

ADAPTIVE MANAGEMENT PROGRAM: A ROADMAP TO DEVELOPING AND MANAGING PROJECTS AROUND THE SALTON SEA



The Salton Sea Restoration and Renewable Energy Initiative, launched by the Imperial Irrigation District, will leverage funds generated by new renewable energy projects located at the sea to help finance activities for air quality management and habitat restoration. The adaptive management program establishes an overall framework and various metrics for developing and managing a series of projects around the Salton Sea perimeter.

To date, multiple small state and federally funded restoration projects are in the planning, permitting, design, and/or early stages of construction around the Salton Sea. The Salton Sea Authority and its member agencies, Imperial and Riverside Counties, Imperial Irrigation District, Coachella Valley Water District and the Torres Martinez Desert Cahuilla Indians, have identified an initial phased approach to Salton Sea restoration until a full scale restoration plan is in place. Following is a two-page summary of the adaptive management plan. To review the study in full, visit www.renewablesforsaltonseas.com.

SSRREI: IN THREE PHASES

Phase I—Early start

Includes construction of restoration projects currently in development.

Phase II—

Development & Implementation

Carry out work from Phase I and integrate it with renewable energy development.

Phase III—Restoration Plan

Integrates Phase I and II projects and creates habitat and air quality projects alongside renewable energy development.

BACKGROUND

Historically the Salton Sink region, because it is an area below the elevation of the ocean, has been a freshwater lake as a result of waters from the Colorado River. The most recent historic lake was Lake Cahuilla, covering over 2,000 square miles, during the Pleistocene. Since then, there is evidence of periodic inflows to the trough that resulted in varying levels of inundation in the region. With the advent of agricultural activity in the Imperial Valley in the late 1800s, the lower portions of the trough were routinely wet from the accumulation of agricultural runoff. In 1905, the current Salton Sea was formed when a breach along the Imperial Canal caused the Colorado River to drain into the Salton Sink through the channels of the New and Alamo rivers. The Colorado River flowed into the sink for about two years, forming a lake that was approximately 400 square miles. Since then, the lake levels have fluctuated and have been sustained by agricultural inflows.

In the late 1990s, inflows to the lake were approximately 1.3 million acre-feet per year, roughly equivalent to the amount of evaporation from the lake, which resulted in a reasonably constant water elevation and pool size. Since the early 2000s, inflows have been decreasing and lake levels have been declining. The reduction in inflow is a result of several different changes including reduced inflows from Mexico, fluctuations in agricultural use patterns, recent droughts, and agricultural-to-urban water transfers.

A water transfer of approximately 100,000 acre-feet was made to Metropolitan Water District in the late 1990s and the Quantification Settlement Agreement Water Transfer

was implemented in 2003. The QSA Water Transfer consists of 303,000 acre-feet of water transferred to San Diego County Water Authority and Coachella Valley Water District. Concurrent with the signing of the QSA Water Transfer, the California state legislature passed legislation that addresses the restoration of the Salton Sea.

Recognizing the state's intention to develop a program for Salton Sea restoration, QSA Water Transfer mitigation measures were developed to mitigate for transfer impacts to the Salton Sea until implementation of the state program. The end of calendar year 2017 was chosen as the target date for the state to have the restoration program underway and several mitigation measures were tailored to that date. Mitigation water delivered to the Salton Sea is designed to maintain current elevation and salinity trends at the lake and will terminate at the end of 2017. The rate of decline in lake level elevation and increase of salinity will be increased at an accelerated rate after 2017. This will result in significant exposure of lakebed, or playa, and will further stress the aquatic environment of the lake.

PHASE I - EARLY START

IID is currently in contract development with a consultant to develop an interim-restoration approach at the Salton Sea, to bridge the gap between current conditions and a more permanent restoration plan in the future. A request for proposals for services relating to SSRREI was posted in June 2014. Once a consultant is selected, they will work with a steering committee composed of members from Imperial & Riverside counties, IID, Salton Sea Authority, and others, who will direct the development of the program.



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The final product, with an expected completion date of April 2015, will be comprised of refined restoration concepts developed to date, a concept layout for integrating incremental habitat, air quality mitigation and renewable energy around the Salton Sea as it recedes. The development of approximate unit costs for various components will be included in the final deliverable. The results of the consultant's efforts will be provided to both the Salton Sea Authority for incorporation into the restoration plan and to Imperial County for use in the development of a renewable energy overlay for its general plan.

The first portion of the state's Species Conservation Habitat project will be constructed as part of Phase I. State grant funded projects, Red Hill Bay, Torres Martinez Wetland Project and Marine Habitat Project will also be implemented in this phase. Construction and maintenance lessons learned during the building of these projects will help to inform design and decisions for Phase II. Should additional funding become available, habitat can be constructed in the permitted footprint of the SCH project.

While Phase I will not complete the environmental documentation process, it will develop a defined project that can be incorporated into the Imperial County land-use planning efforts and/or the Salton Sea Authority's restoration plan. It will also provide the interim "master plan" for habitat creation that will assist in developing funding efforts.

The Early Start approach is intended to provide interim measures while a full-scale restoration plan is developed and implemented, and is not intended to replace or substitute a full-scale plan. One of the many benefits of this approach is that it can be constructed in phases as funding and land becomes available. Cells would be constructed in a mosaic pattern to maximize the reduction of dust emissions; the final design would resemble a patchwork, with small expanses of open playa interrupted by habitat cells that provide ecological and recreational benefits while minimizing wind fetch.

An additional benefit of this approach is the ability to implement portions of the plan sooner than a full-scale restoration program can be implemented. If Phase I is incorporated into the CEQA/NEPA documentation completed as part of Imperial County's Master Plan, renewable energy projects can be implemented in a timely manner. Additionally, if the program is included in the state and federal Desert Renewable Energy Conservation Plan, it will provide a streamlined permitting process.

PHASE II - DEVELOPMENT & IMPLEMENTATION

This phase will incorporate the results from the SSRREI concept design currently being developed with a February 2015 target date. This plan will locate potential habitat project sites around the sea alongside renewable energy projects.

Step I includes the development of renewable energy (primarily geothermal) and wildlife habitat mosaic in selected areas of the exposed playa. Existing geothermal resources are primarily near wildlife habitats, especially near Sonny Bono National Wildlife Refuge. The current placement of geothermal well pads, pipeline routes and generation plants does not appear to have a negative impact on wildlife usage at this time. The renewable energy/habitat concept furthers the idea of coexistence of the two land uses by designing aspects of both into an integrated design. The Red Hill Bay project will be the proof of concept, as it will be designed with pipeline access corridors and well pads integrated into the aquatic cell design. Not all renewable energy development areas will include a wildlife component, but it is likely that the habitat can be integrated into much of the renewable footprint. The development of these projects will be incorporated through this phase of the program.

The renewable energy/habitat complex also proposes the development of solar energy generation. Photovoltaic solar is being considered as part of the complex. There are site logistics issues (foundation stability and panel durability) that require analysis

before larger scale development of PV can be considered. Solar thermal facilities are also being considered. Saline gradient cell technology has been proven in other areas and may be applicable on playa areas and advancements in lower-cost solar reflector/concentration technologies may be useful on the playa. Solar facilities can be located separately from the geothermal (including along the exposed playa on the east and west sides of the lake) or can be interspersed in some of the areas formed by the pipeline corridors. Initial locations of the solar technology may be limited until the suitability of solar facilities in habitat areas is determined.

PHASE III - RESTORATION PLAN

Phase III will be used to help incorporate Phase I and II into a Restoration Plan to be used by the Salton Sea Authority. Phase III will be developed to implement projects around the Salton Sea in time increments as needed until a restoration plan is funded. The concept design from Phase I and the lessons learned from development of habitat and renewable energies in Phase II will help develop the final restoration plan, which will include details of how it will be implemented around the Salton Sea.

MOVING FORWARD

The Salton Sea Restoration and Renewable Energy Initiative program is the beginning framework for an overall restoration plan for the Salton Sea. The adaptive management program outlines the planning process to move forward with the Salton Sea Restoration and Renewable Energy Initiative and explores concept design and cost estimates, as well as initial on the ground projects. Phase I projects, such as Species Conservation Habitat or the Red Hill Bay Project, will provide a testing ground for future projects around the Salton Sea. Phase II will include the implementation of the concept design plan for renewable energies and habitat around the Salton Sea while Phase III will be the final steps that lead into a full restoration plan.



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