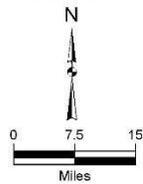
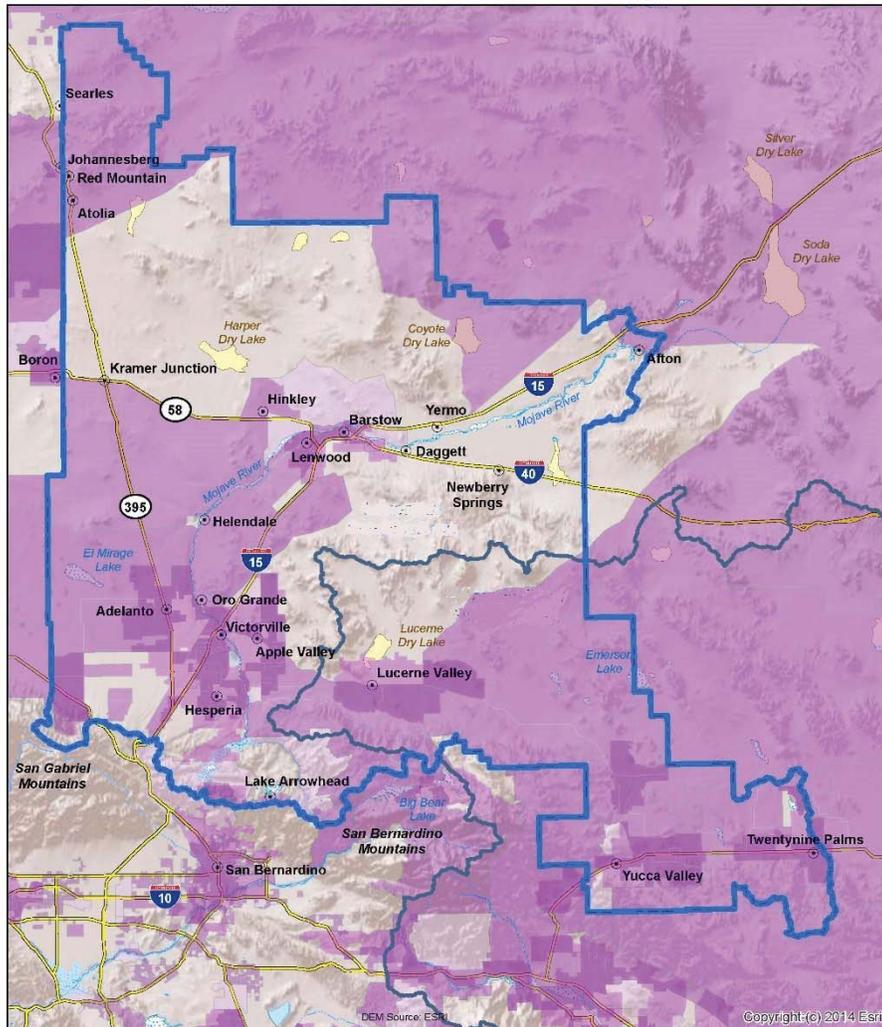


## Areas Affected by Project:

Areas evaluated as part of the water marketing strategy are anticipated to be within the boundary of the Mojave Water Agency, shown in the map below. Potential partner agencies outside the service area are not depicted.



List of Congressional Districts of:

Applicant and Project: CA-8, CA-31

**BUDGET INFORMATION - Non-Construction Programs**

**SECTION A - BUDGET SUMMARY**

| Grant Program Function or Activity (a)                     | Catalog of Federal Domestic Assistance Number (b) | Estimated Unobligated Funds |                 | New or Revised Budget |                 |               |
|--|---|-----------------------------|-----------------|-----------------------|-----------------|---------------|
|  |   | Federal (c)                 | Non-Federal (d) | Federal (e)           | Non-Federal (f) | Total (g)     |
| 1. WaterSMART, Water Marketing Strategy Grants for FY 2019 | 15.507  | \$                          | \$              | \$ 200,000.00         | \$ 400,000.00   | \$ 600,000.00 |
| 2.   |   |                             |                 |                       |                 |               |
| 3.   |   |                             |                 |                       |                 |               |
| 4.   |   |                             |                 |                       |                 |               |
| <b>5. Totals</b>   |   | \$                          | \$              | \$ 200,000.00         | \$ 400,000.00   | \$ 600,000.00 |

**SECTION B - BUDGET CATEGORIES**

| 6. Object Class Categories                    | GRANT PROGRAM, FUNCTION OR ACTIVITY                     |     |     |     | Total<br>(5)  |
|---|---|-----|-----|-----|---------------|
|   | (1)   | (2) | (3) | (4) |               |
|   | WaterSMART, Water Marketing Strategy Grants for FY 2019 |     |     |     |               |
| <b>a. Personnel</b>                           | \$  | \$  | \$  | \$  | \$            |
| <b>b. Fringe Benefits</b>                     |   |     |     |     |               |
| <b>c. Travel</b>                              |   |     |     |     |               |
| <b>d. Equipment</b>                           |   |     |     |     |               |
| <b>e. Supplies</b>                            |   |     |     |     |               |
| <b>f. Contractual</b>                         | 600,000.00  |     |     |     | 600,000.00    |
| <b>g. Construction</b>                        |   |     |     |     |               |
| <b>h. Other</b>                               |   |     |     |     |               |
| <b>i. Total Direct Charges (sum of 6a-6h)</b> | 600,000.00  |     |     |     | \$ 600,000.00 |
| <b>j. Indirect Charges</b>                    |   |     |     |     | \$            |
| <b>k. TOTALS (sum of 6i and 6j)</b>           | \$ 600,000.00   | \$  | \$  | \$  | \$ 600,000.00 |
| <b>7. Program Income</b>                      | \$  | \$  | \$  | \$  | \$            |

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**SECTION C - NON-FEDERAL RESOURCES**

| (a) Grant Program  | (b) Applicant | (c) State | (d) Other Sources | (e) TOTALS    |
|--|---------------|-----------|-------------------|---------------|
| 8. WaterSMART, Water Marketing Strategy Grants for FY 2019 | \$ 400,000.00 | 0.00      | 0.00              | \$ 400,000.00 |
| 9.   |               |           |                   |               |
| 10.  |               |           |                   |               |
| 11.  |               |           |                   |               |
| 12. TOTAL (sum of lines 8-11)                              | \$ 400,000.00 | 0.00      | 0.00              | \$ 400,000.00 |

**SECTION D - FORECASTED CASH NEEDS**

|                                    | Total for 1st Year | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|------------------------------------|--------------------|-------------|-------------|-------------|-------------|
| 13. Federal                        | \$                 | \$          | \$          | \$          | \$          |
| 14. Non-Federal                    | \$                 | \$          | \$          | \$          | \$          |
| 15. TOTAL (sum of lines 13 and 14) | \$                 | \$          | \$          | \$          | \$          |

**SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT**

| (a) Grant Program   | FUTURE FUNDING PERIODS (YEARS) |               |           |            |
|---|--------------------------------|---------------|-----------|------------|
|   | (b) First                      | (c) Second    | (d) Third | (e) Fourth |
| 16. WaterSMART, Water Marketing Strategy Grants for FY 2019 | \$ 100,000.00                  | \$ 100,000.00 | \$        | \$         |
| 17.   |                                |               |           |            |
| 18.   |                                |               |           |            |
| 19.   |                                |               |           |            |
| 20. TOTAL (sum of lines 16 - 19)                            | \$ 100,000.00                  | \$ 100,000.00 | \$        | \$         |

**SECTION F - OTHER BUDGET INFORMATION**

|                       |        |
|-----------------------|--------|
| 21. Direct Charges:   | 600000 |
| 22. Indirect Charges: | 0      |
| 23. Remarks:          |        |

## ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

**PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.**

**NOTE:** Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee- 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.
19. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

|  |   |
|--|---|
| <p>SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL</p> <p>Lauren Everett</p> | <p>TITLE</p> <p>General Manager</p>     |
| <p>APPLICANT ORGANIZATION</p> <p>Mojave Water Agency</p>                 | <p>DATE SUBMITTED</p> <p>07/31/2019</p> |

Standard Form 424B (Rev. 7-97) Back



# Mojave Water Agency Long-Term Water Management/Water Banking Program

July 31, 2019

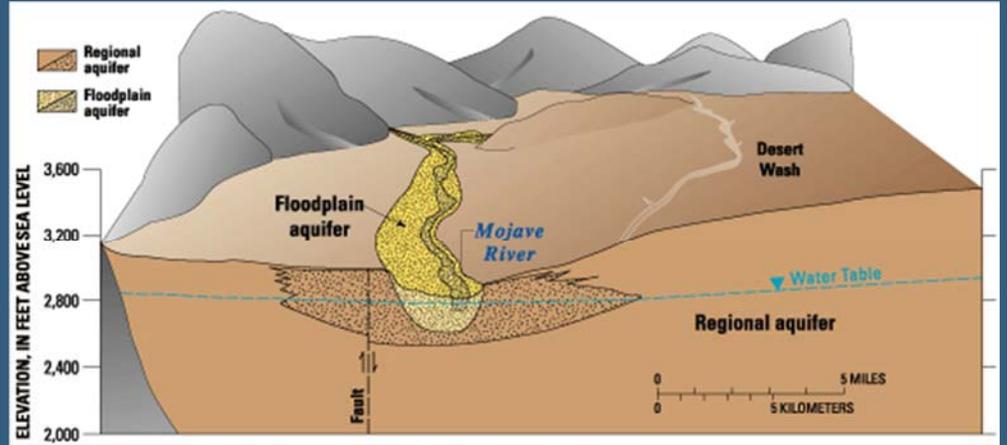


Figure 2. Geologic cross-section of the Mojave River aquifer system. Modified from the USGS (1998).

## WaterSMART Water Marketing Strategy Grant 2019

Bureau of Reclamation FOA No. BOR-DO-19-F006

Lance Eckhart, PG, CHG.

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Mojave Water Agency

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## Acronyms

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|                   |  |
|-------------------|--|
| AFY               | Acre-feet per year                                 |
| CEQA              | California Environmental Quality Act               |
| DWR               | California Department of Water Resources           |
| EIR               | Environmental Impact Report                        |
| IRWMP             | Integrated Regional Water Management Plan          |
| MWA               | Mojave Water Agency                                |
| MWD, Metropolitan | Metropolitan Water District of Southern California |
| NEPA              | National Environmental Policy Act                  |
| PEIR              | Programmatic Environmental Impact Report           |
| SWP               | State Water Project                                |

# Section 1: Technical Proposal and Evaluation Criteria

---

## 1.1 Executive Summary

|                                       |  |
|---------------------------------------|--|
| <b>Date:</b>                          | July 31, 2019  |
| <b>Applicant:</b>                     | Mojave Water Agency  |
| <b>Applicant City, County, State:</b> | Apple Valley, San Bernardino County, CA                              |
| <b>Project Name:</b>                  | Mojave Water Agency Long-Term Water Management/Water Banking Program |

Since 1997, Mojave Water Agency (MWA) has been involved in a series of banking programs with other California State Water Project (SWP) Contractors, although at a limited scale. In 2004, MWA partnered with the Metropolitan Water District of Southern California (Metropolitan, MWD) to develop an in-depth technical study (Bookman-Edmonston, SAIC, 2005) and accompanying Environmental Impact Report (EIR) (MWA, 2006) on the feasibility of a large-scale banking program between MWD and MWA within the Mojave Region. The study determined the large-scale banking program between agencies was technically feasible, providing water supply reliability benefits to both entities. However, the 2008 recession followed by the 2011-2017 drought in California stalled plans on implementing the program.

MWA has continue to progress in the technical understanding of potential baking sites within the Region, has purchased land and has constructed some banking facilities (e.g. Bureau assisted Upper Mojave River Groundwater Regional Recharge and Recovery Project [R3] and Oro Grande Groundwater Recharge Basin [Amethyst Basin] projects ). Now that California is out of the recession and the drought has in large part ended, MWA would like to restart the collaborative process with other SWP Contractors, including Metropolitan, to update and implement a long-term strategy to store SWP water within the Mojave region as well as complete associated, and necessary environmental documentation. Identified benefits include enhanced local water security, being able to leverage available storage, develop a consistent source of outside funding, better manage imported water that is brought into the region, and assist with the State's water reliability among other benefits.

Funds requested from this grant, in the amount of \$200,000 will help with updating the significant work done in the early 2000s to develop a feasibility analysis evaluating large-scale banking alternatives and associated necessary capital improvements, financial benefits/implications, basin effects, and environmental/permitting requirements. Further, the study will focus specific attention on the financial constraints, policy issues, and climate change impacts that helped to stall the earlier efforts in order to ensure the program is successfully implemented. The Project will be completed within 2 years of award of the grant.

MWA is working with the Lower Colorado Region Reclamation Office (contact is Allison Odell, 702-293-8331) on a study to evaluate the potential modification to Mojave Dam for water conservation storage, which could be included as part of the proposed water banking and exchange program.

See Appendix A for all regional and project-specific figures and maps.

## 1.2 Background Data

As described in the following section, the MWA service area has many aspects that will contribute to a successful water banking program. Including:

- Location in an area with sparse development that overlies large and managed groundwater aquifers with an estimated storage capacity of 2 million AF.
- The legal and administrative mechanisms (adjudications and watermasters) to track groundwater recharge and pumping are already in place
- Connection to the State Water Project through which large volumes of water can be transported to and from the Mojave area
- A local need for additional groundwater banking that creates the opportunity to share facilities with regional partners
- A physical location along the East Branch of the California State Aqueduct that could store and then provide a significant amount of water for the region and downstream partners (e.g., heavily populated Southern California) during times when the SWP may be impacted by drought or earthquake or flow restrictions in the California Delta.

MWA was established in 1959 by an act of the California Legislature and was activated by a vote of the residents in 1960 to manage declining groundwater levels in the Mojave Basin Area, the Lucerne Valley and the El Mirage Basin. The Morongo Basin and Johnson Valley areas were annexed in 1965. MWA covers over 4,900 square miles, spread over a hydrologically diverse region facing a unique set of water management issues.

MWA is one of 29 contractors to the California Department of Water Resources (DWR) SWP and has a contract for up to 85,800 acre-feet per year (AFY) from the SWP (Table A – the Agency’s contractual share of available SWP water in a given year). Within the Mojave service area water resources management must balance limited local water supplies with declining SWP import availability and two adjudications that proscribe actions to avoid and recover from groundwater overdraft. The region has historically imported a negligible amount of SWP water and has been dependent upon its groundwater supply, the region has experienced cumulative groundwater overdraft since the early 1950s. The region is at a point where local financial mechanisms are in place to purchase available Table A SWP water to implementation adjudications and other water management activities. The region is now becoming reliant on imported water to supplement groundwater supply and more full use of the Agency’s Table A is expected in the upcoming years as the population grows.

Groundwater has been the primary source of water for the MWA. Consequently, MWA programs have focused on ways to increase the availability and reliability of the local water supply through the continued review and improvement of its management of groundwater resources. MWA recognizes that years of cumulative overdraft have increased the available groundwater storage. This presents an opportunity for enhanced conjunctive management of groundwater and surface water resources, both local and imported. Furthermore, the regions geology (available storage) and sparsely populated rural setting means the region can store large volumes of imported water in an area with little to no anthropogenic contamination issues.

Since the late 1990’s MWA has been marketing water with other SWP contractors through various transfer and exchange mechanisms. In 2005, in recognition of a groundwater storage opportunity within Metropolitan, MWA and Metropolitan developed a Potential Long-Term Water Management Program (Bookman-Edmonston, SAIC, 2005) that reviewed the potential for

entering into a long-term water management program. Metropolitan needed local water storage and MWA had that storage available within the groundwater basin. The location of MWA near the terminus of the East Branch of the SWP provided an opportunity to not only serve Metropolitan with water near the point of its demand but also to reduce peaks on the East Branch. The “predelivery” of water for storage in the Mojave Basin increases water in storage, locally decreases pumping lifts, allows for additional water distribution throughout MWA and provides drought reliability for other SWP contractors via conjunctive use of the Mojave Basin.

In 2006, MWA prepared a Project EIR to more precisely: (a) define the scope and operation of various banking alternatives, including additional features that may be required for banking, exchange, and long-term MWA use; and (b) identify and quantify the potential impacts of specific alternatives. The 2006 EIR evaluated the environmental impacts of two basic operational scenarios for groundwater recharge and extraction projects: 1) a traditional water banking program which would involve Metropolitan delivery of supplies to MWA for recharge, with MWA returning 90% of the volume delivered during dry years. Like a bank saving account, traditional water banking requires deposits before there are withdrawals; and 2) combined water banking and exchange programs, which add an on-going flexible exchange element.

The 2008 recession in California, coupled with the 2011-2017 severe drought, required both agencies to re-focus water management efforts on reducing demands through conservation and diversifying their portfolios with drought proof supplies, temporarily ending the forward movement of the long-term water banking management strategy within the Mojave region.

Today California is out of the recession, the drought has in large part ended, and MWA would like to restart the collaborative process with interested SWP Contractors and other interested agencies to update and implement its long-term water banking strategy, and the related environmental documentation. The current grant opportunity will allow MWA to study the potential benefits and challenges in partnering with outside agencies and provides the opportunity to build a relationship of long-term planning and reliability with these agencies. MWA also would study the local viability of a water marketing program that will include any hydrologic, economic, or legal challenges. Finally, this grant would help MWA develop a water marketing strategy that can be used to further the ability of MWA to bank and transfer water, while providing storage space for other water managers within the state to use to increase the reliability of their own water supplies.

### **1.2.1 Proposed Project Location**

MWA is located in the California High Desert Area of San Bernardino County along the northeastern flanks of the San Bernardino and San Gabriel mountains, approximately 90 miles northeast of downtown Los Angeles. The Mojave River is the main surface water feature within the MWA service area. Municipalities within MWA’s boundaries include Adelanto, Apple Valley, Barstow, Hesperia, Victorville and Yucca Valley. Interstate 15 is the central east-west artery running through MWA while US 395 is the main north-south highway. See Appendix A for figure depicting the MWA regional location and service areas, groundwater basins, adjudication areas, and infrastructure.

### **1.2.2 Water Supply, Demand, and Delivery System Data**

**Water Supply** - MWA has four existing sources of water supply: SWP imports, natural local surface water flows, return flow from pumped groundwater and wastewater imports from outside the MWA service area. All these sources are used to recharge groundwater and essentially all

water used within the MWA service area is pumped from local groundwater basins with each basin having distinct characteristics. Groundwater adjudication proceedings were initiated to control the impacts of rapid population growth on the local basins and resulted in the Mojave Basin Area Judgment and the Warren Valley Basin Judgment. MWA serves as the Watermaster for the Mojave Basin Area Judgment and is the region’s contractor for SWP water delivered from the Bay-Delta to MWA's service area. MWA has an annual contract for SWP Table A water for up to 85,800 AFY through 2019 with this amount scheduled to increase to 89,800 AFY in 2020, a quantity that includes 25,000 AF of annual entitlement purchased from Berrenda-Mesa Water District in 1998 and 14,000 AFY purchased from Dudley Ridge Water District in 2009. Water imported from the California Bay-Delta is delivered to the MWA's groundwater recharge facilities to replenish groundwater pumped by individuals and by retail water suppliers, all within the confines of the adjudication.

***As a result of the adjudications, the necessary groundwater management controls are in place to adequately oversee conjunctive use of the underlying groundwater basins.***

Delivery of water from the SWP is essential for balancing groundwater extractions. Concerns over the SWP's future ability to supply water to MWA and other contractors have brought into clear relief the need to augment the drought resiliency of MWA facilities. As well as the agreements noted above, in 2014 MWA strengthened the reliability of its SWP supplies by entering into the Yuba Accord Agreement which allows for the purchase of water from the Yuba County Water Agency. Under this agreement, approximately 600 AF of water is available to MWA in critically dry years.

***The importance of SWP water is growing in the Mojave region and MWA is interested in banking water for use in its service area and these same banking facilities and mechanisms could benefit a broader and regional groundwater banking program.***

A portion of the water pumped from the ground is returned to the aquifer and becomes part of the available water supply. Return flow, on a regional basis, averages approximately 35 percent of the groundwater production, although this amount varies significantly by subarea. Lastly, treated wastewater effluent is imported to the MWA service area from three wastewater entities serving communities in the San Bernardino Mountains outside MWA's service area.

Table 1 provides the long-term average water supply conditions and do not take into account acute drought periods. Additionally, Table 1 does not reflect basin management practices such as locally over drafted areas in the aquifer nor areas of surplus due to groundwater banking.

**TABLE 1  
SUMMARY OF CURRENT AND PLANNED WATER SUPPLIES (AFY)**

| <b>Water Supply Source</b>         | <b>2015</b> | <b>2020</b> | <b>2025</b> | <b>2030</b> | <b>2035</b> | <b>2040</b> |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Imported Supplies</b>           |             |             |             |             |             |             |
| SWP <sup>(a)(b)</sup>              | 53,196      | 55,676      | 55,676      | 55,676      | 55,676      | 55,676      |
| Yuba Accord Water                  | 0           | 600         | 600         | 600         | 600         | 600         |
| <b>Local Supplies</b>              |             |             |             |             |             |             |
| Net Natural Supply                 | 57,349      | 57,349      | 57,349      | 57,349      | 57,349      | 57,349      |
| Return Flow                        | 47,825      | 52,356      | 54,471      | 57,057      | 59,727      | 62,157      |
| Wastewater Import                  | 2,773       | 2,800       | 2,800       | 2,800       | 2,800       | 2,800       |
| Groundwater Banking <sup>(c)</sup> | 0           | 0           | 0           | 0           | 0           | 0           |

|                         |                |                |                |                |                |                |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>Total Supplies</b>   | <b>161,143</b> | <b>168,781</b> | <b>170,896</b> | <b>173,482</b> | <b>176,152</b> | <b>178,582</b> |
| <b>Projected Demand</b> | <b>138,009</b> | <b>148,366</b> | <b>153,186</b> | <b>159,079</b> | <b>165,164</b> | <b>170,700</b> |

- a) Assumes 62% of Table A amount based on the California DWR State Water Project Delivery Capability Report 2015.
- b) *Historically underutilized/unpurchased due to lack of local funding and affordability.*
- c) Groundwater banking (stored groundwater) would be used during dry year conditions.

**Water Rights** — MWA's water supply imported from the California Bay-Delta rests on a contractual entitlement of up to 85,800 AFY from 2015 to 2019; and 89,800 AFY from 2020 to 2035 and. In the past, since 2005, MWA purchased less than its available yearly allocation, on average 22,400 AFY (2015 DWR Delivery Capability Report, Table 7, Historical SWP Deliveries, Calendar Years 2005-2014). This water is brought into MWA through various conveyance facilities and then distributed for groundwater recharge. The Mojave Basin Area is also adjudicated and MWA is the Watermaster. See Appendix A for a figure of the areas included in the adjudication.

**Current Water Use and Users Served** — Water imported and recharged by MWA is pumped by individuals and retail water purveyors within the MWA service area. There are over 30 retail purveyors that provide water service to most residents within the MWA service area which have approximately 145,000 connections in the service area.

**Current and Projected Water Demand** — Data provided by MWA show total production in the service area during 2015 to have been 138,009 AF, a reduction from the rate of production during 2005 of 166,280 AF due to conservation efforts and implementation of the adjudication (Kennedy/Jenks, 2016).

Projected water use for the entire MWA service area is calculated by multiplying the per capita water use (estimated from 2010 to 2015 purveyor data) by population projections from the MWA Population Forecast conducted by Beacon Economics in December 2015 for the regional Urban Water Management Plan. Projected water demand can be found in Table 1 above.

It is important to note that while MWA has a large Table A allocation, it currently uses only a small portion to meet demands. Table A is the amount of water that MWA has the right to receive through the SWP. However, DWR determines the ‘reliability’ of the Table A amounts every year, and in years that may be drier, the available amount of Table A “wet water” is reduced. Thus, an agency may only receive a portion of its Table A when those “wet” supplies are less available. However, MWA’s Table A allocation is still a contractual ‘commodity’, in that it can be used to assist other water agencies meet their reliability requirements via exchanges and transfers. For example, MWA can exchange their Table A, not as ‘wet water’ but contractually as what is referred to sometimes as ‘paper water’. As the adjudications becomes fully implemented, MWA’s demands will increase over time and the region will have the financial mechanisms in place to purchase more of its Table A allocation. In the meantime, MWA has storage for wet water and available Table A, which will ultimately form a resilient water portfolio together that will not only benefit the region but can benefit multiple SWP contractor partners across the state.

**Potential Shortfalls** — MWA evaluates potential water supply shortfalls within the context of the Integrated Regional Water Management Act, initiated in 2002 by California State Senate Bill 1672. Drought probability, severity and response are analyzed in greater detail in MWA’s 2015 Urban Water Management Plan. Demand for imported SWP water, primarily used for mitigating

groundwater overdraft averaged approximately 22,400 AFY per year over the past decade and is projected to increase to 55,676 AFY by 2040. The 2015 SWP Reliability Report from the State of California predicts that Sierra Nevada snowpack will diminish by 25 to 40 percent from the historical average by mid-century. Water suppliers and water users in the region are deeply concerned over this forecast, which underscores the importance of drought resiliency projects for preserving the economic health of the region.

**Water Delivery System** —MWA's existing and planned water conveyance, recharge and recovery facilities include pipelines, pumping plants, recharge areas and wells. See Appendix A for a figure of MWA’s delivery system. Table 2 below summarizes the length of pipelines and number and extent of other water management facilities owned and operated by MWA.

**TABLE 2  
WATER CONVEYANCE AND DELIVERY SYSTEM**

| System Used           | Quantity     |
|-----------------------|--------------|
| Unlined Canal         | None         |
| Lined Canal           | None         |
| Pipelines             | 168 miles    |
| Pumping Plants        | 3            |
| Recharge Capacity     | 2 million AF |
| Wells                 | 6            |
| Farm Turnouts         | None         |
| Spillway Basins       | None         |
| Drains                | None         |
| Direct River Turnouts | 7            |

MWA also owns and operated the “Upper Mojave River Groundwater Regional Recharge and Recovery” (R3) Project, which Reclamation helped pay a significant portion of. The project delivers SWP water from the California Aqueduct in Hesperia to recharge sites in the floodplain aquifer along the Mojave River in Hesperia and southern Apple Valley. R3 Project wells on either side of the Mojave River located immediately downstream of the recharge area recover and deliver the potable stored water through pipelines directly to retail water agencies. Utilizing R3 for basin management offsets their need to continue excessive pumping within the declining regional aquifer system. This allows the MWA to manage recharge and extractions and takes advantage of underutilized infrastructure that could easily be included and utilized for a pump-back scenario, in an area that is highly monitored with a high degree of control. It is noted that the future phases of the Amethyst Basin project, also funded in part by Reclamation, could also be utilized in groundwater recharge banking program.

### **1.2.3 Past Working Relationship with Reclamation**

MWA has enjoyed an effective partnership with Reclamation through implementation of several programs. Recent relevant projects implemented by MWA, thanks to Reclamation support are noted in Table 3. MWA is currently working with the Lower Colorado Region Reclamation Office (contact is Allison Odell, 702-293-8331) on a study to evaluate the potential modification to Mojave Dam for water conservation storage, which could be included as part of the proposed water banking and exchange program.

**TABLE 3  
PAST WORKING RELATIONSHIP WITH RECLAMATION**

| <b>Grant</b>   | <b>Project</b>   | <b>Amount Awarded</b>                          | <b>Date Awarded</b> |
|--|--|--|---------------------|
| USBR Water Supply Management Studies MOU No. RIOMU350020 | Phase I: Evapotranspiration Water Use Analysis of Salt Cedar and other Vegetation in the Mojave River Flood Plain, 2007 and 2012 | NA   | August 2011         |
| USBR Challenge Grant No. R09AP35R21                      | Oro Grande Wash Groundwater Recharge (Amethyst Basin)  | \$3,456,660                                    | October 2012        |
| USBR Title XVI Grant No. R10AC35R15                      | Regional Recharge and Recovery (R3)  | \$10,997,056                                   | May 2013            |
| USBR Water Management Studies Agreement No. 08FC350246;  | Upper Mojave River Groundwater Regional Recharge and Recovery Feasibility Study  | \$110,000                                      | September 2009      |
| USBR Water Supply Management Studies No. RIOMU350020     | Phase II: Mojave River Watershed Climate Change Assessment to support the Mojave IRWM  | NA   | September 2013      |
| USBR Technical Service Center Irrigation Analysis        | Mojave Water Agency Baja Subarea Irrigation Efficiency Analysis  | \$100,000                                      | November 2014       |
| USBR BSA Crop Conversion Economic Analysis               | Economic Analysis of Three Crop Conversion Scenarios in Mojave Water Agency's Baja Subarea                                       | \$100,000                                      | January 2015        |
| USBR WaterSMART Grant No. R15AS00002                     | CII Turf Replacement Program   | \$300,000                                      | July 2015           |
| USBR WaterSMART Grant No. R16-FOA-DO-004                 | CII Turf Replacement Program   | \$300,000                                      | October 2017        |
| USBR WaterSMART Grant No. BOR-DO-17-F012                 | CII Turf Replacement Program   | \$300,000                                      | December 2019       |
| USBR WaterSMART Grant No. BOR-DO-18-F008                 | City of Adelanto Connection to R3 Pipeline   | \$300,000                                      | February 2018       |
| USBR Water Supply Management Study R16-MU-35-0041        | Mojave River Alto Transition Zone Analysis of Streamflow Conveyance in the Context of Environmental Compliance                   | Not available at time of application submittal | December 2017       |

### **1.3 Project Description and Deliverables**

MWA has conducted extensive initial investigations and plans to move forward with building a robust marketing strategy within a 2-year timeframe. This proposal is for Funding Group I.

#### **Task 1. Project Management and Grant Reporting**

##### Subtask 1.1 Project Management

This task entails coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration (preparation of invoices and maintenance of financial records). All costs for this task will be borne within MWA's normal operating budget. Therefore, no federal funds are being requested for this activity, and the staff time devoted to this work will not be included in MWA's cost share.

***Deliverables: (1) review of USBR Grant Agreement, (2) project kick-off meeting with USBR personnel; (3) preparation of invoices and maintenance of financial records, and (4) preparation of grant reimbursement requests.***

##### Subtask 1.2 Grant Reporting

This task involves reporting on the financial status and project progress on a semi-annual basis. Significant development reports and a final project report will be prepared. In addition, the project will comply with any other reporting requirements specified in the Grant Agreement. All costs for this task will be borne within MWA's normal operating budget. Therefore, no federal funds are being requested for this activity, and the staff time devoted to this work will not be included in MWA's cost share.

***Deliverables: Submission of semi-annual and final reports as specified in the Grant Agreement.***

#### **Task 2. Stakeholder Outreach and Partnership Building**

##### Subtask 2.1 Program Outreach and Partnership Building

MWA will use its existing and long-standing Integrated Regional Water Management Plan (IRWMP) and Technical Advisory Committee (TAC) processes to engage stakeholder interest and engagement. The TAC member list is provided in Appendix C. These existing stakeholder processes have worked well to engage the region on new or emerging water management opportunities such as the R3 program. The group supports groundwater recharge and banking programs submitted to the IRWMP, and the marketing strategy will help to further develop many of the existing banking program ideas. MWA also plans to outreach to other SWP Contractors, including Metropolitan, to solicit their input and interest on potentially partnering on a new water bank.

##### Subtask 2.2 Program Workshops

MWA will convene program workshops with the TAC and the Alto/Oeste Subarea Advisory Committee (a group of major stakeholders in the upper Mojave Basin) to solicit information and input. See Appendix C for a list of the Committee members. MWA will also hold focused public meetings as necessary.

### **Task 3. Scoping and Planning Activities**

#### Subtask 3.1 Updated Feasibility Study

MWA will utilize the 2005 Long-Term Water Management Program Between MWA and Metropolitan (Bookman Edmonson, SAIC 2006) as a foundation for cultivating a current water banking program and marketing strategy, incorporating the numerous technical studies the Agency has developed to date (see Appendix B for a list of MWA’s technical documents) into a feasibility study.

The feasibility study will determine if there are potential feasible projects in the basins, or specific portions of basins, within the MWA service area for groundwater banking programs that would provide an additional revenue stream for MWA while improving overall water supply reliability. The study will also identify the benefits to potential partners in utilizing the available storage capacity in the MWA region to meet their own reliability needs. Feasibility should be evaluated from an operational, hydrogeologic, and economic perspective. Further, the study will focus specific attention on the financial constraints, policy issues, and climate change impacts that helped to stall the earlier efforts in order to ensure the program is successfully implemented.

#### Subtask 3.2 Update the 2006 Water Supply Reliability and Groundwater Replenishment EIR

The 2006 project EIR for MWA’s Water Supply Reliability and Groundwater Replenishment Program (MWA, 2006) will be updated to evaluate the potential environmental impacts associated with the development and implementation of a long-term groundwater banking program with potential banking partners.

### **Task 4. Water Marketing Strategy Report**

#### Subtask 4.1 Draft and Final Water Marketing Strategy Report

MWA will evaluate the information developed in Tasks 2 and 3 and prepare an updated strategy document that will describe the proposed approach to establish a mutually beneficial water marketing program. In accordance with the Funding Opportunity Announcement, the report will include, at a minimum, the following strategy requirements:

- Implementation Plan and Legal Framework
- Monitoring
- Stakeholder Support and Input

***Deliverables: Draft and Final Water Marketing Strategy Report.***

### **1.4 Implementation Schedule**

Below is the Project Schedule by task. The Award Date is assumed to be August 2019. The Agency has vast experience with implementing projects similar to the one proposed. The Project will be completed within 2 years of project award, however full implementation is anticipated to occur sooner. See Table 4 for a schedule of project activities.

**TABLE 4. SCHEDULE OF PROJECT ACTIVITIES**

| <b>Task</b>                                      | <b>Timeframe</b>            |
|--|-----------------------------|
| 1. Project Management and Grant Reporting        | August 2019-October 2021    |
| 2. Stakeholder Outreach and Partnership Building | Ongoing                     |
| 3. Scoping and Planning Activities               | January 2020-January 2021   |
| 4. Water Marketing Strategy Report               | January 2021-September 2021 |

## 1.5 Evaluation Criteria

### 1.5.1 Evaluation Criterion A: Water Marketing Benefits

#### *Will the water marketing strategy project address a specific water supply shortfall?*

Essentially all of the water supplies within MWA are pumped from the local groundwater basins and historically groundwater levels generally had been declining for 50 years or more in many parts of the region. Adjudication proceedings were initiated due to concerns that rapid population growth would lead to further overdraft. The resulting Mojave Basin Area Judgment requires that surface water be imported to help balance the basins. Shortfalls would affect residential, industrial, institutional, landscape, agricultural, and other purposes. However, the reliability of the SWP is variable, with Table A allocations going as low as 5% in 2014. In wet years, MWA cannot take advantage of capturing local stormwater flows as this is prevented pursuant to the adjudication. Therefore, there is a need by MWA to store SWP water when available and utilize the available storage capacity to take better advantage of wet year supplies. Potential partners need such storage as surface water reservoirs across the state are limited, and dry year reserves are increasingly more important as the climate changes.

As discussed in Mojave's IRWMP, the Region's average SWP supplies are substantially higher than its current SWP demands, and a majority of the Region's SWP deliveries are used to recharge groundwater rather than for direct deliveries, allowing the Region to rely on previously stored groundwater during droughts or outages on the SWP. MWA, State Water Contractors, and California, as a whole, faces the prospect of significant water management challenges due to a variety of issues including population growth, regulatory restrictions and climate change, all of which can create severe supply shortfalls. These changes would impact MWA's water supply by changing how much water is available, when it is available, and how it is used due to changes in priorities.

The marketing strategy proposed herein is intended to provide MWA with new facilities and expanded operational opportunities to reduce the rate of overdraft and achieve a balance of water supply and consumptive use. The strategy is needed because:

- Both funding and lack of off-river recharge facilities limit the potential to (a) import supplies from the SWP and (b) recharge SWP water to replenish overdrafted groundwater. As a result, MWA has not historically imported its entire available Table A supply.
- Existing recharge in the MWA service area is focused on recharge of the Mojave River aquifer and the Warren Valley, which is constrained by (a) flood flows in the Mojave River during the wet years when supplemental SWP supplies are most readily available and (b) by lack of adequate recharge and extraction facilities.
- Even when supplemental SWP supplies are available, MWA may not be able to import them and utilize them because of these constraints.
- Riparian enhancement goals in areas where declining groundwater levels have affected riparian forest along the river need to be addressed.

*What is the nature and severity of the shortfall, and which sectors are affected? How and to what extent will the water market/water marketing strategy activities, once implemented, address the shortfall?*

Water uses in the MWA service area include residential, commercial, industrial, institutional, landscape and agricultural uses. In the event of actual water supply shortfalls, all water use sectors would be impacted, although particularly residential users which make up the largest portion within MWA's service area. The same is generally true for SWP Contractors, including Metropolitan.

Water supplies may be interrupted or reduced significantly in a number of ways, such as a drought that limits supplies, an earthquake that damages water delivery or storage facilities, a regional power outage, storm flood damage, environmental restrictions, or a toxic spill that affects water quality. Cities and water agencies within MWA rely on large groundwater basins to meet potable water supply needs. Over the last decade, MWA invested in water purchases from the SWP to pre-store water to have available during times of drought. There is currently over 100,000 AF stored where pumping exceeds the natural supply. During previous drought periods, municipal water suppliers continued to draft from these basins to meet customer needs without the need to impose restrictions on water use, but at rates exceeding natural replenishment in most areas. Large groundwater basins in the region serve as reservoirs and buffer the impacts of seasonal and year-to-year variations in precipitation and imported and natural surface water deliveries. This has been demonstrated during the recent drought, as groundwater supply was available to meet demands; in addition, the retailers have complied with the Governor's emergency order requiring mandatory conservation actions statewide. The area aquifers are either currently in balance or expected to be in balance in the near future due to the combination of water imports, State-mandated conservation requirements, and/or court ordered production "ramp-down." During multiple-year droughts or SWP outages, adequate groundwater supplies will be available to meet demands through the use of conjunctively banked pre-stored imported water.

*Will the water market/water marketing strategy activities benefit multiple sectors and/or types of water uses?*

A banking program within MWA's Mojave Basin will benefit multiple sectors. Currently, all imported SWP water for potable water use is first recharged into the various groundwater basins from which all potable water is then extracted by groundwater wells. Individual purveyors in the MWA service area pump the recharged water and service it to mainly municipal, industrial and irrigation uses. No imported SWP water is used directly for potable water deliveries. The recharged water can then be transferred and exchanged as needed by pumpers within the basin.

*Explain how and to what extent the proposed water market/water marketing strategy activities will improve water supply reliability in general in the area upon implementation of the strategy:*

- *Reducing the likelihood of conflicts over water and increase resiliency to drought;*

A water banking and exchange program will allow for sharing of water resources, particularly in times of need, such as a drought. Short-term transfers of water can lessen the economic impact of shortages during droughts by shifting water to activities and places where the lack of water will be more costly or result in environmental impacts. Through strategic alliances, MWA and its prospective partner agencies can take advantage of greater flexibility in managing its conjunctive use operations; stabilize groundwater levels and benefit from hydraulic efficiency; and provide mechanisms to maximize capacity and lower costs. The Mojave groundwater banking program can provide the storage that is so desperately needed around the state so that wet-year supplies are captured for reuse and not lost to the ocean. Further, this will likely reduce conflicts over

water and increase resiliency to drought because water is available to be sold/transferred to where it is needed most.

Further, having a groundwater banking program in southern California, particularly south of the Tehachapi Mountains, can provide not only dry-year storage to increase reliability, but also can provide emergency storage should a catastrophe like an earthquake occur. The California Aqueduct traverses the Tehachapi Mountains north of MWA's service area. Due to the numerous fault lines crossing the mountain range (including the San Andreas and White Wolf faults), water users located south of the mountains are at greater risk of supply disruption due to earthquake than users located north of the mountains. For this and other reasons, the terminal reservoirs located on both the West and East Branches of the California Aqueduct include emergency storage. MWA receives its SWP from the East Branch.

If an earthquake or other disruption were to occur, pipelines, canals, or pump stations conveying water across the mountains might become inoperable, making SWP deliveries to MWA and the other downstream contractors dependent on the supplies then available in the terminal reservoirs. Although pipelines that traverse fault lines are reinforced, damage can still occur depending on the magnitude of the earthquake. Therefore, as identified in previous reliability plan updates, water banking opportunities south of the Tehachapi Mountains have a high value to MWA and other SWP Contractors south of the Tehachapi Mountains.

Should a supply disruption, like an earthquake occur, DWR and the SWP contractors would need to coordinate operations to minimize supply disruptions. Depending on the particular outage scenario or outage location, some or all of the SWP contractors south of the Delta might be affected. But even among those contractors, potential impacts would differ given each contractor's specific mix of other supplies and available storage. During past SWP outages, the SWP contractors have worked cooperatively to minimize supply impacts among all contractors.

Past examples of such cooperation have included certain SWP contractors agreeing to rely more heavily on alternate supplies, allowing more of the outage-limited SWP supply to be delivered to other contractors, and exchanges among SWP contractors, allowing delivery of one contractor's SWP or other water to another contractor, with that water being returned after the outage was over. In this way, the water bank becomes not only a tool to allow agencies to increase reliability for water supply, but also can function to address emergency scenarios (such as an earthquake) where agencies have no choice but to rely upon previously stored supplies to meet demands. This can be a solution not just for MWA, but for all potential partners across California, who may participate.

#### *Sustaining agricultural communities;*

A water market will allow for better management of local groundwater levels which benefits agricultural resources dependent on that resource. However, agricultural use within MWA's service area has been declining since 1995 as development has increased. The 2006 EIR for the Water Supply Reliability and Groundwater Replenishment Project found that implementing groundwater recharge operations in the MWA service area was not likely to affect agricultural operations due to the little active agricultural production in the region.

#### *Demonstrating a water marketing approach that is innovative and which may be applied by others;*

At the current time MWA does not utilize all the SWP water it is entitled to, this puts MWA in a position to market this water to other SWP contractors in the near-term. So water marketing

operations could start immediately while groundwater banking operations are established for future storage and then pump-back by MWA and regional participants. The ability to market existing water without waiting for groundwater storage to be achieved is an innovative aspect of the MWA planned project. This provides the finances and the momentum to proceed with the larger groundwater banking program. The groundwater bank will function to benefit both MWA and any potential partners, depending on each participant's needs. The groundwater bank can provide for dry-year storage, it can provide emergency storage, it could be utilized via an in-lieu agreement to help an agency maximize hydraulic efficiencies, and it could provide a means to capture excess SWP water when available or facilitate transfers and exchanges between agencies. A water bank of this size, particularly south of the Tehachapi Mountains, can provide that additional reliability and be an emergency solution to agencies throughout the State, in a time when earthquakes, and wildfires are greatly limiting the ability to capture high flows in current infrastructure.

*Providing instream flows for species, creation or water quality objectives.*

One of the potential banking/exchange alternatives is to do instream recharge to the Mojave River. In such a case, MWA would monitor river levels and if necessary, adjust operations by diversifying some banked supplies to other recharge facilities. The ability to shift deliveries of SWP supplies to different recharge sites allows MWA to support surface flows where needed including flows to and through the environmentally sensitive Transition Zone which provides crucial habitat for imperiled Mojave Desert species including the desert tortoise, Cooper's hawk, willow flycatcher, brown crested flycatcher, least Bell's vireo, yellow warbler, yellow breasted chat and summer tanager) (as identified in the USBR Water Supply Management Study R16-MU-35-0041). With regard to water quality, groundwater pumping, use, and then recharge following treatment tends to concentrate minerals in the recharged water and result in long-term build-up of these minerals. This has occurred in the past and will occur in the future. A groundwater bank helps to remediate this potential for buildup of minerals in groundwater because it will bring generally higher-quality SWP water into the service area for banking. Banked water will be used in MWA's service area during dry years and MWA will then return a blend of SWP and groundwater water to Metropolitan, or other SWP contractors. If there is direct return of stored water from MWA to a SWP contractor, the return will involve a mix of indigenous groundwater and SWP water, which in many cases will involve a net export of minerals.

*Describe your plans and timeline for implementing the strategy upon its completion.*

The feasibility, justification for, and benefit has been demonstrated over the past two decades dating back to the early 2000s as demonstrated by the numerous MWA studies (see Appendix B), many of which Reclamation helped to fund. The impetus for restarting the program is the economy and climate conditions which make water banking strategies mutually beneficial for both MWA as the groundwater storage provider, and entities like Metropolitan and other State Water Contractors who wish to take advantage of wet-year supplies and banking them for later extraction during dry-years which is a significant strategy for increasing supply reliability. Moreover, SWP Contractors who can take advantage of storage, not currently available in their own service areas,, can reduce reliance on the Delta by parking their water in storage volumes that can later be extracted.

*Are there complex issues, including issues of law or policy, that would need to be resolved before the strategy could be implemented?*

Yes. The water banking and exchange program would need to be reviewed and screened for consistency with, or conflicts with, agreements between water agencies, the Mojave Basin Area Adjudication and the Warren Valley Basin Judgment, and DWR.

*Explain whether previous planning, outreach and/or water marketing activities have been completed, including work on any of the three required project components.*

As mentioned above, the potential for a long-term water management program between the MWA and Metropolitan was evaluated in a technical study prepared in 2005 (Bookman-Edmonston, SAIC 2005) and an EIR (ESA, 2006). Both of those efforts included stakeholder outreach (Project Element 1), hydrologic modeling, alternatives evaluation, groundwater storage requirements, etc. (Project Element 2). Together these documents constituted the first long-term water marketing strategy document (Project Element 3).

### **1.5.2 Evaluation Criterion B: Level of Stakeholder Support and Involvement**

*Identify stakeholders in the planning area who have committed to be involved in the process.*

Metropolitan has committed to be involved in the planning process for a banking program with MWA. Additionally, the program is further supported by the MWA Technical Advisory Committee (TAC) which is an independent, voluntary group of water purveyors, pumpers, and other interested parties located within Agency boundaries. The TAC meets in a public forum to discuss common concerns and acts to assist the MWA with technical, professional, economic, and community recommendations and counsel concerning policy decisions relating to management of water resources. The TAC also assists in determining the needs, desires, and financial capabilities of the MWA with respect to management of water resources and, upon deliberation, shall convey recommendations to the Board of Directors of the MWA. Many of the IRWMP projects relate to groundwater recharge and banking programs and exchanges, all of which are vetted through the TAC before being supported as an IRWMP project. The group is well positioned to provide the input necessary develop coordinated relationships for such a program. Refer to Appendix C for a list of all of the TAC stakeholders.

*Describe their commitment:*

As mentioned previously, the IRWMP and TAC stakeholder processes will be utilized to most effectively solicit feedback, provide information, and engage in participation in contribution to the banking program. The agencies are interested in some or all aspects of the potential water marketing strategy, as exemplified in the IRWMP projects, and in obtaining more information as it becomes available. Each agency provides data on their system and concepts for potential facilities. The agencies expect that there will be some cost-sharing responsibilities which will be negotiated. .

*Please explain whether the proposed project is supported by a diverse set of stakeholders.*

The strategy is supported by the agencies mentioned above which are either municipalities or water districts within the region. It is further supported by the MWA TAC which is made up of environmental, agricultural, municipal and other interests within the community.

*Is there opposition to the proposed strategy?*

There is local concern regarding export of groundwater from the MWA service area, even if it is water previously provided by another agency under a water banking/exchange agreement. Because of prohibitions against export within the Mojave Basin Area Judgment, it will be necessary to review the program with the Presiding Judge to ensure consistency with the adjudication(s). Pumping of groundwater for export to another basin is a concern for a number of reasons. First, such pumping may occur in a dry period and result in locally lowered groundwater levels, resulting in higher local pumping costs. Second, use of groundwater for exchange may result in changes in groundwater quality. If water recharged to the groundwater basin is of poorer quality than then the indigenous groundwater, and a mix of this water is pumped to provide returns from a groundwater bank, then there may be a net degradation of local groundwater. The continued outreach and planning activities proposed as part of the Project are intended to address these challenges and support continued consensus among the stakeholders.

*Do any separate planning efforts express support for the proposed water market/water marketing activities? Or, will the proposed water marketing strategy complement other ongoing or recent planning efforts within the area?*

Water resources within the Mojave region have been studied and managed for many decades with several supporting local and regional plans, some of which are identified below. MWA's complete document library containing these references and more can be accessed at: <https://www.mojavewater.org/document-library.html>. The water marketing strategy will build on these previous efforts. Over the past five years the MWA professional staff has been investigating previously identified potential large scale banking areas for recharge suitability via test wells, recharge pilot tests, geophysical surveys and etcetera in anticipation of developing a regional water bank.

*Please describe any relevant planning efforts, including who is undertaking these efforts and whether they support or are complemented by the proposed water marketing strategy.*

The proposed marketing strategy is well aligned with the IRWMP. The Mojave IRWMP is a product of a long-term collaborative stakeholder process that began with the development of the first IRWM Plan adopted in 2005. The goals of the IRWMP are to: 1) foster coordination, collaboration and communication between agencies responsible for water-related items and interested stakeholders to achieve greater efficiencies, to provide for integration of projects, enhance public services and build public support for vital projects; and 2) assist in the development of a comprehensive plan to facilitate regional cooperation to benefit water supply reliability, water recycling, water conservation, water quality improvement, storm water capture and management, flood management, and environmental and habitat protection and improvements. MWA manages the IRWMP program for the region with oversight from the Mojave TAC (see Appendix C). The marketing strategy specifically addresses Mojave IRWMP objectives (<http://mywaterplan.com/objectives.html>) including:

- Balance average annual future water demands with available future supplies to ensure sustainability throughout the Region between now and through the 2035 planning horizon and beyond.
- Maintain stability in previously over drafted groundwater basins and reduce overdraft in groundwater basins experiencing ongoing water table declines.
- Address the State policy goal of reducing reliance on the Delta by meeting water demands with alternative sources of supply during times when (SWP) supplies are

reduced or unavailable due to droughts, outages, environmental and regulatory restrictions, or other reasons.

- Optimize the use of the Region’s water-related assets to maximize available supplies to meet projected demands while mitigating against risks. Water-related assets to be optimized include financial resources, groundwater storage programs, available imported water supplies, transfer and exchange opportunities, available physical infrastructure, and management policies.

*Describe what efforts you will undertake to ensure participation by a diverse array of stakeholders in developing the water marketing strategy.*

To further this participation, MWA and its project partners will continue outreach and partnership building efforts to obtain additional supporting stakeholders. The team expects to accomplish this through individual meetings, workshops and notices, such as the workshops already held. The project team will work with interested cities (ex. Adelanto, Hesperia), multiple water districts including Metropolitan and other SWP Contractors, regulatory agencies in addition to a diverse range of representatives from agricultural interests, and various water-related consultants and law firms. The banking program will also coordinate with regular activities of the Mojave IRWMP and the TAC.

### **1.5.3 Evaluation Criterion C: Ability to Meet Program Requirements**

*Describe how the three required project components of a water marketing strategy grant will be addressed within the required timeframe.*

MWA, Metropolitan and any other program partners will meet the Water Marketing Program through activities identified below. For deliverables, major tasks, and dates please see Section 1.3 above.

#### **Project Element 1 – Outreach and Partnership Building**

MWA will use the IRWMP and TAC processes to engage stakeholder interest and engagement. The TAC member list is provided in Appendix C. These existing stakeholder processes have worked well to engage the region on new or emerging water management opportunities such as the R3 program. The group supports groundwater recharge and banking programs submitted to the IRWMP, and the marketing strategy will help to further develop many of the existing banking program ideas. MWA also plans to outreach to other SWP Contractors, including Metropolitan, to solicit their input and interest on potentially partnering on a new water bank.

MWA will convene program workshops with the TAC and the Alto/Oeste Subarea Advisory Committee (a group of major stakeholders in the upper Mojave Basin) as necessary to solicit information and input. See Appendix C for a list of the Committee members. MWA will also hold focused public meetings as necessary.

#### **Project Element 2 – Scoping and Planning Activities**

MWA will utilize the 2005 Long-Term Water Management Program Between MWA and Metropolitan (Bookman Edmonson, SAIC 2006) as a foundation for cultivating a current water banking program and marketing strategy, incorporating the numerous technical studies the Agency has developed to date (see Appendix B for a list of MWA’s technical documents) into a feasibility study.

The feasibility study will determine if there are potential feasible projects in the basins, or specific portions of basins, within the MWA service area for groundwater banking programs that would provide an additional revenue stream for MWA while improving overall water supply reliability. The study will also identify the benefits to potential partners in utilizing the available storage capacity in the MWA region to meet their own reliability needs. Feasibility should be evaluated from an operational, hydrogeologic, and economic perspective. Further, the study will focus specific attention on the financial constraints, policy issues, and climate change impacts that helped to stall the earlier efforts in order to ensure the program is successfully implemented. The planning activities will help to answer the following types of questions:

- Given the area's characteristics and the physical locations of the existing water infrastructure, what are the possible alternatives available to bank water?
- How can existing infrastructure be integrated into a banking program?
- How much can be stored?
- Where will banked water migrate to? Is there an optimal banking period to reduce losses?
- How much can be extracted annually?
- What is the optimal extraction rate/annual draw to conform with yet to be established mitigation triggers?
- How with the MWA/Bureau of Reclamation study on Mojave Dam be incorporated?
- What are the mitigation triggers and do they change based on geography?
- Will the water migrate out of the area before it is extracted? What is the impact of each alternative?
- What is the impact of imported water quality on the basin and subsequent uses of the groundwater/banked water?
- Is local water quality an operating constraint for groundwater banking?
- Can this infrastructure be used to mitigate local water quality challenges?
- Are there East Branch constraints to a banking program?
- Who might benefit/be harmed from/by each alternative and how/to what extent would they benefit/be harmed?
- How can impacts be mitigated?
- What are the potential environmental impacts associated with groundwater banking programs?
- Is the cost worth the benefit? How does this program fit into the Agency's financial projection model?
- What tasks must be completed to have the necessary data to complete a banking EIR? What is the level of confidence in the results of the feasibility analysis?
- What important contractual issues regarding banking/extraction are considerations to such a program?
- Is there a market and who are they?
- Partner owned vs. MWA owned facilities?
- Would a phased approach be viable and could these phases be modular bases on a number of different partners and balancing priorities (who bought in first, who owns the facilities, etc.)?

Lastly, the 2006 project EIR for MWA's Water Supply Reliability and Groundwater Replenishment Program (MWA 2006) will be updated to evaluate the potential environmental

impacts associated with the development and implementation of a long-term groundwater banking program with potential banking partners.

### **Project Element 3 – Development of a Water Marketing Strategy**

Utilizing the information from the previously completed reports and studies, the stakeholder outreach, and research identified above, a number of alternatives will be identified and evaluated (i.e. physical feasibility, cost/benefit, impacts analysis, etc.) for several potential groundwater banking sites and program types.

The water marketing strategy will evaluate the following:

- Evaluate potential extraction sites and methods
- Determine potential impacts from the potential alternatives, including an assessment of potential water losses
- Estimate the cost of infrastructure and cost of operation for each of the potential sites/methods identified
- Identify and evaluate potential participants/banking partners
- Identify methods for a phased implementation considering a banking partner or a suite of banking partners
- Identify and evaluate funding alternatives and other financial considerations
- Identify additional data needs (data gaps) for implementation efforts
- Describe environmental considerations by identifying California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) requirements for plan implementation
- Develop an exchange structure that is initially beneficial for local and state partner needs that will facilitate project implementation

*Describe the availability and quality of existing data and models applicable to the strategy..*

MWA began the investigation into a water marketing program in the early 2000s. The effort is supported by numerous technical documents, hydrologic models, and environmental impact reports all of which provide the data necessary to evaluate alternatives related to hydrology, soil conditions, reliability of supplies, recharge and extraction rates, stakeholder outreach, economic variables, and institutional constraints and conditions. Some of the main documents are the following:

- Technical Study to Evaluate a Potential Long-Term Water Management Program Between Mojave Water Agency and Metropolitan Water District (Bookman-Edmonston, SAIC, 2005).
- Mojave Water Agency Water Supply Reliability and Groundwater Replenishment Program Final EIR State Clearinghouse #2005041103 (MWA, 2006).
- Mojave Water Agency 2004 Regional Water Management Plan Program EIR State Clearinghouse #2003101119 (ESA, Schlumberger, 2004).
- Evaluation of Geohydrologic Framework, Recharge Estimates, and Groundwater Flow of the Joshua Tree Area, San Bernardino County, CA (USGS Scientific Investigations Report 2004-5267).
- Mojave River Transition Zone Recharge Project Phase I Report: Transition Zone Hydrology (URS, 2003).

- Mojave River Transition Zone Recharge Project Phase I Report: Groundwater Supply and Demand in the Transition Zone (URS, 2003).
- Mojave Integrated Regional Water Management Plan (Kennedy/Jenks, 2014)
- Mojave 2015 Urban Water Management Plan (Kennedy/Jenks, 2016)
- Mojave Functionally Equivalent Stormwater Resources Plan (Kennedy/Jenks, 2017)

MWA's complete document library containing these references and more can be accessed at: <https://www.mojavewater.org/document-library.html>. See Appendix B for a listing of all the documents.

*Identify staff with appropriate technical expertise and describe their qualifications. Describe any plans to request additional technical assistance from Reclamation, or by contract.*

Lance Eckhart, PG, CHG, Director of Basin Management and Resource Planning, for MWA will provide overall Project Management for the program. Lance was involved in the original long-term water management strategy in the 2000s and has institutional knowledge of the Agency's operations, the groundwater conditions, marketing opportunities, and stakeholder involvement. Tony Winkel is the senior hydrogeologist/engineer at MWA that has keen knowledge of the current and historical groundwater and climate conditions.

Activities have been included in the budget which Reclamation staff may be able to provide technical assistance with. They include analyzing how to leverage MWA's Table A amount in order to optimize its conjunctive use in a water marketing program; economic evaluations to assist with developing and recommending modeling scenarios; providing technical engineering and geological investigations; calculating the economic benefit of different recharge sites; integrating the Mojave Dam project work the Bureau and MWA are collaborating on; and also integrating the environmental analysis to be provided in the updated EIR with the modeling scenarios.

*Are pilot activities are to be a part of the project?*

No pilot activities are planned as part of the project at this time due the breadth of existing information supporting the hydrology, hydrology, supply availability, groundwater levels, etc.

*Describe any permits or approvals that will be required, along with the process for obtaining such permits or approvals.*

While it is unlikely that significant permitting will be required for this project specifically, MWA will consult with its legal counsel and planning department staff to determine what type of permitting (if any) would be needed to implement a water market system. Possible permits that could be necessary (beyond environmental compliance) may include domestic or de minimis water use permits; water well permits; electrical and mechanical permits; agriculture zoning and use permits; agricultural or other land use permits.

*Describe how the environmental compliance estimate was developed. Has the compliance cost been discussed with the local Reclamation office?*

The environmental compliance cost estimate was developed based on budget estimates for similar water planning efforts that MWA has implemented in the past, including the Water Supply Reliability and Groundwater Replenishment Program Final EIR (2006) and the Regional

Water Management Plan Program EIR (2004). The compliance cost has not yet been discussed with Reclamation.

#### **1.5.4 Criterion D: Department of the Interior Priorities**

*Creating a Conservation Stewardship Legacy Second Only to Teddy Roosevelt: a) Utilize science to identify best practices to manage land and water resources*

Groundwater has been the primary source of water for the MWA. Consequently, MWA programs have focused on ways to increase the availability and reliability of the local water supply through the continued review and improvement of its management of groundwater resources. MWA recognizes that years of cumulative overdraft have increased the available groundwater storage. This presents an opportunity for enhanced conjunctive management of groundwater and surface water resources, both local and imported. MWA has been examining the potential to increase the availability of dry-year (drought) water supplies and overall supply reliability through regional conjunctive use efforts.

The marketing strategy is intended to provide MWA with new facilities and expanded operational opportunities to reduce the rate of overdraft, which the Agency has been carefully and effectively monitoring and managing, and to achieve a balance of water supply and consumptive use. Additionally, the potential partners in this long-term banking program, including possibly Metropolitan and other SWP Contractors, will benefit from being able to store their wet-year supplies in the Mojave Basin – where storage is lacking for many entities, as well as helping them to reduce their reliance on the Delta by utilizing the stored supplies during dry years when the Delta is dependent on minimum environmental flows. Two fundamental actions that will be taken as part of the marketing strategy to address the problem of groundwater overdraft and future growth/water demand are supply enhancement projects, either involving groundwater recharge or an increase in groundwater efficiency, and management actions, involving conservation, storage agreements, and water transfers.

*Restoring Trust with Local Communities: a) Expand the lines of communication*

MWA has involved a number of stakeholders regarding improvements and the management of the Mojave River groundwater basins and will continue consultation as part of this project. In particular, MWA will involve its TAC. This Committee is an independent, voluntary group of water purveyors, pumpers, and other interested parties located within Agency boundaries. The TAC regularly meets in a public forum to discuss common concerns and acts to assist the MWA with technical, professional, economic, and community recommendations and counsel concerning policy decisions relating to management of water resources. The TAC also assists in determining the needs, desires, and financial capabilities of the MWA with respect to management of water resources and, upon deliberation, shall convey recommendations to the Board of Directors of the MWA. Additionally, the TAC serves at the Mojave Integrated Regional Water Management Plan Implementation Support Team as defined in the IRWMP.

*Modernizing our infrastructure: a) Support the White House Public/Private Partnership Initiative to modernize U.S. infrastructure*

As part of the marketing analysis that will be prepared as part of the long-term management strategy update, MWA will research the opportunities and benefits provided from extending the partnership between itself and other SWP Contractors to potentially include private interests such as Cadiz, which owns 35,000 acres of private property within the Mojave Region which it hopes to market as available groundwater storage land.

## **Section 2: Environmental and Cultural Resources Compliance**

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The project proposed for funding is a feasibility study, update of a past EIR to evaluate impacts of groundwater replenishment and banking, studies that will lead to development of a water marketing strategy. The activities proposed for funding do not involve physical changes to the environment. Implementation of the water marketing strategy, a future activity, will involve changes to the physical environment.

*Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.*

The project proposed for funding does not involve physical changes to the environment.

*Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?*

The project proposed for funding does not involve physical changes to the environment and will not affect sensitive habitat.

*Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “Waters of the United States?”*

The project proposed for funding does not involve physical changes to the environment and will not affect wetlands or waters of the US.

*When was the water delivery system constructed?*

MWA was established in 1960 and the major features of the Agency water distribution system were completed in 1995. The Agency began importing SWP water in 1960. In 2013, with support from Reclamation, MWA began constructing the R3 Project. The project delivers SWP water from the California Aqueduct in Hesperia to recharge sites in the floodplain aquifer along the Mojave River in Hesperia and southern Apple Valley. R3 Project wells on either side of the Mojave River located immediately downstream of the recharge area recover and deliver the potable stored water through pipelines directly to retail water agencies. Utilizing R3 for basin management offsets their need to continue excessive pumping within the declining regional aquifer system. This, along with the Mojave River and Morongo Basin pipelines, allows the MWA to manage recharge and extractions utilizing in an area that is highly monitored with a high degree of control.

*Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.*

The Project will not result in any modifications of or effects to individual features of an irrigation system.

*Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.*

The project proposed for funding does not involve physical changes to the environment. In addition, there are no known buildings or structures present in the project area listed or eligible for listing..

*Are there any known archeological sites in the proposed project area?*

The project proposed for funding does not involve physical changes to the environment. In addition, MWA is not aware of any archeological sites in the project area.

*Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?*

This project will not have a disproportionately high and adverse effect on low income or minority populations. Within the MWA service area, approximately 60% of the population meets the definition of a disadvantaged community (2012-2016 American Community Survey 5-year estimates, U.S. Census). This project is undertaken to better manage local groundwater resources in order to reliably meet supply and demand into the future which is a benefit to all water users within the region.

*Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?*

The project proposed for funding does not involve physical changes to the environment and would not inhibit access to any sacred sites or tribal lands.

*Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?*

The project proposed for funding does not involve physical changes to the environment and therefore would not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area.

## Section 3: Project Budget

---

### 3.1 Funding Plan and Letters of Commitment

*Describe how the non-Federal share of project costs will be obtained. Reclamation will use this information in making a determination of financial capability.*

The source of the Agency's share of the contributions will be from an MWA Mojave Water Agency Board approved budget in Capital Improvement Plan funds which is made up of revenue from MWA's rate structure.

No third-party funding sources will contribute to the project budget. Cost-sharing options with project participants will be evaluated as part of implementation of the water marketing strategy.

No other cost-share funding sources will contribute to the budget herein. There are no pending funding requests (e.g., grants or loans) that have not yet been approved for the project. No previously incurred costs are included as project costs.

**TABLE 5. TOTAL PROJECT COST**

| Source  | Amount           |
|---|------------------|
| Costs to be reimbursed with the requested Federal funding | \$200,000        |
| Costs to be paid by the applicant                         | \$400,000        |
| Value of third-party contributions                        | \$0              |
| <b>Total Project Cost</b>                                 | <b>\$600,000</b> |

### 3.2 Budget Proposal

The Project Budget consists of costs associated with the implementation of the Project and fall within various budget categories, including equipment, supplies, materials, contractual and/or implementation, among others. The budget proposal is provided in Table 6, which reflects all budget categories listed in the Funding Opportunity Announcement (FOA). The budget items included in the table are described in detail below.

**TABLE 6. BUDGET PROPOSAL**

| Budget Item Description              | Computation                       |          | Quantity Type | Total Cost        |
|--------------------------------------|-----------------------------------|----------|---------------|-------------------|
|                                      | \$/Unit                           | Quantity |               |                   |
| <b>Salaries and Wages</b>            |                                   |          |               |                   |
| Not applicable                       | -                                 | -        | -             | \$0.00            |
| <b>Fringe Benefits</b>               |                                   |          |               |                   |
| Not applicable                       | -                                 | -        | -             | \$0.00            |
| <b>Travel</b>                        |                                   |          |               |                   |
| Not applicable                       | -                                 | -        | -             | \$0.00            |
| <b>Equipment</b>                     |                                   |          |               |                   |
| Not applicable                       | -                                 | -        | -             | \$0.00            |
| <b>Supplies and Materials</b>        |                                   |          |               |                   |
| Not applicable                       | -                                 | -        | -             | \$0.00            |
| <b>Contractual/Construction</b>      |                                   |          |               |                   |
| Stakeholder Outreach                 | Consultant quote for similar work |          |               | \$40,000          |
| Feasibility Study                    | Consultant estimate               |          |               | \$350,0000        |
| Updated CEQA Programmatic EIR        | Consultant quote for similar work |          |               | \$150,000         |
| Strategy/Report Preparation          | Consultant estimate               |          |               | \$60,0000         |
| <b>Other</b>                         |                                   |          |               |                   |
| Not applicable                       |                                   |          |               | \$0               |
| <b>TOTAL DIRECT COSTS</b>            |                                   |          |               | <b>\$600,000</b>  |
| <b>Indirect Costs</b>                |                                   |          |               |                   |
| Not applicable                       |                                   |          |               | \$0.00            |
| <b>TOTAL ESTIMATED PROJECT COSTS</b> |                                   |          |               | <b>\$600,0000</b> |

Notes: This budget assumes Reclamation funding will be used to fund \$200,000 of contractual costs.

**3.2.1 Salaries, Wages, and Fringe Benefits**

Lance Eckhart, PG, CHG, Director of Basin Management and Resource Planning, for the Agency will be the representative for the Applicant and will provide overall Project Management. Administrative and reporting will be performed by the Agency’s office and field personnel. In this regard, the Agency’s office staff, which will consist of a Senior Project Manager, staff Professional Engineer, staff Professional Geologist, staff Certified Hydrogeologist and an Administrative Assistant, will perform project-related administration support and grant reporting. Additionally, the Agency will use accounting staff for tracking costs, maintaining financial records and invoicing. Work performed by Agency staff will be completed as part of the Agency’s daily operations and will not be included as part of the local cost share commitment.

In this regard, the Agency will not be asking for reimbursement or reporting any “In-Kind” contributions for any Salaries and Wages costs. The Agency is proposing not to track these costs separately from daily operations, even though employees will be providing services necessary for implementation of the grant-funded Program. Accordingly, no expenses under “Salaries, Wages, and Fringe Benefits” have been included in Table 6.

### **3.2.2 Travel**

Travel expenses have not been included in the budget as local travel will be covered under the Agency’s operating budget. Travel related to contracted tasks will be included in the consultants’ contracts. Accordingly, no travel expenses have been included under “Travel” in Table 6.

### **3.2.3 Equipment, Materials and Supplies**

The project is the development of a strategic plan; therefore, equipment, materials, and supplies are not applicable. Accordingly, no equipment, materials and supplies expenses have been included under “Equipment, Materials and Supplies” in Table 6.

### **3.2.4 Contractual**

A consultant, or consultant team will be hired to assist with Stakeholder Outreach and Program coordination; the feasibility study, an updated PEIR, and required water marketing strategy report. An RFP for a portion of the work is anticipated to be released to the public in September 2019. A consultant will be hired to update the 2006 EIR for the Water Supply Reliability and Groundwater Replenishment Program. The environmental compliance cost estimate was developed based on budget estimates for similar water planning efforts that MWA has implemented in the past, including the Water Supply Reliability and Groundwater Replenishment Program Final EIR (2006) and the Regional Water Management Plan Program EIR (2004).

### **3.2.5 Third-Party In-Kind Contributions**

There will be no third-party in-kind contributions.

### **3.2.6 Environmental and Regulatory Compliance Costs**

The project proposed for funding will not result in any physical changes to the environment and therefore not environmental and regulatory compliance costs have been budgeted.

### **3.2.7 Other Expenses**

All project expenses are included in the cost items described above. Therefore, no costs are associated with this budget category in Table 6.

### **3.2.8 Indirect Costs**

No “indirect” costs are included in the proposed budget.

## **3.3 Total Costs**

The estimated budget for the Project is presented above in Table 6. As shown, the total budget to fund all phases of Project implementation is estimated at \$600,000, with \$200,000 in requested grant funds (Federal Cost Share) and \$400,000 in Non-Federal Cost Share funds from MWA. The total Federal Cost Share requested is 33% percent of total Project costs.

## **Section 4: Required Permits and Approvals**

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MWA will perform a thorough evaluation of the proposed Project, which will include further identification of the required permits or approvals that will be needed prior to Project implementation. Since the project proposed for funding will not have earth disturbing components, typical construction permits will not be needed. One of main outputs from the scoping and planning activities will be a long-term water banking strategy application/documentation submitted to Watermaster demonstrating consistency with the Judgement.

## **Section 5: Existing Analysis Contributing to the Water Marketing Strategy**

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*If there is planning work relevant to one or more of the three required components of a water marketing strategy that the applicant intends to rely on in developing the strategy, please include a link to any existing plans or work (or attach relevant sections). Note, this will not count against the application page limit.*

As mentioned previously, in 2005, in recognition of a groundwater storage opportunity within MWA, Metropolitan and MWA developed a technical study evaluating the potential for a long-term water management program (Bookman-Edmonston, SAIC, 2005). In 2004, B-E/GEI conducted a demand study of the East Branch Contractors to assess their demands over a 20-year period. The study found that demands were approaching the capacity of the East Branch.

A link to this technical study is provided here:

<https://www.mojavewater.org/files/longtermwatermgmtwmetfinalreportcomplete.pdf>

At the time the technical study was developed, a Programmatic Environmental Impact Report (PEIR) was also prepared for the long-term program. The 2004 Project EIR is located here:

[https://www.mojavewater.org/files/MWA\\_2004\\_RWMP\\_PEIR\\_aw3i29c1.pdf](https://www.mojavewater.org/files/MWA_2004_RWMP_PEIR_aw3i29c1.pdf)

A Project EIR was also prepared for the water supply reliability and groundwater replenishment program. The 2006 Project EIR is located here:

<https://www.mojavewater.org/files/FINAL-EIR-Long-Term-Storage.zip>

Since then, MWA has supported this effort by numerous technical documents, hydrologic models, and environmental impact reports all of which provide the data necessary to evaluate alternatives related to hydrology, soil conditions, reliability of supplies, recharge and extraction rates, stakeholder outreach, economic variables, and institutional constraints and conditions. A listing of these documents is provided in Appendix B and include documents such as the 2015 UWMP, a Salt Nutrient Management Plan, a Stormwater Resources Plan, and the IRWMP.

## **Section 6: Unique Entity Identifier and System for Award Management**

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MWA is registered in the System for Award Management (SAM) and will maintain an active SAM registration during the period of any federal assistance agreement.

MWA's DUNS number is 1319366680000.

MWA is registered in the Automated System Application for Payment (ASAP) and will maintain an active ASAP account during the period of any federal assistance agreement.

**⚠️ ALERT:** SAM.gov will be down for scheduled maintenance Saturday, 08/10/2019, from 8:00 AM to 1:00 PM (EDT).

**⚠️ ALERT:** CAGE is currently experiencing a high volume of registrations, and is working them in the order in which they are received. When your registration is assigned to a CAI Technician, you will be contacted by CAGE, if necessary, for any additional information.

### Entity Dashboard

- ▶ [Entity Overview](#)
- ▶ [Entity Registration](#)
- ▶ [Core Data](#)
- ▶ [Assertions](#)
- ▶ [Reps & Certs](#)
- ▶ [POCs](#)
- ▶ [Reports](#)
- ▶ [Service Contract Report](#)
- ▶ [BioPreferred Report](#)

Mojave Water Agency

DUNS: 131936668 CAGE Code: 5NU50

Status: Active

Expiration Date: 05/01/2020

Purpose of Registration: Federal Assistance Awards Only

[Entity Overview](#)

13846 Conference Center Dr  
 Apple Valley, CA, 92307-4377,  
 UNITED STATES

#### Entity Registration Summary

DUNS: 131936668

Name: Mojave Water Agency

Doing Business As: MWA

Business Type: US Local Government

Last Updated By: Darrell Reynolds

Registration Status: Active

Activation Date: 05/02/2019

Expiration Date: 05/01/2020

Joanne James  
 Mojave Water Agency

## Section 7: References

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Bookman-Edmonston, SAIC. 2005. Technical Study to Evaluate a Potential Long-Term Water Management Program Between Mojave Water Agency and Metropolitan Water District.

ESA, Schlumberger. 2004. Mojave Water Agency 2004 Regional Water Management Plan Program EIR State Clearinghouse #2003101119.

Kennedy/Jenks Consultants. 2016. Mojave 2015 Urban Water Management Plan.

Kennedy/Jenks Consultants. 2017. Mojave Functionally Equivalent Stormwater Resources Plan.

MWA. 2006. Mojave Water Agency Water Supply Reliability and Groundwater Replenishment Program Final EIR State Clearinghouse #2005041103.

USACE. 1985. Evaluation of Proposed Modifications - Mojave River Dam, California”.

USGS, 2004. Evaluation of Geohydrologic Framework, Recharge Estimates, and Groundwater Flow of the Joshua Tree Area, San Bernardino County, CA (USGS Scientific Investigations Report 2004-5267).

URS. 2003a. Mojave River Transition Zone Recharge Project Phase I Report: Transition Zone Hydrology.

URS. 2003b. Mojave River Transition Zone Recharge Project Phase I Report: Groundwater Supply and Demand in the Transition Zone.



## **Appendix A**

### **Project Figures**

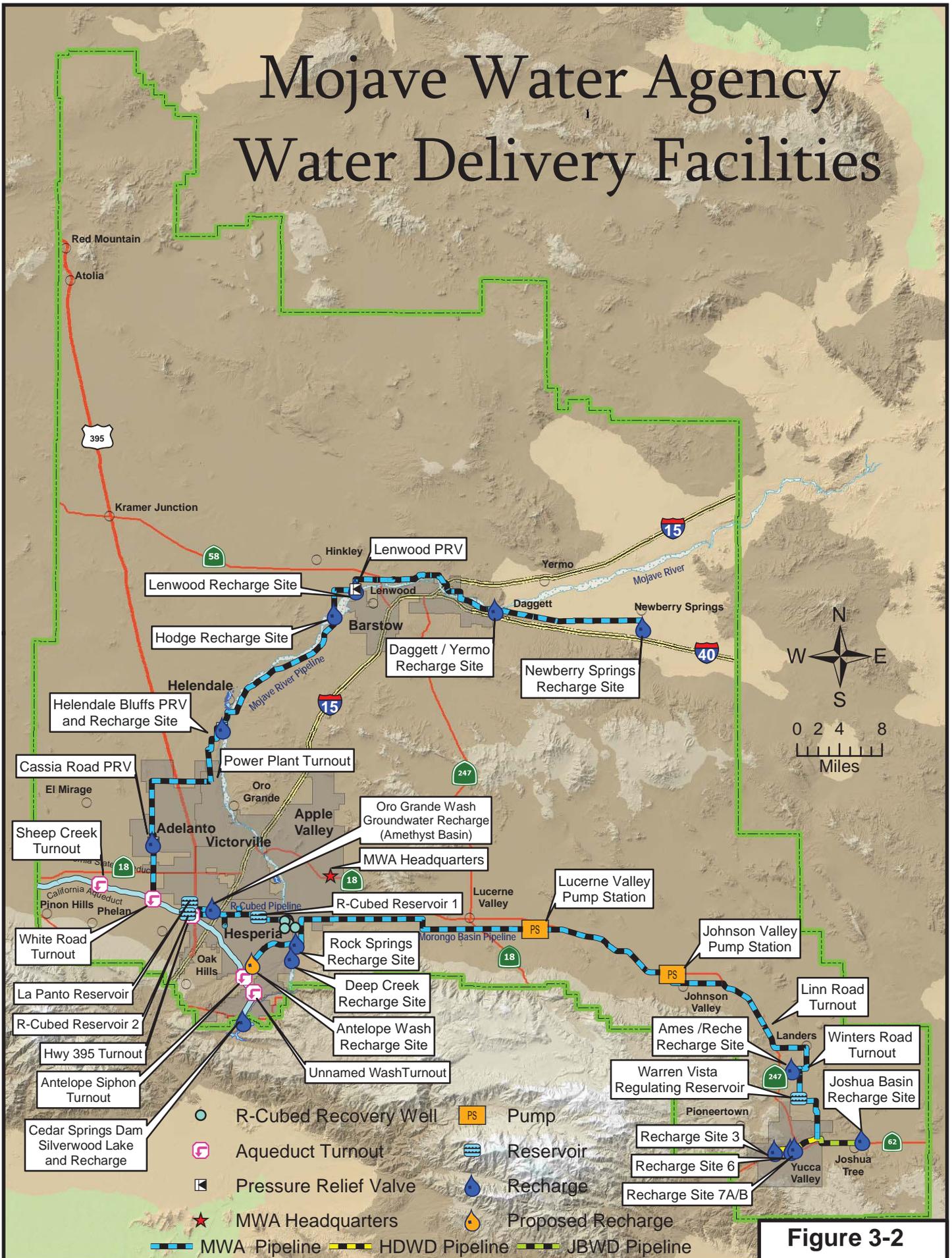


**Figure 1-1**

**Figure 1-1: MWA Vicinity Map**

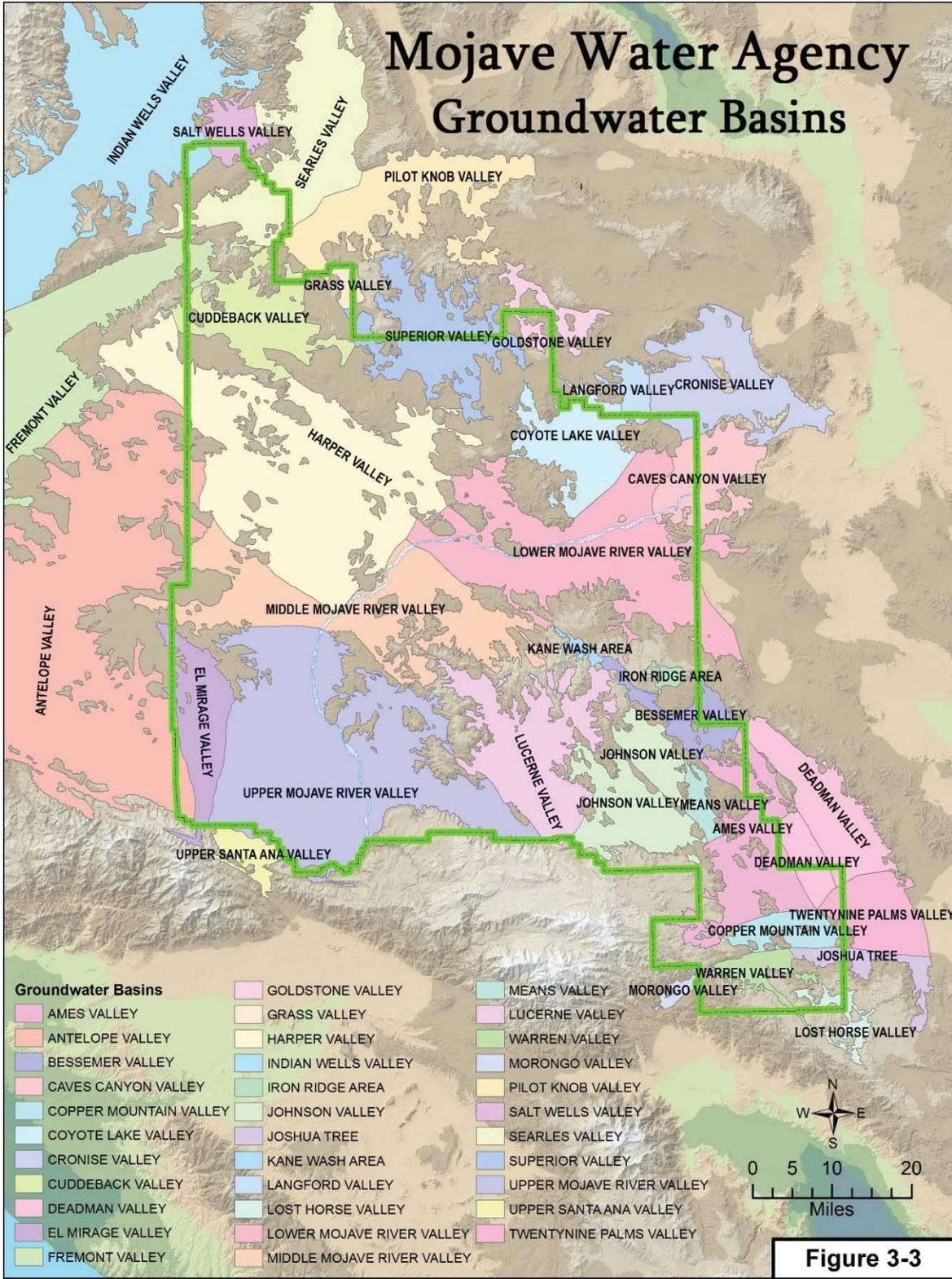


# Mojave Water Agency Water Delivery Facilities



**Figure 3-2**

**Figure 3-2: MWA Water Delivery Facilities**

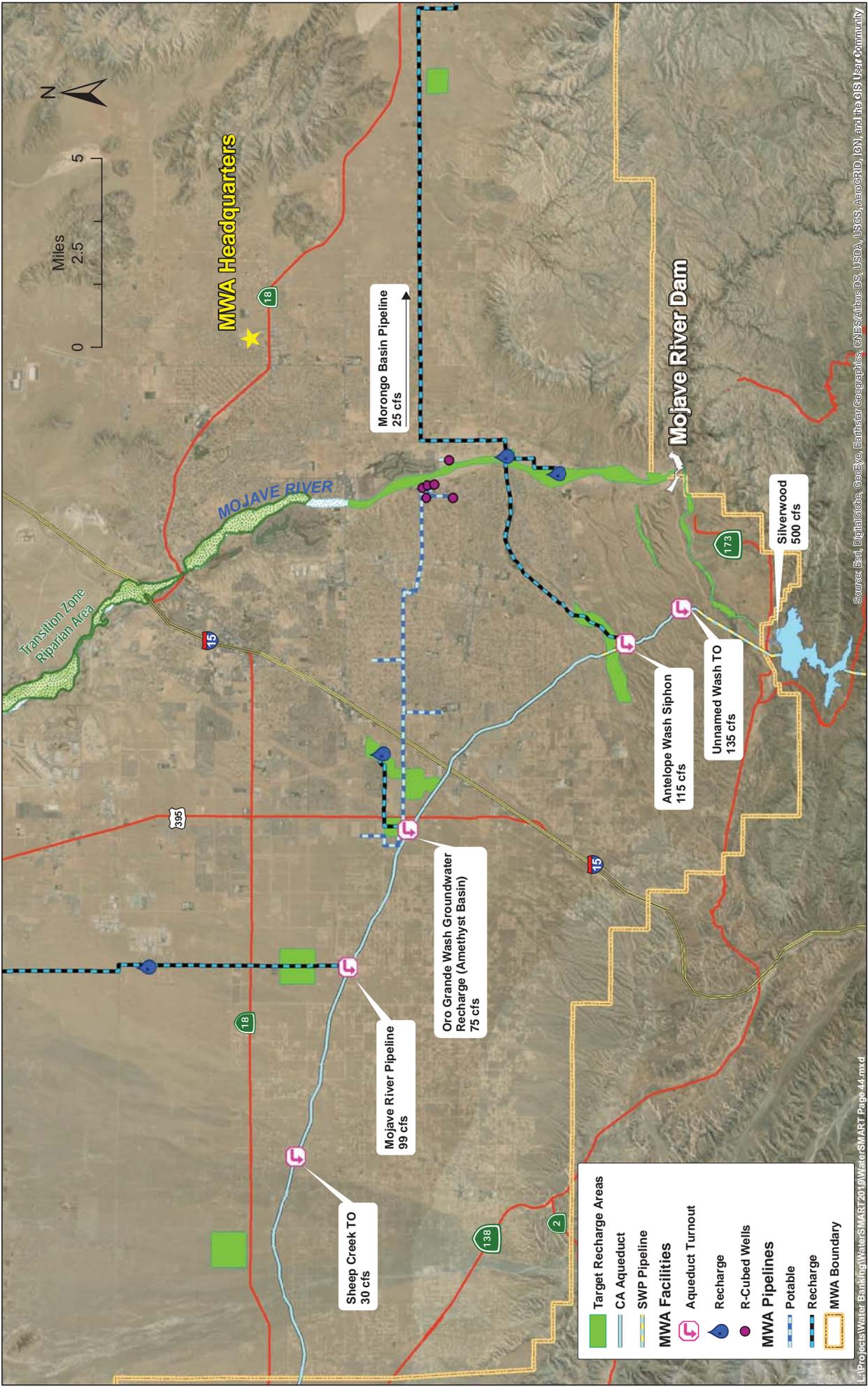


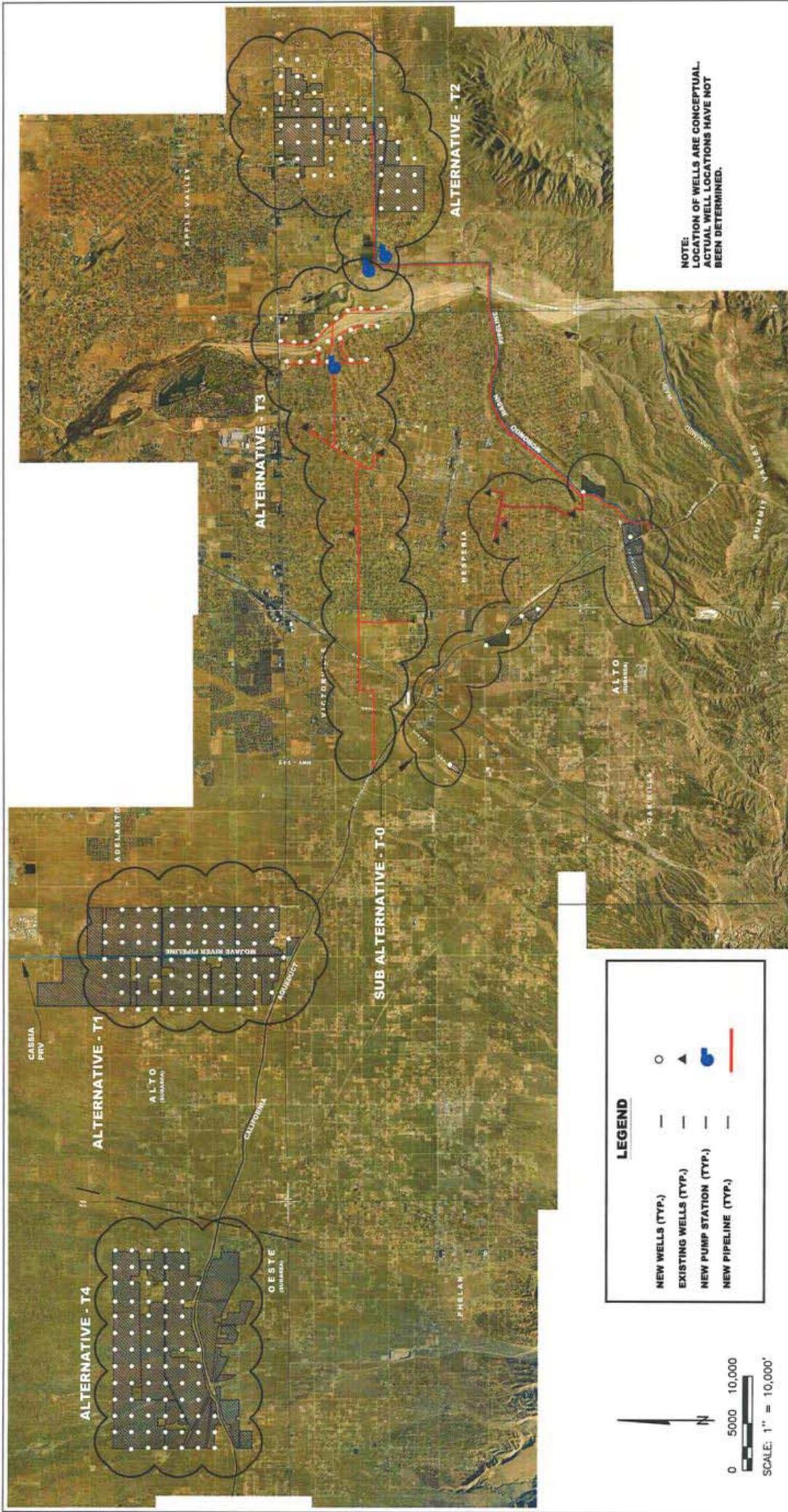
**Figure 3-3: Mojave Service Area Groundwater Basins**



**Figure 1-3**

**Figure 1-3: MWA Adjudicated Boundary and Subareas**





MOJAVE WATER AGENCY

TECHNICAL STUDY TO EVALUATE A POTENTIAL LONG-TERM WATER MANAGEMENT PROGRAM BETWEEN MWA AND METROPOLITAN WATER DISTRICT

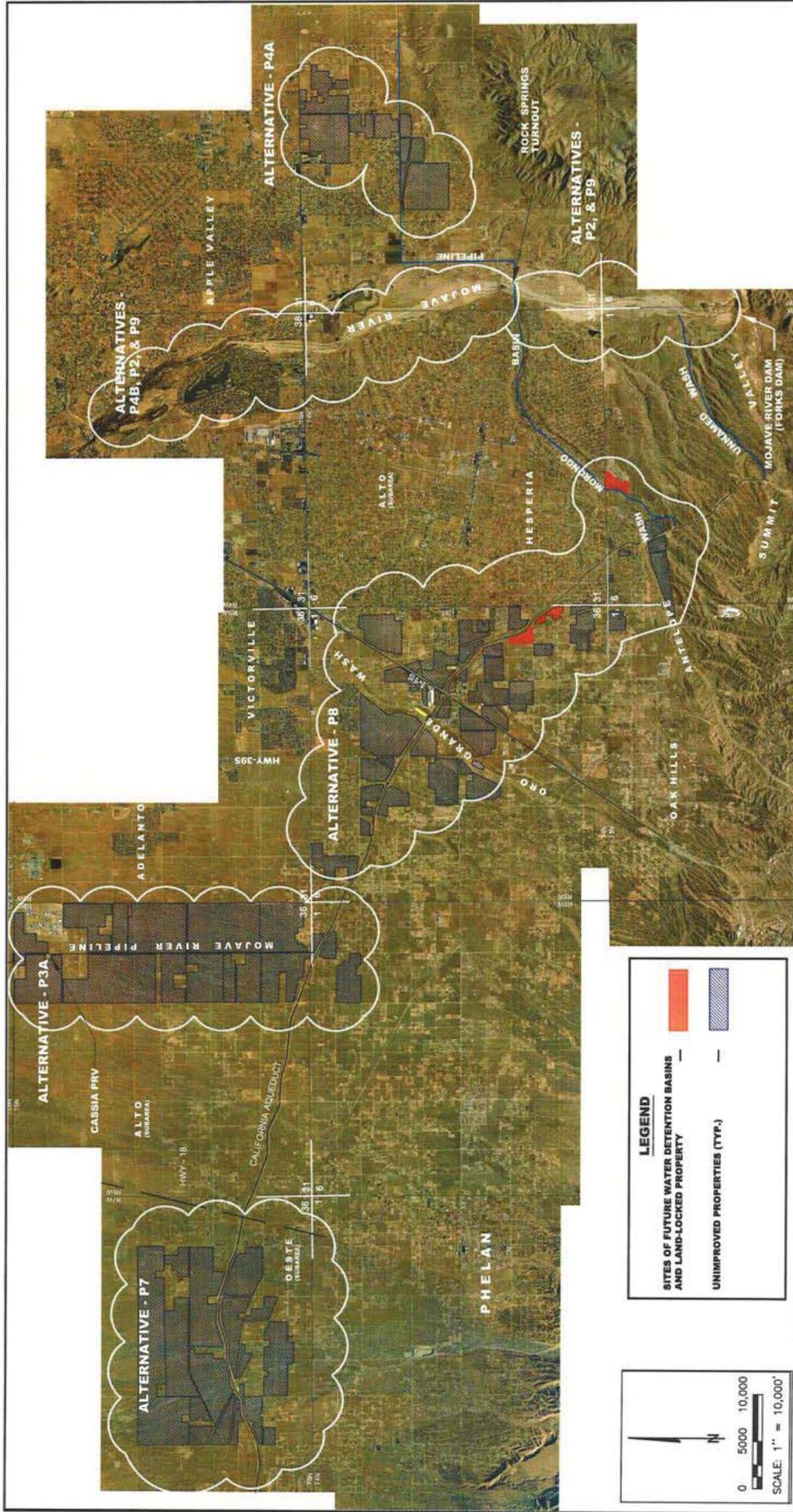
**Bookman-Edmiston**  
 A Division of GEI Consultants  
 Science Applications International Corporation  
 An Employee-Owned Company

SAIC

LOCATION OF TAKE ALTERNATIVES

Proj. No. 042810 10/14/05

PLATE 4



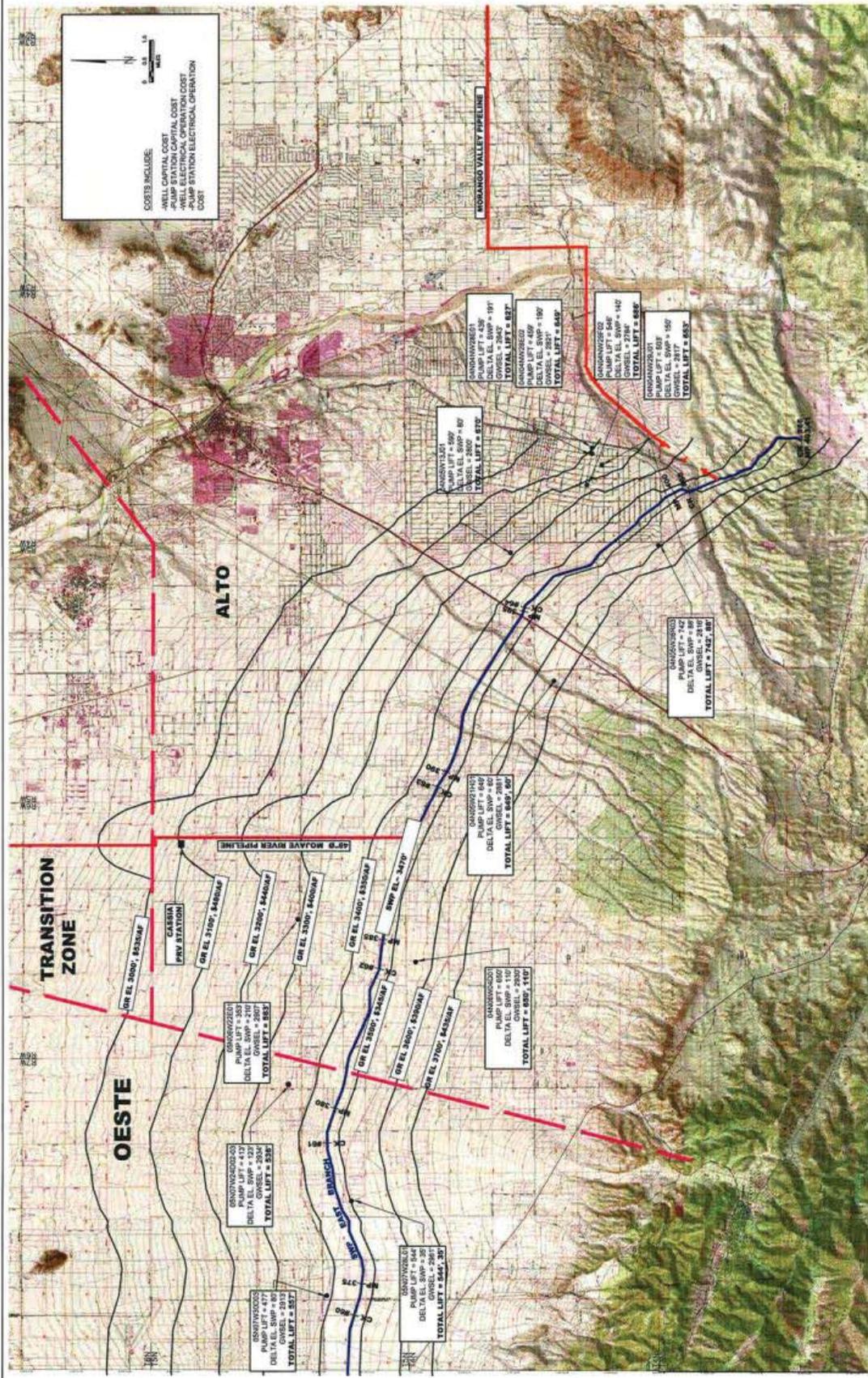
TECHNICAL STUDY TO EVALUATE A POTENTIAL LONG-TERM WATER MANAGEMENT PROGRAM BETWEEN MWA AND METROPOLITAN WATER DISTRICT

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MOJAVE WATER AGENCY

LOCATION OF PUT ALTERNATIVES

Proj. No. 042810 10/14/05



**TECHNICAL STUDY TO EVALUATE A POTENTIAL LONG-TERM WATER MANAGEMENT PROGRAM BETWEEN MWA AND METROPOLITAN WATER DISTRICT**

**COMPARATIVE COST "CONTOUR MAP"**

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Science Applications International Corporation  
SAC  
An Employee-Owned Company

MOJAVE WATER AGENCY

10/14/05

PLATE 2

## Appendix B

### Mojave Water Agency Document Library – Existing Analysis Contributing to the Water Marketing Strategy

All documents can be downloaded here: <https://www.mojavewater.org/document-library.html>

|   | <b>Publication<br/>Date</b> |
|---|-----------------------------|
| <u><a href="#">ACWA Guidelines for Groundwater Monitoring</a></u>   | 2014                        |
| <u><a href="#">Antelope Valley - East Kern Water Agency 2005 Urban Water Management Plan</a></u>  | 2005                        |
| <u><a href="#">Aquifer Recharge From the 1969 and 1978 Floods in the Mojave River Basin, California</a></u>   | 1980                        |
| <u><a href="#">Basin Conceptual Model and Assessment of Water Supply and Demand for the Ames Valley, Johnson Valley, and Means Valley Groundwater Basins</a></u>                                    | 2007                        |
| <u><a href="#">Bulletin No. 84 Mojave River Ground Water Basins Investigations, DWR</a></u>   | 1967                        |
| <u><a href="#">California's Groundwater Bulletin 118 Update 2003, DWR</a></u>   | 2003                        |
| <u><a href="#">Changes in Riparian Vegetation in the Southwestern United States: Historical Changes Along the Mojave River, California</a></u>  | 2001                        |
| <u><a href="#">Concentrations for Total Dissolved Solids, Arsenic, Boron, Fluoride, and Nitrite-Nitrate for Wells Sampled in the Mojave Water Agency Management Area, California, 1991-1997</a></u> | 1997                        |
| <u><a href="#">Conceptual Hydrogeologic Model and Assessment of Water Supply and Demand for the Centro and Baja Management Subareas Mojave River Groundwater Basin</a></u>                          | 2013                        |
| <u><a href="#">Data and Water-Table Map of the Mojave River Ground-Water Basin, San Bernardino County, California</a></u>   | 1992                        |
| <u><a href="#">Detection and Measurement of Land Subsidence Using Interferometric Synthetic Aperture Radar and Global Positioning System, San Bernardino County, Mojave Desert, California</a></u>  | 2003                        |
| <u><a href="#">Este Hydrologic Atlas</a></u>  | 2005                        |
| <u><a href="#">Evaluation of Geohydrologic Framework, Recharge Estimates, and Ground-Water Flow of the Joshua Tree Area, San Bernardino County, California</a></u>                                  | 2004                        |
| <u><a href="#">Evaluation of the Source and Transport of High Nitrate Concentrations in Ground Water, Warren Subbasin, California</a></u>   | 2003                        |
| <u><a href="#">Evapotranspiration Water Use Analysis of Saltcedar and Other Vegetation in the Mojave River Floodplain, 2007 and 2010</a></u>  | 2011                        |
| <u><a href="#">Flood-Hazard Study -- 100-Year Flood Stage for Apple Valley Dry Lake San Bernardino County, California</a></u>   | 1975                        |
| <u><a href="#">Flood-Hazard Study -- 100-Year Flood Stage for Lucerne Lake San Bernardino County, California</a></u>  | 1977                        |

|  |      |
|--|------|
| <u>Flood Plain Information Mojave River (Vicinity of Victorville) San Bernardino County, California</u>  | 1969 |
| <u>Generalized Streamflow Relations of the San Bernardino and Eastern San Gabriel Mountains, California</u>  | 1972 |
| <u>Geologic Map of California</u>  | 2002 |
| <u>Geologic Map of the Daggett Quadrangle, San Bernardino County</u>   | 1970 |
| <u>Geologic Map of the Lucerne Valley Quadrangle San Bernardino County, California</u>   | 1964 |
| <u>Geologic Map of the Old Woman Springs, Quadrangle, San Bernardino County, California</u>  | 1963 |
| <u>Geologic Map of the Rogers Lake and Kramer Quadrangles</u>  | 1960 |
| <u>Geologic Setting, Geohydrology and Ground-Water Quality near the Helendale Fault in the Mojave River Basin, San Bernardino County, California</u>         | 2003 |
| <u>Ground-Water Storage in the Johnson Valley Area, San Bernardino County, California</u>  | 1978 |
| <u>Ground-Water Storage and Surface-Water Relations along the Mojave River, Southern California</u>  | 1996 |
| <u>Groundwater Quality Analysis Technical Memorandum/Phase 1 Between Mojave Water Agency and Schlumberger Water Services</u>                                 | 2007 |
| <u>Health of Native Riparian Vegetation and its Relation to Hydrologic Conditions along the Mojave River, Southern California</u>                            | 1999 |
| <u>Helium Isotope Studies in the Mojave Desert, California: Implications for Groundwater Chronology and Regional Seismicity</u>                              | 2003 |
| <u>Hydrogeologic Evaluation Proposed R3 Project Mojave River Channel Area Vicinity Hesperia San Bernardino County, California</u>                            | 2008 |
| <u>Hydrogeologic Investigation of Camp Cady Wildlife Area CDFG</u>   | 2013 |
| <u>Hydrologic Analysis of Mojave River Basin, California, Using Electric Analog Model</u>  | 1971 |
| <u>In Situ Seismic Velocities of Granitic Rocks, Mojave Desert, California</u>   | 1979 |
| <u>Judgement After Trial and Appendix A (Maps)</u>   | 1996 |
| <u>Late Cenozoic Strike-Slip Faulting in the Mojave Desert, California</u>   | 1990 |
| <u>Lithologic and Ground-Water Data for Monitoring Sites in the Mojave River and Morongo Ground-Water Basins, San Bernardino County, California, 1992-98</u> | 2002 |
| <u>Mojave River Basin Ground-Water Recharge with Particular Reference to the California Floods of January and February 1969</u>                              | 1969 |
| <u>Mojave River Transition Zone Recharge Project Phase I Report: Transition Zone Hydrogeology</u>  | 2003 |
| <u>Mojave River Transition Zone Recharge Project Phase II Report: Groundwater Supply and Demand in the Transition Zone</u>                                   | 2003 |

|  |      |
|--|------|
| <u>Mojave Salt and Nutrient Management Plan Final, Volumes I and II (zipped)</u>   | 2015 |
| <u>Mojave Water Agency 1993 Regional Water Management Plan Johnson Valley/Morongo Basin Area</u>   | 1993 |
| <u>Mojave Water Agency 1994 Regional Water Management Plan</u>   | 1994 |
| <u>Mojave Water Agency 2002 Strategic Plan</u>   | 2002 |
| <u>Mojave Water Agency 2004 Regional Water Management Plan</u>   | 2004 |
| <u>Mojave Water Agency 2004 Regional Water Management Plan Volume 2: Appendices</u>  | 2004 |
| <u>Mojave Water Agency 2004 Regional Water Management Plan Program Environmental Impact Report SCH#2003101119</u>  | 2004 |
| <u>Mojave Water Agency 2004 Regional Water Management Plan Supplement A: 2005 Urban Water Management Plan Update</u>   | 2005 |
| <u>Mojave Water Agency 2010 Urban Water Management Plan</u>  | 2001 |
| <u>Mojave Water Agency 2015 Urban Water Management Plan</u>  | 2016 |
| <u>Mojave Water Agency 2015 Urban Water Management Plan Appendices</u>   | 2016 |
| <u>Mojave Water Agency Water Supply Reliability and Groundwater Replenishment Program Final Project Environmental Impact Report</u>  | 2006 |
| <u>Movement and Age of Ground Water in the Western Part of the Mojave Desert, Southern California, USA</u>   | 2004 |
| <u>Oeste Atlas</u>   | 2009 |
| <u>Oeste Hydrologic Sub-Area Hydrogeologic Report</u>  | 2009 |
| <u>Old Woman Springs Ranch Geoscience Support Services: Letters, Reports, Data, Assessment</u>   | 1991 |
| <u>Pliocene and Pleistocene Evolution of the Mojave River, and Associated Tectonic Development of the Transverse Ranges and Mojave Desert, Based on Borehole Stratigraphy Studies Near Victorville, CA</u> | 2000 |
| <u>Potential for Ground-Water Contamination from Movement of Wastewater through the Unsaturated Zone, Upper Mojave River Basin, California</u>   | 1993 |
| <u>Precipitation Depth-Duration and Characteristics for Antelope Valley, Mojave Desert, California</u>   | 1995 |
| <u>Precipitation History of the Mojave Desert Region, 1893-2001</u>  | 2004 |
| <u>Regional Water Table (1994) and Water Level Changes in the Morongo Basin, San Bernardino County, California</u>   | 1995 |
| <u>Regional Water Table (1996) and Water Level Changes in the Mojave River, the Morongo, and the Fort Irwin Ground-Water Basins, San Bernardino County, California</u>                                     | 1997 |
| <u>Regional Water Table (1998) and Ground-Water-Level Changes in the Mojave River and the Morongo Ground-Water Basins, San Bernardino County, California</u>   | 2000 |

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|---|----------------|
| <u>Regional Water Table (2000) and Ground-Water Level Changes in the Mojave River and the Morongo Ground-Water Basins, Southwestern Mojave Desert, California</u> | 2003           |
| <u>Regional Water Table (2002) and Water-Level Changes in the Mojave River and Morongo Ground-Water Basins, Southwestern Mojave Desert, California</u>            | 2004           |
| <u>Regional Water Table (2004) and Water-Level Changes in the Mojave River and Morongo Ground-Water Basins, Southwestern Mojave Desert, California</u>            | 2004           |
| <u>Regional Water Table (2006) and Ground Water-Level Changes in the Mojave River and the Morongo Ground-Water Basins, Southwestern Mojave Desert, California</u> | 2006           |
| <u>Regional Water Table (2008) in the Mojave River and Morongo Groundwater Basins, Southwestern Mojave Desert, California</u>                                     | 2008           |
| <u>Report on the Geophysical Investigations for the Harper-Hinkley Gap Area Near Hinkley, California</u>  | 2007           |
| <u>Report on the Utilization of Mojave River for Irrigation in Victor Valley, California</u>  | 1918           |
| <u>Riparian Vegetation and Its Water Use During 1995 Along the Mojave River, Southern California</u>  | 1996           |
| <u>Simulation of Ground-Water Flow in the Mojave River Basin, California</u>  | 2001           |
| <u>Simulation of Water-Management Alternatives in the Mojave River Ground-Water Basin, California</u>   | 2002           |
| <u>Some Desert Watering Places in Southeastern California and Southwestern Nevada</u>   | 1909           |
| <u>Source and Movement of Ground Water in the Western Part of the Mojave Desert, Southern California, USA</u>   | 2004           |
| <u>Technical Study to Evaluate a Potential Long-Term Water Management Program Between Mojave Water Agency and Metropolitan Water District</u>                     | 2005           |
| <u>The Mohave Desert Region, California A Geographic, Geologic, and Hydrologic Reconnaissance</u>   | 1929           |
| <u>Water Levels and Artesian Pressure in Observation Wells in the United States in 1939</u>   | 1940           |
| <u>Water Supply in the Mojave River Ground-Water Basin, 1931-99, and the Benefits of Artificial Recharge</u>  | 2001           |
| <u>Watermaster Annual Reports: Main Volume and Volume II (Appendix L)</u>   | 1993 - current |