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REPORT

COST OF MITIGATION AT OWENS LAKE, CALIFORNIA

TASK ORDER: 2066

**PREPARED FOR
THE LONG NOW FOUNDATION**

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JUNE 26, 2011



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INTRODUCTION

This report documents the magnitude of the mitigation costs associated with suppressing fugitive dust emissions at Owens Lake, California. These mitigation costs were not foreseen in the early years of the Los Angeles Department of Water and Power (LADWP) water project. Lessons learned at other water development projects may aid in the development of potential mitigation requirements associated with groundwater development and exportation in eastern Nevada. These requirements and costs should be factored into decisions relating to the feasibility, value, and potential economic costs of any proposed project.

CONDITIONS AT OWENS LAKE

Anderson (2006) provides a historical overview of the water production activities dating back approximately 100 years, the periodic legal and regulatory entanglements, and changing environmental conditions in the Owens River Valley. He writes of Owens Lake near Olancho, “On a bad day, the dust rises off the lake’s skeleton in vicious, tornado-like plumes, forcing children and the elderly to stay indoors. It is the largest source of coarse-particle air pollution in the country — second in the world only to the Sahara Desert” (Anderson, 2006). Since 2006, progress has continued and conditions have evidently improved, as the LADWP states that the PM-10 dust is being 90% controlled as of 2010 (LADWP, 2010b).

MITIGATION REQUIREMENTS

The LADWP operates its groundwater production program in accordance with a 1997 Owens Valley Memorandum of Understanding between LADWP and Inyo County (LADWP, 2010a). Under this MOU, LADWP must prepare an annual report documenting hydrologic conditions for the Valley, operation of the groundwater production program, and status of the mitigation program. This mitigation is set in accordance with the Environmental Impact Report of 1991 (LADWP, 2010a). This mitigation includes extensive monitoring of hydrology, condition of vegetation and dust generation. The mitigation also includes a series of projects such as revegetation with native flora, reinstatement of river flows, water augmentation for ponds, surface spreading of water, pasture irrigation, maintenance of waterfowl habitat, and measures to suppress fugitive dust (PM-10) generation (LADWP, 2010a).

The California Air Resources Board and the Great Basin Unified Air Pollution Control District require that LADWP control the fugitive dust. Techniques tested include sand fences, chemicals, covering the lake with old tires, as well as a proposal to pump treated sewage from Los Angeles. The methods that worked best were shallow flooding, vegetation, and gravel (Anderson, 2006). As of June 2011, the mitigation program continues. Most mitigation projects are underway, however some are still in the planning stage (LADWP, 2010a) and new techniques continue to be tested (Piper, 2006; LADWP, 2010b).

MITIGATION EXPENDITURES

In the mid-1990s, as the Owens Lake dust mitigation project matured, City of Los Angeles officials and taxpayers' representatives began to grow concerned over the size of the costs associated with the project. At a meeting on February 15, 2006, the Los Angeles City Council ordered that an independent audit be conducted to quantify the expenditures to date on the Owens Lake dust mitigation project (City of Los Angeles, 2006). The Council stated that while the Department of Water and Power had originally stated that the project would cost "no more than \$120 million," the cost had in fact escalated to over three times that much. Meanwhile, one of the City's contractors on the project, CH2M HILL, submitted a letter stating that "Many agencies and other entities involved with the Owens Lake project have known and reported for almost a decade now that the project, as defined, would cost in the range of \$400 million" (CH2M HILL, 2006). The letter continued: "Specifically, initial estimates, provided to the [LADWP] in May 1997, anticipated that the Owens Lake project would cost between \$313 million and \$440 million. These early estimates were validated by Parsons Engineering, an independent engineering firm and competitor to CH2M HILL, before our company began serving the city on the project." The letter provides a tabulation of costs accrued to date (as of January 2006) which totals \$446 million.

A recent online article quotes LADWP as having spent \$540 million for the first 43 square miles of dust control on the lake bed (Piper, 2011). LADWP confirms that it is over \$500 million as of 2010 (LADWP, 2010b). In addition, this capital expenditure (and consulting fees) does not include the average \$17.5 million for annual maintenance as well as the average \$24 million annually (which varies depending upon precipitation) for water applied to the lake for a yearly total of \$41.5 million (GBUAPCD, 2008). However LADWP quotes much higher annual costs:

\$25 million annually for maintenance and \$41 million for water use annually, for a yearly total of \$66 million (LADWP, 2010b).

SUMMARY

Based on a review of publically available references, capital expenditures for the project as of 2011 are approximately \$540 million and yearly recurring costs range between \$41-66 million.

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Owens Lake Dust Mitigation Program

Los Angeles Department
of Water and Power



May 2010

General Statistics - Accomplishments and Costs

- Great Improvement - Owens Lake is no longer in the top 10 list of PM10 emissions
- 39.5 square miles of dust control in operation
Capital cost = more than a half-billion dollars
- Presently 62 full time staff working on Owens Lake
Annual operation and maintenance costs = \$25-million
- Annual Water Use = 95,000 acre feet per year
Annual water cost = \$46-million*

*(95,000 acre-feet at \$484 per acre-foot, MWD tier 1 rate for untreated water)