Evaluation of Potential Environmental Impacts of the Export and Discharge of Salton Sea Water to the Gulf of California or Pacific Ocean

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INTRODUCTION

The Salton Sea is a below sea-level hypersaline lake located in a closed desert depression east of Los Angeles and San Diego. Absent a natural outlet, evaporation is the only escape for water entering this, the largest inland body of water in California. Over time, this condition has resulted in the continued accumulation of salts, nutrients, and other contaminants within the Sea and its sediments. The resulting degradation of water quality is associated with negative impacts on the Sea's biota (e.g., fish kills) and aesthetic qualities (e.g., algal blooms and noxious odors). These and other impacts have resulted in restoration of the Sea becoming a subject of renewed focus. Stabilization and reduction of salinity levels, which have now reached 44 parts-per-thousand (ppt), is one of the major actions being pursued. One of several possible actions being evaluated for salinity control is to pump water out of the Salton Sea to the upper Gulf of California or to the Pacific Ocean. This would provide an outlet for the Sea and a means for the removal of salts and some nutrients. The purpose of this report is to assess the potential environmental impacts associated with the transport and discharge of Salton Sea waters into the upper Gulf of California or to the Pacific Ocean.

PROPOSED ACTIONS

The U.S. Bureau of Reclamation (USBR) and the Salton Sea Authority are evaluating two different possibilities for pumping water out of the Salton Sea as part of their Phase 2 restoration alternatives (Figure 1) (USBR, 1999). The Phase 2 alternative actions, if approved, could be operational by 2015. One possibility involves pumping water to the Gulf of California by one of two different water conveyance routes: (1) exporting water from the Sea to the east side of the Gulf through a 140-mile long pipeline that would terminate near El Golfo de Santa Clara and outside the core of the Biosphere Reserve; and (2) exporting water from the Sea to the west side of the Gulf through a 177-mile long pipeline that would terminate approximately one mile into the Gulf near San Felipe (Figure 2). Much of the upper Gulf of California is protected by its status as a Biosphere Reserve. Neither route violates the core of the Reserve, but the eastern route invades the buffer zone around the core area.

The second possibility being considered involves pumping water to the Pacific Ocean off the coast of southern California by one of two different conveyance routes: (1) exporting water from the Sea to the Pacific Ocean through a 101-mile long pipeline/tunnel that would terminate at an outfall site near Oceanside (Camp Pendleton); and (2) exporting water from the Sea to the Pacific Ocean through a 108-mile long pipeline/tunnel that would terminate at an outfall site near San Diego (Point Loma) (Figure 3).

Each of the Gulf of California export routes would utilize a 112-inch diameter, polymer-lined, steel pipe to convey nearly 223 million gallons per day (250,000 acre-feet per year) of water from the Salton Sea to the selected terminus point. Each route would require two or more pumping plants to lift water over small grades along the pipeline alignment.

Because of the need to cross the rugged San Jacinto Mountains at different points, the proposed design details of the two Pacific Ocean export routes differ from one another. Each route, however, would consist of two variable diameter pipeline segments, or reaches, interconnected by a concrete-lined tunnel segment beneath the mountains. Depending on the export route, as many as nine pumping plants and eight powerplants would be needed at specific points