Option Submittal Form

Contact Information (optional):

☐ Keep my contact information private

Contact Name: _____ Title: _____

Affiliation: _____

Address: _____

Telephone: _____ E-mail Address: _____

Date Option Submitted: February 1, 2012

Option Name:

Precipitation Enhancement/Cloud Seeding

Description of Option:

Cloud seeding activities release silver iodide to the atmosphere over areas of the western states of the U.S., Canada and some other areas around the globe to augment rainfall/snowfall or reduce hail damage. (Source : http://www.weathermodification.org/images/AGI_toxicity.pdf)

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

Western U.S.

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.

The local cloud seeding program is operated between November 1 and April 30 of most years. Seeding is only possible during those months if there are clouds present that might produce rain. During drought periods, cloud seeding is not effective. (Source: ttp://www.countyofsb.org/pwd/pwwater.aspx?id=3740)

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.

NA

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.

The cost of the annual cloud seeding program is shared among the County and the water districts which receive a benefit from it. The cost is well justified when compared to its benefits. The average cost of water produced by cloud seeding is less than $100 per acre foot. By comparison, the cost of State Water on the South Coast is roughly $1200 per acre foot. Desalinated seawater costs approximately $1950 per acre foot. Groundwater and water from Lake Cachuma average between $75 and $250 per acre foot. Cloud seeding is one of the least expensive sources of water available to us. (Source: City of Santa Barbara)

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

NA

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.

NA

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

NA

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 effectiveness of cloud seeding has been evaluated to demonstrate its benefits. Recent statistical studies suggest that seeding results in a maximum increase in precipitation of about 20% over one rain season. This translates to thousands of acre feet of additional water captured for storage in local reservoirs. (Source: http://www.countyofsb.org/pwd/pwwater.aspx?id=3740)

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

NA

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
NA	NA

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
NA	NA

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

Locations	Anticipate Benefits or Impacts
NA	NA

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

Locations	Anticipated Benefits or Impacts
NA	Environmental impact studies related to silver iodide usage in cloud seeding

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

NA

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

NA