

# SALTON SEA WATER IMPORTATION SUBMITTAL REVIEW

October 2021

## Technical Memorandum (TM) #2.2

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Subject Area: Screening and Evaluation Approach  
Topic: Previously Used Criteria to Evaluate Major Water Projects

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*This Technical Memorandum (TM) was prepared as part of the Salton Sea Water Importation Proposal Review to provide information to support and reflect the Independent Review Panel's evaluation of submitted ideas to restore the Salton Sea by water importation and provide the Salton Sea Management Program (SSMP) with approaches that are feasible. Parts of this TM may be used in the Panel's Screening Report, Fatal Flaw Report, Feasibility Report, and/or Summary Report (Reports). In the event that any discrepancies are found between the Reports and this TM, the Reports shall take precedence.*

## 1.0 Previously Used Criteria

### 1.1 2011 SALTON SEA SPECIES CONSERVATION HABITAT PROJECT (DRAFT EIS/EIR) CRITERIA (CNRA, 2011)

The Salton Sea Species Conservation Habitat Project Draft EIS/EIR evaluated alternatives for habitat conservation and restoration at the Salton Sea. Two goals defined the undertaking: (1) restore habitat for fish-eating birds while increasing water quality, and (2) act as a proof of concept for shallow water habitat restoration and create an adaptive management framework. The alternatives focused on creating habitat areas defined by salinity as well as playa mitigation and recreational areas (Figure 1). Although published in 2011, no action was taken due to issues with funding, conflicting interests, and because the current air quality and public health issues were not as pressing at the time.

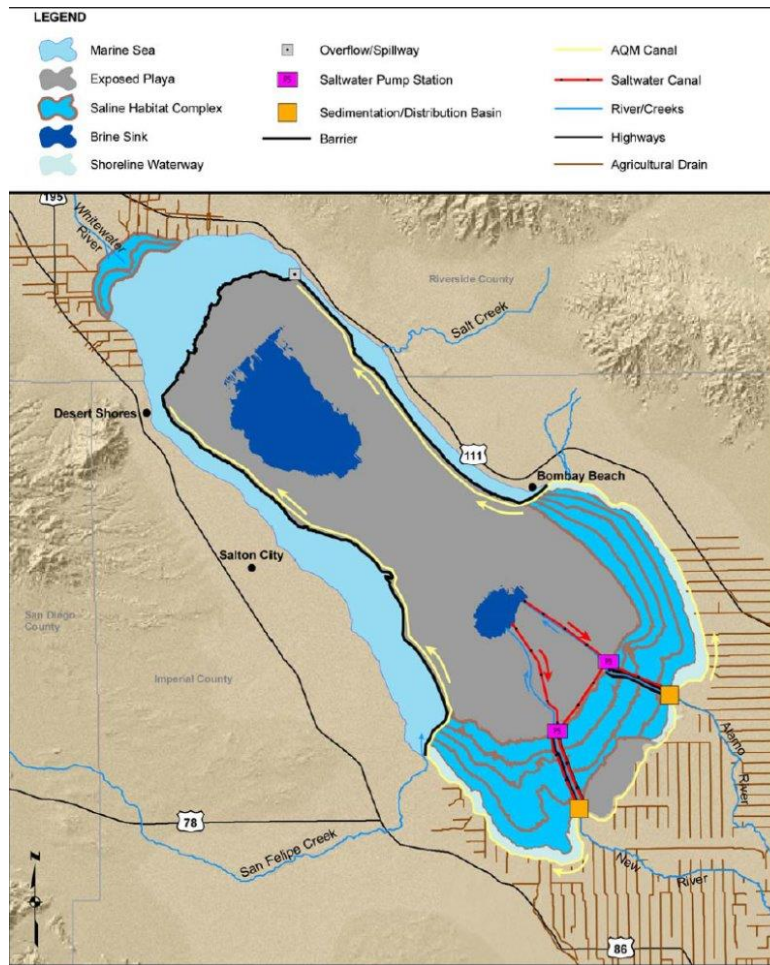


FIGURE 1. The Salton Sea Species Conservation Habitat Project Draft EIS/EIR selected alternative, indicating different salinity areas, exposed playa, and canals (CNRA, 2011).

### 1.1.1 EXCLUSIONARY CRITERIA

Three primary criteria were used to exclude alternative projects: available water rights, available land, and adequate water supply. The evaluation with these criteria found the following:

- The Whitewater River would not be an available water source for the projects due to the State Water Resources Control Board designation of being fully appropriated
- The New and Alamo rivers were not fully appropriated, but had applications pending that would result in both rivers being fully appropriated if approved
- Land at the New and Alamo rivers was owned by Imperial Irrigation District, land at Wister Beach was privately owned, the Torres Martinez Desert Cahuilla Indian Tribe owns land at the Whitewater River and would be needed for water conveyance to ponds, and there was only limited available land for the project

- Water required for the project ranged from 5,400 af for 900 acres of ponds to 34,200 af for 5,700 acres of ponds. Both the New and Alamo rivers could provide this water, but not the Whitewater River based on Coachella Valley Water District and Torres Martinez Tribe water demands
- Water from agricultural drains could not be used due to quality, unreliability, and due to their use by Desert Pupfish
- Groundwater is not an adequate water supply.

### **1.1.2 EVALUATIVE CRITERIA**

A list of project components (elements that a project could include) was generated for the following categories:

- Diversion mechanisms
- River water conveyance
- Salt water conveyance
- Suspended sediment management
- Power supply.

Each component was then evaluated for exclusion or refinement based on:

- Engineering feasibility and constructability
- Cost-effectiveness (including capital cost and O&M)
- Potential for physical environmental impacts
- Compatibility with existing and planned land use
- Ability to meet schedule.

### **1.1.3 ADDITIONAL ANALYSIS**

Although not listed as criteria, each project was also analyzed based on regulatory requirements, environmental affects, and the impacts and possible mitigation measures for a number of categories.

Each concept was given one of the following scores:

- Beneficial
- Significant unavoidable
- Significant but mitigatable to less than significant
- Less-than-signific
- No impact.

The categories were as follows:

- Aesthetics

- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy Consumption
- Environmental Justice
- Geology, Soils, and Minerals
- Greenhouse Gas Emissions/Climate Change
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Indian Trust Assets
- Land Use
- Noise
- Paleontological Resources
- Population and Housing
- Public Services
- Recreation
- Socioeconomics
- Transportation and Traffic
- Utilities and Service Systems.

The EIR also analyzed cumulative impacts of other projects in the region including landfill expansion, renewable energy development, water rights applications, a wastewater treatment plant upgrade, and recreation/tourism projects.

## **1.2 2016 DELTA TUNNEL (WATERFIX EIR/EIS) PROJECT CRITERIA (ICF INTERNATIONAL, 2016).**

The WaterFix project intended to upgrade the existing water conveyance and divert water from the Sacramento River to the State Water Project and Central Valley Project via tunnels that passed under the Sacramento-San Joaquin Delta. The project also contained a habitat restoration component.

The initial criteria focused on meeting the project's purposes and needs:

- Conservation and management of species
- Protecting, restoring, and enhancing aquatic, riparian, and associated terrestrial natural communities/ecosystems
- Reducing adverse effects on covered species through modified use of existing facilities and intakes
- Restoring and protecting water reliability.

Additional initial screenings considered conveyance alignments:

- Analyzed how differing capacities affect overall system operations
- Screening evaluations for operations and restoration based on:
  - Changing Delta salinity
  - Flooded western island
  - Preferential diversion on the Sacramento River at Hood compared to south Delta diversions
  - Increased spring river flows
  - Increased spring Delta outflow
  - Increased fall Delta outflow
  - Preferred south Delta diversion
  - Fully isolated Hood diversion
- Climate change
- North Delta bypass flows and operations
- Tidal marsh and Delta simulations
- Daily operations
- Delta island consumptive use.

The second level of criteria focused on combining the initial accepted conveyance alignment concepts with operation concepts:

- Avoiding or lessening expected significant environmental effects of the project
- Addressing significant issues related to the proposed action.

The third level of criteria focused on:

- Technical and economic feasibility/practicality
- Accordance with federal and state statutes and regulations, including the Sacramento–San Joaquin Delta Reform Act requirements
- Balance of economic, environmental, social, and technological factors.

### **1.3 2009 RED-DEAD CANAL (RED SEA-DEAD SEA CONVEYANCE) PROJECT CRITERIA**

The Red Sea-Dead Sea Conveyance Project feasibility study assessed environmental, social, economic, and technical aspects of transferring water from the Red Sea to the declining Dead Sea (Markel et al., 2013). Two consulting firms conducted the study: one focused on the feasibility in terms of environmental, economic, and technical aspects while the other focused on the environmental and social assessment (Markel et al., 2013). Four sub-studies provided additional information: Red Sea, water conveyance, Dead Sea, and hydropower and desalination (Markel et al., 2013).

The feasibility study compared the base case scenario (water conveyance without desalination) and two additional scenarios, one of which includes a desalination plant placed at a high elevation location while in the other, the desalination facility is placed closer to the Dead Sea. The criteria used in the feasibility study were as follows (Coyne Et Bellier, 2009):

- Dead Sea target level achieved within 25 years of commissioning for all three scenarios
- The preferred alternative scenario option is the one that achieves the target year with the lowest water abstraction and transfer rate for the selected target level
- The preferred alternative scenario option is the one that maximizes the capacity of a desalination plant.

A list of system components and variables (e.g., location, capacity, etc.) were generated, and each were analyzed based on the following considerations (where applicable):

- Environmental benefits and impacts
- Social impacts
  - Existing infrastructure and developments
  - Impact on industry (e.g., discharge location impact on chemical industry)
  - Archaeological sites
  - Potential cross-border issues
- Topographical/geological/seismic/hydrological/physical constraints of potential locations
- Potential flood flows
- Technical feasibility
- Energy requirements
- Power generation
- Costs
- Construction schedule
- Maintainability
- Leakage risk to groundwater
- Alignment length
- Appropriateness of technology (e.g., Reverse Osmosis for desalination)
- Plot size requirement.

## References

CNRA (2011). Salton Sea Species Conservation Habitat Project Draft Environmental Impact Statement/Environmental Impact Report. US Army Corps of Engineers. Prepared for the California Natural Resources Agency by the Department of Water Resources and Department of Fish and Game. August 2011. (On Zotero)

Appendices: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Integrated-Regional-Water-Management/Salton-Sea-Unit/Salton-Sea-Species-Conservation-Habitat-Project-EIR-EIS/Salton-Sea-EIR\\_Appendices\\_a\\_y19.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Integrated-Regional-Water-Management/Salton-Sea-Unit/Salton-Sea-Species-Conservation-Habitat-Project-EIR-EIS/Salton-Sea-EIR_Appendices_a_y19.pdf)

Coyne Et Bellier (2009). Red Sea-Dead Sea Water Conveyance Study Program Feasibility Study, Options Screening and Evaluation Report Executive Summary. Report No. 12 147 RP01, Jan 29, 2009. Available online at:

[https://web.archive.org/web/20131206072110/http://siteresources.worldbank.org/INTREDESEADEADSEA/Resources/C-B\\_Options\\_Screening\\_Jan2009.pdf](https://web.archive.org/web/20131206072110/http://siteresources.worldbank.org/INTREDESEADEADSEA/Resources/C-B_Options_Screening_Jan2009.pdf)

ICF International (2016). Chapter 3 Description of Alternatives, Bay Delta Conservation Plan / California WaterFix, Final Environmental Impact Report/Environmental Impact Statement, for the Bay Delta Conservation Plan/WaterFix, prepared for California Department of Water Resources and U.S. Bureau of Reclamation. December. p3-8 to 3-12. Available online at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/california\\_waterfix/exhibits/exhibit102/docs/vol1/Final\\_EIR-EIS\\_Chapter\\_3\\_-\\_Description\\_of\\_Alternatives.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/exhibit102/docs/vol1/Final_EIR-EIS_Chapter_3_-_Description_of_Alternatives.pdf)

All chapters of the WaterFix EIR-EIS located here:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/california\\_waterfix/exhibits/exhibit102/exhibit102\\_vol1.html](https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/exhibit102/exhibit102_vol1.html)

Markel, M., Alster, J., and Beyth, M. (2013). Chapter 12 The Red Sea-Dead Sea Conveyance Feasibility Study, 2008-2012 in Becker, N. (ed.), Water Policy in Israel: Context, Issues and Options, Global Issues in Water Policy 4, DOI: DOI 10.1007/978-94-007-5911-4 12

More studies relating to the Red Sea-Dead Sea Water Conveyance Study can be found here:

<https://web.archive.org/web/20131203035128/http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/EXTREDESEADEADSEA/0,,contentMDK:21844180~menuPK:5215939~pagePK:64168445~piPK:64168309~theSitePK:5174617,00.html>