Community Air Monitoring Workshop: Air Quality Priority: Salton Sea

Purpose of This Document

- Summarize the Eastern Coachella Valley (ECV) Community Steering Committee (CSC) air quality concerns;
- Provide information on parts of the Community Air Monitoring Plan (CAMP) describing air monitoring strategies aimed at addressing air quality concerns at/near the Salton Sea;
- Gather feedback from the CSC

Community Concerns (CC)

The ECV CSC has expressed the following concerns regarding issues at and near the Salton Sea that may negatively impact air quality and the life of local community members:

CC-1 The Salton Sea is drying up due to decreased inflow of water. As the Salton Sea evaporates, its receding shoreline exposes sediments that are deposited at the bottom of the Sea, also referred to as the "playa". The loose soil is blown off by strong gusty winds, contributing to PM10 (inhalable particulate matter) emissions that could impact air quality.

CC-2 The soil from the playa may contain components from agricultural runoff, which could pose a risk to human health. Previous tests have detected selenium, cadmium and nickle in the playa.

CC-3 Elevated levels of hydrogen sulfide (H2S) occur from natural processes in the Salton Sea and cause a strong odor that causes health effects and negatively affects the quality of life in ECV.

CC-4 CSC members would like Imperial Irrigation District (IID) and the State of California to move more quickly to develop and implement dust suppression projects around the Salton Sea.

CC-5 CSC members experience acute health effects (e.g., headaches and nosebleeds) during windblown dust and Salton Sea H2S odor events.

CC-6 Additional monitoring and improvements to notification systems are needed to better understand emissions from the Salton Sea.

Proposed Air Monitoring Strategies to Address Salton Sea

Below are proposed air monitoring strategies to address CSC concerns about emissions from the Salton Sea.

Goals	Proposed Air Monitoring Strategies	Current Air Monitoring Activities	Seeking CSC Input
Supplement monitoring networks and improve notification systems	• Supplement the existing South Coast AQMD's hydrogen sulfide (H2S) monitoring network in ECV up to two or three years to: ○ Provide real-time H2S data and inform the community members about the odors they smell and where they come from, including a notification system for when ambient levels exceed the State standard ○ Determine community impact and extent to which the odors may transport in the community and beyond ○ Provide information for the evaluation of long-term H2S monitoring strategy ***Community Concern(s) addressed: CC-3, CC-5, CC-6***	• South Coast AQMD currently operates two H2S monitors in ECV, at the Mecca (Saul-Martinez Elementary School) and Salton Sea Near Shore monitoring stations. • Data is available in near real-time at: ○ AB 617 Data Display Tool: http://www.aqmd.gov/ab617-data-display-tool/ecv ○ Dedicated website with subscription-based notification system: https://saltonseaodor.org/	• Are there any other monitoring purposes and objectives? • Input on locations • Input on the current notification and advisory systems • Input on the timeline
	• Identify opportunities to supplement the current South Coast AQMD's PM10 monitoring network in the ECV to: ○ Provide real-time PM10 and wind data and inform community	• Currently, PM10 monitoring is being conducted at six fixed monitoring stations within the ECV community boundary ○ South Coast AQMD operates two PM10 monitors in ECV, at Indio and	• Are there any other monitoring purposes and objectives? • Input on locations • Input on the current notification and advisory systems • Input on the timeline

	members of PM10 levels in ECV, where they come from, and if they exceed Federal and/or State standards ○ Gain a better understanding of dust emissions and distinguish between windblown dust from desert areas and playa dust emissions from the Salton Sea ○ Track the emission reduction progress and success of dust suppression projects ○ Provide information for the evaluation of long-term PM10 monitoring strategy ***Community Concern(s) addressed: CC-1, CC-6***	Mecca (Saul-Martinez Elementary School) monitoring stations ○ One of these stations, 29 Palms, has been established by a partnership between Twenty-Nine Palms Band of Mission Indians and the Cabazon Band of Mission Indians in the ECV community through an AB 617 Community Air Grant awarded by CARB to the tribes ○ One monitoring station has been stablished by Torres-Martinez Desert Cahuilla Indians ○ The Salton Sea Park and Salton Sea Near-Shore monitoring stations are operated by the Imperial Irrigation District • PM10 Data for two monitors operated by the South Coast AQMD is available in near real-time at: ○ AB 617 Data Display Tool: http://www.aqmd.gov/ab617-data-display-tool/ecv	
	• Establish baseline air monitoring to: ○ Characterize the chemical composition of fugitive dust emissions from different sources to help distinguish between windblown dust from desert areas and playa dust emissions from the Salton Sea ○ Track the progress of emission reduction strategies	• South Coast AQMD will conduct the baseline measurements as part of the AB 617 program and the implementation of the CAMP	• Are there any other monitoring purposes and objectives? • Input on location(s) • Input on pollutants of interest • Input on sampling frequency • Input on the timeline

	Community Concern(s) addressed: ***CC-1, CC-6***		

	• Seek new opportunities and work with the CSC to expand air quality sensor deployments in ECV to:
	  ○ Provide real-time PM10 data
	  ○ Supplement the PM10 monitoring network in the ECV and cover a larger area in the community
	  ○ Co-locate air quality sensors at monitoring stations with reference PM10 monitors and develop a systematic data calibration and correction protocol to enhance air quality sensor PM10 data quality
	
	Community Concern(s) addressed:
	CC-1, CC-2, CC-6
		• South Coast AQMD will begin the sensor deployment as part of the AB 617 program and the implementation of the CAMP	• Are there any other monitoring purposes and objectives?
			• Input on locations
			• Input on the size of the sensor network
			• Input on CSC and/or community participation and hosting the sensors
			• Input on the timeline
			• Input on data dashboard

	• Pursue a collaborative partnership with other entities (e.g., University of California – Riverside, CARB, Imperial County APCD) to support the ongoing study on soil chemical and microbiome composition of the Salton Sea playa dust samples ***Community Concern(s) addressed:*** ***CC-1, CC-2, CC-6***	• South Coast AQMD staff will pursue a collaborative partnership with other organizations (e.g., University of California – Riverside, CARB, Imperial County APCD)) to support the ongoing study on soil chemical and microbiome composition of the Salton Sea playa dust samples	• How can South Coast AQMD support this ongoing research?

Assembly Bill 617 (AB 617) Eastern Coachella Valley Community
South Coast Air Quality Management District

Input Gathering Worksheet for Air Monitoring at/near the Salton Sea

Please provide information and suggestions on potential monitoring locations for supplemental PM10 and H2S measurements for addressing potential emissions from the Salton Sea.

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Please provide information and suggestions on potential locations for sensor deployment. Feel free to include a list of community members or organization who may be willing to host a sensor at their private residence (NOTE: each sensor will measure PM, NO2 and O3).

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Please provide any input you may have regarding other monitoring purposes and objectives for the Salton Sea

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Note: Information provided by you on this worksheet (including contact or other personal information) is a public record and may be released in response to a California Public Records Act request.

CAMP Subchapter on the Salton Sea

The Salton Sea is the largest lake in California and, as its shorelines continue to recede and expose the sediments deposited at the bottom of the Sea (also referred to as the "playa"), emissions from the Salton Sea contribute to poor air quality for ECV residents. The CSC has expressed their concerns about the Salton Sea, mainly with respect to odors caused by emissions of hydrogen sulfide (H_2S) and inhalable dust / particulate matter (PM10; particles with diameters of 10 microns or smaller). Elevated levels of H_2S result from natural processes in the Salton Sea; these can lead to strong foul odors that negatively affects the quality of life of local residents and at high levels can cause acute health effects (e.g., headaches and nosebleeds). Dust emissions from the Salton Sea occur when the playa sediments get blown off by strong gusty winds and contribute to PM10 emissions in the area, further deteriorating air quality. The CSC is also concerned that the soil from the playa may contain residuals of pesticides and other pollutants from agricultural runoff (toxic elements and metals, such as selenium (Se), cadmium (Cd), and nickel (Ni)), which can pose a risk to human health. Moreover, the CSC has conveyed that additional monitoring and improvements to notification systems are needed to better understand emissions and reduce exposure from the Salton Sea.

The main monitoring strategy to address CSC concerns regarding H_2S emissions from the Salton Sea includes supplementing the existing H_2S monitoring network in ECV to provide limited expansion to its geographical coverage and real-time H_2S data at more locations, and inform the community members about the odors they smell and where they come from, including a notification system for when ambient levels exceed the State standard. Currently, H_2S monitoring is being conducted at two fixed-site monitoring stations within the ECV community boundary; at the Mecca and Salton Sea Near-Shore air monitoring stations. A notification system for H_2S exceedances at these sites is available through "The Salton Sea Hydrogen Sulfide Monitoring" website[1]. As part of this monitoring strategy, South Coast AQMD will work with the CSC to identify opportunities to expand its air monitoring network. Continuous wind speed and wind direction data will also be collected to help better identify the location(s) for the odors. The expansion of the H_2S monitoring network will lead to covering a larger part of the ECV community and will help assess community impact and the extent to which the odors may be transported in the community and beyond.

Currently, PM10 monitoring is being conducted at six fixed monitoring stations within the ECV community boundary. Two of these sites (Mecca and Indio) are operated by the South Coast AQMD. One of these stations, Twenty-Nine Palms, has been established by a partnership between Twenty-Nine Palms Band of Mission Indians and the Cabazon Band of Mission Indians in the ECV community through an AB 617 Community Air Grant awarded by CARB to the tribes.[2] One monitoring station has been stablished by Torres-Martinez Desert Cahuilla Indians. The Salton Sea Park and Salton Sea Near-Shore monitoring stations are operated by the Imperial Irrigation District. The location of these stations is shown in Figure 7.1 and the pollutants monitored at each site is presented in Table 7.1.

[1] https://saltonseaodor.org/

[2] Twenty-Nine Palms Tribal EPA, Air Quality: https://www.29palmstribe.org/epa-air-quality

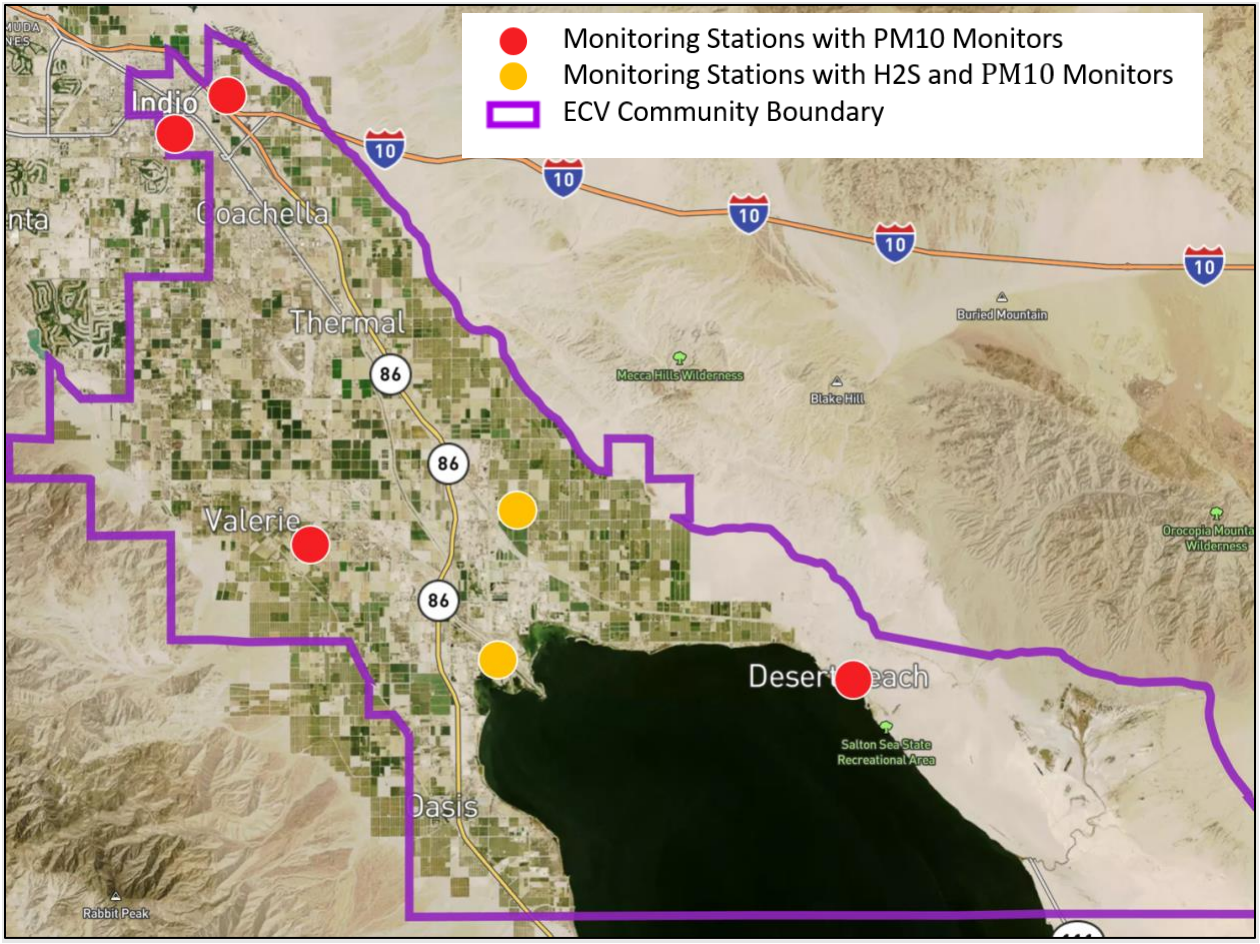

Figure 7.1 - Map of the ECV community with respect to the location of sampling sites where H_2S and PM10 monitoring is currently conducted

Table 7.1 - Pollutants monitored at each station in the ECV community

Station Name	Site Location	Agency	Monitored Pollutants
Indio	46990 Jackson Street Indio, CA 92201	South Coast AQMD	Ozone, PM2.5, PM10
Mecca (Saul-Martinez Elementary School)	65705 Johnson Street Mecca, CA 92254	South Coast AQMD	H2S, PM10
Torres-Martinez Tribal	66-725 Martinez Road, Thermal, CA 92274	Torres-Martinez Cahuilla Indians	PM10
Salton Sea Near Shore	Lincoln Ave. & 73rd Ave., Mecca CA 92254	Imperial Irrigation District	H_2S*, PM2.5, PM10
Salton Sea Park	100-225 State Park Rd., North Shore CA 92254	Imperial Irrigation District	PM2.5, PM10
29 Palms	33.719724, -116.189578	Twenty-Nine Palms Band of Mission Indians	PM2.5, PM10

* *H_2S monitor is operated by the South Coast AQMD*

The monitoring strategy to address CSC concerns about dust emissions from the Salton Sea consists of supplementing the current fixed-site PM10 monitoring network, establishing a network of sensors for PM10 measurements, and baseline monitoring to look at the chemical composition of the PM10 in the ECV community.

As part of its efforts to better characterize PM10 emissions from the Salton Sea, South Coast AQMD staff will work with the CSC to identify opportunities to supplement the PM10 monitoring network in ECV to provide additional air quality information in residential areas that do not currently have such measurement data. This, together with continuous wind speed and wind direction data, will help gain a better understanding of dust emissions and distinguish between windblown dust from desert areas and playa dust emissions from the Salton Sea. It can also help track the concentration trends of PM10 over the course of the AB 617 program to help assess the effectiveness of dust suppression projects. Data from this monitoring network will be provided in near real-time to inform community members of PM10 levels in ECV, and if they exceed Federal and/or State standards.

The above-mentioned monitoring network will be supplemented by a network of PM10 sensors to enhance the spatial coverage of PM10 measurements at more locations of interest. Data from these sensors will provide real-time information and improve our understanding of the variations in PM10 levels across the ECV community. This will help identify the source(s) of PM10 emissions and their origin (e.g., fugitive road dust and wind-blown desert dust) and assess for a long-term monitoring strategy. Air quality sensors will be co-located with a reference PM10 monitor at one of South Coast AQMD's air monitoring stations to verify the sensors performance prior to deployment. A data calibration and correction protocol has been developed to systematically enhance the data quality of the PM10 sensors after deployment. The sensor deployment process will be carried out in close collaboration with South Coast AQMD's AQ-SPEC[3].

These measurements will be accompanied by baseline monitoring to better characterize the chemical composition of dust in the ECV community. Chemical composition data will be highly beneficial in characterizing the relative contributions of playa dust emissions and dust from other sources (e.g., fugitive road dust and wind-blown desert dust) to the ambient concentrations of PM10 measured in ECV. Baseline measurements will also help track the concentration trends of key indicator pollutants of Salton Sea emissions and address specific CSC concerns about the chemical composition and potential toxicity of playa dust emissions.

Lastly, South Coast AQMD staff will pursue a collaborative partnership with other organizations (e.g., University of California – Riverside) to support the ongoing study on soil chemical and microbiome composition of the Salton Sea playa dust samples.

[3] Air Quality Sensor Performance Evaluation Center (AQ-SPEC): http://www.aqmd.gov/aq-spec