2026 SALTON SEA MIP ANNUAL WORK PLAN

Prepared for
California Natural Resources Agency,
California Department of Water Resources, and
California Department of Fish and Wildlife

March 2026

ESA

Photo Credit: Jay Kellum, CDFW

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Acronyms and Other Abbreviations

Acronym or Abbreviation	Definition
Alianza	Alianza Coachella Valley
Audubon CA	Audubon California
BLM	U.S. Bureau of Land Management
Brown U	Brown University
Cabazon	Cabazon Band of Mission Indians
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CDPR	California Department of Parks and Recreation
CNLM	Center for Natural Lands Management
CNRA	California Natural Resources Agency
CVWD	Coachella Valley Water District
Colorado River Basin RWQCB	Colorado River Basin Regional Water Quality Control Board
DPR	California Department of Pesticide Regulation
DWR	California Department of Water Resources
eDNA	environmental DNA
ICAPCD	Imperial County Air Pollution Control District
H_2S	hydrogen sulfide
HARC	Health Assessment and Research for Communities, Palm Desert
IID	Imperial Irrigation District
LLU	Loma Linda University
MATES	Multiple Air Toxics Exposure Study
MIP	Salton Sea Monitoring Implementation Plan
NASA	National Aeronautics and Space Administration
NHM	Natural History Museum of Los Angeles County
NO_2	nitrogen dioxide
NSF	National Science Foundation
O_3	ozone
OBO	Oasis Bird Observatory
OEHHA	California Office of Environmental Health Hazard Assessment
PBCS	Point Blue Conservation Science
SBSSNWR	Sonny Bono Salton Sea National Wildlife Refuge

Acronym or Abbreviation	Definition
SCH	Species Conservation Habitat
SCH Project	Species Conservation Habitat Project
SCHX	Species Conservation Habitat Expansion
SDSU	San Diego State University
South Coast AQMD	South Coast Air Quality Management District
SSMP	Salton Sea Management Program
State	State of California
TDS	total dissolved solids
TLD	The Living Desert
Torres Martinez	Torres Martinez Desert Cahuilla Indians
TSP	total suspended particulate
TSS	total suspended solids
Twenty-Nine Palms	Twenty-Nine Palms Band of Mission Indians
U. Idaho	University of Idaho
UCI	University of California, Irvine
UCLA	University of California, Los Angeles
UCR	University of California, Riverside
UCSD	University of California, San Diego, Scripps Institution of Oceanography
USBR	U.S. Bureau of Reclamation
USC	University of Southern California
USD	University of San Diego
USDA-NRCS	U.S. Department of Agriculture–Natural Resources Conservation Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compounds
Work Plan	Salton Sea MIP Annual Work Plan

CHAPTER 1
Introduction

1.1 Background

The California Natural Resources Agency (CNRA), the California Department of Water Resources (DWR), and the California Department of Fish and Wildlife (CDFW) are implementing the Salton Sea Management Program (SSMP) to address air quality and ecological threats at the Salton Sea. The SSMP has a plan for action over the 10-year period from 2018 to 2028 (Phase 1: 10-Year Plan), which aims to improve conditions around the Salton Sea by constructing projects that create habitat and reduce dust from the exposed lakebed on 30,000 acres. Since the State of California (State) is not a significant landowner in the area, collaboration with land-owning entities is essential and a top priority for the SSMP. The SSMP team also recognizes the crucial role of partnerships in meeting restoration goals through collecting data, facilitating project implementation, and helping obtain funding sources.

The Salton Sea Monitoring Implementation Plan (MIP) is a regional-scale monitoring plan for the Salton Sea ecosystem (CNRA 2022). The MIP, which was developed with input from implementing partners (agencies, nongovernmental organizations, universities, and other research partners) and the SSMP Science Committee, describes recommended monitoring activities to measure conditions of water, air quality, land cover, biological resources, and socioeconomics. The MIP prioritized indicators and metrics and summarized methods and sampling regimes. These indicators were prioritized based on their informativeness and relationship to key resources and drivers of the Salton Sea ecosystem, feasibility of measurement, and relevance for management actions. Some indicators were recommended only for focused study to inform a specific management-articulated information need or specifically identified data gap.

1.2 MIP Work Plan

The Salton Sea MIP Annual Work Plan (Work Plan) tiers off the MIP and reflects the monitoring and research studies within the Salton Sea ecosystem that implementing partners plan to conduct during the calendar year. The Work Plan is intended to promote collaborative science and monitoring to leverage the collective expertise and investments of partner agencies and the larger science community. The Work Plan includes monitoring and research that supports the SSMP's vision for delivering dust suppression and habitat projects during Phase 1 and informs long-range planning beyond Phase 1. This includes baseline status and trends monitoring, effectiveness monitoring of projects, and focused studies (more intensive or short-term investigations). The first Work Plan was published in February 2024 (ESA 2024) and made publicly available in both English and Spanish.

This 2026 Work Plan compiles and updates data collection activities planned for 2026; outlines potential data needs and opportunities; and provides a list of studies that have finished data collection (i.e., no new observations to be collected in 2026) and moved into the analysis and reporting phases.

1.3 Implementing Partners

The following regional implementing partners were contacted in October 2025 to inventory activities planned for 2026 (respondents are italicized):

- *Alianza Coachella Valley (Alianza)*
- *Arizona State University*
- *Audubon California (Audubon CA)*
- *Brown University (Brown U)*
- Cabazon Band of Mission Indians (Cabazon)
- *California Air Resources Board (CARB)*
- *California Department of Fish and Wildlife (CDFW)*
- *California Department of Natural Resources (CNRA)*
- California Department of Parks and Recreation (CDPR)
- California Department of Pesticide Regulation (DPR)
- *California Department of Water Resources (DWR)*
- California Office of Environmental Health Hazard Assessment (OEHHA)
- Center for Natural Lands Management (CNLM)
- *Coachella Valley Water District (CVWD)*
- Claremont College
- *Colorado River Basin Regional Water Quality Control Board (Colorado River Basin RWQCB)*
- Emissions Analytics
- *Health Assessment and Research for Communities (HARC), Palm Desert*
- *Imperial County Air Pollution Control District (ICAPCD)*
- Imperial Irrigation District (IID)
- *Loma Linda University (LLU)*
- National Aeronautics and Space Administration (NASA)
- Natural History Museum of Los Angeles County (NHM)
- National Science Foundation (NSF)
- *Oasis Bird Observatory (OBO)*
- *Pacific Institute*

- *Point Blue Conservation Science (PBCS)*
- *San Diego State University (SDSU)*
- Sonoma Technology
- *South Coast Air Quality Management District (South Coast AQMD)*
- Southwest Resource Management Association
- Torres Martinez Desert Cahuilla Indians (Torres Martinez)
- Twenty-Nine Palms Band of Mission Indians (Twenty-Nine Palms)
- U.S. Bureau of Land Management (BLM)
- *U.S. Bureau of Reclamation (USBR)*
- *U.S. Department of Agriculture–Natural Resources Conservation Service (USDA-NRCS)*
- *U.S. Fish and Wildlife Service (USFWS)*
- *U.S. Fish and Wildlife Service Sonny Bono Salton Sea National Wildlife Refuge (SBSSNWR)*
- *U.S. Geological Survey (USGS)*
- *University of Idaho (U. Idaho)*
- University of California, Irvine (UCI)
- University of California, Los Angeles (UCLA)
- *University of California, Riverside (UCR)*
- *University of California, San Diego, Scripps Institution of Oceanography (UCSD)*
- *University of San Diego (USD)*
- University of Southern California (USC)

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CHAPTER 2
2026 Monitoring Elements

The monitoring activities and studies (monitoring elements) that were voluntarily reported by partners are summarized in **Table 2-1**. This Work Plan may not reflect all monitoring, studies, research, and synthesis work occurring in the Salton Sea region. Effectiveness monitoring related to specific projects to determine project performance and metrics such as air quality monitoring are included. Compliance monitoring, such as biological surveys in conjunction with as-needed construction monitoring or maintenance of drainage channels, is not discussed. Information about the timing of data collection or sampling (e.g., months, frequency, and duration) was noted if it was provided.

2.1 Status and Trends Monitoring

2.1.1 Surface Water Hydrology

Implementing Partner: USGS.

Description: Gaging stations to measure river discharge (cubic feet per second), river stage (feet), and elevation (lake).

Location: River discharge (cubic feet per second) to the Salton Sea and gage height (feet) are measured at the Whitewater River (Station 10259540, Whitewater River near Mecca), Alamo River (Station 10254730, Alamo River near Niland), and New River (Station 10255550, near Westmorland). Water surface elevation of the Salton Sea is measured on the southwest shore (Station 10254005, Salton Sea near Westmorland).

Timing: Daily.

Notes: Data is available from the USGS National Water Information System website (https://waterdata.usgs.gov/nwis/sw).

2.1.2 Salton Sea Water Quality Monitoring

Implementing Partners: CDFW, Colorado River Basin RWQCB, Alianza.

Description: This study aims to reestablish long-term ambient monitoring of water quality around the Salton Sea. Monitoring is conducted by boat. Water quality parameters (temperature, electrical conductivity, pH, dissolved oxygen) are measured by a handheld YSI sonde. Additionally, water grab samples are collected and sent for lab analysis to measure nitrate, phosphorus, total nitrogen, ammonia, organophosphate pesticides, pyrethroids, sulfide, sulfate, enterococcus, chloride, sodium, mercury, metals, total dissolved solids (TDS), and total suspended solids (TSS).

Location: Sampling sites are located in open water: three southern lake sites (i.e., USGS2, USGS3, USGS5) and two northern lake sites (dependent on accessibility).

Timing: Quarterly events occur in February, April, August, and October.

Notes: Salton Sea monitoring is difficult due to the lack of boat access as the shoreline recedes. Two monitoring locations in the southern lake site were relocated due to receding shoreline. Access issues may improve in 2026, but will remain challenging. The two northern lake sites will be sampled if boat launching access in the northern part of the lake is improved in 2026 and/or by implementing partners if feasible.

2.1.3 CVWD Agricultural Drain Monitoring

Implementing Partner: CVWD.

Description: The CVWD maintains a system of 25 agricultural drains at the northern Salton Sea, which drain into the Salton Sea around the Whitewater River. Flow (discharge) from CVWD agricultural drains is measured monthly using a SonTek FlowTracker 2 handheld velocimeter instrument or dedicated flowmeter. Water quality parameters (i.e., temperature, field pH, and field electrical conductivity) are measured bi-annually using the handheld Hach HQ2200 multi-parameter instrument. Water grab samples are collected annually for lab analysis (TDS and nutrients).

Location: CVWD direct drains that discharge to the north Salton Sea.

Timing: Monthly discharge measurements; biannual (February and April) water quality measurements of temperature, field electrical conductivity, and field pH; and annual (August) water sample collection for nutrients and TDS lab analysis.

Notes: CVWD continues to conduct agricultural drain monitoring in association with ongoing operations and maintenance.

TABLE 2-1
2026 MONITORING AND STUDIES AT THE SALTON SEA

Section	Title	Implementing Partner(s)[1]	Indicator	Stage	Timing of Data Collection[2]	Location
	Status and Trends					
2.1.1	Surface Water Hydrology	USGS	Hydrology (discharge, elevation)	Data Collection	Daily	Rivers (Whitewater, Alamo, New), Salton Sea near Westmorland
2.1.2	Salton Sea Water Quality Monitoring	CDFW, Colorado River Basin RWQCB, Alianza	Water quality (basic, contaminants, nutrients)	Data Collection	Quarterly (Feb, Apr, Aug, Oct)	Two northern and three southern sites (i.e., USGS2, USGS3, USGS5) within the Salton Sea
2.1.3	CVWD Agricultural Drain Monitoring	CVWD	Hydrology (discharge), water quality (basic)	Data Collection	Discharge: Monthly Water quality: Biannual (Feb, Aug) Nutrients and TDS: Annually (Aug)	North Salton Sea drains
2.1.4	Salton Sea Environmental Timeseries – Water Quality and Air Quality	Alianza, LLU, Brown U, UCLA, USD, Claremont College.	Water quality, air quality	Data Collection	Water quality: Quarterly (Feb, May, Aug, Nov) Water inflow: Feb, May, Jun, Sep, Dec Air quality: continuous	Northwest Salton Sea near Whitewater River inflow
2.1.5	Meteorology and Air Quality Monitoring	South Coast AQMD, ICAPCD, IID, Torres Martinez, Twenty-Nine Palms/Cabazon	Air quality	Data Collection	Continuous	Dust control areas, shoreline, playa
2.1.6	Salton Sea Odor Monitoring and Notification System	South Coast AQMD, Sonoma Technology	Air quality	Data Collection	Ongoing, long-term monitoring	Eastern Coachella Valley
2.1.7	Vegetation Classification Analysis	Audubon CA	Vegetation	Reporting	Year-round	Salton Sea vicinity
2.1.8	Emergent Wetlands Analysis	Audubon CA	Vegetation	Reporting	Jan 2020, Jan 2022, Jan 2026	Salton Sea playa
2.1.9	Shoreline Waterbird Surveys – Tri-annual	PBCS, Audubon CA, OBO, CDFW, USFWS, MNH	Birds	Data Collection	Seasonally (Apr, Aug, Nov–Dec)	Entire shoreline
2.1.10	Shoreline Waterbird Survey – Quarterly	Audubon CA	Birds	Data Collection	Quarterly	Entire shoreline
2.1.11	Shoreline Waterbird Surveys – Bi-weekly	OBO	Birds	Data Collection	Bi-weekly (twice per month)	North Salton Sea shoreline (between Desert Shores and Salt Creek, including Whitewater River)
2.1.12	Marshbird Callback Surveys – Restoration Sites	CDFW	Birds	Data Collection	Annually (Mar 1–May 15)	Surveys at Salton Sea North Shore, Bombay Beach Wetlands, and Kane Spring Wetlands
2.1.13	Marshbird Callback Surveys – SBSSNWR	USFWS SBSSNWR	Birds	Data Collection	Annually Mar–May	South end of Salton Sea on SBSSNWR refuge land and adjacent unmanaged marshes
2.1.14	Wintering Waterfowl Aerial Surveys	USFWS SBSSNWR	Birds	Data Collection	January	Imperial Valley and Salton Sea
2.1.15	Fall-Winter Migratory Water Bird Surveys	USFWS	Birds	Data Collection	Annually (Fall–Spring) through 2031	USFWS Refuge wetlands in South Shore
2.1.16	Annual White Goose and Swan Survey	CDFW and USFWS	Birds	Data Collection	Annually (Winter) through 2061	South Shore
2.1.17	Aerial Surveys: Salton Sea Pelican and Cormorant Monitoring	CDFW	Birds	Data Collection	Annually (September–May) through 2029	Salton Sea shores, New River and Alamo River mouths, Whitewater River, SCH, private duck clubs, Wister, SBSSNWR, IID Managed Marsh, Finney and Ramer Lakes
2.1.18	Evening Sandhill Crane Roost Surveys	USFWS SBSSNWR	Birds	Data Collection	Monthly: Sep-Feb	Throughout Imperial Valley
2.1.19	Salton Sea Fish Survey	CDFW	Aquatic (fish)	Reporting	Fall	Imperial Valley: New River, Alamo River, and Whitewater River Deltas, Salton Sea proper
2.1.20	Desert Pupfish Survey	CDFW, IID, CVWD, USFWS, BLM, CNLM, CDPR, SRMA	Aquatic (pupfish, other fishes)	Data Collection	Mar/Apr to Oct	Entire Salton Sea
2.1.21	SSMP and Community Engagement Committee	SSMP	Public engagement	Data Collection	Meetings throughout the year	Virtual meetings
2.1.22	SSMP Engagement Opportunities and Outreach	SSMP	Public engagement	Data Collection	Meetings throughout the year	Virtual and in-person in communities around the Salton Sea

Section	Title	Implementing Partner(s)[1]	Indicator	Stage	Timing of Data Collection[2]	Location
	Focused Studies					
2.2.1	Selenium Concentrations in Yuma Ridgway's Rails and Prey	USGS, USFWS, U. Idaho	Water quality, birds (selenium in Yuma Ridgway's rails and prey)	Data Collection	March–July 2026	Marshes around Salton Sea and in Arizona along the Lower Colorado River
2.2.2	Salton Sea Coastal Zone Soil Survey	USDA-NRCS, USBR	Soils	Data Collection	Ongoing through 2027	Entire shoreline
2.2.3	Aerosolized Toxins around the Salton Sea	USBR, HARC (Palm Desert), UCR	Air quality (particulates, toxin)	Data Collection	Year-round 2023–2026	Imperial Valley (various Salton Sea locations)
2.2.4	Public Health Impacts from Salton Sea Playa Dust	UCR, BREATHE Center, CE-CERT	Air quality (playa dust), Health	Data Collection	Ongoing until Spring 2026	Coachella and Imperial Valleys
2.2.5	Dust Characterization Study	South Coast AQMD, CARB, UCR, AB 617 Community Steering Committee	Air quality	Data Collection	Jan 2022–Jan 2026	Eastern Coachella Valley - Mecca
2.2.6	Multiple Air Toxics Exposure Study (MATES) VI	South Coast AQMD, Emissions Analytics, UCI, USC	Air quality	Data Collection	July 2025–August 2026	South Coast AQMD Jurisdiction, including Eastern Coachella Valley
2.2.7	NASA Earth Observations for a Resilient Salton Sea	Brown U, Alianza, UCLA, LLU.	Air quality, public health	Data Collection	Continuous until Nov 2027	One location in the northern Salton Sea and one location in the southern Salton Sea
2.2.8	Water Quality at Emergent Wetlands	Audubon CA, LLU	Water quality	Data Collection	Winter 2024/Spring 2025/Spring 2026	Agricultural wetlands with Colorado River input in the northern Salton Sea shoreline and Bombay Beach Wetland
2.2.9	Wetland Management Effects on Selenium Bioaccumulation	USGS and DWR	Water quality (selenium)	Data Collection	Quarterly sampling Fall 2026–Winter 2027	Southern Salton Sea
2.2.10	Salton Sea Aquatic Invertebrate Monitoring	CDFW, Colorado River Basin RWQCB	Aquatic (plankton, macroinvertebrates), water quality	Data Collection	Quarterly Sampling: spring, summer, fall, and winter	Salton Sea and Shoreline: 3 water quality monitoring locations in the south, 1-2 water quality monitoring locations in the north
2.2.11	Environmental DNA (eDNA) Sequencing Study	CDFW	Aquatic (fish)	Data Collection	Quarterly at the Salton Sea and monthly at SCH, through February 2026	Three sites at the Salton Sea and five at SCH, and the mouths of the New River and Alamo River, when feasible.
2.2.12	Phytoplankton Pigment Study	CDFW	Aquatic (phytoplankton, harmful algal blooms), water quality (chlorophyll-*a* and phycoerythrin)	Data Collection	Quarterly	Salton Sea and SCH ponds
2.2.13	Yuma Ridgway's Rail Movements and Migration Behavior	U. Idaho, USGS	Birds (Yuma Ridgway's rail)	Data Collection	Deploy GPS transmitters March–July 2026; Location data collected throughout 2026	Marshes around the Salton Sea and in Arizona along the Lower Colorado River
2.2.14	Refuge Burrowing Owl Burrow Occupancy and Maintenance Surveys	USFWS, U of Idaho	Birds	Data Collection	Summer and winter annually through 2032	USFWS SBSSNWR in South Shore
	Effectiveness Monitoring					
2.3.1	IID Salton Sea Air Quality Mitigation Program	IID	Air quality (particulates)	Data Collection	Continuous	IID dust suppression project areas (southern shoreline, playa)
2.3.2	SSMP Dust Suppression – Air Quality Monitoring	DWR	Air quality (particulates)	Data Collection	Continuous	SSMP dust suppression projects (Clubhouse, Tule Wash, West Bombay Beach)
2.3.3	SSMP Dust Suppression – Vegetation Monitoring	DWR	Habitats (other)	Data Collection	Four times per year (Mar, Jun, Sep, Dec)	SSMP dust suppression projects (Clubhouse, Tule Wash, and West Bombay Beach)
2.3.4	SSMP Species Conservation Habitat Project Water Quality	DWR, CDFW, Colorado River Basin RWQCB	Water quality (basic, selenium)	Data Collection	Quarterly	SCH Project near New River (interception ditch, ponds, water supply)
2.3.5	SSMP Species Conservation Habitat Project – Aquatic Invertebrate Monitoring	CDFW	Aquatic (plankton, macroinvertebrates)	Data Collection	Quarterly Sampling: spring, summer, fall and winter	South Salton Sea and Shoreline: SCH and SCHX
2.3.6	SSMP Species Conservation Habitat – General Fish Monitoring and Desert Pupfish Monitoring	CDFW and DWR	Aquatic (fish, invertebrates)	Data Collection	Three times per year	South Salton Sea: SCH Conservation Habitat Ponds and SCH Habitat Expansion Ponds
2.3.7	SSMP Species Conservation Habitat Project - Avian Population Parameter Monitoring	CDFW	Birds	Data Collection	Annually (five times per year in Feb, Apr, Jun, Aug, and Nov or Dec) through 2028	SCH (East Pond and East Pond 1, and East and West Pond Sedimentation Basins)

Section	Title	Implementing Partner(s)[1]	Indicator	Stage	Timing of Data Collection[2]	Location
2.3.8	SSMP Species Conservation Habitat Project – Nesting Seabird Surveys	CDFW, USFWS	Birds	Data Collection	Weekly during seabird breeding season, April-fall	East Pond, East Pond 1 (SCHX), and the New River Weir at the Species Conservation Habitat (SCH).
2.3.9	SSMP Project Tracker	SSMP	Public engagement	Reporting	Acreage totals updated twice per year	Projects around perimeter of the Salton Sea
2.3.10	Bombay Beach Wetland Restoration Project	Audubon CA, CNRA	Habitats (wetlands), birds	Permitting and Design Phase	February 2022–2028	Bombay Beach Wetland

Notes:

1. Abbreviations: Alianza = Alianza Coachella Valley; Audubon CA = Audubon California; BLM = Bureau of Land Management; Brown U = Brown University; CARB = California Air Resources Board; CDFW = California Department of Fish and Wildlife; CNRA = California Natural Resources Agency; CNLM = Center for Natural Lands Management; CVWD = Coachella Valley Water District; CDPR = California Department of Parks and Recreation; CE-CERT = College of Engineering, Center for Environmental Research & Technology; Colorado River Basin RWQCB = Colorado River Basin Regional Water Quality Control Board; DWR = Department of Water Resources; GPS = Global Positioning System; HARC = Health Assessment and Research for Communities, Palm Desert; ICAPCD = Imperial County Air Pollution Control District; IID = Imperial Irrigation District; LLU = Loma Linda University; MATES = Multiple Air Toxics Exposure Study; MNH = Natural History Museum of Los Angeles County; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation; OBO = Oasis Bird Observatory; OEHHA = California Office of Environmental Health Hazard Assessment; PBCS = Point Blue Conservation Science; SCH -= Species Conservation Habitat; SCHX = Species Conservation Habitat Expansion; SCH Project = Species Conservation Habitat Project; South Coast AQMD = South Coast Air Quality Management District; SDSU = San Diego State University; SSMP = Salton Sea Management Program; TDS = total dissolved solids; Torres Martinez = Torres Martinez Desert Cahuilla Indians; Twenty-Nine Palms/Cabazon = Twenty-Nine Palms Band and Cabazon Band of Mission Indians; U. Arizona = University of Arizona; UCI = University of California, Irvine; UCR = University of California, Riverside; U. Idaho = University of Idaho; UCLA = University of California, Los Angeles; USC = University of Southern California; USBR = U.S. Bureau of Reclamation; USDA-NRCS = U.S. Department of Agriculture – Natural Resources Conservation Service; USFWS = U.S. Fish and Wildlife Service; USFWS SBSSNWR = U.S. Fish and Wildlife Service Sonny Bono Salton Sea National Wildlife Refuge, USGS = U.S. Geological Survey
2. Timing or location of data collection not specified by respondent, or using existing data.

Source: Data compiled by ESA 2026

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2.1.4 Salton Sea Environmental Timeseries – Water Quality and Air Quality

Implementing Partners: Alianza, LLU (Ryan Sinclair), Brown U (Mara Freilich, Alejandra Lopez), UCLA, USD, Claremont College.

Description: This monitoring program is a community science project in the northwest Salton Sea to simultaneously measure air quality and water quality. An Aeroqual sensor (AQS1 Gas Sentry Pro) was deployed in August 2023 to measure hydrogen sulfide (H_2S), volatile organic compounds (VOC), and nitrogen dioxide (NO_2). Basic water quality metrics (temperature, dissolved oxygen, pH, specific conductivity, chlorophyll-*a*, phycoerythrin, and turbidity) are measured using a YSI ProDSS sonde. Nutrients (nitrate, ammonia, phosphate, sulphate, and sulfide) are measured using a YSI 6500 photometer. Additionally, turbidity is measured using a TN400 turbidity meter.

This monitoring program measures water quality in quarterly increments in the northwest Salton Sea, a location that is currently not monitored by the state or local water boards for the parameters the Salton Sea Time Series is currently monitoring. The sampling sites have been shifted to better reflect the water quality of the nearshore areas along the northwest shore of the Salton Sea. Previous sites with the most relevant data (center of the lake, air quality sensor, and the mouth of the Whitewater River) will continue to be sampled.

Location: Northwest Salton Sea about 2 miles off the northwestern shore near the Whitewater River. Six sample points include the following locations: 4 kilometers (km) south of the Whitewater River (33° 28' 11" N, 116° 1' 31" W), 1.9 km south of the Whitewater River and collocated with an air quality sensor (33° 28' 52” N, 116° 2' 52" W), the mouth of the Whitewater River (33° 29' 49" N, 116° 3' 13" W), the mouth of the agricultural drain along the north shore (33° 31' 5" N, 115° 58' 18" W), nearshore at the North Shore Yacht Club (33° 31' 3" N, 115° 56' 25" W), and nearshore at the Salton Sea State Recreation Area (33° 30' 8" N, 115° 55' 4" W). The Aeroqual sensor is deployed on the northwestern part of the lake on a structure sitting on the border of parcel, APN 737-060-005.

Timing: Water quality monitoring occurred four times in 2025 (February, May, August, and November). In 2026, basic water quality and nutrients will be measured four times on the third Saturday of February, May, August, and November. Monitoring of inflowing river water will occur five times (February, May, June, September, and December). Air quality monitoring is ongoing with the Aeroqual monitor that measures H_2S, VOC, and NO_2.

Notes: The air monitor posts data in real time and is viewable at https://saltonseascience.org/.

2.1.5 Meteorology and Air Quality Monitoring

Implementing Partners: South Coast AQMD and the ICAPCD operate regulatory monitoring equipment within Riverside and Imperial County, respectively, to the north and south of the Salton Sea. The IID Salton Sea Air Quality Mitigation Program maintains a non-regulatory monitoring network. Other monitoring stations are maintained by the Torres Martinez, the Twenty-Nine Palms Band of Mission Indians, and the Cabazon Band of Mission Indians.

Description: Real-time monitoring focuses on criteria and noncriteria air pollutants of concern, mainly particulate matter (PM_{10}, $PM_{2.5}$), H_2S, and ozone (O_3). Monitoring sites and parameters measured are summarized in **Table 2-2**, as cataloged by CARB. The general methods are listed in **Table 2-3** for each parameter.

TABLE 2-2
SALTON SEA AIR BASIN AIR QUALITY MONITORING SITES

County	CARB Site Number[1]	Site Name	Agency	Meteorological and Air Quality Parameters[2, 3]
Riverside	TBD (060652007)	Indio-Amistad High School AQS	South Coast AQMD, IID	O_3, H_2S, H_2S, PM_{10} BAM, $PM_{2.5}$ BAM, Outdoor Temperature, Relative Humidity, Wind Direction-Scalar, Wind Direction-Resultant, Wind Speed-Resultant, Wind Speed-Scalar, Barometric Pressure
Riverside	33137	Palm Springs Fire Station	South Coast AQMD	CO, NO_2, O_3, PM_{10}, Continuous PM_{10}, 24-hour $PM_{2.5}$, Relative Humidity, Wind Direction-Scalar, Wind Direction-Resultant, Wind Speed-Resultant, Wind Speed-Scalar, Barometric Pressure
Riverside	n/a	Twenty-Nine Palms and Cabazon	Twenty-Nine Palms and Cabazon Bands of Mission Indians[4]	PM_{10}, $PM_{2.5}$, Wind Direction, Wind Speed, Outdoor Temperature
Riverside	33033	Mecca–Saul Martinez	South Coast AQMD	Continuous metals, Black Carbon, Organic Carbon, Ammonia H_2S, NO_2, PM_{10} BAM, Outdoor Temperature, Relative Humidity
Riverside	33601	Torres Martinez (i.e., Near-Shore)	Torres Martinez, South Coast AQMD, IID	H_2S, TEOM $PM_{2.5}$, Outdoor Temperature, Relative Humidity, Wind Direction-Scalar, Wind Speed-Scalar, Barometric Pressure
Imperial	13601	Bombay Beach	IID	Low-Vol PM_{10}, TEOM $PM_{2.5}$, Outdoor Temperature, Relative Humidity, Wind Direction-Scalar, Wind Speed-Scalar, Barometric Pressure
Riverside	33602	Salton Sea Park	IID	TEOM PM_{10}, TEOM $PM_{2.5}$, Outdoor Temperature, Relative Humidity, Wind Direction-Scalar, Wind Speed-Scalar, Barometric Pressure
Imperial	13603	Naval Test Base	IID	TEOM $PM_{2.5}$, Outdoor Temperature, Wind Direction-Scalar, Wind Speed-Scalar
Imperial	13604	Salton City	IID	TEOM $PM_{2.5}$, Outdoor Temperature, Relative Humidity, Wind Direction-Scalar, Wind Speed-Scalar, Barometric Pressure
Imperial	13602	Sonny Bono	IID	Low-Vol PM_{10}, TEOM $PM_{2.5}$, Outdoor Temperature, Wind Direction-Scalar, Wind Speed-Scalar, Barometric Pressure
Imperial	13997	Niland–English Road	ICAPCD	O_3, BAM PM_{10}, Outdoor Temperature, Wind Direction-Resultant, Wind Speed-Resultant, Barometric Pressure

County	CARB Site Number[1]	Site Name	Agency	Meteorological and Air Quality Parameters[2, 3]
Imperial	13697	Westmorland	ICAPCD	O_3, BAM PM_{10}, Outdoor Temperature, Wind Direction-Resultant, Wind Speed-Resultant, Barometric Pressure
Imperial	13701	Brawley–Main Street #2	ICAPCD	BAM PM_{10}, BAM $PM_{2.5}$

Notes:

1. The California Air Resources Board (CARB) provides information on sites and parameters here: https://ww2.arb.ca.gov/applications/quality-assurance-air-monitoring-site-list-generator-1. This page does not necessarily reflect all parameters monitored at a site.
2. Particulate matter - sampling techniques for continuous measurement of suspended particulate matter vary among sites, including low-volume and high-volume samplers, TEOM (tapered element oscillating microbalance), and BAM (Beta Attenuation Monitor).
3. Hydrogen sulfide - Real-time H_2S data is available at: https://saltonseaodor.org/
4. Data for the Twenty-Nine Palms and Cabazon monitoring site is available at: https://www.29palmstribe.org/departments/tribal-epa/air-quality/

Source: CARB 2024

TABLE 2-3
SALTON SEA AIR BASIN AIR QUALITY MONITORING METRICS AND METHODS

Metrics	Methods	Timing
Black Carbon (CD)	Real Time, AE33 and MA350	Ongoing
Total Carbon (TC)	Real Time, Total Carbon Analyzer	Monitor removed in Nov 2024
Metals	Real Time, Xact 625i	Ongoing
NO_X/NO/NO_2	Real Time, T200	Ongoing
O_3	Real Time, T400	Ongoing
Ammonia	Real Time, Picarro	Ongoing

Notes: NO = nitric oxide; NO_2 = nitrogen dioxide; NO_x = nitrogen oxides; O_3 = ozone.

Source: CARB 2026

Location: As cataloged by CARB, there are 13 active air quality monitoring sites near the Salton Sea (Table 2-2). Three sites are in the north (Indio, Mecca, and Torres Martinez), two are on the east shore (Salton Sea Park, Bombay Beach), two are on the west shore (Salton City, Naval Test Base), four are in the south (Sonny Bono, Niland-English Road, Westmorland, and Brawley), and one is Palm Springs (Palm Springs Fire Station). The Cabazon and Twenty-Nine Palms tribes installed an air quality monitoring station near the Eagle Falls Golf Course in Indio.

Timing: Real-time continuous monitoring.

Notes: CARB provides information on sites and parameters online at: https://ww2.arb.ca.gov/applications/quality-assurance-air-monitoring-site-list-generator-1. More information is available online from South Coast AQMD: Salton Sea Air Basin Air Quality Monitoring Metrics and Methods.

2.1.6 Salton Sea Odor Monitoring and Notification System

Implementing Partners: South Coast AQMD, Sonoma Technology.

Description: South Coast AQMD operates four continuous, real-time H_2S monitors along with meteorological stations to measure and track odors associated with the Salton Sea. South Coast AQMD has developed a data visualization tool and a subscription-based notification system for when levels exceed health thresholds.

Location: Eastern Coachella Valley.

Timing: Ongoing, long-term monitoring.

Notes: H_2S real-time data and subscription to receive notifications can be accessed through the dedicated website: https://saltonseaodor.org/.

2.1.7 Vegetation Classification Analysis

Implementing Partner: Audubon CA.

Description: As Colorado River water allocations are reduced and the Salton Sea continues to recede, there is less habitat available for birds. By identifying vegetation on exposed playa that birds are still using as habitat, these areas can be prioritized for management and protection. High-resolution drone imagery, field mapping, and machine learning techniques are used to classify the vegetation types surrounding the Salton Sea, specifically as tamarisk or cattails. Vegetation identified on the desktop will be ground-truthed at various survey locations surrounding the Salton Sea. This vegetation mapping, along with quarterly bird surveys around the Salton Sea, will allow for a better understanding of where birds are using vegetated wetland habitats.

Location: Salton Sea vicinity.

Timing: 2024 field observations. Year-round, 2024–2025 imagery.

Notes: To be completed in spring 2026.

2.1.8 Emergent Wetlands Analysis

Implementing Partner: Audubon CA.

Description: Quantifying emerging wetlands and measuring changes in the persistence of vegetation and wetlands on exposed playa is important to understanding how habitat availability is changing. Ten-meter resolution multispectral imagery from Sentinel 2 satellite imagery from January 2020 and January 2022 were used to assess vegetation on exposed playa. This analysis will be part of a comprehensive report on the state of bird habitats and trends at the Salton Sea. The hope is to continue assessing vegetation around the Salton Sea every 2 years.

Location: Playa surrounding the Salton Sea.

Timing: Continuous monitoring every couple of years using most recent satellite imagery.

2.1.9 Shoreline Waterbird Surveys – Tri-Annual

Implementing Partners: PBCS, Audubon CA, OBO, CDFW, USFWS, NHM.

Description: Coordinated regional- and flyway-scale surveys for migratory shorebirds that rely on a standardized survey protocol. The Intermountain West Shorebird Survey is a biannual survey during migration (April and August) from 2022–2026 at more than 200 freshwater wetland and saline lake sites in 11 U.S. western states. The Pacific Flyway Shorebird Survey occurs each winter at more than 400 sites in all 13 countries of the Pacific Coast of the Americas, including every December since 2010 at Salton Sea. Shorebird abundance is measured around the Salton Sea shoreline, peripheral emergent habitats around drains and wetlands (including near Bombay Beach), and managed wetland complexes at Imperial Valley Wildlife Area and Sonny Bono Salton Sea National Wildlife Refuge (SBSSNWR). Incidental observations are collected for any dead and sick birds.

The Intermountain West Shorebird Survey also provides information about the abundance and distribution of snowy plovers along the shoreline. Although the surveys do not involve nest searching, plovers are territorial breeders, so their distribution in late April is a coarse-scale indicator of the distribution of preferred breeding habitat. The August survey will provide information on local abundance in the context of the regional population when compared to other interior sites.

Survey data will also be contributed by OBO and Audubon CA from their regular monitoring locations. Volunteers and staff from Point Blue, Audubon CA, CDFW, and USFWS will conduct the surveys.

Location: The surveys cover the entire Salton Sea shoreline (19 segments, with 85 subsegments). Surveys will also include the greater wetland complex of impoundments in Wister, SBSSNWR, Imperial Wildlife Area, Sonny Bono and Species Conservation Habitat (SCH) ponds, Bombay Beach, Ramer Lake.

Timing: Three times annually in April, August, and November–December.

Notes: Complete shoreline surveys are dependent upon having an airboat to cover portions of the shoreline inaccessible by foot or all-terrain vehicle. Boat access to the sea has become difficult in recent years due to the receding shoreline. Thus, many surveys have not covered the entire shoreline since 2015. If CDFW or USFWS cannot provide a boat, additional support will be needed to purchase a boat for nongovernmental organizations to lead the boat survey portion. For more information of the survey methodologies used, please visit: https://migratoryshorebirdproject.org/pfss/ and https://www.imwss.org/.

2.1.10 Shoreline Waterbird Surveys – Quarterly

Implementing Partner: Audubon CA.

Description: Waterbird surveys have been conducted since November 2016 at 14 sites around the Salton Sea. These surveys are conducted quarterly in February, May, August, and November. Surveys consist of bird counts taken from a predetermined survey point with a spotting scope, covering a distance 500 m to the left and right of the survey point and 1 km offshore of the point, creating a "survey box" in which birds are counted for roughly 15 minutes and are identified to species. Counts include birds on the shore, on the water, and in flight. Because the Salton Sea is rapidly receding in some areas, it was necessary to move survey points toward the water's edge as the sea receded to ensure the surveys were covering the intended habitat. In some cases, the original point is now more than a mile from the shoreline.

Location: 14 sites along the shorelines of the Salton Sea.

Timing: Quarterly

2.1.11 Shoreline Waterbird Surveys – Bi-Weekly

Implementing Partner: OBO.

Description: OBO initiated waterbird surveys in 2014 at multiple shoreline viewsheds along the central and northern portions of the Salton Sea to document long-term spatial and temporal patterns in waterbird distribution, abundance, migration, phenology, and habitat use across shoreline and nearshore environments.

Surveys estimate species composition and abundance at each site and include both shoreline habitats and an open-water viewshed extending approximately 1 km perpendicular from shore. Observations are conducted during morning and afternoon periods. Each site is surveyed for 60–120 minutes, depending on waterbird abundance, to ensure accurate identification and abundance estimates. During each survey, observers record all waterbirds detected within approximately 1 km of the count location. Shoreline, open water, and airspace are surveyed using spotting scopes (20×60) and binoculars (8×42 and 10×42). Surveys historically covered approximately 25 km² of shoreline and offshore habitat. All waterbird species are recorded, with seasonal, focused assessments of key species and groups, including waterfowl, eared grebes, semipalmated plovers (staging), snowy plovers (breeding), sanderlings, red knot staging, gulls, and terns.

Beginning in 2026, survey frequency transitioned from weekly to semi-monthly (two surveys per month), while maintaining the same survey sites, methodology, and survey duration. With this adjusted effort, surveys place increased emphasis on documenting waterbird staging locations at the north end of the Salton Sea and identifying and monitoring waterbird nesting areas.

Location: Ten sites along the northern shoreline between Desert Shores and Salt Creek.

Timing: From 2014 through December 2025, surveys were conducted weekly at eight sites and monthly at two sites. In 2026, surveys will be conducted bi-weekly (i.e., two surveys per month) using the same sites and methods.

Notes: As of December 2025, OBO completed 10 consecutive years of continuous weekly surveys, providing a robust long-term dataset for evaluating changes in waterbird use and habitat conditions at the North and Central Salton Sea. With reduced survey frequency (bi-weekly) in 2026, the study makes a strategic shift toward synthesis, analysis, and manuscript preparation. Ongoing work focuses on waterbird trends and habitat change at the north end of the Salton Sea, with a working manuscript title: *Contemporary Trends for Waterbirds at North Salton Sea: A Ten-Year Index.*

2.1.12 Marshbird Callback Surveys – Restoration Sites

Implementing Partner: CDFW.

Description: Conducting surveys along the northern shoreline for the purpose of project impact evaluation, documenting suitable habitat and occupancy for the future north lake projects.

Location: Surveys will be conducted at the Salton Sea North Shore, Bombay Beach, and Kane Springs Wetlands.

Timing: March 1 through May 15, 2026.

2.1.13 Marshbird Callback Surveys – SBSSNWR

Implementing Partner: USFWS SBSSNWR.

Description: Conduct annual secretive marshbird audio callback surveys for Ridgway's rail, Virginia rail, black rail, least bittern, American bittern, and pied-billed grebe.

Location: South end of Salton Sea at managed marshes on the refuge and adjacent unmanaged marshes.

Timing: One visit to each marsh every 15 days from March through May.

2.1.14 Wintering Waterfowl Aerial Surveys

Implementing Partner: USFWS SBSSNWR.

Description: Aerial survey of waterfowl wintering at the Salton Sea. In addition, an annual white goose survey is conducted in the Imperial Valley.

Location: Imperial Valley and Salton Sea.

Timing: One time, in January.

2.1.15 Fall-Winter Migratory Water Bird Surveys

Implementing Partners: USFWS.

Description: The annual Fall-Winter Migratory Water Bird Surveys were established in 2021 to meet Risk Assessment Mapping Program requirements. The ground point count surveys were established to understand waterfowl and wading bird presence and habitat use within the managed seasonal wetlands. The primary survey objectives for this survey are written as follows:

- Over the next 10 years (2021–2031), the annual peak number of individual ducks will be increased to greater than 5,000 ("very good") at the SBSSNWR.
- Over the next 10 years (2021–2031), the ratio of dabbling to diving ducks across all managed wetland units is maintained at 60 percent dabbling to 40 percent diving ducks at the SBSSNWR.

Location: USFWS Refuge wetlands in South Shore.

Timing: Sampling yearly (fall–spring) to continue through 2031.

2.1.16 Annual White Goose and Swan Survey

Implementing Partner: CDFW and USFWS.

Description: Yearly monitoring of all goose populations occupying the Imperial Valley, with white goose versus Ross's geese ratio surveys conducted every 3 years via ground counts. Any swans detected during the survey are also counted. Surveys are coordinated with land managers across the Pacific Flyway. Some locations with more dispersed populations are conducted via aerial counts.

Location: South Shore.

Timing: Sampling in winter (December). Study expected to continue until 2061.

2.1.17 Aerial Surveys: Salton Sea Pelican and Cormorant Monitoring

Implementing Partner: CDFW.

Description: The main goal of this project is to evaluate fish-eating bird populations at the Salton Sea, focusing on American white pelicans, brown pelicans, double-crested cormorants, and other cormorant species. Aerial surveys efficiently count these waterbirds across large, hard-to-reach areas, including the shoreline and open water of the Salton Sea, and freshwater impoundments, which are often inaccessible. These counts help monitor how birds respond to environmental changes at the Salton Sea, especially the flooding and creation of the SCH. The SCH's main objective is to bolster the aquatic food web via species like tilapia, thereby addressing the challenges posed by severe salinity increases and the Salton Sea recession. An increase in pelican and cormorant populations indicates ecological success and a reliable food supply. Monitoring their populations is vital, as these species are sensitive to food chain disruptions, and the Salton Sea serves as a key stopover and historic breeding site on the Pacific Flyway. A growing SCH population suggests successful support for these species amid ecosystem decline.

Aerial censuses are being conducted along predetermined transects. Observers positioned on opposite sides of a fixed-wing aircraft simultaneously count, identify, and record the total abundance of all observed pelican and cormorant species within their designated transect boundaries.

Location: Alamo River and Mouth, East Shore, New River Mouth, South Shore, West Shore, Whitewater River and North Shore, Species Conservation Habitat, private duck clubs, Wister, SBSSNWR, IID Managed Marsh, and Finney and Ramer Lakes.

Timing: Surveys will be conducted from September through May. The study is expected to continue through 2029.

2.1.18 Evening Sandhill Crane Roost Surveys

Implementing Partner: USFWS SBSSNWR.

Description: Evening surveys for sandhill crane roosts.

Location: Throughout Imperial Valley, at various wetlands, farms, and granaries.

Timing: Monthly surveys in September–February.

2.1.19 Salton Sea Fish Survey

Implementing Partner: CDFW.

Description: General fish surveys conducted by boat with trammel nets at nearshore locations and by cast nets at river deltas to document fish species and abundance.

Location: Imperial Valley: New River, Alamo River, and Whitewater River Deltas.

Timing: Fall 2024.

Notes: Conducting fish surveys has become difficult in recent years due to the lack of boat access as the Salton Sea recedes. A fish survey was conducted in fall 2024, and a summary report of the findings is currently being drafted.

2.1.20 Desert Pupfish Survey

Implementing Partners: CDFW, IID, CVWD, USFWS, BLM, CNLM, CDPR, SRMA, TLD.

Description: Long-term monitoring of desert pupfish populations throughout range in California, presence and relative abundance, general trend information. Pupfish surveys are primarily conducted using minnow traps. Dip nets may be used to confirm presence if the water is too shallow to set minnow traps. Information collected during surveys includes general habitat conditions; presence and relative abundance (catch per unit effort) of pupfish and nonnative species; and basic water quality data (conductivity, dissolved oxygen, and temperature).

Location: Irrigation drains/shoreline pools, interception ditches, tributary streams/creeks, ponds, former Salton Sea marinas, refuges (artificial habitat).

Timing: Each site is visited once annually primarily at the end of March or early April through October. Some drains may be sampled more frequently, if pupfish are not detected during the first survey, to confirm negative results. A few sites may be surveyed more frequently (e.g., quarterly) depending on the need for more information. Ideally, sites should be surveyed during the spring, summer, and early fall, but this is often difficult due to staff workload.

Notes: While primarily monitoring desert pupfish, other fish species may be monitored too. This long-term monitoring effort is expected to continue for many years to come.

2.1.21 Salton Sea Management Program and Community Engagement Committee

Implementing Partner: SSMP.

Description: The SSMP Community Engagement Committee and its subcommittees serve as the hub and primary venue to plan engagement activities and identify best outreach and involvement strategies for SSMP public events. The Community Engagement Committee consists of representatives from community-based organizations, stakeholder groups, local leaders, governmental agencies, and Tribal governments. It enlists leaders of local community groups and nongovernmental organizations to help guide SSMP engagement efforts, reach community members through varying communications channels, and increase community engagement in SSMP planning activities. The Committee is led by two co-chairs, one from Alianza and one from the County of Imperial.

Location: Virtual meetings.

Timing: Various meetings throughout the year.

Notes: Meetings occur in preparation for public community meetings and engagement opportunities.

2.1.22 Salton Sea Management Program Engagement Opportunities and Outreach

Implementing Partner: SSMP.

Description: The SSMP team hosts regular public meetings and workshops to share information and gather community feedback. The SSMP team continues to use and is working to update a comprehensive website, www.saltonsea.ca.gov, to continue to provide information on SSMP projects, processes, and provide opportunities to receive input.

The State also continues to share news, engagement opportunities, and project updates via the SSMP update e-newsletter. The SSMP update e-newsletter is distributed through the CNRA Salton Sea mailing list to over 1,900 subscribers.

Location: Virtual meetings and in-person meetings in communities around the Salton Sea.

Timing: Various meetings throughout the year.

Notes: Newsletters are issued monthly or when needed for updates.

2.2 Focused Studies

2.2.1 Selenium Concentrations in Yuma Ridgway's Rails and Prey

Implementing Partners: USGS, USFWS, U. Idaho.

Description: Selenium concentrations can vary between marshes fed by Colorado River water versus agricultural runoff. The goal of this study is to document and compare selenium concentrations in Yuma Ridgway's rails throughout their range. Blood and feather samples will be collected from Yuma Ridgway's rails at marshes around the Salton Sea and along the Lower Colorado River. Rail prey items have previously been collected in those same marshes. Blood, feathers, and prey samples will be tested for selenium concentrations.

Location: Marshes around the Salton Sea and in Arizona along the Lower Colorado River.

Timing: Capture and sample collection from Yuma Ridgway's rails will occur between March and July 2026.

2.2.2 Salton Sea Coastal Zone Soil Survey

Implementing Partners: USDA-NRCS, USBR.

Description: The USDA-NRCS Soil and Plant Science Division is conducting soil survey mapping through the National Cooperative Soil Survey along the perimeter of the Salton Sea on exposed playa formerly covered by water and shallow submerged areas that are projected to be exposed in the future. This work is being completed in collaboration with the Department of the Interior (through USBR and BLM) to assist efforts of restoring wetlands and reduce fugitive dust emissions from the exposed playa surface of the Salton Sea in Imperial and Riverside Counties, California.

Understanding the properties of the exposed Salton Sea playa sediments and submerged areas will be essential for land managers involved in restoring wetlands and controlling fugitive dust emissions on the playa now and in coming years as the new area of playa are exposed. Treatments to control dust will rely on understanding soil properties, such as soil texture, to strategically place soil erosion controls and restore wetlands.

Work will consist of collating existing resources for soils in the project area; describing and sampling soils at additional locations, as needed, to supplement and maximize available soils resources; and meeting with key land managers (federal, state, and local), as needed. The USDA-NRCS will publish soils data in the work area using official platforms through the National Cooperative Soil Survey to support implementation of informed land management strategies.

Location: Exposed playa along the perimeter of the Salton Sea in areas previously covered by water and shallow water areas.

Timing: This project started in 2022 and is scheduled to be complete by 2027.

Notes: The USDA-NRCS will use a combination of available soil resources and document soil profile descriptions of soil properties at new sites to complete soil survey mapping through the National Cooperative Soil Survey.

2.2.3 Aerosolized Toxins around the Salton Sea

Implementing Partners: USBR, HARC (Palm Desert), UCR (Emma Aronson, Roya Bahreini, and David Lo).

Description: Seasonal collections of Salton Sea water, sediment below the current sea, playa soil, and dusts, from several sites around Salton Sea are proposed. More detailed microbiome studies on the microbial species, and their functional attributes, found to be characteristic of the Salton Sea water and playa ecology, in contrast to environmental microbiomes in more distant areas of the Coachella and Imperial Valleys will be performed. The study will also seek to catalog and propagate potential biocrust component microorganisms that may affect dust entrainment. Adaptation of microbial species to the chemistry of the Salton Sea water and playa are hypothesized to result in synthesis of cell wall components such as lipopolysaccharides, which are particularly toxic to the lungs of residents. This toxic material may be a major contributor to the observed health impacts in the region, such as the high incidence of asthma. The microbial products found in the biomass collected in aerosol dusts from the playa will be studied by identifying microbial species that contribute the most material, in particular the most lung-toxic components, as well as the biochemical mechanisms that lead to the entrainment of these toxic components in the playa dust.

Location: Imperial Valley. Field samples from various Salton Sea locations.

Timing: Year-round sampling between January 2023 through February 2026.

Notes: Results are being correlated with community epidemiology study performed in previous project period to assess prevalence of asthma like symptoms across the Salton Sea region.

2.2.4 Public Health Impacts from Salton Sea Playa Dust

Implementing Partners: UCR (David Lo, Emma Aronson, Roya Bahreini [BREATHE Center], David Cocker [CE-CERT]).

Description: The high incidence of childhood asthma in the Salton Sea region is associated with proximity and exposure to aerosol dusts generated at the exposed playa. These studies are aimed at identifying the biological and clinical effects of the playa dusts, including identification of the most toxic or inflammatory dust components, the related pathological mechanisms, and their clinical symptom correlates. In addition, the studies aim to understand the source of the toxic material in the dust and how it is entrained in the playa dust, and how playa features may favor the production of the toxic dust.

Location: Coachella and Imperial Valleys.

Timing: Studies are ongoing, and are expected to continue through spring 2026 or later.

Notes: Funding provided by National Institute on Minority Health and Health Disparities/NIH (U54 MD013368), California Air Resources Board (ARB 21RD014 LO 8/22), USBR (R23AP00088) to DL. Clinical symptoms studies include preliminary epidemiology studies in the Coachella and Imperial Valley communities.

2.2.5 Dust Characterization Study

Implementing Partners: South Coast AQMD, CARB, UCR, AB 617 Community Steering Committee.

Description: The primary objective of the dust characterization study in the eastern Coachella Valley community is to identify the main sources of dust and quantify their contributions to ambient PM levels. Methodology includes time-integrated sample collection (PM_{10} and total suspended particulate [TSP]), subsequent chemical analysis, and continuous measurements of PM_{10} mass and its chemical constituents.

Location: Eastern Coachella Valley.

Timing: January 2022 – January 2026.

2.2.6 Multiple Air Toxics Exposure Study (MATES) VI

Implementing Partners: South Coast AQMD, Emissions Analytics, UCI, USC.

Description: MATES VI includes a fixed site monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize risk across the South Coast AQMD. The study focuses on the cancer risk and chronic non-cancer risk from exposure to air toxics but does not estimate mortality or other health effects from air pollutant exposures. Study methodology includes time-integrated sample collection ($PM_{2.5}$, PM_{10}, TSP, and gases) and subsequent chemical analysis with a focus on air toxics.

Location: South Coast AQMD Jurisdiction, including Eastern Coachella Valley.

Timing: Samples collected July 2025–August 2026.

2.2.7 NASA Earth Observations for a Resilient Salton Sea

Implementing Partners: Brown U (Mara Freilich, Alejandra Lopez), Alianza, UCLA, LLU.

Description: The Salton Sea is the largest inland body of water in California, and it has a defining role in the landscape for both the surrounding communities and ecosystems. The surrounding communities in the eastern Coachella Valley are environmental justice communities; the predominantly low income and Latinx communities are also at elevated risk for respiratory illnesses, caused at least in part by exposure to air flowing over the Salton Sea. One of the major concerns of residents is the frequent smell of hydrogen sulfide that occurs due to the anoxic conditions and high sulfate levels in the Salton Sea. This odor not only decreases quality of life but also causes nausea and headaches and may have other effects such as decreased property values. The smells suggest that water quality influences air quality in the

Salton Sea region. Beyond gases such as hydrogen sulfide, recent evidence in other locations also suggests that sea spray can travel significant distances from bodies of water, with important impacts for public health, particularly around impaired water bodies due to chemical loading, bacteria, or toxic algae blooms. Understanding the impact of the Sea on air quality is therefore a high priority so that these environmental justice communities can have agency in planning for the future of the Salton Sea.

This study will use satellite observations and wind observations to predict the influence of air pollution from the Salton Sea on Eastern Coachella Valley communities. The proposed work will address air pollution impacts on human health and upstream influences on coastal communities. The major goal of the prediction will be hindcasting hydrogen sulfide impacts on local communities. The study will validate the model using data collected by a community science program which engages Eastern Coachella Valley residents in air and water quality monitoring and communication of scientific findings (see 2.1.4 Salton Sea Environmental Timeseries – Water Quality and Air Quality). This will be supplemented with other in situ observations. Using this hindcast, a study of the socioeconomic demographics and geography of detectable hydrogen sulfide odor exposure will be conducted using archival research, interviews, and surveys. The combination of scientific and socioeconomic analyses will be made available as a toolkit for community members and on our accessible data dashboard to increase understanding of the role of the Salton Sea on both public health and quality of life. This project will be a collaboration between a multidisciplinary team of academics and Alianza, an environmental justice organization. Alianza convenes the Resilient Salton Sea campaign guided by the philosophy that addressing the environmental issues in the Salton Sea is about more than just an impaired body of water. It is also about shifting socioeconomic conditions to benefit the most vulnerable communities in ways in which both people and the environment can prosper.

Measurements will be made with an AQS-1 air quality sensor with sensors for H_2S, NO_2, and VOCs. In addition, a handheld Jerome meter is used to map the spatial distribution of H_2S.

Location: Air sensors are located above the Salton Sea with one in the northern Salton Sea (Riverside County, 33.48N, 116.0472W) and one on the NASA platform in the southern Salton Sea (Imperial County, 33.22532 N, 115.82425 W).

Timing: Initiated in 2023 and continuous until November 2027.

2.2.8 Water Quality at Emergent Wetlands

Implementing Partners: Audubon CA, LLU.

Description: The Salton Sea faces numerous challenges, including rising salinity, nutrient pollution, increasing playa exposure from reduction in water inputs, and harmful algal blooms. As the Sea continues to shrink, wetlands emerge at irrigation drains, natural springs and desert washes that may play a crucial role in contaminant reduction to the Salton Seawater. In this study, nutrient and contaminant concentrations are monitored across two different emergent wetlands to assess their effectiveness for contaminant reduction, providing insights into the utility and potential for wetland's role in the Salton Sea's immediate future. One wetland has an agricultural waste flow and is in the north and the other wetland is the Bombay Beach Wetland with a natural spring source located. Both are emergent wetlands but have different source water characteristics.

Samples are taken in three locations: one sample is taken in the source water before it enters the wetland, one is taken after it flows through the wetland, and one sample is taken in the sea water. Parameters measured include NO_3 (nitrate), NO_2, NH_4 (ammonium), PO_4 (phosphate), sulfide, turbidity, oxidation-reduction potential, pH, TSS, conductivity, salinity, dissolved oxygen, phycoerythrin, total chlorophyl, *Enterococcus*, *E. coli* and *Coliform* indicator bacteria in four trips at two wetlands.

Location: Agricultural wetlands with Colorado River input in the northern Salton Sea shoreline and Bombay Beach Wetland.

Timing: Winter 2024/spring 2025/spring 2026.

Notes: All data will be provided on the open Salton Sea science dashboard as well as in a raw data form with geolocated sample positions.

2.2.9 Wetland Management Effects on Selenium Bioaccumulation

Implementing Partners: USGS and DWR.

Description: USGS will conduct work studying potential impacts from wetland management actions on selenium bioaccumulation at the Salton Sea. Irrigation drain water that maintains newly forming wetlands at the Salton Sea is known to contain high concentrations of selenium as well as other contaminants. Various treatment and management options have the potential to reduce selenium and other contaminant hazards for wildlife in wetlands around the Salton Sea. The implementation of state projects represents a unique opportunity to test the viability of strategies designed to decrease, transform, and/or remove selenium and other contaminants from wetland systems and thus lower the risk for wetland-dependent species.

Location: To be determined, within newly emerging wetland in the southern Salton Sea.

Timing: Sampling to occur in 2026–2027; reporting to occur in 2028.

2.2.10 Salton Sea Aquatic Invertebrate Monitoring

Implementing Partners: CDFW, Colorado River Basin RWQCB.

Description: CDFW will be collecting aquatic invertebrate samples from the Salton Sea in conjunction with a water quality monitoring initiative. Sampling will occur quarterly, in line with the schedule for water quality assessments. The study aims to identify the species composition, enumerate taxonomic groups and species, and assess the abundance of biomass in the water column and at two sampling points in the benthic zone. Species identifications will be conducted down to the family level. A trawl net off the side of an airboat and an Ekman dredge will be used for benthic sampling.

Location: South Salton Sea and shoreline (including Alamo and New Rivers): 3 water quality monitoring locations; North Salton Sea and shoreline (including Whitewater River): 1-2 water quality monitoring locations.

Timing: Quarterly Sampling: spring, summer, fall and winter.

2.2.11 Environmental DNA (eDNA) Sequencing Study

Implementing Partner: CDFW.

Description: CDFW staff will collect surface water samples from the Salton Sea and from constructed shallow saline habitat at the SCH. Samples will be analyzed for eDNA to determine the types of species present down to genus and estimate their relative abundance.

Location: Three sites at the Salton Sea and five at the SCH and the mouths of the New River and Alamo River, when feasible.

Timing: Quarterly at the Salton Sea and monthly at the SCH, through February 2026.

2.2.12 Phytoplankton Pigment Study

Implementing Partner: CDFW.

Description: A YSI ProDSS Total Algae-Phycoerythrin (TAL-PE) sensor will be used to collect measurements of chlorophyll-*a* and phycoerythrin concentrations in the Salton Sea and the SCH. These measurements will be used to verify estimates calculated from publicly available satellite data sponsored by the State Water Resources Control Board. The mapping tool displays satellite imagery that is used to estimate harmful algal blooms and chlorophyll-*a* concentrations in many of the largest waterbodies in the state, including the Salton Sea. The measurements collected with the Total Algae probe will be used to ground-truth those estimates.

Location: Salton Sea and Species Conservation Habitat ponds.

Timing: Quarterly

2.2.13 Yuma Ridgway's Rail Movements and Migration Behavior

Implementing Partners: U. Idaho, USGS.

Description: Yuma Ridgway's rails will be captured and fitted with a satellite GPS transmitter in marshes around the Salton Sea and along the Lower Colorado River (Arizona). The data from the transmitters will reveal spatial and temporal patterns in the dispersal and long-distance migration behaviors of the Yuma Ridgway's rails. These data will inform management of existing habitat and assist in identifying areas for new marsh creation/restoration projects.

Location: Marshes around the Salton Sea and in Arizona along the Lower Colorado River.

Timing: Researchers will deploy satellite GPS transmitters between March and July 2026. The transmitters will report location data throughout 2026.

2.2.14 Refuge Burrowing Owl Burrow Occupancy and Maintenance Surveys

Implementing Partners: USFWS and U of Idaho.

Description: Ground transect surveys will aim to assess the occupancy and functionality of all artificial and natural burrowing owl burrows on the SBSSNWR. Surveys are conducted on vehicles to minimize disturbance. Data is used to inform artificial burrow management.

Location: USFWS SBSSNWR in South Shore.

Timing: Summer and winter annually through 2032.

2.3 Effectiveness Monitoring

2.3.1 IID Salton Sea Air Quality Mitigation Program

Implementing Partner: IID.

Description: The IID Salton Sea Air Quality Mitigation Program was developed in 2016 in cooperation with ICAPCD. This program monitors dust emissions (PM_{10}) and effectiveness of dust suppression activities.

Location: Dust suppression project areas along the shoreline and playa.

Timing: Real-time continuous.

Notes: Information sourced from IID website: https://saltonseaprogram.com/aqm/

2.3.2 SSMP Dust Suppression– Air Quality Monitoring

Implementing Partner: DWR.

Description: DWR has implemented three vegetation enhancement projects on Reclamation and IID lands (Clubhouse, 399 acres; Tule Wash, 1,217 acres; and West Bombay Beach, 91 acres). Vegetation was seeded/planted and irrigated within rows of grass bales. Dust suppression through temporary engineered roughness is being placed on other areas. Meteorological and air quality monitoring is underway to assess the performance of hay bales in reducing wind speed and dust emissions from the playa. Fixed stations with monitoring equipment measure particulate matters (PM_{10}, $PM_{2.5}$), wind speed, wind direction, air temperature, precipitation, relative humidity, precipitation saltation, relative humidity temperature, barometric pressure, and saltation flux.

Location: Monitoring is conducted at the Clubhouse, Tule Wash, and West Bombay Beach sites. At the revegetation sites, fixed stations are placed in transects to monitor air quality in upwind, intermediate, and downwind locations along the south-southwest (249 degrees) axis, which is the predominant direction of wind events that lead to emission of PM_{10}. At the Clubhouse site, three transects were constructed in which one transect with three stations were for Clubhouse A, and two transects with a

total of six stations were for Clubhouse C. At the Tule Wash site, two transects were constructed, one for the area with bales and one for the area without bales so that the difference in air quality can be compared. The one in the bale area has three stations and the one in the without-bale area has two stations. At the West Bombay Beach site, one transect was constructed with three stations.

Timing: High-frequency measurements, every 1 minute data collection for PM_{10}, $PM_{2.5}$, and the saltation flux, and every 10 minutes for the remaining parameters. Monitoring is conducted year-round.

Notes: See Section 2.3.7 for related SSMP Dust Suppression – Vegetation Monitoring study.

2.3.3 SSMP Dust Suppression – Vegetation Monitoring

Implementing Partner: DWR

Description: DWR has planted vegetation to increase surface roughness and reduce dust emissions at several locations on the playa. Vegetation monitoring includes the use of belt transects, volunteer plant quadrats, and photographic monitoring. Belt transects are intended to understand shrub density, species composition trends, height distribution, and plant mortality in irrigated and non-irrigated settings within vegetation enhancement areas. Randomized belt transects are centered over linear irrigation features and non-irrigated features and are used to record shrub stem density by species and height classes for living and dead individuals.

Volunteer plants not within the range of irrigation features are sampled using randomized quadrats and shrub plant stems as the counting unit. All shrub species, live or dead status, and height classes are recorded within each quadrat. Three volunteer location classes are used to understand plant colonization patterns: (1) individuals near grass bales; (2) individuals near surface manipulation features; and (3) non-adjacent individuals.

Photographic monitoring includes repeat photography at specified stations to document landscape change and photography of transects and volunteer sampling quadrats.

Location: Vegetation monitoring is conducted at SSMP vegetation enhancement locations including the Clubhouse, Tule Wash, and West Bombay Beach sites. Vegetation enhancement locations include those sites where seeding and planting have occurred, which includes irrigated and non-irrigated features.

Timing: Four vegetation monitoring events occur annually during the months of March, June, September, and December.

Notes: See Section 2.3.2 for a related SSMP Dust Suppression – Air Quality Monitoring study.

2.3.4 SSMP Species Conservation Habitat Project – Water Quality

Implementing Partners: DWR, CDFW, and Colorado River Basin RWQCB.

Description: The Species Conservation Habitat Project (SCH Project) is constructing saline habitat ponds at the mouth of the New River. In 2024, some portions of the ponds were commissioned (i.e., will receive

water and be partially wetted). Monitoring will measure inflows using Supervisory Control and Data Acquisition, a computer-based system for gathering and analyzing real-time data to monitor and control equipment that deals with time-sensitive operations. Measurements will be taken at the saline pump station, water intake structure, and sedimentation basins. Continuous monitoring will use EXO3 Sonde units to measure salinity (measured as TDS), water temperature, dissolved oxygen, and water depth.

In addition, water samples will be collected from the west interception ditch along the SCH ponds. The samples will be tested for TDS, TSS, nutrients, contaminants (e.g., pesticides, herbicides, and metals such as arsenic and boron), selenium, and pathogens (e.g., bacteria, including enterococcus).

Location: SCH Project (west interception ditch and wetted areas of Center and East ponds), which flanks the mouth of the New River in the southern Salton Sea.

Timing: The west interception ditch will be monitored quarterly. Pond water supply operations will be measured continuously with sondes when the ponds are commissioned and partially wetted (date to be determined).

2.3.5 SSMP Species Conservation Habitat Project – Aquatic Invertebrate Monitoring

Implementing Partner: CDFW.

Description: CDFW will collect aquatic invertebrate samples from flooded areas of the SCH and SCHX four times a year using dip and trawl nets and an Ekman dredge. Baseline data will be gathered on species composition in both the water column and the benthic zone, identified down to the family level. Additionally, the species composition will be assessed to determine the available forage for tilapia.

Location: South Salton Sea and Shoreline: SCH and SCHX.

Timing: Quarterly Sampling: spring, summer, fall, and winter.

2.3.6 SSMP Species Conservation Habitat – General Fish Monitoring and Desert Pupfish Monitoring

Implementing Partner: CDFW and DWR.

Description: Fish monitoring at SCH ponds and SCHX ponds to estimate the relative abundance of fish species expected to support piscivorous bird species and the relative abundance of desert pupfish. Nets and fish traps are deployed to characterize the status of fish populations in terms of species composition, size classes, and relative abundance. Fish are identified by species, enumerated, measured, and then returned to the same pond as they were captured. Fish surveys assess various habitat types and incorporate collection of general water quality data (conductivity, dissolved oxygen, and temperature).

Location: SCH ponds and SCHX ponds.

Timing: Fish monitoring is conducted three times per year.

2.3.7 SSMP Species Conservation Habitat Project - Avian Population Parameter Monitoring

Implementing Partner: CDFW.

Description: The goal of this study is to assess bird community structure within the protected wet ponds of the SCH. To do this, roadside point count surveys will be conducted around the perimeter of the wet ponds. During these standardized sampling efforts, observers will use optics, such as spotting scopes and binoculars, to identify and count all bird species found in the ponds. These monitoring activities will gather important data on bird abundance, species diversity, and pond use, aiding in the evaluation of the ecological health and management effectiveness of the wet ponds' habitats.

Location: All wetted ponds at the SCH, including East Pond and East Pond 1, and East and West Pond Sedimentation Basins.

Timing: Survey efforts will be completed five times per year in February, April, June, August, and November (or December) through 2028.

2.3.8 SSMP Species Conservation Habitat Project – Nesting Seabird Surveys

Implementing Partners: CDFW, USFWS.

Description: Weekly monitoring of all colonial-nesting seabirds will be conducted at the SCH. The survey period will begin in April and continue through the breeding season, ending in the fall. In addition to the weekly monitoring, high-resolution drone imagery will be used, when feasible, to assist in identifying and monitoring seabirds. Data to be collected include the number of adult birds, nests, chicks, and fledglings; weather conditions; and notes on predators, disturbances, and habitat conditions.

Location: East Pond, East Pond 1 (SCHX), and the New River Weir at the SCH.

Timing: Weekly surveys during the seabird breeding season.

Notes: The study was included in the 2024 Annual Work Plan and was to be led by USFWS. However, in 2024, CDFW took over the monitoring effort to survey the nesting colonial birds because they no longer nested on SBSSNWR and USFWS personnel did not survey for these birds. CDFW and USFWS are collaborating on this work as these seabird colonies may continue to change nesting locations.

2.3.9 SSMP Project Tracker

Implementing Partner: SSMP.

Description: The SSMP team has developed an online Project Tracker to provide a comprehensive public platform with updated information on Salton Sea Management Program projects. The Project Tracker shows progress under the Salton Sea Management Program Phase 1: 10-Year Plan in a single location.

Integrated into the SSMP website at www.saltonsea.ca.gov, this tool tracks current progress on SSMP 10-Year Plan projects. Projects are viewable and sortable by project phases, activity type, and category. The Explore Projects and Project Info sections display information on the activities, outcomes, and different SSMP metrics important to the Salton Sea Region. The Results Section has a Progress Dashboard that provides a snapshot of the accomplishments and advancements being made to improve conditions at the Salton Sea and displays information on the current progress toward meeting the requirements in State Water Resources Control Board Order 2017-0134.

Location: Online at www.saltonsea.ca.gov.

Timing: Acreage totals are updated twice a year.

2.3.10 Bombay Beach Wetland Restoration Project

Implementing Partners: Audubon CA, CNRA.

Description: A 564-acre wetland restoration project co-led between Audubon CA and the CNRA to stabilize and enhance a vital wetland where groundwater discharges and several washes converge. This area already supports species like the Yuma Ridgway's rail, American avocet, and northern pintail, despite invasive tamarisk plants dominating higher-quality habitat upslope. The project's goals include enhancing saline wetlands and playa habitats, mitigating dust pollution from exposed playa, and providing recreational opportunities for the public.

Location: Bombay Beach Wetland.

Timing: Construction is expected to begin end of 2026 to early 2027 and be completed in 2028. Currently in design and permitting phase.

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CHAPTER 3
Discussion

3.1 Completed Studies

The following studies have completed their data collection and are either in data analysis, reporting, or completed/published and are summarized in **Table 3-1**.

3.2 Data Needs and Opportunities

Many of the priority indicators identified in the MIP are being monitored and/or are the subject of a focused study, as summarized in **Table 3-2**. There remain, however, several primary indicators that were recommended in the MIP but are not reflected in the 2026 Work Plan, because a study either has not been planned, is unknown, or was not reported. These uncertainties or gaps may also reflect limitations of outreach to potential implementing partners and voluntary reporting. Primary priority indicators not known to be monitored or studied in 2026 include the following:

- Aerial surveys to capture land cover, habitat types, and playa extent. This may present an opportunity to explore use of remote sensing technologies, such as drones.
- Groundwater well surveys to measure elevation, conductivity, temperature, dissolved oxygen, pH, depth, nutrients, TDS, TSS, and contaminants.
- Harmful algal blooms in surface water.
- Southwestern willow flycatcher survey.

Opportunities exist to standardize sampling and data collection methodologies and reporting across implementing partners. In 2026, the Salton Sea Hub Site will be launched, which will connect multiple datasets, shapefiles, ArcGIS Online layers, websites, dashboards, Story Maps, and web applications related to the Salton Sea. The website will provide new capabilities and tools that will help organize projects, partners, data, visualization tools, and public outreach.

TABLE 3-1
2026 COMPLETED STUDIES AT THE SALTON SEA

Title	Implementing Partner(s)[1]	Indicator	Stage	Timing of Data Collection[2]	Location
Status and Trends					
SSMP and Community Needs	CNRA	Public input	Reporting	Surveys and meetings conducted in 2023	Communities around Salton Sea
Bird Habitat Quantification	Audubon CA	Birds	Reporting	Year-round, completed in 2024	Entire Salton Sea
Trends in Bird Populations and Habitats at the Salton Sea	Audubon CA	Birds	Reporting	Weekly (Nov 2016–Dec 2019) Monthly (Jan 2019–Sep 2022) Quarterly (Oct 2022–Dec 2024)	Entire Salton Sea
Salton Sea Environmental Timeseries: Moored Continuous Hydrodynamic and Biochemical Observations	UCLA, Alianza, LLU, Brown U	Water quality	Reporting	Year-round	North Salton Sea and shoreline; co-located with the northern Alianza H_2S monitor
Measurements of Dust Storms in the Salton Sea Region	UCSD, NASA	Air quality	-	Year-round (Dec 2019–2025)	Western shoreline of the Salton Sea
Focused Studies					
Spatial and Temporal Patterns and Controls on Water-Column Redox and Temperature Structures in the Salton Sea	UCR	Water quality (oxygen, sulfur)	Reporting	-	Entire Salton Sea basin (shallow and deep water)
Sulfur Cycling in the Salton Sea Water Column and Sediments	UCR	Water quality (sulfur)	Reporting	-	Entire Salton Sea basin (shallow and deep water)
Nutrient Sources, Sinks, and Cycles in the Salton Sea	UCR	Water quality (nutrients)	Reporting	-	Entire Salton Sea basin (shallow and deep water)
Selenium Cycling and Bioaccumulation in Foodwebs in Salton Sea Wetlands	USBR, DWR, USFWS, CDFW, USGS	Water quality, detritus, primary producers, invertebrates, fish (selenium, isotopes, genetics)	Reporting	March and April	Wetlands at the southern Salton Sea (managed and emerging wetlands)
Trace Metal Patterns and Controls in the Sediments of the Salton Sea	UCR	Water quality (metals)	Reporting	-	Entire Salton Sea basin (shallow and deep water)
Patterns of Pesticide Enrichment in Salton Sea Sediments	UCR, SDSU	Water quality (pesticides)	Reporting	-	Entire Salton Sea basin (shallow and deep water)
Lithium Measurements in Sediments and Surface Water	UCR	Water quality (lithium)	Reporting	Every few months	Salton Sea near river inflows and power plants

Title	Implementing Partner(s)[1]	Indicator	Stage	Timing of Data Collection[2]	Location
Microbially and Enzyme-Induced Calcite Precipitation for Mitigation of Fugitive Dust	USBR, ASU, IID	Soils (biocrust)	-	Fall 2025	Near Salton City
Low-Cost Ambient Air Quality Network Development	UCR	Air quality	Reporting	Data collection complete	Coachella and Imperial Valleys
Indoor Air Quality and Filtration Study	UCR	Air quality	Reporting	Summer 2023–Summer 2024; Data collection complete	Coachella and Imperial Valleys
Salton Sea Air Quality Assessment	Pacific Institute	Air quality	Reporting	No new data collection scheduled	Salton Sea and surrounding areas
Microbial Ecology: Patterns of Lateral and Vertical Variability and Controls	UCR	Aquatic (microbes)	Reporting	Data collection complete	Entire basin (shallow and deep water)
Biofilm as a Food Resource for Shorebirds at the Salton Sea	Audubon CA	Aquatic (plankton, macroinvertebrates)	Pending Funding	2023-2024: Spring (late Apr), summer (late Jul), and fall (early Oct)	Salton Sea shoreline and coastal mudflats
Eastern Coachella Valley Fumigation/Pesticides Study	South Coast AQMD, CARB, OEHHA, DPR, AB 617 Community Steering Committee	Air quality	Completed	Nov 2022–Feb 2023	Eastern Coachella Valley
Human Health Risks from Metals in Exposed Playa Sediments	USD, LLU	Playa and sediments, Water quality	Reporting	Once per year	Playa sites throughout Salton Sea
Salton City Multi-Metals Monitoring[3]	CARB	Air quality	Reporting	Sep 2023–Jan 2024; Jul 2024–Jun 2025	Salton Sea shoreline (discrete deployment of Cooper XRF multi-metals monitor)
Salton Sea Dust Study	CARB	Air quality	Reporting	2025	Numerous locations around the Salton Sea
Effectiveness Monitoring					
SSMP Species Conservation Habitat Project – Predator Prevention Scent Barrier	CDFW, DWR, MWH Contractors Inc.	Birds, mammal predators	Completed	Summer months during bird nesting season	South Salton Sea: SCH and SCHX on the causeway

Notes:

1. Abbreviations: Alianza = Alianza Coachella Valley; Audubon CA = Audubon California; Brown U = Brown University; CARB = California Air Resources Board; CDFW= California Department of Fish and Wildlife; CNRA = California Natural Resources Agency; DPR = California Department of Pesticide Regulation; DWR = Department of Water Resources; H_2S = hydrogen sulfide; IID = Imperial Irrigation District; LLU = Loma Linda University; MATES = Multiple Air Toxics Exposure Study; NASA = National Aeronautics and Space Administration; OEHHA = California Office of Environmental Health Hazard Assessment; SCH -= Species Conservation Habitat; SCHX = Species Conservation Habitat Expansion; South Coast AQMD = South Coast Air Quality Management District; SDSU = San Diego State University; SSMP = Salton Sea Management Program; UCR = University of California, Riverside; UCLA = University of California, Los Angeles; USC = University of Southern California; USBR = U.S. Bureau of Reclamation; USFWS = U.S. Fish and Wildlife Service; USGS = U.S. Geological Survey
2. - = timing or location of data collection not specified by respondent, or using existing data.
3. Study was recently provided and not described in previous Annual Work Plans.

Source: Data compiled by ESA 2026

TABLE 3-2
2026 MONITORING AND STUDIES COMPARED WITH MIP PRIORITIES

Resource	Indicators	Priority	Status Monitoring[1, 2]	Focused Studies[1, 2]	Effectiveness Monitoring[1, 2]
Hydrology	Surface water (inflow, surface elevation)	1	• Surface Water Hydrology (USGS) • CVWD Agricultural Drain Monitoring (CVWD)		• SSMP Species Conservation Habitat Project Water Quality (DWR, CDFW Colorado River Basin RWQCB)
	Groundwater	1			
Water Quality	Basic water quality (temperature, TDS)	1	• Salton Sea Water Quality Monitoring (CDFW, Colorado River Basin RWQCB) • CVWD Agricultural Drain Monitoring (CVWD) • Salton Sea Environmental Timeseries – Water Quality and Air Quality (Alianza, LLU)	• Water Quality at Emergent Wetlands (Audubon CA)	• SSMP Species Conservation Habitat Project Water Quality (DWR, CDFW, Colorado River Basin RWQCB)
	Nutrients	1	• Salton Sea Environmental Timeseries – Water Quality and Air Quality (Alianza, LLU)		• SSMP Species Conservation Habitat Project Water Quality (DWR, CDFW, Colorado River Basin RWQCB)
	Selenium (water, sediments)	1			• SSMP Species Conservation Habitat Project Water Quality (DWR, CDFW, Colorado River Basin RWQCB) • Wetland Management Effects on Selenium Bioaccumulation (USGS, DWR)
	Selenium (biota)	1-3		• Selenium Concentrations in Yuma Ridgway's Rails and Prey (U. Idaho, USGS, USFWS)	
	Pesticides, metals	2			• SSMP Species Conservation Habitat Project Water Quality (DWR, CDFW, Colorado River Basin RWQCB)
	Harmful algal blooms	1		• Phytoplankton Pigment Study (CDFW)	
	Pathogens				• SSMP Species Conservation Habitat Project Water Quality (DWR, CDFW, Colorado River Basin RWQCB)
Geography	Land cover, playa area	1	• Vegetation Classification Analysis (Audubon CA) • Emergent Wetlands Analysis (Audubon CA)	• Salton Sea Coastal Zone Soil Survey (USDA-NRCS, USBR)	• SSMP Dust Suppression – Vegetation Monitoring (DWR)

Resource	Indicators	Priority	Status Monitoring[1, 2]	Focused Studies[1, 2]	Effectiveness Monitoring[1, 2]
Air Quality	Meteorology	1	• Meteorology and Air Quality Monitoring (South Coast AQMD, ICAPCD, IID, Torres Martinez, Twenty-Nine Palms/Cabazon)		
	Particulate matter (PM_{10} and $PM_{2.5}$)	1	• Salton Sea Environmental Timeseries – Water Quality and Air Quality (Alianza) • Meteorology and Air Quality Monitoring (South Coast AQMD, ICAPCD, IID, Torres Martinez, Twenty-Nine Palms/Cabazon)		• SSMP Dust Suppression – Air Quality Monitoring (DWR) • IID Salton Sea Air Quality Mitigation Program (IID)
	Hydrogen sulfide	1	• Meteorology and Air Quality Monitoring (South Coast AQMD, Torres Martinez) • Salton Sea Odor Monitoring and Notification System (South Coast AQMD)		
	Particulate matter chemistry	3		• Aerosolized Toxins around the Salton Sea (UCR) • Dust Characterization Study (South Coast AQMD, CARB, UCR)	
	General air quality	3		• Multiple Air Toxics Exposure Study (South Coast AQMD, Emissions Analytics, UCI, USC) • Public Health Impacts from Salton Sea Playa Dust (UCR)	
Biological – Birds	Shoreline waterbirds	1	• Shoreline Waterbird Surveys−Tri-annual (PBCS, Audubon CA, OBO, CDFW, USFWS, MNH) • Shoreline Waterbird Surveys − Quarterly (Audubon CA) • Shoreline Waterbird Surveys – Bi-weekly (OBO) • Vegetation Classification Analysis (Audubon CA) • Emergent Wetlands Analysis (Audubon CA) • Fall-Winter Migratory Water Bird Surveys (USFWS)		• SSMP Species Conservation Habitat Project - Avian Population Parameter Monitoring (CDFW)

Resource	Indicators	Priority	Status Monitoring[1, 2]	Focused Studies[1, 2]	Effectiveness Monitoring[1, 2]
	Marsh birds (Yuma Ridgway's rail, black rail)	1	• Marshbird Callback Surveys – Restoration Sites (CDFW) • Marshbird Callback Surveys – SBSSNWR (USFWS)		
	Yuma Ridgway's rail	1		• Yuma Ridgway's Rail Movements and Migration Behavior (USGS, U. Idaho) • Selenium Concentrations in Yuma Ridgway's Rails and Prey (USGS, USFWS, U. Idaho)	
	Piscivorous bird (aerial survey)	1	• Wintering Waterfowl Aerial Surveys (not piscivorous birds) (CDFW, USFWS) • Aerial Surveys: Salton Sea Pelican and Cormorant Monitoring (CDFW)		
	Colonial birds (breeding, roosting) (aerial survey)	1-2	• Nesting Seabird Surveys (not colonial) (USFWS) • Evening Sandhill Crane Roost Surveys (USFWS) • Annual White Goose and Swan Survey (CDFW, USFWS)		
	Southwestern willow flycatcher	1			
	Western snowy plover	2			
Biological – Aquatic	Fish	1	• Salton Sea Fish Survey (CDFW)		• SSMP Species Conservation Habitat – General Fish Monitoring and Desert Pupfish Monitoring (CDFW)
	Desert pupfish	1	• Desert Pupfish Survey (CDFW)		
	Phytoplankton, zooplankton, benthic macroinvertebrates	2		• Salton Sea Aquatic Invertebrate Monitoring (CDFW, Colorado River Basin RWQCB) • eDNA Sequencing Study (CDFW) • Phytoplankton Pigment Study (CDFW)	• SCH Species Conservation Habitat Project – Aquatic Invertebrate Monitoring (CDFW)
	Harmful algal blooms	1		• Phytoplankton Pigment Study (CDFW)	
	Microbial loop, pathogens	3			

Resource	Indicators	Priority	Status Monitoring[1, 2]	Focused Studies[1, 2]	Effectiveness Monitoring[1, 2]
Socioeconomic	SSMP event public participation	1	• SSMP and Community Engagement Committee (SSMP) • SSMP Engagement Opportunities and Outreach (SSMP)		
	Community benefits	1			
	Economic indicators	2			

Notes:

Abbreviations: Alianza = Alianza Coachella Valley; ASU = Arizona State University; Audubon CA = Audubon California; CARB = California Air Resources Board; CDFW = California Department of Fish and Wildlife; Colorado River Basin RWQCB = Colorado River Basin Region Water Quality Control Board; CVWD = Coachella Valley Water District; DWR = Department of Water Resources; eDNA = Environmental DNA; ICAPCD = Imperial County Air Pollution Control District; IID = Imperial Irrigation District; LLU = Loma Linda University; MNH = Natural History Museum of Los Angeles County; NASA = National Aeronautics and Space Administration; OBO = Oasis Bird Observatory; PBCS = Point Blue Conservation Science; SBSSNWR = Sonny Bono Salton Sea National Wildlife Refuge; South Coast AQMD = South Coast Air Quality Management District; SSMP = Salton Sea Management Program; TDS = total dissolved solids; Torres Martinez = Torres Martinez Desert Cahuilla Indians; Twenty-Nine Palms/Cabazon = Twenty-Nine Palms Band and Cabazon Band of Mission Indians; UCR = University of California Riverside; U. Idaho = University of Idaho; USBR = U.S. Bureau of Reclamation; USDA-NRCS = U.S. Department of Agriculture–Natural Resources Conservation Service; USGS = U.S. Geological Survey; USFWS = U.S. Fish and Wildlife Service.

Source: Data compiled by ESA 2026

3.3 Future Annual Work Plans and Reporting

The MIP Annual Work Plan demonstrates the breadth of monitoring and research at the Salton Sea and can be a foundation for further collaboration and coordination. Future Work Plans may include additional information, as available, including standard operating procedures and more detail regarding logistics and coordinated survey efforts. Implementing partners are encouraged to participate in an annual coordination meeting in October to develop future Work Plans.

Annual reporting is dependent on available funding. If funding is available, the annual report will summarize the data collected by the SSMP agencies (CDFW and DWR) and by implementing partners, where known. Annual reports would also include a summary of data collected during each year and cumulatively as well as recommendations for adjustment and improvement of survey locations and sampling protocol. To facilitate this process, implementing partners are encouraged to submit a summary of activities that were conducted, challenges and lessons learned, annual reports (if available), data needs and opportunities, and confirmation of anticipated monitoring activities in future years.

CHAPTER 4
References

CNRA (California Natural Resources Agency). 2022. Salton Sea Monitoring Implementation Plan. February 2022.

ESA (Environmental Science Associates). 2024. Salton Sea MIP Annual Work Plan. Prepared for California Natural Resources Agency, California Department of Water Resources, and California Department of Fish and Wildlife. February 2024.

ESA. 2025. Salton Sea MIP Annual Work Plan. Prepared for California Natural Resources Agency, California Department of Water Resources, and California Department of Fish and Wildlife. February 2025.

Humphreys, J., Brounce, M., McKibben, M.A., Dobson, P., Planavsky, N., Kalderon-Asaelb B. (in press). 2024. Characterization of Li in the Salton Sea Geothermal Field; Special issue on Lithium; Economic Geology. November 2024.

Jones, A., K. Krieger, L. Salas, N. Elliott, and D.S. Cooper. 2016. Quantifying bird habitat at the Salton Sea: Informing the State of California's Salton Sea Management Plan. Audubon California, Point Blue Conservation Science, and Cooper Ecological Monitoring, Inc. Submitted to the California Natural Resources Agency.

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