Option Submittal Form

Contact Information (optional): ☐ **Keep my contact information private.**

Contact Name: _____ Title: _____

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Date Option Submitted: 07 FEB 2012

Option Name:

Colorado River Aqueduct Desalination and Salton Sea Water Supply Project

Description of Option:

A project to reduce the salinity of Colorado River water by desalting the water flowing in MWD's Colorado River Aqueduct (CRA) from 700 mg/l to 200 mg/l. The desalination process would recover 95% of the treated water and the desalination reject water (46,800 AF/yr at 10,913 mg/l) would be conveyed to the Salton Sea through a 23-mile long penstock with hydro-electric generation of 7.4 MW from the elevation drop of 1,598 feet (static head).

Location: Describe location(s) where option could be implemented and other areas that the option would affect, if applicable. Attach a map, if applicable.

Desalination facility would be located on the south side of the CRA immediately west of Chiriacco Summit. The 48" Penstock would convey the desalination process reject water southwesterly about 20 miles (106,000 feet) to the Salton Sea (existing salinity ≈ 40,000 mg/l).

Quantity and Timing: Roughly quantify the range of the potential amount of water that the option could provide over the next 50 years and in what timeframe that amount could be available. If option could be implemented in phases, include quantity estimates associated with each phase. If known, specify any important seasonal (e.g., more water could be available in winter) and/or frequency (e.g., more water could likely be available during above-average hydrologic years) considerations. If known, describe any key assumptions made in order to quantify the potential amount.

Benefits in the MWD Service Area include: (1) Salinity damage reduction of $307 million/yr. (2002 dollars); (2) Reduced water treatment costs of $30/AF; (3) Increased recyling of treated CRA flow amounting to 160,000 AF/yr, and (3) Lower irrigation rates with lower salinity (higher salinity requires more water to 'flush' the salts from soil surrounding the root systems.

Additional Information

Technical Feasibility: Describe the maturity and feasibility of the concept/technology being proposed, and what research and/or technological development might first be needed.

Project feasibility studies were completed by SAIC Engineering, Inc. in April 2003 and a supplemental Technical Memorandum reflecting the QSA was completed in January 2004.

Costs: Provide cost and funding information, if available, including capital, operations, maintenance, repair, replacement, and any other costs and sources of funds (e.g., public, private, or both public and private). Identify what is and is not included in the provided cost numbers and provide references used for cost justification. Methodologies for calculating unit costs (e.g., $/acre-foot or $/million gallons) vary widely; therefore, do not provide unit costs without also providing the assumed capital and annual costs for the option, and the methodology used to calculate unit costs.

Overall capital costs including unlisted items, contingencies, design permitting and construction were estimated to be about $1.6 billion on 2002 dollars. This assumed an 18-year desalination plant build-out period to match likely CRA flows under the QSA. The benefit cost ration of the QSA Reformulation alternative was estimated to be 1.29 to 1.

Permitting: List the permits and/or approvals required and status of any permits and/or approvals received.

The Project Sponsors sought and received a preliminary FERC Permit under which the permitting would be processed. The FERC Preliminary Permit expired and would need to be re-applied for to develop the project.

NPDES permit would be required for discharge into Salton Sea. This permit would be sought when the project is under design. The brine discharge would be of a better quality than the existing quality of the Sea.

Legal / Public Policy Considerations: Describe legal/public policy considerations associated with the option. Describe any agreements necessary for implementation and any potential water rights issues, if known.

Initially, strong Project support was received from MWD, Salton Sea Authority, IID, Colorado River Basin Regional Water Quality Control Board and others who collaborated in Project formulation. However, Colorado River water is not used uniformly throughout MWD's Service Area and allocating Project costs among Member Agencies (and their customers) that actually benefit from the Project would be a challenge.

Implementation Risk / Uncertainty: Describe any aspects of the option that involves risk or uncertainty related to implementing the option.

The Project Sponsors initially looked at MWD for a "take or pay" cost reimbursement contract to secure private sector Project financing but since Project benefits are not equally shared by MWD Member Agencies, an alternative financing strategy is needed for the Project to Proceed.

Reliability: Describe the anticipated reliability of the option and any known risks to supply or demand, such as: drought risk, water contamination risk, risk of infrastructure failure, etc.

The SAIC Feasibility Study identified strategies to avoid or mitigate adverse environmental consequences. No other risks were identified.

Water Quality: Identify key water quality implications (salinity and other constituents) associated with the option in all of the locations the option may affect.

The CRA carries "constituents of concern" such as Perchlorate, Selenium and Strontium. Facilities to manage these constituents to acceptable levels were included in the Project.

Energy Needs: Describe, and quantify if known, the energy needs associated with the option. Include any energy required to obtain, treat, and deliver the water to the defined location at the defined quality.

Energy Required	Source(s) of Energy
Energy to operate the desalination facility would be from on-site Natural gas combined cycle combustion turbines.	Natural gas from west Texas and the Four Corners area would be conveyed to the site by the interstate pipeline systems of the El Paso Natural Gas Company and SoCal Gas.

Hydroelectric Energy Generation: Describe, and quantify if known, any anticipated increases or decreases in hydroelectric energy generation as a result of the option.

Location of Generation	Impact to Generation
Two hydro plants on Penstock to Salton Sea	Annual generation of about 60 million kWh/tr.

Recreation: Describe any anticipated positive or negative effects on recreation.

Location(s)	Anticipate Benefits or Impacts
Salton Sea	Replacement water supply for Imperial Irrigation District (IID) conservation impacts

Environment: Describe any anticipated positive or negative effects on ecosystems within or outside of the Colorado River Basin.

Location(s)	Anticipated Benefits or Impacts
Project Area	All identified impacts avoided or mitigated

Socioeconomics: Describe anticipated positive or negative socioeconomic (social and economic factors) effects.

The socioeconomic impacts of changing levels of salinity of water delivered by MWD have been documented in studies by Reclamation and MWD. The benefits of reduced salinity are both social and economic

Other Information: Provide other information as appropriate, including potential secondary benefits or considerations. Attach supporting documentation or references, if applicable.

The SAIC Feasibility Study Report (April 2003) and the QSA Reformulation Alternative Technical Memorandum (January 2004) are available to be copied – contact Greg Spinkelink at 702-821-1554.