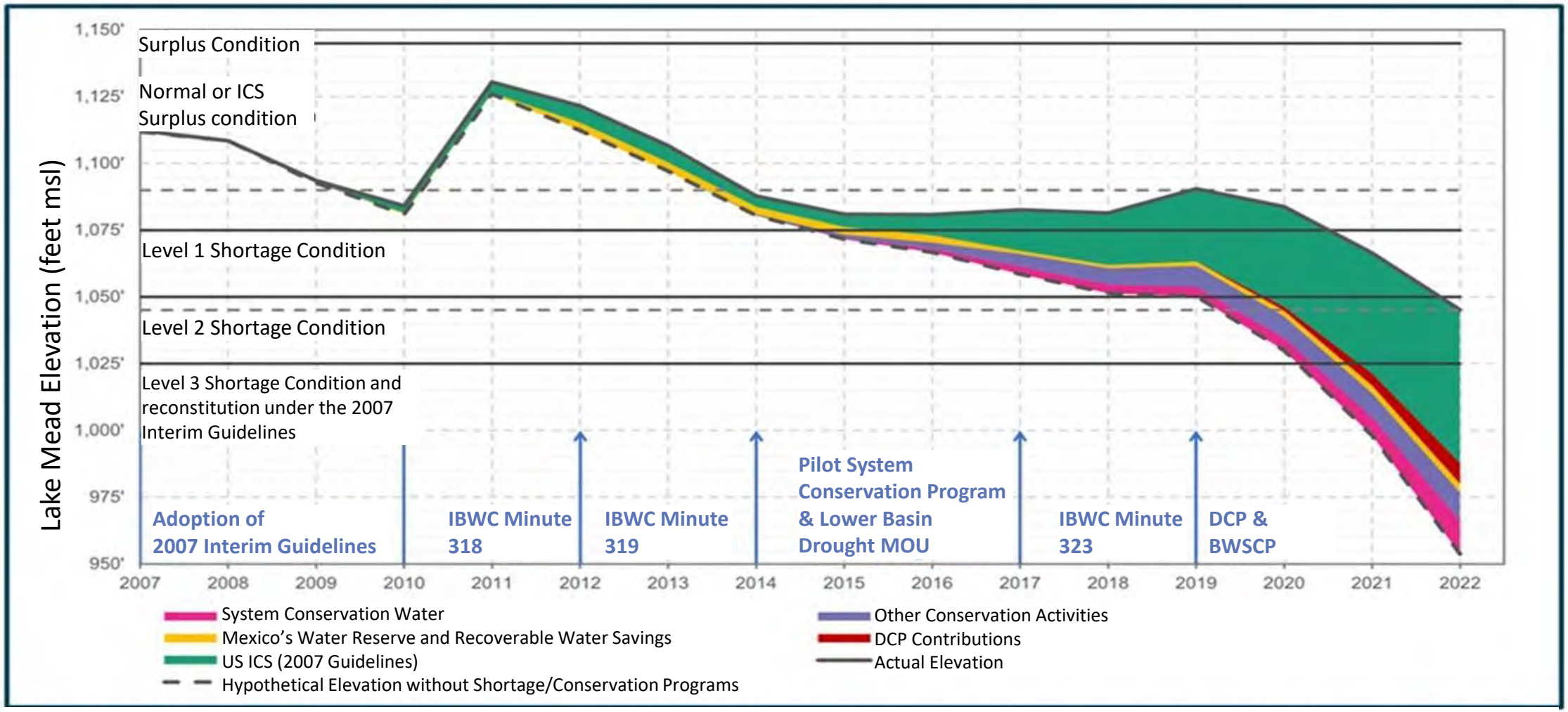
WY-21/22 and the Call to “Protect Critical Infrastructure”

- 2020-2022 **lowest** consecutive years of inflow on record.
- WY-21, Upper Basin “emergency” drought ops. releases was provided.
- WY-22, the annual Glen Canyon Dam release reduced by 480 KAF and an additional 500 KAF drought ops. release was provided.
- In June 2022, USBR called for “2-4 MAF of annual water use reductions”.
- In November 2022, USBR announced intention to prepare SEIS to evaluate potential modifications to the 2007 ISG.

Colorado River Board of California

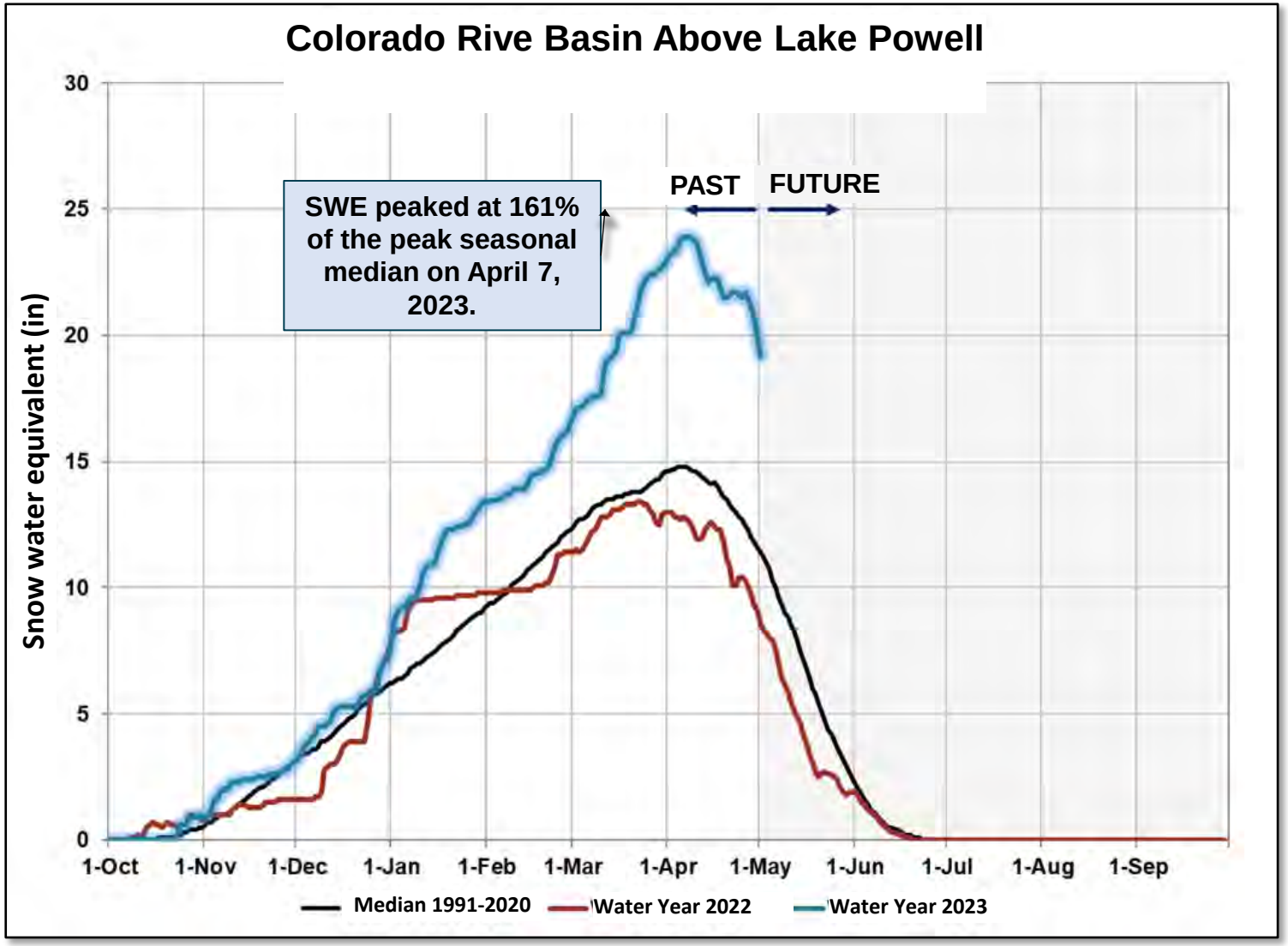
Lake Mead Storage and Conservation 1

Lake Powell WY Release (maf)															
8.23	8.98	8.24	8.23	12.5	9.47	8.23	7.48	9.00	9.00	9.00	9.00	9.00	8.23	8.23	7.00



[1]End of calendar year 2022 balances of U.S. ICS and Mexico's Water Reserve, system conservation water, and other voluntary contributions to Lake Mead are provisional and are subject to change.

Water Year Snowpack and Precipitation[1] as of May 1, 2023



Colorado Basin River Forecast Center

Dated April 17, 2023

Lake Powell Unregulated Inflow Forecast	maf	% of Average
April – July 2023	11.10	174%
Water Year 2023	14.27	149%

Water Year 2023 Precipitation (year-to-date)= 124 % of Average

Current Snowpack= 164% of median

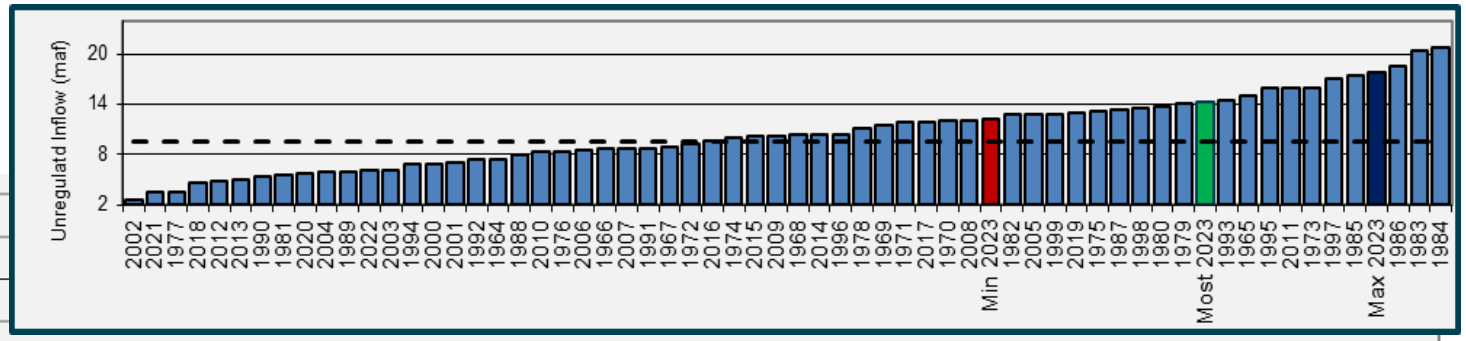
[1]Statistics are based on the 30-year period of record from 1991-2020.

Lake Powell Water Year Unregulated Inflow 1964- April 2023

Water Year 2023 Final Forecast[1]
April Prob Min: 12.27 maf (128%)
April Most Prob: 14.47 maf (151%)
April Prob Max: 17.86 maf (186%)

Water Year 2023 Final Forecast[1]
Apr Prob Min: 12.27 maf (128%)
Apr Most Prob: 14.47 maf (151%)
Apr Prob Max: 17.86 maf (186%)

Water Year 2023 Mid-Month Forecast
April Most Prob: 14.27 maf (149%)



Unregulated Inflow Volume (maf)

0 5 10 15 20

1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2023 2023

Max

Most

Min

[1]Water Year statistics are based on the 30-year period of record from 1991-2020.

Colorado River Basin Storage as of April 2023

Reservoir	Percent Full	Storage (maf)	Elevation (feet)
Lake Powell	24%	5.54	3,524.99
Lake Mead	29%	7.66	1,049.69
Total System Storage	34%	19.80	**- - -**

Total system storage: 34% of capacity, or 20.45 maf in storage, at this time last year.

Colorado River Board of California

Next Steps

Supplemental EIS to modify 2007 ISG

- Could provide additional technical and/or administrative actions to protect the reservoir system.
- Actions could be implemented as soon as August 2023.
- Three alternatives: No Action and Action Alts. 1 & 2.
- Lower Basin States working to develop consensus-based agreements/activities to inform Final SEIS/ROD.

BIL/IRA-Funded Conservation Programs

- BIL & IRA funding is intended to support voluntary water conservation, water use and system efficiency projects in ag/urban sectors.

WY-2023 Operations

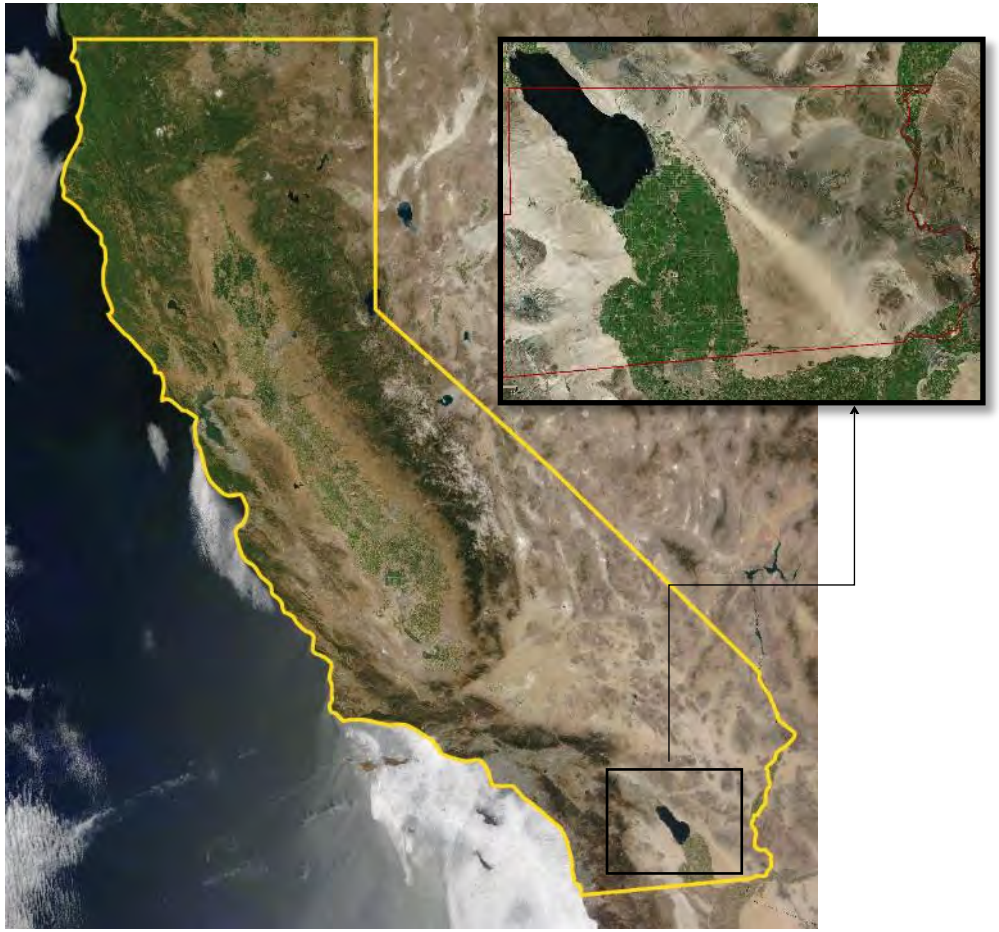
- Powell/Mead balancing operations (9.0-9.5 MAF).
- Recovery of prior DROA release volumes (up to 620 KAF).

Colorado River Solutions and Challenges: The Impact of Drought and Conservation at the Salton Sea

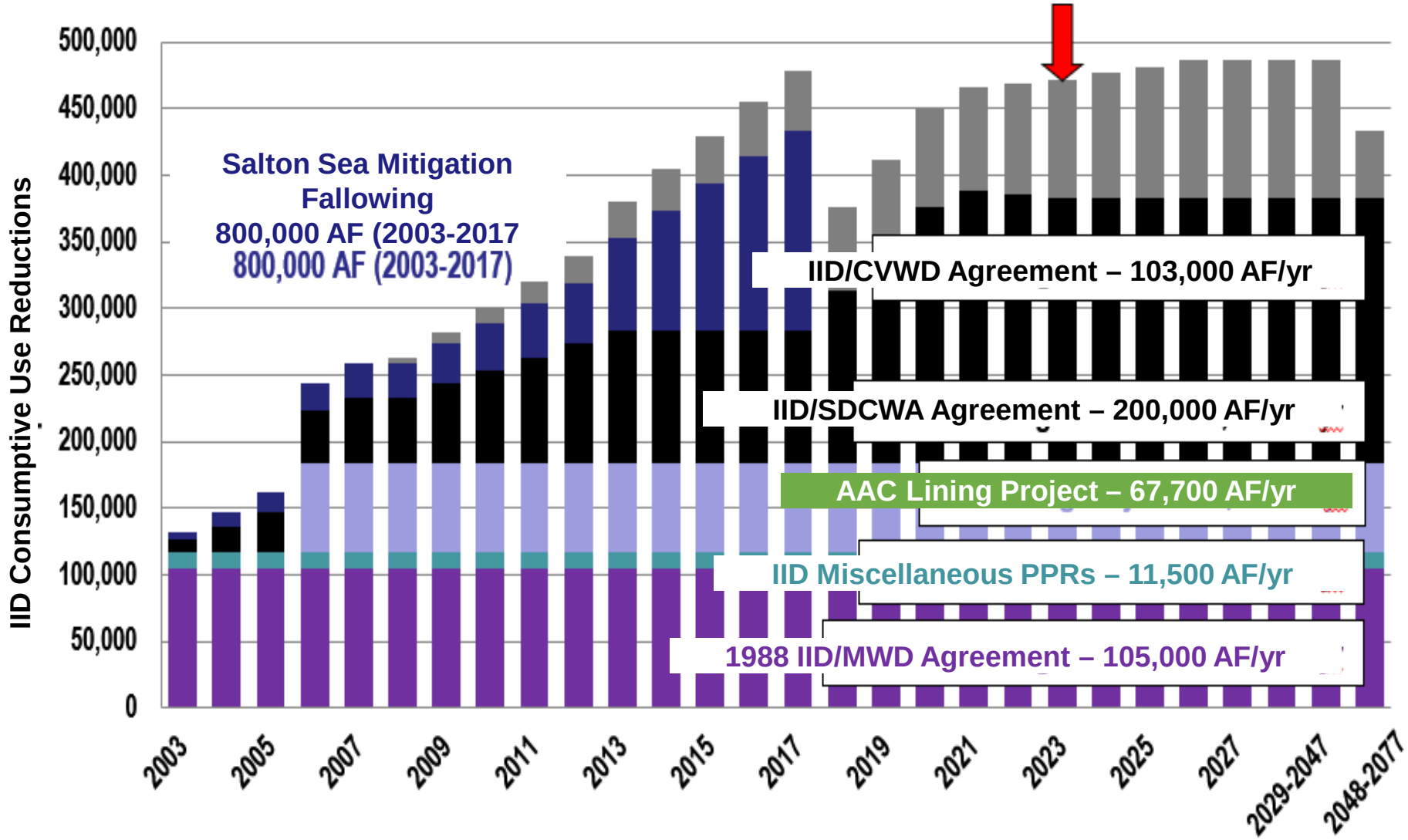
SWRCB 2023 Salton Sea Workshop

Tina Shields

PE Water Manager

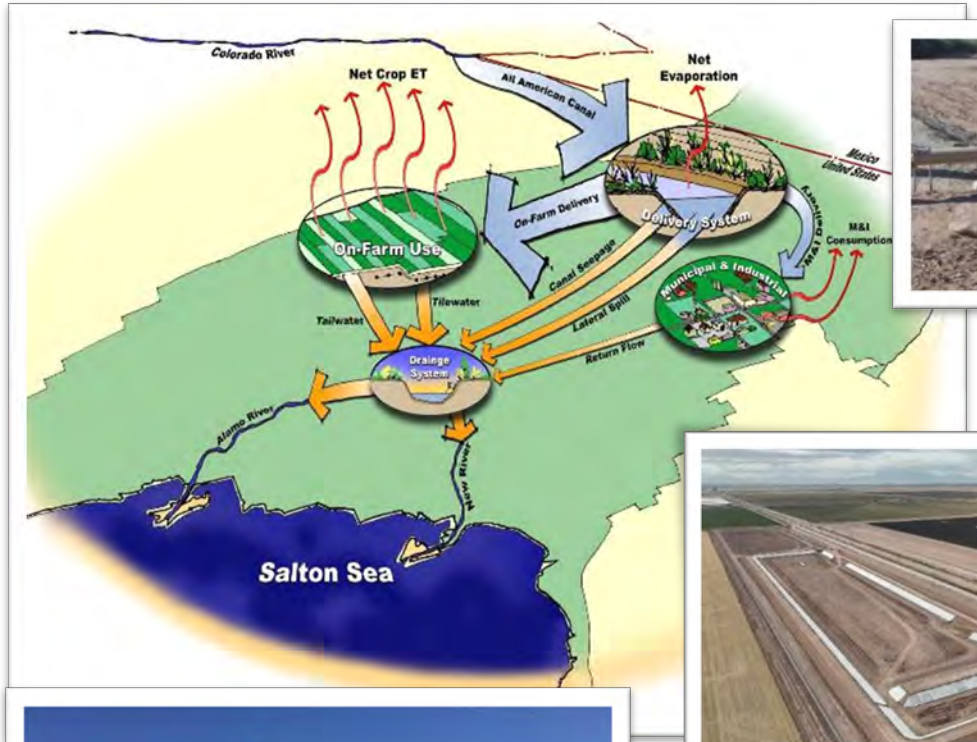


The California Solution:
QSA Water Conservation & Transfer Programs

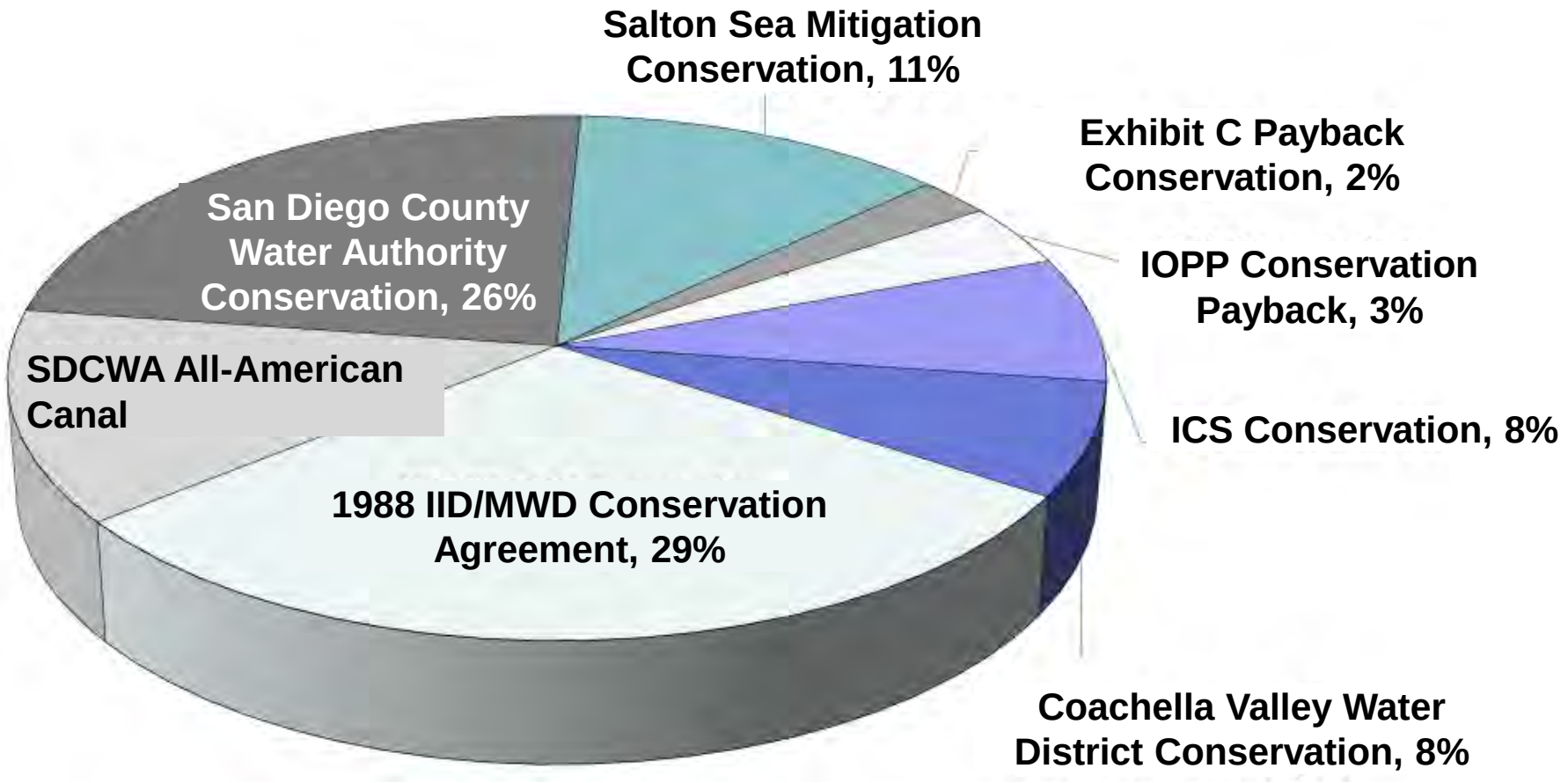


QSA Conservation Programs

A suite of capital improvement infra-structure projects that conserve water and provide operational flexibility to support an on-farm efficiency conservation program. These conserve 105,000 AFY for MWD, 200,000 AFY for SDCWA and 103,000 AFY for CVWD, but reduce Salton Sea inflows.

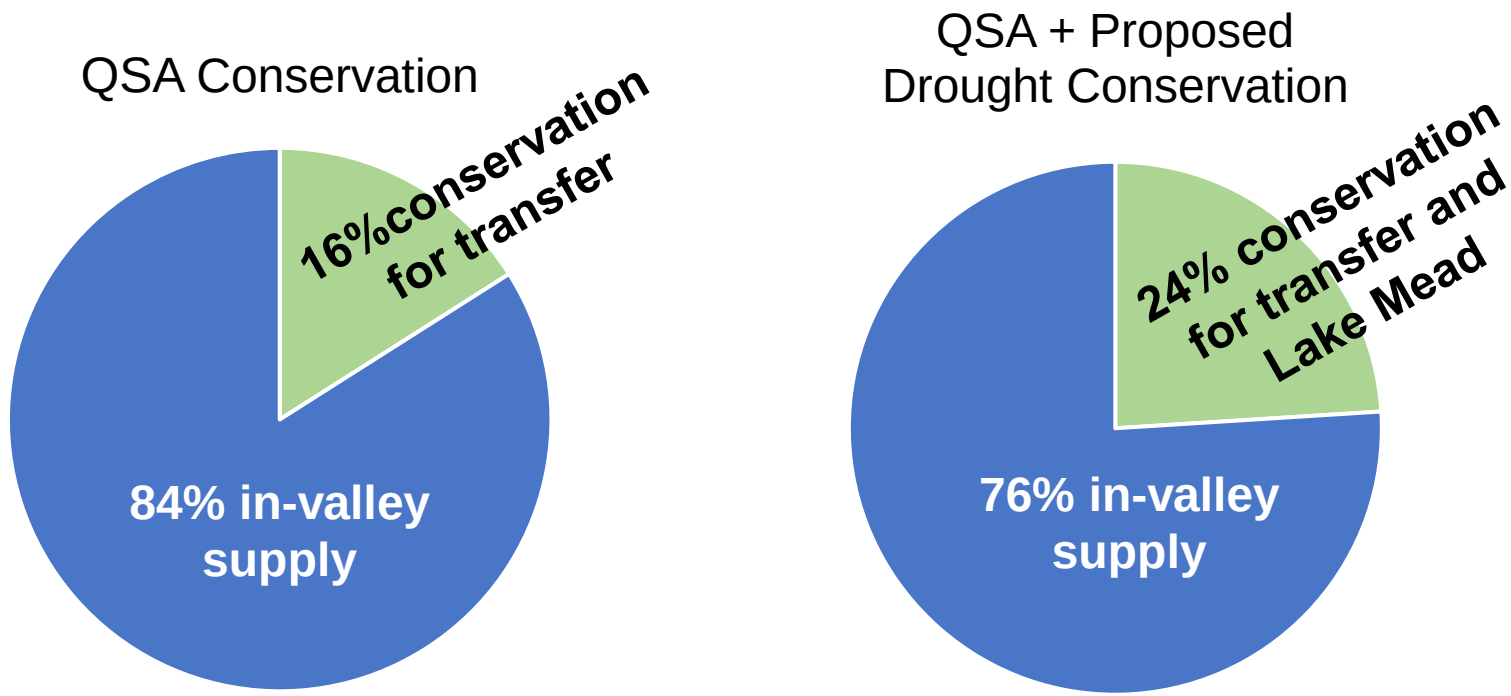


IID's QSA Water Conservation & Transfer Summary
(2003-2022 Total = 7,250,852 acre-feet)



IID's Additional Conservation Proposal

- An additional 250,000 AFY of conservation through 2026, a more than 50 percent increase from 2022 conservation levels.
- IID's conservation was pre-conditioned, in part, on a state/federal commitment to address mitigation and funding of Salton Sea impacts related to accelerated playa exposure.



Salton Sea Management Commitment related to Conservation in the Lower Colorado River Basin

COMMITMENT TO SUPPORT SALTON SEA MANAGEMENT RELATED TO WATER CONSERVATION IN THE LOWER COLORADO RIVER BASIN

Preserving the Colorado River Basin, including water supplies in Lake Mead and Lake Powell, is essential to providing water to communities and economic activity across the American Southwest. Forty million Americans receive at least a portion of their water supplies from the reservoirs of the Colorado River Basin. Operating this critical water supply system relies on maintaining adequate lake elevations in both reservoirs to allow for continued water across the region and to Mexico.

Over the last twenty-three years, and accelerating over the past three years, the Colorado River system has experienced worsening drought and low run-off conditions that demonstrate the significant impacts of warming temperatures and climate change. Consequently, water levels in Lake Mead and Lake Powell are critically low. Without immediate action, water supply delivery and hydroelectric energy production could be severely impacted or even eliminated.

Water users, the seven Basin states, Tribal Nations, Mexico, and federal agencies are continuing to work together to stabilize the water supply system in the Colorado River Basin. This effort includes the development of voluntary agreements to conserve water in Lake Mead and Powell to protect critical elevations consistent with the Law of the River, including all compacts, agreements, laws, regulations, and policies that govern the Colorado River system.

Water users in the Imperial and Coachella Valleys of California are working with partners across the region to establish agreements to conserve water in Lake Mead. In conjunction, there may be additional impacts to the Salton Sea and its surrounding communities, including tribal nations. The Salton Sea is California's largest inland body of water, but continues to shrink due to reduced inflows into the lake as a result of evaporation, climate change, and agricultural to urban water transfers including the 2003 Quantification Settlement Agreement (QSA), which annually conserves and transfers Colorado River water from the Imperial Irrigation District (IID) to Southern California's Coastal Plain. This reduction of inflows into the Sea has resulted in exposed lakebed, called playa, which worsens air quality in the region when particles become airborne and has degraded the aquatic habitat upon which fish and bird species rely. The QSA limits the funding for mitigation related to those water conservation and transfer activities, as well as Salton Sea restoration, for certain QSA parties (IID, the San Diego County Water Authority, and Coachella Valley Water District) to $163 million in 2003 dollars, adjusted for inflation.

Combined reduced water usage in the Imperial and Coachella Valleys associated with increased system conservation activities is expected to accelerate the exposure of lakebed and increase the salinity of the Salton Sea. State and federal agencies and local water agencies have estimated that up to 6,000 to 8,000 acres of lakebed may be exposed six to eight years sooner than had this reduction in water usage not occurred. Salinity concentrations are expected to increase by 6.2 to 9.0 parts per thousand by the year 2027. These increases in lakebed

In 2022, USBR, CNRA, IID and CVWD authorized a letter of commitment providing $250 million in federal funding and agency partnerships to accelerate implementation of the state's Salton Sea Management Program dust suppression and aquatic habitat projects.

Panel 1 Q&A

Panel 2: Habitat and Wildlife

Charles Land, **Facilitator**; California Department of Fish and Wildlife
Dan Orr - Audubon California
Paisley Ramstead - Torres Martinez Desert Cahuilla Indians
Razia Shafique-Sabir - Sonny Bono Salton Sea National Wildlife Refuge

Salton Sea Birds and Habitats

Audubon | CALIFORNIA

Daniel Orr, Andrea Jones, Frank Ruiz, Camila Bautista,
Keilani Bonis-Ericksen

May 2023; Photo by Marcelle Shoop

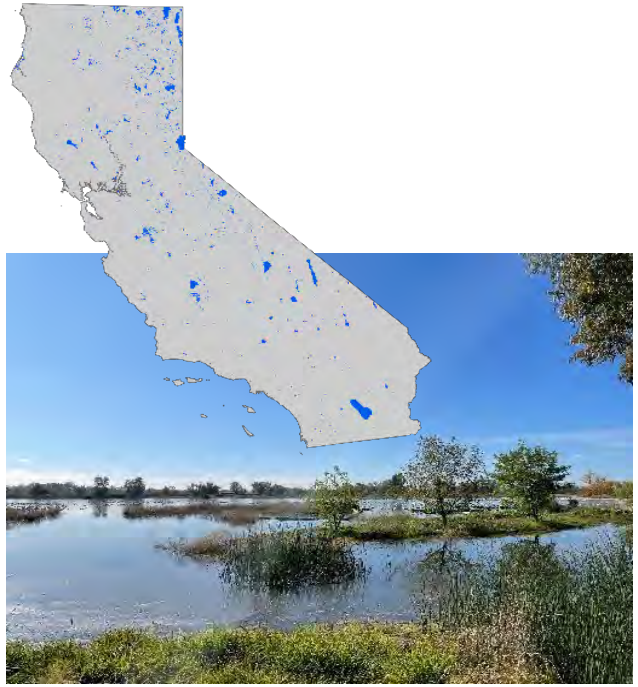
Salton Sea: Importance to Birds

Pacific Flyway

Salton Sea – Important stopover and wintering ground for migrating birds

Wetland Habitat Loss

California has lost over 90% of wetlands



Saline Lakes System

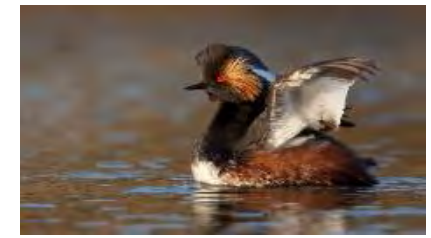


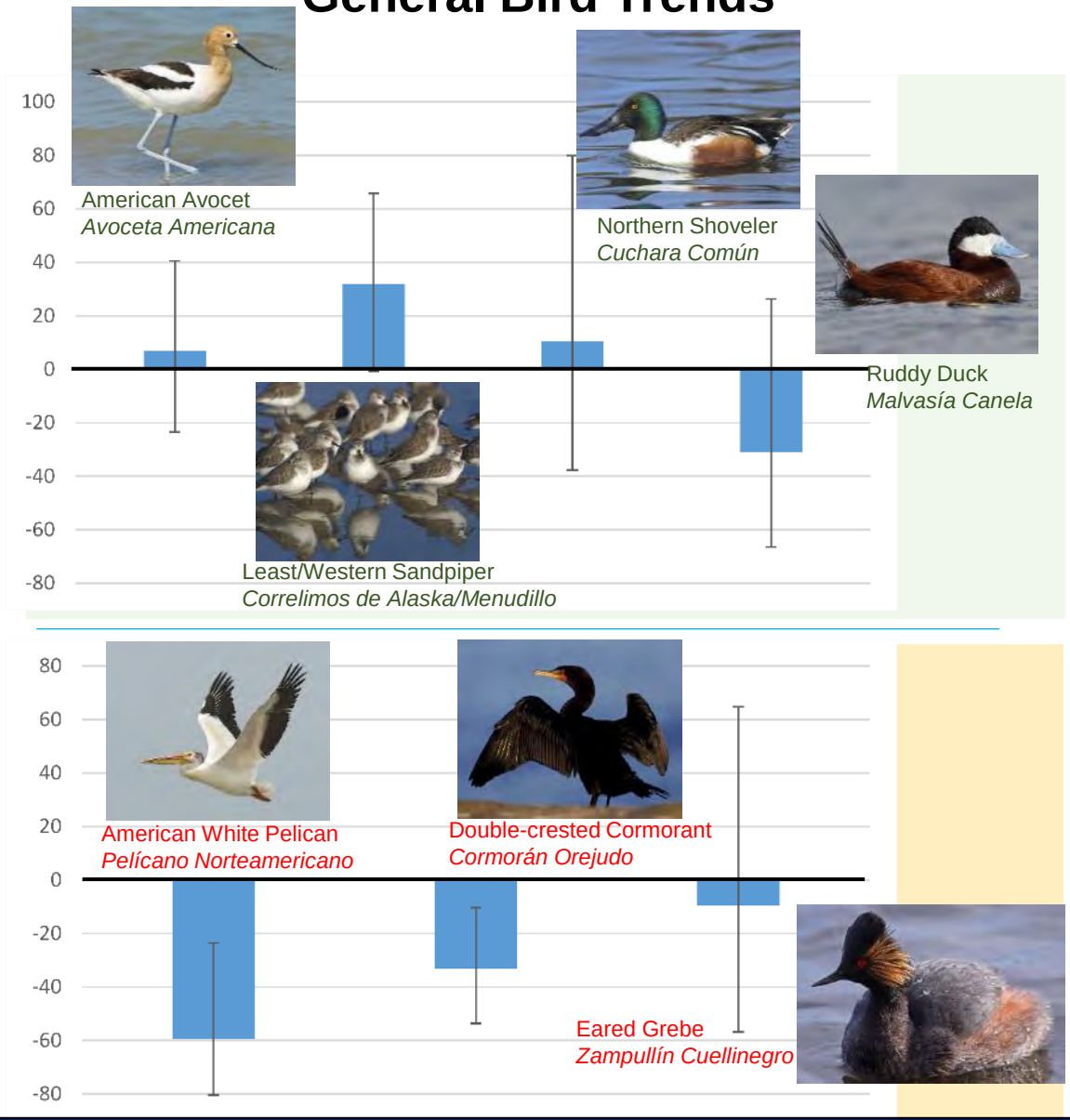
Photo: Peter Knoot/ Audubon Photography Awards;

Photo: Georgia Wilson / Great Backyard Bird Count;

Audubon | CALIFORNIA

Audubon Monitoring Efforts

General Bird Trends



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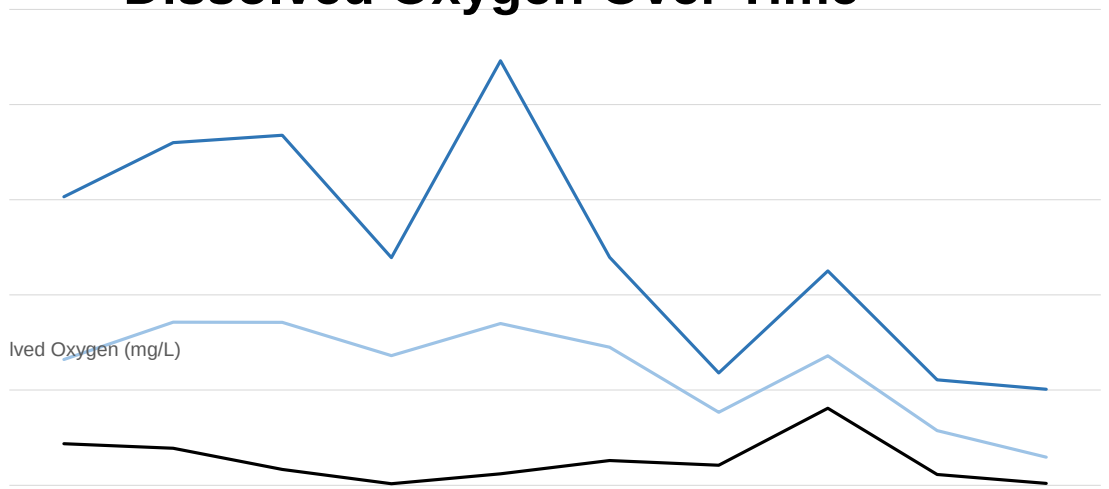
Dissolved Oxygen Over Time

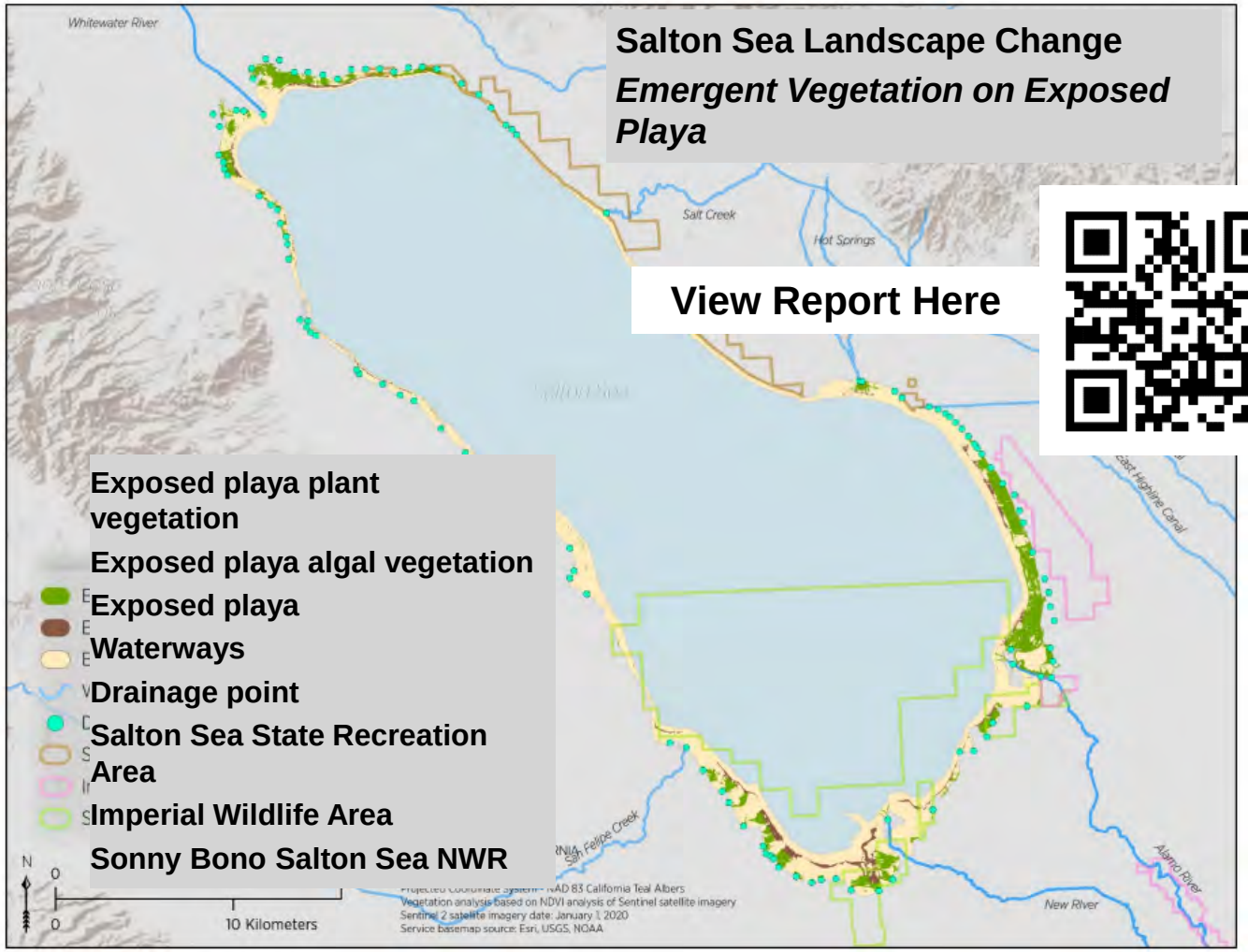


- **Maximum measured DO**
- **Mean DO**
- **Minimum measured DO**

General trend of decreasing Dissolved Oxygen (Values below 3 are concerning, values below 1 are hypoxic)

Analyses of New Emerging Wetlands

Vegetation analyses quantified over 6,000 acres of emerging wetland habitat on exposed playa
These can and should be leveraged for habitat restoration.



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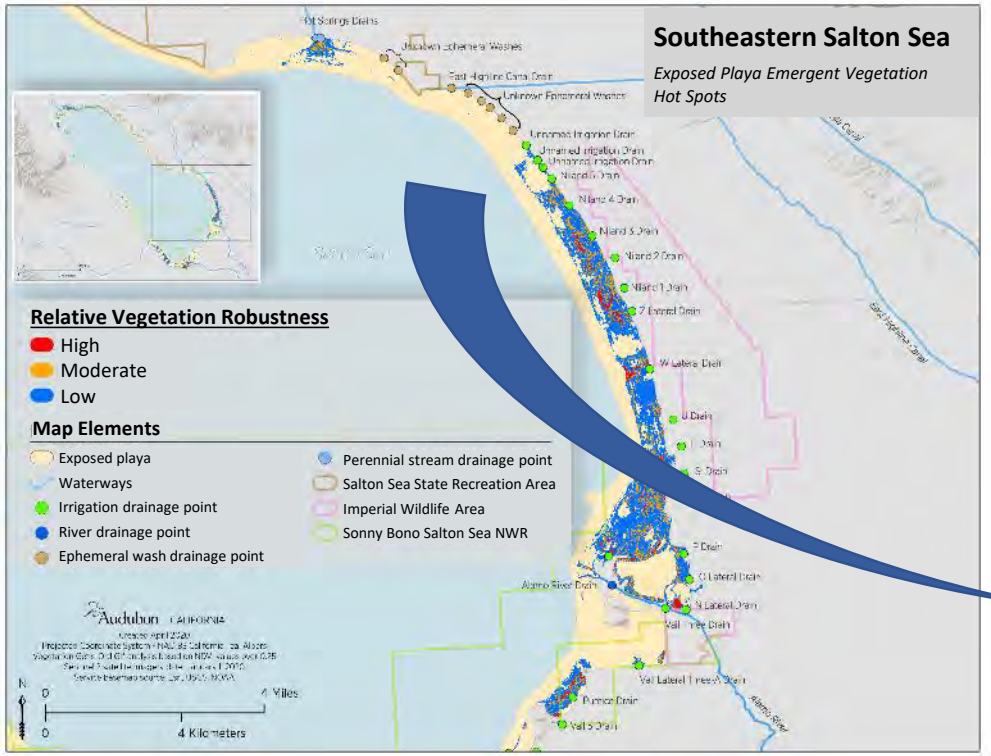
Habitat Restoration – Bombay Beach Wetland

Utilizing Audubon Vegetation analyses

Audubon | CALIFORNIA

Proof of concept – leveraging emerging wetlands for restoration

- Planning phase
- Enhance and stabilize existing wetlands



New Work Underway

Habitat Suitability Modeling

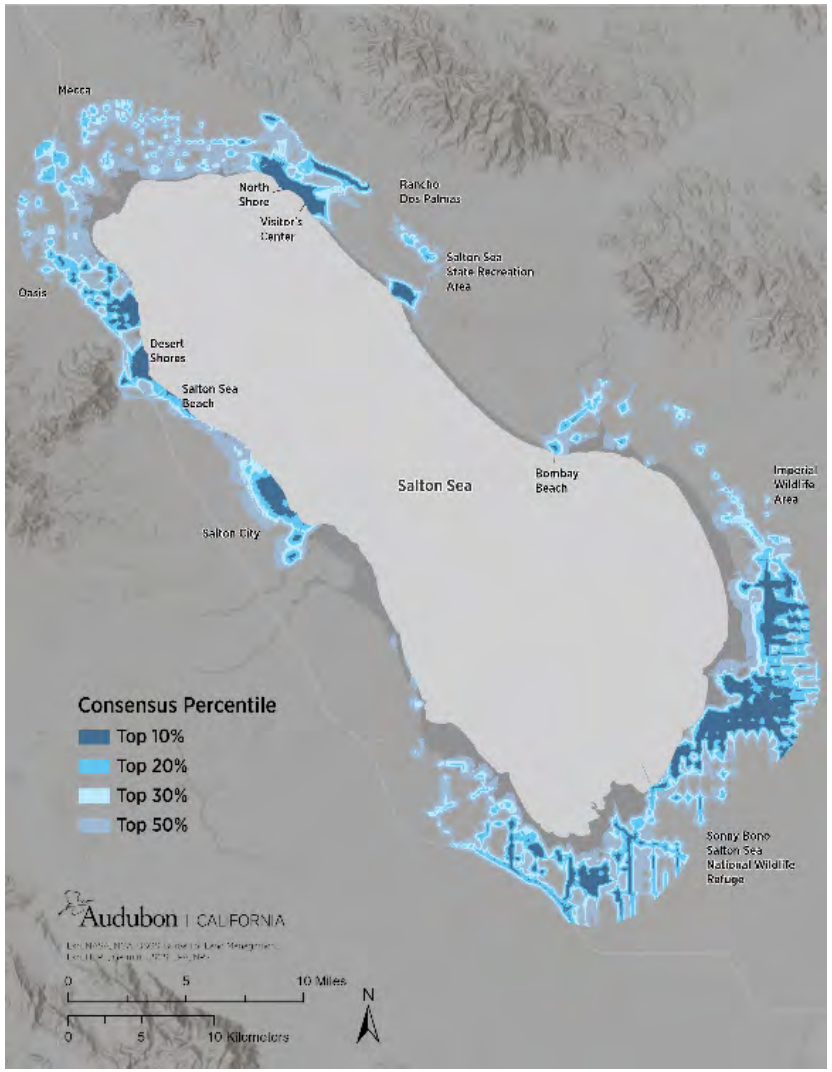
Jane Hemmerich/Audubon Photography Awards

Biofilm Study

Stefan Kathman/Audubon Photography Awards

Audubon | CALIFORNIA

Suitability Analysis for Public Access



Paisley Ramstead

TORRES MARTINEZ DESERT CAHUILLA INDIANS

Sonny Bono Salton Sea National Wildlife Refuge

Raza Shafique-Sabir
U.S. Fish and Wildlife Service
Wildlife Biologist

NATIONAL WILDLIFE REFUGE SYSTEM

Refuge Establishment - Uplands

ESTABLISHED IN 1930 UNDER EXECUTIVE ORDER:
CONSERVING 37,900 ACRES OF UPLAND, WETLAND, AND DEEP WATER HABITAT.

Refuge Establishment - Wetlands

ESTABLISHED IN 1930 UNDER EXECUTIVE ORDER:
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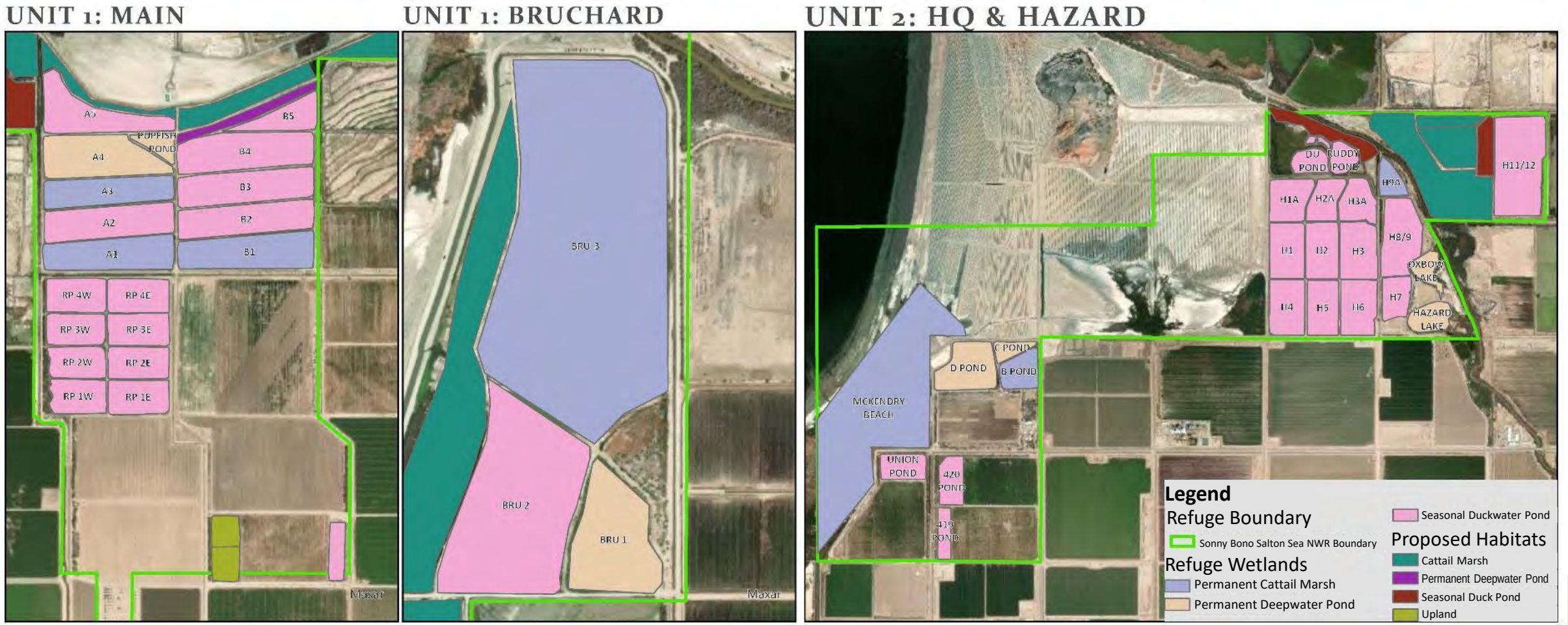


The Future

- **Budgetary cuts leading to less funding for habitat management.**
  - Cooperative farming.
  - Increased spill water use.
  - Shorter flooding periods.
- **Aridification affecting the viability of waterbird habitats.**
  - Convert deep water ponds to wetlands that have a lower evaporation rate and water demand.
  - Drought-tolerant year-round upland vegetation like Sudan grass or tall fescue.
- **Possibility of serious heavy metal contamination despite the use of clean Colorado River water.**
  - Use of cattails, surface scraping, and prescribed burns

Current Management Issues & Mitigation

Thank you

Razia Shafique-Sabir
Razia_Shafique@fws.gov

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

NATIONAL WILDLIFE REFUGE SYSTEM

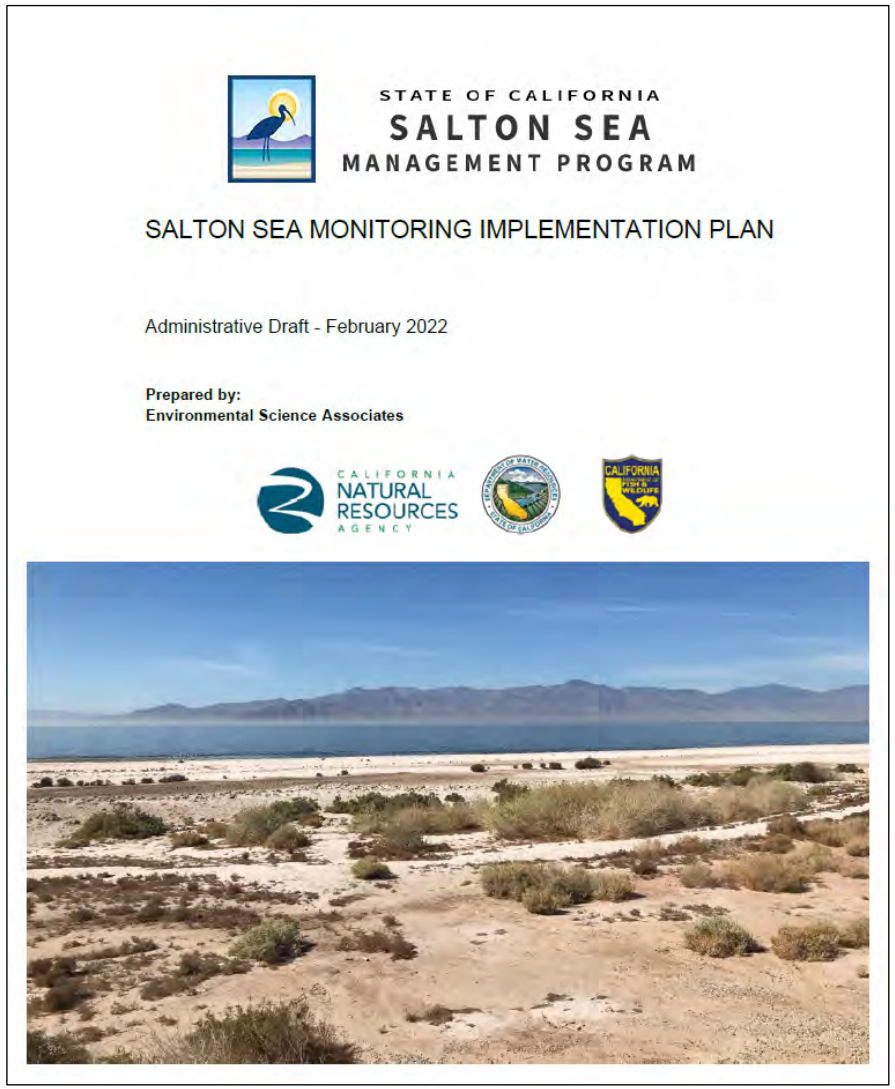
Panel 2 Q&A

Monitoring Implementation Plan Overview

Ramona Swenson, ESA

May 16, 2023

Goals of MIP



- Identify and prioritize monitoring activities that will measure current and future conditions within the Salton Sea ecosystem.
- Establish milestones against which data gathered during long-term monitoring can be compared.
- Establish methods for measuring and reporting these metrics.
- Identify and prioritize filling of existing data gaps.
- Describe a framework to store, manage, and make monitoring data publicly available in a timely manner.

MIP Development Process

- **Why** – What is purpose of this data? How can it inform management?
- **What** – Type of metrics, prioritization
- **Where** - Sampling locations, intensity
- **When** – Timing, frequency, duration
- **How** - Methods of sample collection and analysis
- **Who** - Coordination and data sharing among partners

MIP- Resource Areas

- Hydrology and Water Quality
- Air Quality
- Geography (land cover)
- Biological Resources
- Socioeconomics
- Data Management





MIP – Indicators (example)

INDICATOR					TIMING					LOCATION												PARTNER
										Aquatic				Terrestrial				Managed Areas				
Resource	Indicator	Metric	Priority	Method	Frequency	Q1	Q2	Q3	Q4	Salton Sea	Nearshore Sea	Rivers, Creeks	Drains	Shoreline, Playa	Wetlands	Halophytic Scrub	Riparian, Uplands	Dust Control Areas	Created Ponds and Wetlands			Implementing Partner
Hydrology	Surface Water	Lake elevation	1	Gaging station	Continuous	–	–	–	–	X												USGS
		Inflow—rivers and creeks	1	Gaging station	Continuous	–	–	–	–			X										USGS
		Inflow—direct drains	1	Pump rates, or field measurements	Monthly	○○○	○○○	○○○	○○○				X									IID/CVWD
	Groundwater	Groundwater elevation	1	Wells	Continuous	–	–	–	–					X				X	?			DWR, IID
	Stratification	Conductivity, DO, temperature	1	Sonde vertical profile; same profile as water quality	Monthly	○○♦	○○♦	○○♦	○○♦	X	?											Reclamation, DWR
Water Quality	Surface Water and Sediments	Conductivity, DO, temperature, pH, turbidity, Chl *a*	1	Sonde vertical profile in central Salton Sea	Monthly	○○○	○○○	○○○	○○○	X												Reclamation, DWR
			1	Sonde (handheld) in nearshore, rivers, drains	Quarterly	○	○	○	○		X	X	X									
			1	Sonde installed in impoundment	Continuous (or monthly)	–	–	–	–										X			
		TDS, TSS	2	Grab sample (water), lab analysis	Quarterly (or annually in winter)	♦	○	○	○	X	X	X	X						X			Reclamation, DWR
		Nutrients	1	Grab sample (water), lab analysis	Quarterly (or annually in winter)	♦	○	○	○	X	X	X	X						X			Reclamation, DWR
		Contaminants (pesticides, herbicides)	2	Grab sample (water and sediment), lab analysis	Quarterly (sediments annually in winter)	○	□	□	□	X	X	X	X					X	X			Reclamation, DWR
		Contaminants (metals such as arsenic, boron)	2	Grab sample (water), lab analysis	Quarterly (sediments annually in winter)	○	□	□	□	X	X			X					X			
		Harmful algal blooms	1	TBD (DNA probes)	Summer and early fall			○														
		Pathogens	3	Grab sample (water), lab analysis of pathogenic bacteria, viruses	To be determined					X	X											
Geography	Land Cover	Land cover, habitat types	1	Aerial imagery	Every three years (triennial)		○			X	X	X	X	X	X	X	X	X	X			DWR, Audubon
	Playa	Playa extent	1	Aerial imagery	Annual									X				X				DWR
Air Quality		Meteorology/climate	1	Fixed-site meteorological stations (temporary and permanent)	Continuous	–	–	–	–									X				IID, Torres Martinez. SCAQMD, ICAPCD
		PM_{10} concentrations	1	Fixed-site air monitoring stations (temporary and permanent, nonregulatory)	Continuous	–	–	–	–					X				X				IID, Torres Martinez, SCAQMD, ICAPCD
		$PM_{2.5}$ concentrations	2	Fixed-site air monitoring stations (temporary and permanent, nonregulatory)	Continuous									X								IID, Torres Martinez, SCAQMD, ICAPCD
		PM_{10} constituent analysis	3	Focused study	To be determined																	TBD
		Hydrogen sulfide (H_2S) concentrations	2	Fixed-site air monitoring stations	Continuous	–	–	–	–					X				X				SCAQMD
Biological Resources	Birds	Waterbirds at sea	1	General waterbird shoreline survey (19 survey areas)	Five times annually (late winter: January–February; spring: March–May; breeding: February–October; early fall: July–August; early winter: November–December)	○♦○	♦○♦	♦○○	○○♦	X				X								CDFW, USFWS, Audubon, OBO, Point Blue
		Piscivorous birds	1	Aerial survey (26 aerial survey transect points and four aerial survey zones)	Five times annually (late winter: January–February; spring: March–May; breeding: February–October; early fall: September–November; early winter: December–January)	○♦○	♦○♦	○○♦	○○♦	X				X	X							CDFW

MIP and MAMP comparison

MIP

- **Regional** monitoring plan for Salton Sea ecosystem
- Measure **status and trends** of resources
- Describe activities to measure conditions of water, air quality, land cover, biological resources, and socioeconomics
- Provides a framework for future project-scale monitoring plans

Project Monitoring Plan

- **Project-level** monitoring plan for individual project
- Measure **performance and progress** toward project objectives
- **Guide management** and operations of the project

Next Steps

- Developing Annual Workplan
- Surveyed partner entities about monitoring anticipated in 2023-24

SSMP Science Committee

Members

- Volunteers with certain scientific expertise.
- Were either on the committee in the past or were nominated for the position.
- No SSMP team member, consultant or their agencies are on the committee
- Charter includes process for nominating members to meet SSMP science needs

Member Meetings

- SSMP requests reviews as needed during Member Meetings
- Public meetings to commence reviews and share information
- Working sessions scheduled as needed

2022 Science Committee Members

- **Carol Roberts, USFWS (Chair)**
- Tom Anderson, USFWS
- Blake Barabee, Point Blue Conservation
- Tim Bradley, PhD, UC Irvine
- Mike Chotkowski, PHD, USGS
- Courtney Conway, PhD, USGS
- Susan de la Cruz, PhD, USGS
- Paolo D'Odorico, PhD, UC Berkeley
- Amato Evan, PhD, UCSD Scripps Inst. Oceanography
- Andrea Jones, Audubon California
- Kurt Leuschner, College of the Desert
- Robert McKernan, Oasis Bird Observatory
- Geoff Schladow, PhD, ME, UC Davis
- Ryan Sinclair, PhD, MPH, Loma Linda Univ.
- Isa Woo, PhD, USGS

No longer on Committee

- *Marilyn Fogel, PhD, UC Riverside*
- *Kathy Molina, LA County Natural History Museum (ret.)*

Thank you for attending