

Vegetation Establishment to Promote Dust Control Using Natural Physical Barriers and Surface Hydrology at the Salton Sea, CA

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The Salton Sea is a hypersaline inland lake situated in the Imperial Valley of Southern California. Over the past 20 years the lake surface elevation has decreased by approximately 12 ft, exposing the dry lakebed (playa) and accumulated lakebed sediments containing metals, salts and likely a suite of degradation products resulting from chemicals used in production agriculture. The lake surface elevation is expected to drop another 18 feet over the next 20 years (CH2M Hill, 2018), thus exposing an additional 80,000 acres of lakebed. If no action is taken, the increase in exposed lakebed is anticipated to exacerbate the regional air quality problem.

A multi-disciplinary team led by the California Department of Water Resources, along with Tetra Tech, is designing a landscape-scale dust suppression and vegetation enhancement project over 2,500 acres. The primary aim of this plan is to prevent dust emissions. This initial planning effort has consisted of a review of plant establishment challenges on the playa, climatic and hydrologic factors, and edaphic and vegetative parameters associated with plant establishment. Roughness-based dust control methods consist of the construction of natural physical structures and establishment of *Allenrolfea occidentalis*, a keystone species in hyper-xeric halophytic settings. Ephemeral surface water inputs from surrounding watersheds are proposed to be utilized with surface contouring built in key landscape positions in order to retain stormwater flows on site and promote vegetation germination and establishment. The selection and rationale for structures and placement will be presented along with the modeling efforts and field data collection activities.

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