Mojave Water Agency
13846 Conference Center Drive
Apple Valley, CA 92307

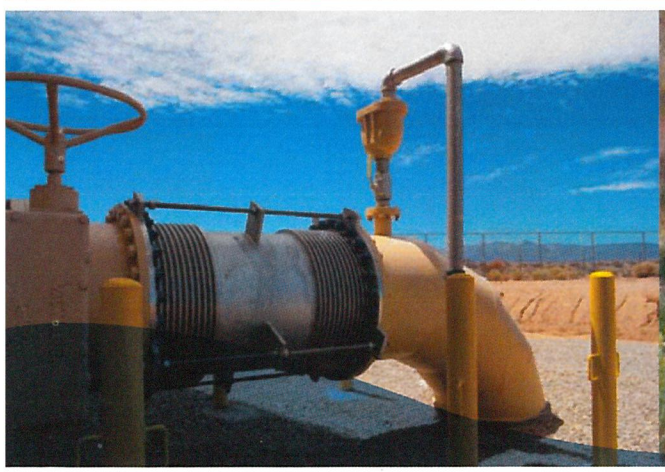
February 2018

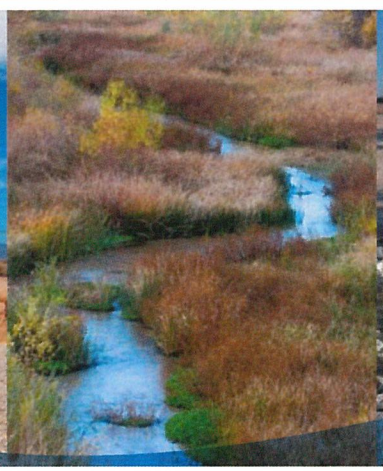
Mojave Water Agency

CITY OF ADELANTO CONNECTION TO R^3 PIPELINE

WaterSMART: Drought Response Program:
Drought Resiliency Projects for FY 2018
Funding Opportunity Announcement No. BOR-DO-18-F008

Location: San Bernardino County, CA





Mojave Water Agency
City of Adelanto Connection to R^3 Pipeline

WaterSMART Drought Response Program: Drought Resiliency Projects for FY 2018
Funding Opportunity Announcement No. BOR-DO-18-F008

Project Location
Mojave Water Agency
San Bernardino County, CA

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February 13, 2018

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5.1 Executive Summary

Date: February 13, 2018
Applicant Name: Mojave Water Agency (MWA)
City, County, State: Apple Valley, San Bernardino, California

Summary of Benefits to Achieve FOA Goals

- Increase reliability of water supply
- Improve water management
- Increase water management flexibility, making the water supply more resilient
- Project supports an existing drought plan

The Mojave Water Agency (MWA), working in collaboration with the City of Adelanto, is requesting federal funding to assist in the implementation of the R^3: Adelanto Connection Project. A pipeline project that will improve the City's drought resiliency by delivering imported SWP water from the MWA's Upper Mojave River Groundwater Regional Recharge and Recovery Project (R^3) to the City of Adelanto; an underserved part of the MWA's service area. The R^3 Project consists of recharge facilities along the Floodplain Aquifer of the Mojave River where SWP water can be readily recharged and banked for future use. For basin management purposes, and to leverage the value of water recharged by the R^3 Project, the recovery component of the R^3 Project (6 high-volume extraction wells located in the recharge area of the Floodplain Aquifer) are used to pump stored water. This stored water is wheeled as a potable wholesale source to various municipalities within the Alto Subarea of the Mojave Basin. Currently the City of Adelanto is drawing groundwater from the Regional Aquifer of the Alto Subarea (Regional Aquifer) to provide water to its residents. The Regional Aquifer has historically experienced significant overdraft. The new pipeline will reduce groundwater overdraft in the Regional Aquifer, thereby providing drought resiliency and increasing the reliability of Adelanto's water supply.

The goal of the WaterSMART Drought Resiliency Projects Funding Opportunity Announcement (FOA) No. BOR-DO-18-F008 is to support drought resiliency projects that will build long-term drought resiliency and reduce the need for emergency response actions. The Adelanto Connection Project meets these goals by providing the City of Adelanto with a supplemental supply of water to reduce their dependency on over-drafted groundwater resources. Additionally, Adelanto has not been able to meet their water demand needs due to groundwater production limitations. Which have been exacerbated by California's recent drought and has had to rely on approximately 1,000 AF of temporary supplemental water (25% of their 2015 demand as shown in Table 5-2 below) supplied by the neighboring City of Victorville via an intertie.

The Adelanto Connection Project is proposed as a Funding Group 1 project that would be placed in operation within two years of completion of a funding agreement. MWA seeks $300,000 of WaterSMART funding to assist in construction costs associated with the pipeline connection.

The project is categorized in the FOA under Task A - *Increasing the Reliability of Water Supplies through Infrastructure Improvements* and is consistent with the following suggested categories of Task A projects:

- Construction of new conveyance system components (pipelines, canals, pumping plants, etc.) to increase flexibility to deliver water from different sources, to facilitate voluntary water marketing or to deliver water from alternative sources.
- Constructing interties between water conveyance systems to increase options for water deliveries

The project is expected to take 13 months to complete and is expected to be operational by November 2019. The project is not located on a Federal facility.

Funding Summary

Funding Source	Cost Share	Percentage
MWA (Prop 1 – IRWM implementation grant funds)[1]	$2,200,000	88%
Reclamation	$300,000	12%
Total	**$2,500,000**	**100%**

[1] MWA and the City of Adelanto will seek alternate sources of state cost-share funding from programs such as the Proposition 1 IRWM funds designated for the Mojave IRWM area and the Drinking Water State Revolving Fund.

5.2 Background Data

The Mojave Water Agency 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.

The City of Adelanto was incorporated in 1970 and encompasses approximately 53.8 square miles with a 77-square-mile sphere of influence. The City's water supply comes solely from groundwater production from 15 potable wells in three pressure zones, transmission and distribution pipelines, booster stations and a tank farm. It is expected that single family residential service will account for the majority of Adelanto's growth with this growth accompanied by expansion of commercial/industrial developments.

Adelanto is classified by the State of California as a Severely Disadvantaged Community, a category the state defines as having an average household income that is less than 60% of the State's median household income of $61,489 based on the 2016 American Community Service estimate prepared by the U.S. Census Bureau. Based on the above, California considers the City of Adelanto to be a 100% Severely Disadvantaged Community with a median annual household income of less than $36,893. Figure 6-1 of this application shows the boundaries of the Severely Disadvantaged Area of the City of Adelanto.

Geographic Location

The: Adelanto Connection Project is located in San Bernardino County, California approximately 8 miles southwest of "Old Town" Victorville. The project latitude is 34°476756'N and longitude is -117°411557'W. The Project and the City of Adelanto both lie entirely within the service area of the Mojave Water Agency. 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 the 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. The Statewide Map (Figure 5-1) shows the location of MWA within the state of California. Figure 5-2 shows MWA's boundaries.

The Adelanto Connection Project is a pipeline that will extend from an existing R^3 connection point located north of the California Aqueduct and west of Hwy 395 to the Adelanto Tank Farm. Figure 5-3 shows the Project Location.

Source of 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.

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 with these proceedings resulting in the Warren Valley Basin Judgment and the Mojave Basin Area Judgment. MWA serves as the Watermaster for the Mojave Basin Area Judgment and is the contractor for State Water Project (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 from 2013 to 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. The allocation from the Dudley Ridge purchase is being transferred to MWA incrementally with the last portion of this purchase resulting in the 4,000 AFY increase on total Table A allocation set to take place in 2020. Water imported from the California Bay-Delta is delivered to the MWA's extensive groundwater recharge facilities (including the R^3 banking area) to replenish groundwater pumped by individuals and by retail water suppliers.

MWA has a long-term average natural water supply of 57,349 AFY, including surface water and subsurface groundwater inflow in the five subareas of the Mojave Basin as presented in Table C-1 of the Twenty-Third Annual Report of the Mojave Basin Area Watermaster for Water Year 2015-2016. The City of Adelanto and the associated project are located in the Alto Subarea of the Mojave Basin Area Adjudication.

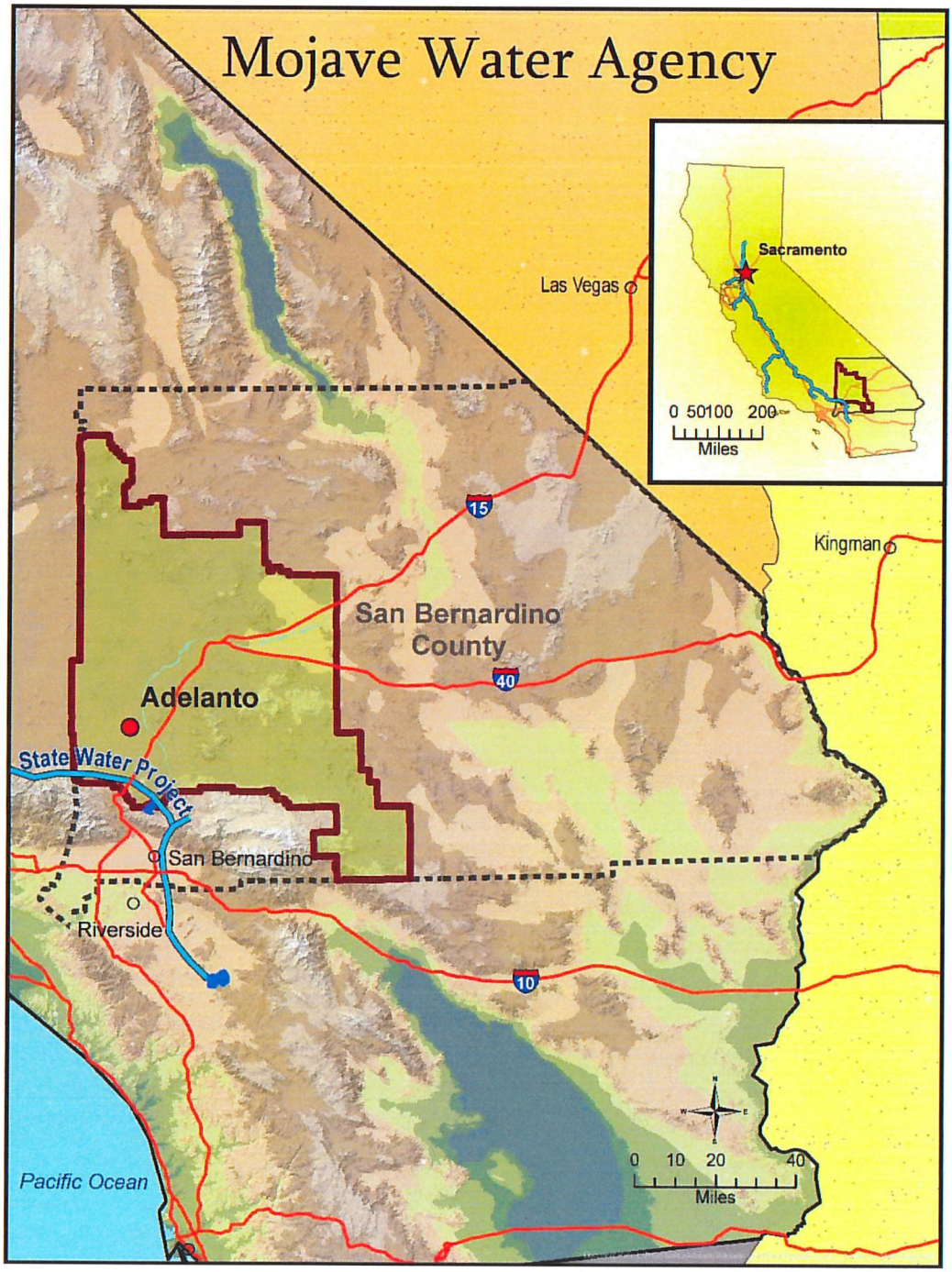


Figure 5-1 Statewide Map

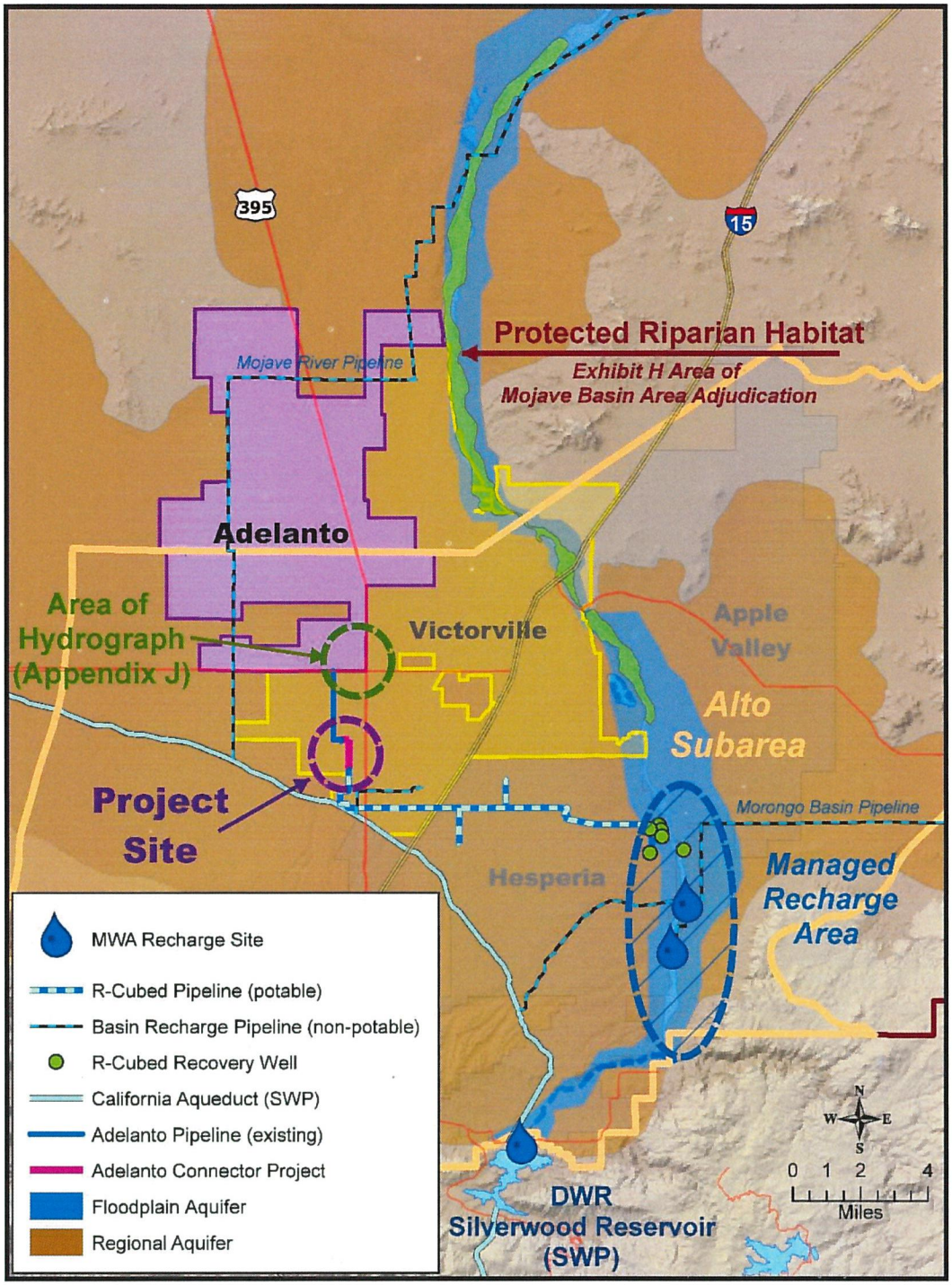


Figure 5-2 Boundaries of the Mojave Water Agency

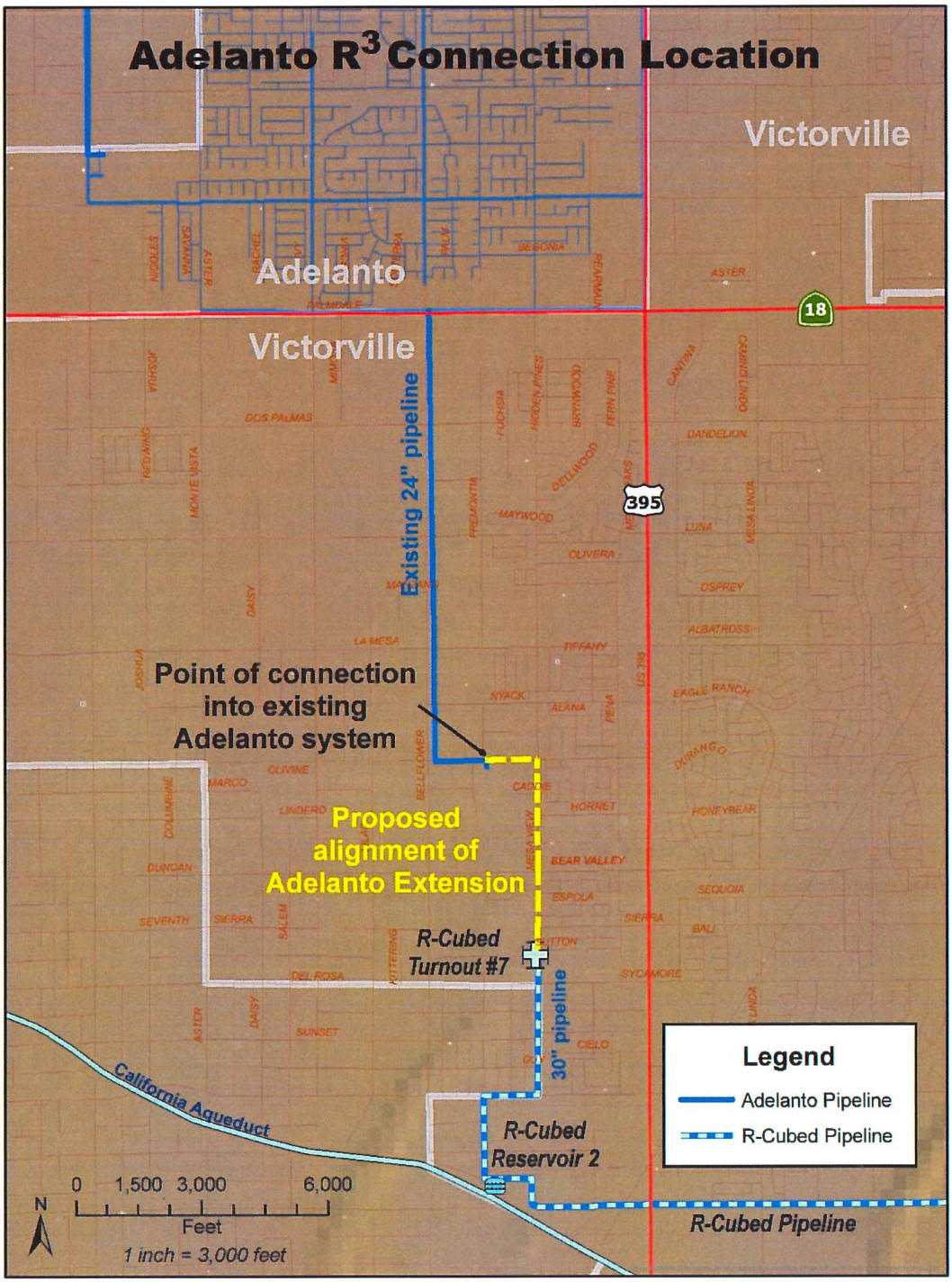


Figure 5-3 Project Location

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.

Average rainfall within the lower-lying areas of the Mojave Basin Area and the Morongo Basin/Johnson Valley Area is roughly five inches per year, and the annual native water supply recharging the region's groundwater aquifers is estimated to average 54,000 AF/Y.

A portion of the water pumped from the ground is returned to the groundwater aquifer and becomes part of the available water supply. This return flow, shown in Table 5-1, is calculated as a percent of the previous year's water production for each water use category, as defined by the Watermaster. 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.

Total Quantity of Water Supply

The values shown in Table 5-1 represent long-term average conditions and do not take into account acute drought periods. Additionally, Table 5-1 does not reflect basin management practices such as locally overdrafted areas of the aquifer nor areas of surplus due to groundwater banking. Importantly, to perform basin management and long-term sustainability, projects such as the Adelanto Connection are necessary to manage natural and anthropogenic stresses to the groundwater basin(s).

Table 5-1 Summary of Current and Planned Water Supplies (AF/Y)

Water Supply Source	2015	2020	2025	2030	2035	2040
Imported Supplies						
SWP [a]	53,196	55,676	55,676	55,676	55,676	55,676
Yuba Accord Water	0	600	600	600	600	600
Local Supplies						
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 [b]	0	0	0	0	0	0
Total Supplies	**161,143**	**168,781**	**170,896**	**173,482**	**176,152**	**178,582**
Projected Demand [g]	**138,009**	**148,366**	**153,186**	**159,079**	**165,164**	**170,700**

a) Assumes 62% of Table A amount based on the California DWR State Water Project Final Delivery Capability Report 2015.

b) 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 89,800 AF/Y of SWP Table A (primary) allocation. Of this allocation, the

MWA has received 30,600 AF/Y on average over the past decade. This water is brought into MWA through various conveyance facilities and then distributed for groundwater recharge.

The City of Adelanto has an adjudicated water right or "Base Annual Production [BAP]" of 4,366 AF under the Mojave Basin Area Adjudication. The Alto Subarea of the adjudicated area has been ramped down to 60% BAP which currently gives the City of Adelanto a "Free Production Allowance [FPA]" of 2,620 AF, the volume of water that can be produced without incurring a Replacement Obligation to the basin (the purchase of the same volume of imported SWP water for recharge to keep the basin in balance). The 2016-2016 Watermaster Report for the Mojave Basin Area Adjudication shows the City of Adelanto as having a verified production of 3,773 AF for the 2015-2016 water year. This volume of produced groundwater was from City of Adelanto wells which are unable to keep up with current demand due to loss of production associated with the drought. To meet demands, approximately 1,000 AF/Y of temporary supplemental water is being wheeled to Adelanto via an intertie from the neighboring City of Victorville's water infrastructure. If available, the City would take up to 2,340 AF/Y of imported water from the R^3 Project to reduce stress on the groundwater basin.

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 37 major water purveyors and 146,877 connections in the service area. The City of Adelanto water district is one of the water purveyors and have 8,165 connections.

Current and Projected Water Demand – Data provided by MWA show total production in the service area during 2015 to have been 134,238 AF, a reduction from the rate of production during 2005 of 156,181 AF due to conservation efforts and implementation of the adjudication. In the City of Adelanto, all water demand is for potable water. Table 5-2 shows water demands throughout the City for 2015. Single Family Residences accounted for 61.5% of the usage.

Table 5-2: Adelanto Demands for Potable and Raw Water – 2015 Actual

	2015 Actual		
Use Type	Additional Description	Level of Treatment When Delivered	Volume (AF/Y)
Single Family		Drinking Water	2,491
Mulit-Family		Drinking Water	275
Commercial/Institutional		Drinking Water	417
Industrial		Drinking Water	234
Irrigation	Ag and landscape	Drinking Water	3
Other		Drinking Water	20
Losses		Drinking Water	607
		Total	4,047

Projected water use for the entire Mojave Water Agency service area is calculated by multiplying the per capita water use (estimated from 2010 to 2015 purveyor data) by population projections from the Mojave Water Agency Population Forecast conducted by

Beacon Economics in December 2015 for the regional Urban Water Management Plan. Projected water demand can be found in Table 5-1 above. By 2040, MWA is predicting the regional demand to increase to 170,700 AF/Y, approximately 19% higher than the 2015 water demand. MWA also projected water demands for its largest purveyors, City of Adelanto being one of them. The Projected Water Demand for the City of Adelanto is shown in Table 5-3.

Table 5-3: MWA Projected Water Demands by Purveyor (AF/Y)

Purveyor	2015	2020	2025	2030	2035	2040
Adelanto, City of	4,047	4,578	4,872	5,292	5,737	6,195

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 the Urban Water Management Plans developed by both the MWA and the City of Adelanto. Demand for imported SWP water, primarily used for mitigating groundwater overdraft averaged approximately 30,600 AF/Y per year over the past decade and is projected to increase to 46,200 AF/Y by 2035. The 2012 SWP Reliability Report from the State of California predicted 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 – Figure 5-4 shows MWA's existing and planned water conveyance, recharge and recovery facilities including pipelines, pumping plants, recharge areas and wells. Table 5-4 below summarizes the length of pipelines and number and extent of other water management facilities owned and operated by MWA.

Table 5-4: Water Conveyance and Delivery System

Water Conveyance and Delivery System	
System Used	**Quantity**
Unlined Canal	None
Lined Canal	None
Pipelines	168 miles
Pumping Plants	3
Spreading Grounds	24 acres
Wells	6
Farm Turnouts	None
Spillway Basins	None
Drains	None
Direct River Turnouts	7

To distribute water from the California Aqueduct to the points of need, MWA has taken a central role in designing and constructing the Morongo Basin (71-mile) and Mojave River (76-mile) large diameter, non-potable pipelines, which extend from the California Aqueduct. The

Morongo Basin Pipeline was completed in 1994 and deliveries for recharge began in 1995 to various water districts in the region known as the Morongo Subarea. The MWA also financed and constructed the Mojave River Pipeline which was completed in 2006 and delivers non-potable recharge water from Barstow east to Newberry Springs.

MWA also owns and operated the R^3 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. R^3 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 R^3 for basin management offsets their need to continue excessive within the declining regional aquifer system

Past Working Relationships 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 below:

USBR Challenge Grant No. R09AP35R21	Oro Grande Wash Groundwater Recharge	$3,456,660	10/2012
USBR Title XVI Grant No. R10AC35R15	Regional Recharge and Recovery	$10,997,056	5/2013
USBR WaterSMART Grant No. R15AS00002	CII Turf Replacement Program	$300,000	7/2015
USBR WaterSMART Grant No. BOR-DO-17-F012	CII Turf Replacement Program	$300,000	12/2019
USBR Water Supply Management Studies MOU No. R10-MU-35-0020	Phase I: Evapotranspiration Water Use Analysis of Salt Cedar and other Vegetation in the Mojave River Flood Plain, 2007 and 2012		8/2011
	Phase II: Mojave River Watershed Climate Change Assessment		9/2013
	Phase III: Baja Subarea Water Use Efficiency Investigation		ongoing
USBR WaterSMART Grant No. R16-FOA-DO-004	CII Turf Replacement Program	$300,000	10/2017

5.3 Technical Project Description

Scope of Work - The Adelanto Connection Project involves construction of a 5,800 foot-long 24-inch ductile iron water main that will connect the water storage facilities of the City of Adelanto to the existing Upper Mojave River R^3 Project. This pipeline would add Adelanto as a direct turnout connection to the R^3 Project. The new pipeline would start at the existing R^3 connection point located just north of the California Aqueduct and west of Highway 395 as shown on Figure 5-3 and would run northerly to Adelanto's existing 5-million-gallon tank farm.

Project Tasks - Program implementation has been divided into the following eight tasks: 1) Administration, 2) Reporting, 3) Design, 4) Environmental Compliance, 5) Permits/Approvals, 6) Contract Bidding 7) Construction, and 8) Construction Management. Due to the MWA's extensive experience managing pipeline construction projects and collaborating with

Reclamation, MWA will manage each of these grant-related activities. Operation of the pipeline, which is outside the scope of this grant application, will be performed by Adelanto.

The tasks listed below are defined to accomplish the Project Work and are organized to track Budget and Schedule items presented in this application. If selected to receive a grant award, the NEPA and CEQA processes would commence immediately. A Grant Agreement is expected to be signed as early as May 2018, bidding is scheduled to take place in April 2019 and completion of construction is planned by the end of November 2019.

The proposed Project will improve drought resiliency and water supply reliability for the severely disadvantaged community of Adelanto by providing Adelanto with a direct connection to the groundwater storage and banking facilities of the R^3 Project. The Adelanto Project includes 5,800 linear feet (LF) of 24-inch diameter ductile iron water main, tanks, injection pumps and nozzles for chlorine treatment and telemetry and communications hardware and software to connect to the new pipeline with the R^3 Project's SCADA system. Appendix A is a cost estimate that presents details of the lengths of pipe and fittings included in the design.

All project milestones assume completion of CEQA/NEPA compliance prior to award of any construction contract. See Appendix B for the proposed Project Schedule.

Task 1: Administration - 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) coordination of field visits with USBR personnel, (4) preparation of invoices and maintenance of financial records, (5) preparation of grant reimbursement requests, and (6) other deliverables as required.***

Task 2: 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 3: Design - Preliminary design of the Project has been completed, including Project sizing and preliminary cost estimates. Much of the preliminary work is based on design and pricing information from a similar R^3 connection project being undertaken by the City of Victorville. Appendix C – Victorville Pipeline Drawings presents representative drawings from this project. Remaining work includes completion of design plans and specifications.

Deliverables: Design documents will be prepared and approved at the final level.

Task 4: Environmental Compliance - A National Environmental Quality Act (NEPA) document will be completed for the Adelanto Connection Project. MWA staff will work with environmental specialists from the Lower Colorado Region's Temecula Area office to determine the scope of the required documentation. Under this task, support will be provided to Reclamation, as needed, regarding the preparation of the necessary NEPA compliance documents and for mitigation throughout the proposed Project. In addition to meeting NEPA requirements, MWA will act to comply with the requirements of the ESA and CEQA.
Deliverables: Confirm NEPA compliance requirements with Reclamation's environmental staff, assist in preparation of NEPA documentation and provide the results of the pre-activity biological survey at the time of construction. Compliance with CEQA and the ESA will be performed in parallel with NEPA.

Task 5: Permits/Approval - This task involves the permitting of all Project works. The Project is located exclusively within rights-of-way accessible by the cities of Adelanto and Victorville. Permits that may be required to implement the project along with a process for obtaining these permits is described in Section 8 - *Required Permits and Approvals.*
Deliverables: (1) Completed and approved construction and encroachment permits, (2) compliance with the MDPA Fugitive Dust Control Rule.

Task 6: Contract Bidding - Bids for construction will be solicited through a competitive bidding process on the basis of final plans and specifications. The standard specifications include language relating to obtaining permits and approvals prior to construction. In particular, the specifications states, "The Contractor is an independent contractor and shall, at his sole cost and expense, comply with all laws, rules, ordinances and regulations of all governing bodies having jurisdiction over the work, obtain all necessary permits and licenses therefore…" Contractor responsibility for permitting will include preparation of a Storm Water Pollution Prevention Plan and any necessary Caltrans permitting. A pre-activity survey will be ordered and conducted by a qualified biologist shortly before the start of construction.
Deliverables: (1) advertisement for bids, 2) abstract of bids received, (2) evaluation of bids and 4) award to successful bidder.

Task 7: Construction - This task entails the furnishing and installing of all Project works. Contracts for pipeline construction and ancillary work will be awarded to the successful bidder(s) who will perform the work. Project construction is scheduled to begin in October 2018 and all project components will be completed by the end of November 2019. Please see Appendix B for the proposed Project Schedule.
Deliverables: Reference Task 8: Construction Management

Task 8: Construction Management - This task involves activities ranging from the issuance of a Notice to Proceed to filing a Notice of Completion for the Project works and preparation of "As-Built" drawings. These activities can generally be categorized as field inspection and contract administration, where the latter includes many items, such as the pre-

construction conference, correspondence with the Contractor, submittal review, progress payments, periodic meetings with the Contractor, and Contract Change Orders.
Deliverables: (1) abstract of bids received; (2) successful bid proposal; (3) construction progress pay estimates; (4) start-up and testing verification; (5) Notice of Completion; and (6) "As-Built" drawings.

The proposed Project will be implemented under the direction of MWA working closely with City of Adelanto staff and consultants. Nicholas Schneider, WMA's Water Conservation and Forecast Manager will have responsibility for overall Project management, while Brian Wolfe, City of Adelanto Contract Engineer, will serve as the Point of Contact for Reclamation and others involved in the Project, and provide technical Project Management on behalf of the City of Adelanto and MWA.

5.4 Performance Measures

Providing high quality water to the Severely Disadvantaged Community of Adelanto delivered directly from the R^3 Project will relieve the City of the need to rely exclusively on local groundwater. By linking Adelanto to the R^3 Project, the Adelanto Connection Project links the Alto Subarea, an area where natural groundwater recharge can only be accomplished using local precipitation and storm water, with the R^3 Project that actively recharges and banks imported SWP water in the Mojave Floodplain Aquifer. In addition to supporting Adelanto, the Project aids MWA in performing its mission of providing a reliable, resilient water supply throughout its service area.

The performance measure will be a comparison of the volume of water received by the community from the R^3 pipeline connection with pre-project and post-project volumes of groundwater pumped by the City. Analysis of these measured volumes will be augmented with observations of pre-project and post-project groundwater levels utilizing MWA's extensive groundwater monitoring network to assess project impacts on the Alto Subarea.

If groundwater overdraft continues, MWA and the City of Adelanto will meet to evaluate the conditions leading to the continued overdraft and to adjust operation of the R^3 Pipeline Connection in ways that will relieve the continued overdraft.

5.5 Evaluation Criteria

5.5.1 Criterion A: Project Benefits (40 Points)

How will the project build long-term resilience to drought?
The Adelanto Connection, with an expected service life of at least 50 years, is expected to provide long-term drought resiliency to the City of Adelanto and greatly reduce the need for stopgap responses to future droughts. The City now relies almost exclusively on groundwater from 15 production wells drawing potable water from the Alto Subarea of the Mojave Basin. The Project will build long-term resilience to drought by introducing a supplemental water supply from the R^3 Project facilities. At times of drought and during peak water use periods heavy pumping of Adelanto's wells has produced overdraft and inability to keep up with

demand and causing the City to temporarily supplement their supply with water wheeled from a neighboring city, Victorville, via an intertie (see hydrograph in Appendix H). The approximate 1,000 AF/Y of additional temporary supply from Victorville is less than the 2,340 AF/Y the City of Adelanto estimates it would utilize if a more reliable source of supplemental water were immediately available to reduce stress on the local aquifer and infrastructure.

Will the project make additional water supplies available?
Yes, it will provide water to the City of Adelanto from the MWA's R^3 Project.

If so, what is the estimated quantity of additional supply the project will provide and how was this estimate calculated?
Based on Adelanto's current rate of water use and of groundwater overdraft from the Alto Subarea, it is estimated that the Adelanto Connection Project will deliver an average of 2,340 AF/Y. This average rate is expected to fluctuate considerably from year to year being substantially greater during periods of drought and will increase over time congruent with the increase in demand projected in the City of Adelanto's UMWP.

What percentage of the total water supply does the additional water supply represent? How was this estimate calculated?
The City of Adelanto used 4,366 AF/Y of water in the 2015-2016 water year. By delivering an average volume of 2,340 AF/Y, the new Adelanto Connection Project will contribute approximately 54 percent of Adelanto's total water supply, thereby providing significant relief from the City's current reliance on groundwater.

Provide a brief description of the benefits associated with the additional water supplies.
The Project has several benefits associated with the additional water supply. The Project will provide support and assistance for drought resiliency to a Severely Disadvantaged Community by stabilizing water levels in a groundwater basin that is experiencing ongoing declines. By stabilizing groundwater levels and providing Adelanto with an alternative source of water supply, the project protects local beneficial uses, particularly domestic water supply. See Appendix H – Water Level Elevations for a discussion of how the project may benefit domestic water supply. The Project also addresses the California 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 drought and leveraging the water banking and conjunctive use aspects of the R^3 project.

Will the project improve the management of water supplies?
Yes, by providing Adelanto a firm supplemental source of supply, the project substantially increases the City's operational flexibility and its capacity to respond to droughts. This is accomplished by shifting groundwater production away from an aquifer that is difficult to manage to an aquifer that is highly manageable through the existing extensive infrastructure.

If so, how will the project increase efficiency or operational flexibility
The supplemental water supply delivered through the Adelanto Connection Project will help Adelanto deliver water to its residents without requiring them to overdraft the local aquifers within the Alto Subarea, an action that increases pumping lifts and risks generating conflicts with others who rely on groundwater in the subarea. By providing recharged water that,

thanks to the R^3 Project, meets standards for domestic use, MWA is optimizing the basin in the use of the region's water-related assets to maximize available supplies to meet projected demands while mitigating against risk. Simply, the Alto Subarea is managed by recharging and storing imported SWP water, when readily available, in an area of the basin which is highly manageable. This water is recovered in times of need and the resource is moved to where the demand is, thus removing stress on the less managed parts of the basin.

What is the estimated quantity of water that will be better managed by this project?
The quantity of water that will be better managed is estimated based on the volume of R^3 Project water that will be delivered through the Adelanto Connection. The pipeline connection project is initially expected to convey 2,340 AF/Y to the City of Adelanto under average conditions. This volume was identified as the initial supply of supplemental water, because it is the volume of water that Adelanto is estimated to have overdrafted to meet Water Year 2015-16 demands (1,516 AF) plus the calculated additional volume needed to reduce stress on the City's overtaxed water infrastructure and local aquifer.

How will the project increase efficiency or operational flexibility?
The Project increases efficiency and operational flexibility by providing a supplemental water supply for the City of Adelanto. This additional water supply will reduce dependency on local groundwater thus providing flexibility. As water conveyed via the Adelanto Connection will be delivered directly to the City's tank farm, distribution to the City's primarily domestic customer base will make efficient use of the City's municipal system.

What percentage of the total water supply does the water better managed represent?
The 2,340 AFY of water that is better managed will represent 54 percent of the total water supply for the City of Adelanto with this percentage expected to grow as the population of Adelanto increases. The volume of water that will be better managed immediately upon implementation of the Adelanto Connection was identified because it is the volume that Adelanto is estimated to overdraft from their groundwater supply to meet demand plus the volume of additional water estimated by the City to be needed to reduce stress on the local aquifer and the City's water infrastructure.

Provide a brief qualitative description of the degree of anticipated management benefits.
Water management benefits associated with the Project include provision of drought resiliency to a Severely Disadvantaged Community by stabilizing a locally overdrafted groundwater basin. The Project will also address the California 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 drought.

Will the project make new information available to water managers?
Operation of the project will be extensively monitored through the ongoing MWA groundwater monitoring program, including MWA's participation in the California Statewide Groundwater Elevation Monitoring (CASGEM) Program, to determine the impact various levels of water delivery from the R^3 Project have on groundwater pumping by the Adelanto and on groundwater levels in the Alto Subarea which underlies the City.

Will the project have benefits to fish, wildlife, or the environment? .

This Project will benefit fish, wildlife and the environment because it will reduce reliance on groundwater immediately upstream from a rare desert riparian habitat with a history of degradation from groundwater overpumping. These riparian areas, defined by the California Department of Fish and Wildlife, are referred to as "Exhibit H Areas" in the Mojave Basin Adjudication and are protected by established minimum water levels to be maintained as performance metrics of the adjudication. Historically, groundwater production in and around these Exhibit H areas has resulted in the lowering of the local water table which has had deleterious impacts on these riparian areas. By shifting production away from this critical habitat area into an area easily recharged and managed, the Adelanto Connection Project will allow water levels to recover, which will support local ecosystems.

5.5.2 Criterion B: Drought Planning and Preparedness

- *Attach a copy of the applicable drought plan, or sections of the plan.*

There are three documents that discuss drought management for the region. Sections describing drought management from the Urban Water Management Plans (UWMP) of both the City of Adelanto and MWA are included in Appendix D and E, respectively. Included in Appendix F is the Mojave Integrated Regional Water Management Plan (IRWMP).

- *Explain how the applicable plan addresses drought.*

The two UWMPs go into extensive detail about regional water supply availability and response to drought. The available supplies and water demands were analyzed to assess the region's ability to satisfy demands during three scenarios: an average water year, single-dry year, and multiple-dry years. Various drought scenarios related to supply and demand were prepared for the years 2015 and 2040, in five-year increments. The average water year was determined by the average historical data between 1922 and 2003. Single-Dry Water Year analysis was based on the 1977 and 2014 droughts. Drought response and long-term supply contingencies are also discussed in these documents.

- *Explain whether the drought plan was developed with input from multiple stakeholders.*

Broad stakeholder involvement has been and continues to be an essential component of the Mojave IRWMP process. During the development of the 2004 IRWMP, significant efforts were made to identify and solicit input from stakeholders having an interest in long-term reliable water supplies for the Region from the onset of the process. These efforts involved one-on-one interviews, evaluation of questionnaires and holding meetings with individuals, groups and the local stakeholder group, the Technical Advisory Committee for the Mojave IRWMP. Outreach efforts were directed at stakeholders from local water agencies, state and federal agencies, municipalities, San Bernardino County, and local community groups, including environmental organizations, regulatory agencies, development interests, tribal communities, disadvantaged communities and other community associations.

These stakeholder involvement efforts have continued during the 2014 update process. Ultimately, the planning group included 58 municipal water purveyors, seven municipal and county agencies, fourteen state and federal agencies, and over 30 community interest groups. All of these groups have engaged in the IRWM Plan update and its ongoing implementation.

- *Does the drought plan include consideration of climate change impacts?*

Section 3.4 of the Adelanto UWMP and Section 1.6 of the MWA UWMP both discuss the potential effects of Climate Change. These sections reference the Mojave IRWMP's Climate Change Assessment.

Section 12 of the IRWMP is devoted to analysis of the impacts of climate change and how these impacts are integrated into the regional planning process. The California Department of Water Resources (DWR) Integrated Regional Water Management Guidelines for Proposition 84 and 1E (2012 Guidelines) was used for guidance in developing this section of the IRWMP.

MWA also contracted with the Technical Service Center of the US Bureau of Reclamation (USBR) to prepare a climate change assessment of the Mojave River Watershed. The final report, Mojave River Watershed Climate Change Assessment (USBR Climate Report) (USBR 2013) (included in Appendix G of the IRWMP) was the basis for the subsections that discuss current regulatory constraints, greenhouse gases, climate change projections, the region's vulnerability to climate change, and next steps for future IWMP updates.

- *Describe how your drought resiliency project is supported by an existing drought plan.*

This drought resiliency project is supported by the existing IRWMP and both UWMPs based on the following planning objectives: balance of supply and demand, optimize use of assets, and preserve water quality. Drought scenarios and associated contingency options are also discussed in the MWA's regional 2015 UWMP and the associated City of Adelanto UWMP.

- *Does the drought plan identify the proposed project as a potential mitigation action?*

Project 94R in the IRWMP is the construction of an arsenic and fluoride treatment system to provide additional water to the City of Adelanto. This project was considered high importance and high urgency. The Adelanto connection pipeline will accomplish the goals of the treatment project by bringing high quality water from the R^3 Project to the City of Adelanto. The approach is modeled after the experience of the City of Victorville which has been able to cease operation of their arsenic treatment plants after gaining access to R^3 Project water.

- *Does the proposed project implement a goal or need identified in the drought plan?*

The Project meets the following UWMP objectives related to drought response:

- Maintain stability in previously overdrafted groundwater basins and reduce overdraft in groundwater basins experiencing ongoing water table declines.
- Provide support and assistance to Disadvantaged Communities and help facilitate projects and programs that benefit those communities.
- Optimize the use of the Region's water-related assets to maximize available supplies to meet projected demands while mitigating against risks.

- *Describe how the proposed project is prioritized in the referenced drought plan?*

The drought response sections of the UWMP do not include specific, prioritized projects. However, this Project satisfies key objectives of the plans noted in the previous response.

5.5.3 Criterion C: Severity of Actual or Potential Drought Impacts

- *What are the ongoing or potential drought impacts to specific sectors.*

Almost all of the water used within MWA's service area is supplied by pumped groundwater. To supplement local groundwater supplies, MWA recharges the groundwater basins with imported water from the SWP, natural surface water flows, wastewater imports from outside MWA's service area, and return flow from pumped groundwater. MWA's sources are only used to recharge the groundwater basins and are not supplied directly to any retailers, with the exception of the High Desert Power Project and the LUZ Solar Plant.

The City of Adelanto lies in the western portion of the Alto Subarea where groundwater levels have exhibited declines consistent with locally heavy pumping and limited local recharge. These conditions will worsen absent implementation of drought resiliency projects due to projected increases in the population of Adelanto and anticipated reductions in the reliability of its groundwater supplies. If there is no action taken, continued reliance on local groundwater will lead to declining groundwater levels and potential depletion of the basin, land subsidence, harm to groundwater-dependent ecosystems, and economic losses.

- *Whether there are public health concerns or social concerns*

In the City of Adelanto, a 100 percent Severely Disadvantage Community, groundwater quality constraints are present in several wells. One well has been removed from service because arsenic levels exceed the maximum contamination level. A second well was found to have high levels of arsenic and was temporarily removed from service, but the water is now being blended with higher quality water to decrease the arsenic concentration. Four wells have elevated levels of iron and manganese for which filtration treatment has been instituted. The proposed project will bring a high quality source of potable water to the City of Adelanto which can be used in lieu of local impaired groundwater or be utilized for blending.

- *Whether there are ongoing or potential environmental impacts*

The Mojave Region is an ecologically diverse area with biodiversity and species uniquely adapted to the desert region. The Region is host to 47 threatened, endangered, or candidate species, and/or designated critical habitat. Because many of the Region's species are adapted to very specialized conditions, their adaptability to climate change impacts is limited.

Appendix G of the Mojave IRWMP is the US Bureau of Reclamation Mojave River Watershed Climate Change Assessment. The assessment identified vulnerabilities in the Region which include Ecosystem and Habitat. Changes in temperature, precipitation patterns and fire occurrences due to climate change can alter ecosystems that provide habitat for California's native species. These impacts can result in species loss, increased invasive species ranges, loss of ecosystem functions, and increased stresses on sensitive systems, including existing riparian and/or wetland areas in the Region.

- *Whether there are ongoing, past or potential, local, or economic losses associated with current drought conditions*

Yes, there have been past economic losses. However, the greater concern is the avoidance of future losses as the projected growth of Adelanto coupled with the risks to water supply reliability resulting from climate change increase the City's vulnerability to drought.

- *Whether there are other drought-related impacts not identified above.*

Although there are tensions regarding water supply and water use within the region, because the MWA service area overlies adjudicated groundwater basins and because the MWA serves as the Watermaster for these basins, there is a well-established process for addressing such tensions. Nevertheless, drought will exacerbate existing tensions and require more rigorous implementation of water conservation and allocation measures.

- *Describe existing or potential drought conditions in the project area.*

California's recent drought represented the severe conditions that the state is likely to experience in the future. The hydrographs presented in Appendix H – Water Level Elevations, indicates the impact of the drought on groundwater levels in Adelanto. As noted below, the MWA received only 5 percent of its SWP allocation during a portion of the drought (2014).

- *Is the project in an area that is currently or has recently suffered from drought?*

The Mojave Region was severely impacted by California's drought which started in late 2012 and persisted through 2016. During the drought's peak unprecedented reductions were imposed on SWP deliveries that led to allocations of 5 percent of the MWA contracted supply.

Given the arid conditions and limited water supply that characterize the MWA service area, California's recent drought has had an immediate impact. For this reason, implementation of the Adelanto Connection Project is particularly valuable as the Project offers a mechanism to rapidly establish drought resiliency to a vulnerable, severely disadvantaged community.

As noted above, the 2012 SWP Reliability Report predicted that Sierra Nevada snowpack will diminish by 25 to 40 percent from the historical average by mid-century suggesting that deliveries from the State Water Project will become increasingly vulnerable to curtailment. The resulting anticipated rate of groundwater extraction may result in deeper pumping lifts and land subsidence as predicted in the USGS 2014 Mojave Water-Level Studies (USGS California Water Science Center). Included in Appendix G is the 2017 Land Subsidence in the Southwestern Mojave Desert Fact Sheet and Appendix H shows the water level elevation change at a monitoring point near the Adelanto water tank farm.

- *Describe any projected increases to the severity or duration of drought in the project area resulting from climate change.*

As discussed above, Section 12 of the Mojave IRWMP and Appendix G of the IRWMP discuss the Climate Change effects on the Region and the projected increases in the severity and duration of drought in the project area. The 2012 SWP Reliability Report, also noted above, addresses predicted reductions in snowpack in the Sierra Nevada and the possible impact of these reductions on SWP operations.

5.5.4 *Criterion D:* Project Implementation

- *Describe the implementation plan of the proposed project.*

The Adelanto connection project is estimated to be completed in 13 months with project activity extending from May 2018 to November 2019. The major milestones are discussed above in the Project Task Section.

- *Describe any permits that will be required.*

Permits that may be required to implement the project along with a process for obtaining these permits is described in Section 8 of this application *Required Permits and Approvals.*

- *Identify and describe any engineering or design work performed specifically in support of the proposed project.*

Conceptual engineering design for this project has been performed and formal design is scheduled to begin in October 2018. The Project will be similar to a project recently designed for connections to the R^3 Project by the City of Victorville.

- *Describe any new policies or administrative actions required to implement the project.*

No new policies or administrative actions will be required to implement the Project.

- *Describe how the environmental compliance estimate was developed.*

Guidance in previous WaterSMART FOA's has suggested that the minimum amount budgeted for environmental compliance should be equal to at least 1 to 2 percent of the total project costs. In this instance, we have budgeted environmental compliance at 2 percent of construction costs (1.7 percent of total project costs). The estimated compliance costs have not yet been discussed with the local Reclamation office.

5.5.5 *Criterion E:* Nexus to Reclamation

- *How is the proposed project connected to a Reclamation project or activity?*

Two Reclamation activities related to the proposed project are the USBR Title XVI Grant No. R10AC35R15 for the Regional, Recharge, and Recovery Project (R^3); and the Water Supply Management Studies MOU No: R10-MU-35-0020. The proposed project will link the City of Adelanto to the R^3 Project and will potentially help with the outcome of the Water Supply Management Studies. However, while recovering water recharged by the R^3 Project, the Adelanto connection is a drought resiliency project and not a water recycling or reclamation effort. As such, the project is distinct from the Title XVI-funded R^3 Project.

- *Will the project benefit any tribe(s)?*

This project will not benefit any tribes.

- *Does the applicant receive Reclamation project water?*

No, the MWA is a State Water Project contractor.

- *Is the project on Reclamation project lands or involving Reclamation facilities?*

The Project is not on Reclamation project lands or involving Reclamation facilities.

- *Is the project in the same basin as a Reclamation project or activity?*

Yes, Reclamation has supported, and continues to support, water management activities of the MWA. In addition, Reclamation is involved in projects outside of the MWA's service area but within the Mojave River Basin.

- *Will the proposed work contribute water to a basin where a Reclamation project is located?*

No, the project will move water within a basin where there is on-going Reclamation activity but will not contribute new water to the basin.

6 Project Budget

6.1 Funding Plan and Letters of Commitment

(1) Describe how the non-Federal share of project costs will be obtained.

The MWA will implement this project to benefit the City of Adelanto using various state and federal funding sources. Federal funds for the project are being requested through Reclamation's Drought Resiliency grant program in the amount $300,000. The $2,200,000 of local funds being committed to the project includes several components. The MWA Integrated Regional Water Management (IRWM) group has reached an agreement with other IRWM groups within the Lahontan Funding region. This agreement enables MWA to receive $6.18 million of Proposition 1 regional IRWM funds to support implementation of projects included in the MWA IRWM Plan (IRWMP). Projects eligible for this funding include the Adelanto Connection which was submitted for inclusion in the IRWMP by the City of Adelanto in 2014 and subsequently approved by regional partners.

In addition to IRWM funding, the MWA, on behalf of the City of Adelanto, will be pursuing other State of California funding options which may provide lower cost sources for the local funding commitment. For example, the California Drinking Water State Revolving Fund is being considered as a source of local cost share because of preferential consideration that may be given based on Adelanto's status as a Severely Disadvantaged Community.

(2) How you will make your contribution to the cost-share requirement, such as monetary and/or in-kind contributions and source funds contributed by applicant.

As described above, all cost-share contributions will be monetary with the funds originating from State of California programs including an IRWM implementation grant and possibly including funding from other state sources such as the Drinking Water State Revolving Fund.

(3) Describe any donations or in-kind costs incurred before the anticipated Project start date that you seek to include as project costs.

Table 6-1, below, presents a breakdown of federal and non-federal funding sources for the project. Table 6-2 shows anticipated project expenditures and amounts. No in-kind costs or donations will be incurred or received before the anticipated project start date and no in-kind costs are included in the project budget

(4) Describe any funding requested or received from other Federal partners.

There are no other Federal partners for the proposed Project.

(5) Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.

There are no pending funding requests for this Project, therefore the local cost share commitment is not continent on any outstanding requests. However, as noted above, MWA may seek alternative sources of state funding. The alternative sources would enable the Agency to meet its cost-share commitment in a more financially efficient way; for example, by using funding programs targeted to benefit Severely Disadvantaged Communities such as Adelanto.

Table 6-1 Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities	
1. State of California Integrated Regional Water Management funds available to the Agency[1]	$2,115,000
2. MWA Operating Budget	$85,000
Non-Federal Subtotal	*$2,200,000*
Other Federal Entities	
1. Not applicable	$0
Other Federal Subtotal:	*$0*
Requested Reclamation Funding:	*$300,000*
Total Project Funding:	**$2,500,000**

[1]MWA will seek additional state sources of cost share funding that may be substituted for IRWM funds.

6.2 Budget Proposal

The Agency proposes to apply all Federal and Non-Federal funds that may be associated with the grant agreement to funding design, environmental compliance, permitting, construction and construction management activities of the Adelanto Connection Project. Administrative support to the Project and project reporting will be provided through Agency funding. Refer to Table 6-2 below, which provides a summary of the estimated budget.

Section 5.3 (Technical Project Description) of this application presents a Scope of Work describing tasks necessary for the successful completion of the Project. As noted above, the Agency proposes to cover all costs associated with staff and contract employee time required to perform project administration and reporting under the Agency's operating budget. Accordingly, the Agency will not be requesting reimbursement for administration and reporting nor will the Agency present this effort as an element of their cost share.

A summary of the estimated Project budget is presented in Table 6-2. Table 6-3 has been prepared following the "Budget Proposal" outline from the FOA in support of the budget estimates in Table 6-2.

Table 6-2 Project Budget by Task

Budget Item Description	Computation		Quantity Type	Total Cost	Percentage of Project Cost
	$/Unit	Quantity			
Administration[1]					
Project administration	$42,500	1	-	$42,500	2%
Reporting[1]					
Grant agreement reporting	$42,500	1	-	$42,500	2%
Subtotal				$85,000	4%
Design					
Plans and specifications	$127,500	1	-	$127,500	5%
Environmental Documentation					
NEPA and CEQA documentation	$42,500	1	-	$42,500	2%
Permits/Approvals					
Project permitting	$10,600	1	-	$10,600	<1%
Pipeline Construction					
24-inch water main	$275	5,800	LF	$1,595,000	64%
Repave street	$440,000	1	LS	$440,000	18%
Subtotal				$2,035,000	
Water Treatment Facilities					
Tanks, injection pumps, nozzles	$38,500	1	EA	$38,500	2%
Subtotal				$38,500	
Operation and Control Facilities					
SCADA, telemetry, controls	$51,700	1	LS	$51,700	2%
Construction Subtotal				$2,305,800	92%
Construction Management					
Construction Contracting	$21,300	1	-	$21,300	1%
Construction Supervision	$85,000	1	-	$85,000	3%
Subtotal				$106,300	4%
TOTAL PROJECT COSTS				$2,497,100	100%

Notes:

[1] Administrative and Reporting activities will be performed as routine operations by the staff of the MWA and are not included as components of the local cost share.

This table is supported by detailed line item costs in Table 6-3 which is included below.

Table 6-3 Budget Summary – Aggregate of Project Costs

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	$/Unit	Quantity		
SALARIES AND WAGES				**$ -**
FRINGE BENEFITS				**$ -**
TRAVEL				**$ -**
EQUIPMENT				**$ -**
SUPPLIES/MATERIALS				**$ -**
CONTRACTUAL – ENGINEERING DESIGN				
Senior Consultant – Grade 8	$259.00	40	hrs	$10,360
Senior Professional – Grade 7	$231.00	60	hrs	$13,860
Senior Professional – Grade 6	$195.00	110	hrs	$21,450
Senior Professional – Grade 5	$171.00	200	hrs	$34,200
Senior Professional – Grade 4	$145.00	240	hrs	$34,800
Senior CADD drafter	$122.00	105	hrs	$12,810
Subtotal				**$127,480**
CONTRACTUAL – ENVIRONMENTAL DOCUMENTATION				
Senior Consultant – Grade 8	$259.00	10	hrs	$2,590
Senior Professional – Grade 6	$195.00	40	hrs	$7,800
Senior Professional – Grade 5	$171.00	60	hrs	$10,260
Senior Professional – Grade 4	$145.00	115	hrs	$16,675
Senior CADD drafter	$122.00	42	hrs	$5,124
Subtotal				**$42,449**
CONTRACTUAL - PERMITTING				
Senior Professional – Grade 5	$171.00	56	hrs	$9,576
Permit filing fees	$1,000.00	1	LS	$1,000
Subtotal				**$10,576**
CONTRACTUAL – CM				
Senior Professional – Grade 7	$231.00	60	hrs	$13,860
Senior Professional – Grade 5	$171.00	120	hrs	$20,520
Senior Professional – Grade 4	$145.00	170	hrs	$24,650
Construction Inspector	$129.00	280	hrs	$36,120
Senior CADD drafter	$122.00	90	hrs	$10,980
Subtotal				**$106,130**
CONTRACTUAL - CONSTRUCTION				
Pipeline Construction				$2,035,000
Water Treatment Facilities				$38,500
Operation and Control Facilities				$51,700
Subtotal				**$2,125,200**
OTHER				**$ -**
TOTAL DIRECT COSTS				$2,497,100
INDIRECT COSTS - 0%				$ -
TOTAL ESTIMATED PROGRAM COSTS				$2,497,100

6.3 Budget Narrative

The following discussion addresses budget line items required for implementation of the Adelanto Connection Project. Table 6-3 displays the Project budget and includes explanatory notes.

Salaries and Wages

Nicholas Schneider, Water Conservation and Public Information Manager 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 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 and Wages" have been included in Table 6-3.

Fringe Benefits

Expenses under Fringe Benefits have not been included. Please see discussion under "Salaries and Wages" above.

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 expenses have been included under "Travel" in Table 6-3.

Equipment

Equipment expenses have not been included in the budget as the Agency is not expected to purchase or lease any equipment as part of this Project. Construction equipment necessary to implement the Project will be provided by the construction contractor. The costs for this equipment are included in the estimated costs for construction. Accordingly, no "Equipment" expenses have been included in Table 6-3.

Materials and Supplies

Acquisition of supplies for general office use is not anticipated; rather, the Agency will provide any incidental supplies. However, since the costs associated with purchase of the materials and supplies will be minimal, they will be purchased by the Agency and be included as part of their overhead costs. In this regard, the Agency will not be charging any expenses, nor will they be asking for reimbursement of any costs for acquisition of materials and supplies. Accordingly, no "Materials and Supplies" expenses have been included in Table 6-3. Appendix A is a cost estimate from Buerkle Pipeline and Appendix K is a proposal from Vertech. Vertech is the supplier of the control panel and SCADE Integration equipment.

Contractual/Construction

Project design, permitting, construction and construction management will be performed by specialty firms contracted to perform this work. During construction, construction administration will consist of review of the progress and quality of the work in accordance with the approved designs, specifications and schedule prepared by the design consultant. The design consultant will also be required to review the construction contractor's technical submittals. The construction management consultant will maintain project records and all items related to the execution of the construction contracts, such as coordinating testing of materials. The estimated costs of these activities are presented in Table 6-3.

Environmental and Regulatory Compliance Costs

Based on recent experience with pipeline construction projects, the Agency anticipates that the costs for environmental and regulatory compliance will be on the order of two percent of construction costs. Environmental compliance will be performed under contract with a qualified environmental consultant.

Reporting

Project Reporting will be completed by Agency staff and be integrated as part of their daily operations. In this regard, the Agency will not be charging any expenses, nor will they be asking for reimbursement of any costs associated with Reporting. Accordingly, no "Reporting" expenses have been included in Table 6-3.

Other Expenses

All project expenses are included in the cost items described above. Therefore, no costs are associated with "Other Expenses".

Indirect Costs

No indirect costs are included in the budget. Accordingly, this category does not apply.

Total Costs

The estimated budget for the Project is presented above in Table 6-2. As shown, the total budget to fund all phases of Project implementation is estimated at **$2,500,00**, with **$300,000** in requested grant funds (Federal Cost Share) and **$2,200,000** in Non-Federal Cost Share funds, that are State funds available to the Applicant. The total Federal Cost Share requested is 12 percent of total Project costs.

7 Environmental and Cultural Resources Compliance

The following section summarizes MWA's approach to avoid, minimize, and mitigate any potential environmental impacts related to implementation of the Adelanto Connection Project.

The Adelanto Connection Project will require installing approximately 1.1 miles of pipeline along the alignment of Mesa View Drive and Olivine Road. To the east of Mesa View drive there are new residential developments being built and vacant land to the west. To the north and south of Olivine Rd is vacant land and the Adelanto water tank farm. MWA has installed pipelines throughout the region and is familiar with CEQA and NEPA procedures. Should the proposed Adelanto Connection Project be recommended for funding, Agency staff will coordinate with Reclamation environmental specialists to determine the level of NEPA documentation necessary. The Agency will begin preparation of any needed documents with the goal of satisfying NEPA requirements prior to signing of the funding agreement. If habitat or vegetation surveys are required, the Agency will engage experienced experts to perform the necessary surveys.

The Agency will complete all necessary CEQA and NEPA documentation before commencing any construction activities under the proposed Project.

(1) 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 Adelanto Connection Project will require construction activities which include mobilizing and demobilizing of equipment, excavating soil to install 5,800 LF of ductile iron pipeline, replacing spoil, compacting and repaving the road. These activities will impact the soil and air of the surrounding environment. These impacts will be for a four-month construction period, and standard dust suppression techniques will be used. To minimize potential animal habitat impacts, the road will be closed to allow for construction vehicles and equipment to be staged in the existing roadway and not in the right-of-way, or any vacant land.

(2) 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 Agency is not aware of any listed species that currently reside in the project area, nor that the existing habitat is listed species habitat.

(3) Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the project may have.

No wetlands or other surface waters occur within the project area.

(4) When was the water delivery system constructed?

The Mojave Water Agency was established in 1960 and the major features of the Agency water distribution system were completed in 1995. The Agency began importing State Water Project water in 1960. The R^3 Project was constructed in 2013.

(5) 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 proposed Project will connect the R^3 Project to the Adelanto water tank farm.

(6) 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 Agency is not aware of any buildings or structures which are listed or eligible for listing. No buildings or structures are present in the Project area and the Agency is not aware of any features listed or eligible for listing. However, the Agency will coordinate with Reclamation staff to ensure that the proposed Project would have no effect on historic properties pursuant to 36 CFR Part 800.4(d)(1)

(7) Are there any known archeological sites in the proposed project area?

The Agency is not aware of any archeological sites in the project area.

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

This connection project will not have a disproportionately high and adverse effect on low income or minority populations. In fact, it will benefit one, the City of Adelanto. All of the City of Adelanto is considered a Severely Disadvantaged Community, see Figure 6-1. The Project will provide Adelanto with a supplemental supply of water.

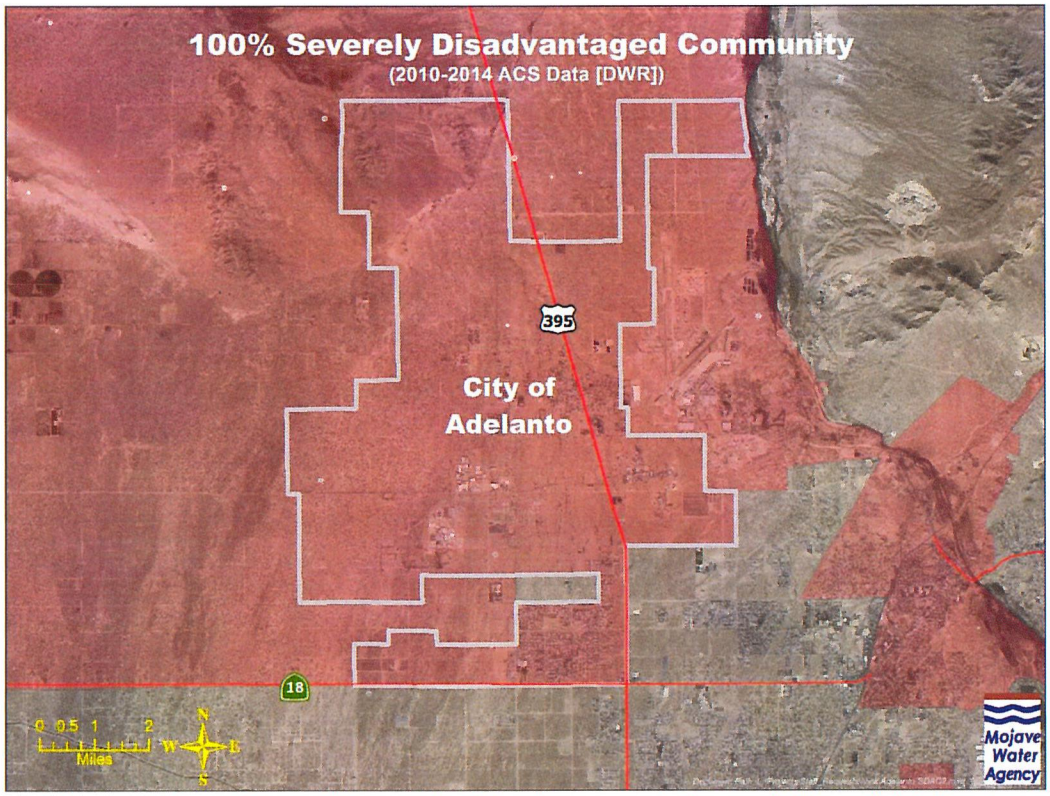


Figure 6-1 Map of Severely Disadvantaged Area of City of Adelanto

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

The proposed Project will not inhibit access to any sacred sites or tribal lands.

(10) 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?

No, the Project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species know to occur in the area.

8 Required Permits and Approvals

The City of Adelanto Connection may require several permits prior to construction. These permits include:

- City of Victorville Encroachment Permit for the right of way on Mesa View Drive
- Construction permit for Adelanto
- California Department of Transportation (Caltrans) encroachment permit if Bear Valley Road is determined to be a Caltrans facility
- Jack and bore permits for installing pipe under Bear Valley Road
- NPDES for Pipe Test Flush Water from Lahontan Regional Water Quality Control Board (Lahontan RWQCB)
- Storm Water Pollution Prevention Plan approved by Lahontan RWQCB
- Permit amendment for addition to existing drinking water system from RWQCB

Permits will be obtained by the City of Adelanto, the MWA and the construction contractor with the construction contractor being responsible for preparing the Storm Water Pollution Prevention Plan and obtaining the jack and bore permit and any necessary Caltrans permits.

The Project will also conform with the requirements of Rule 403.2 Fugitive Dust Control for the Mojave Desert Planning Area.

9 Acronym List

Agency – MWA

AFY – acre feet per year

BAP – Base Annual Production

BVWSD – Buena Vista Water Storage District

CEQA – California Environmental Quality Act

CSD – Community Services District

DCR – Delivery Capability Report

DWR – California Department of Water Resources

FOA Funding Opportunity Announcement

GW groundwater

MWA Mojave Water Agency

IRWM - Integrated Regional Water Management

IRWMP – Integrated Regional Water Management Plan

hrs – hours

LF – linear feet

LS – Lump sump

NEPA – National Environmental Policy Act

NPDES – National Pollutant Discharge Elimination System

R^3 - Upper Mojave River Groundwater Regional Recharge and Recovery Project

SCADA – Supervisory Control and Data Acquisition

SWP – State Water Project

SWPW State Water Project water

TAC – Technical Advisory Committee

USBR United States Bureau of Reclamation

WC – Water Conservation

WD – Water District

Appendix A Project Cost Estimate

Cost Estimate

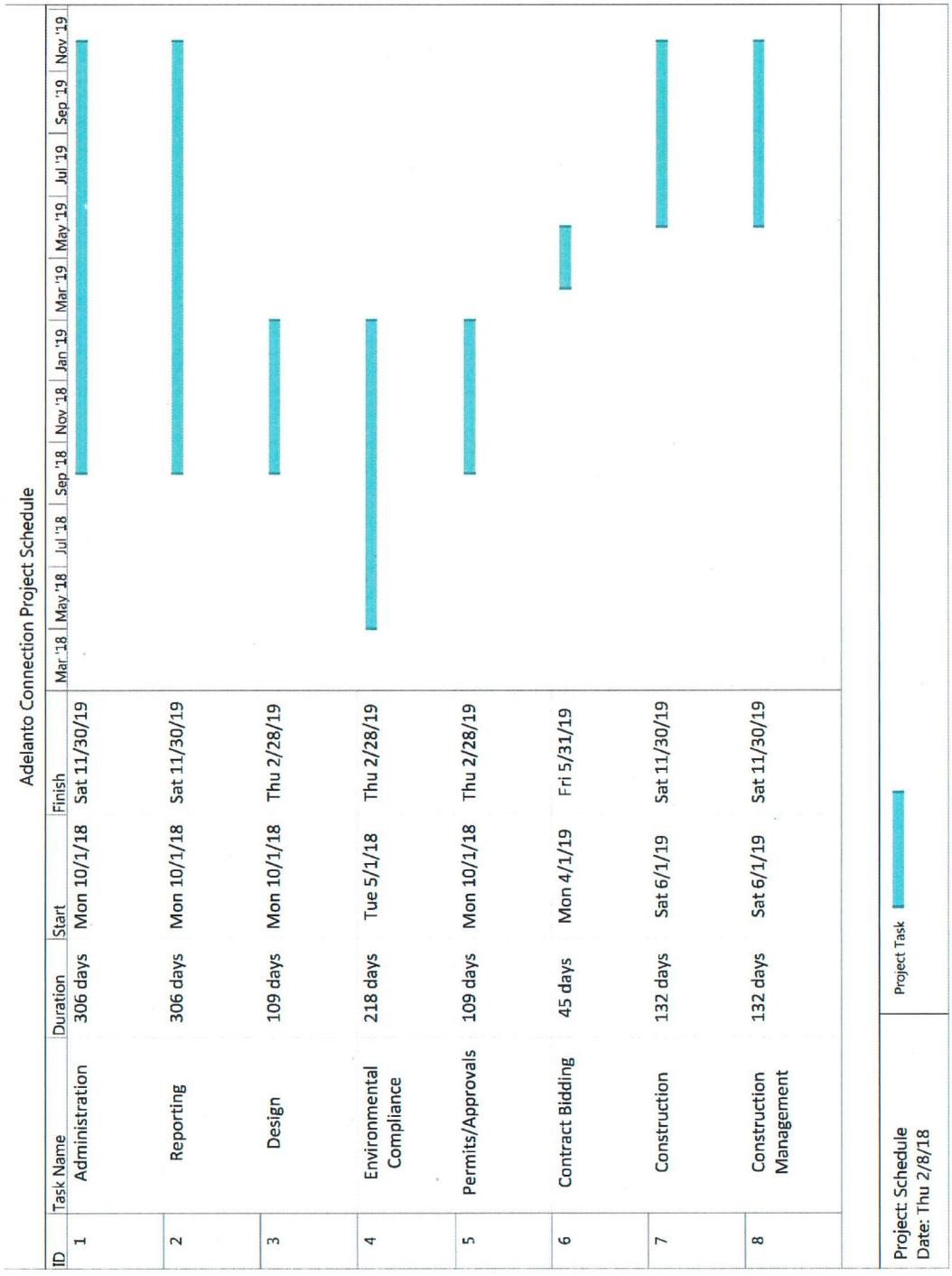
Prepared by: TA & MJE
Date: 5-Jul-16

Bid Item	Description	QTY	UNIT	$/UNIT	TOTAL COST
	21" PIP Cl 100 PVC SDR 32.5	4342	LF	18.00	$ 78,156.00
	48" HDPE DR 32.5	13136	LF	107.00	$ 1,405,552.00
	36" HDPE DR 32.5	26994	LF	58.00	$ 1,565,652.00
	Labor to Install 21"	4342	LS	12.00	$ 52,104.00
	Labor to Install 48"	13136	LS	70.00	$ 919,520.00
	Labor to Install 36"	26994	LS	24.00	$ 647,856.00
	21" Valve	1	LS	9,800.00	$ 9,800.00
	36" Valve	4	LS	17,000.00	$ 68,000.00
	7th Standard Road Crossing	2	EA	35,000.00	$ 70,000.00
	Drains	3	EA	15,000.00	$ 45,000.00
	Manways	13	EA	5,000.00	$ 65,000.00
	Pipeline Turnouts	14	EA	22,000.00	$ 308,000.00
					$ 5,234,640.00
			Contingency	0.10	$ 523,464.00
			TOTAL ESTIMATE		**$ 5,758,104.00**

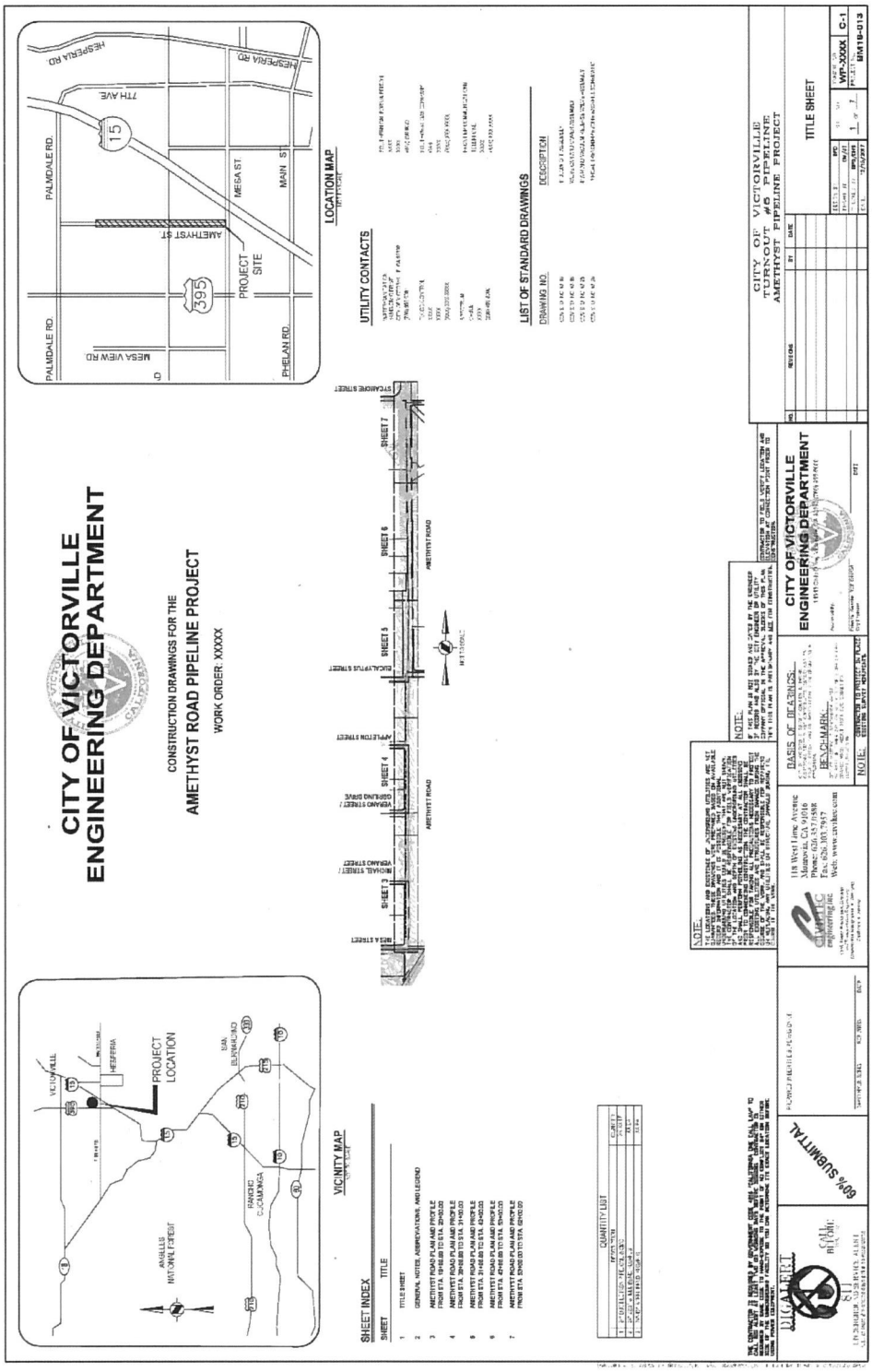
Note: Operational Recharge (2016 Estimated based on 1 month) 5.6 CFS per day
Total Length 13,840
840 AF/YR based on 75 day run
$159,600 savings per yer based on $190/AF avg cost of SWP (see Assessment PP)

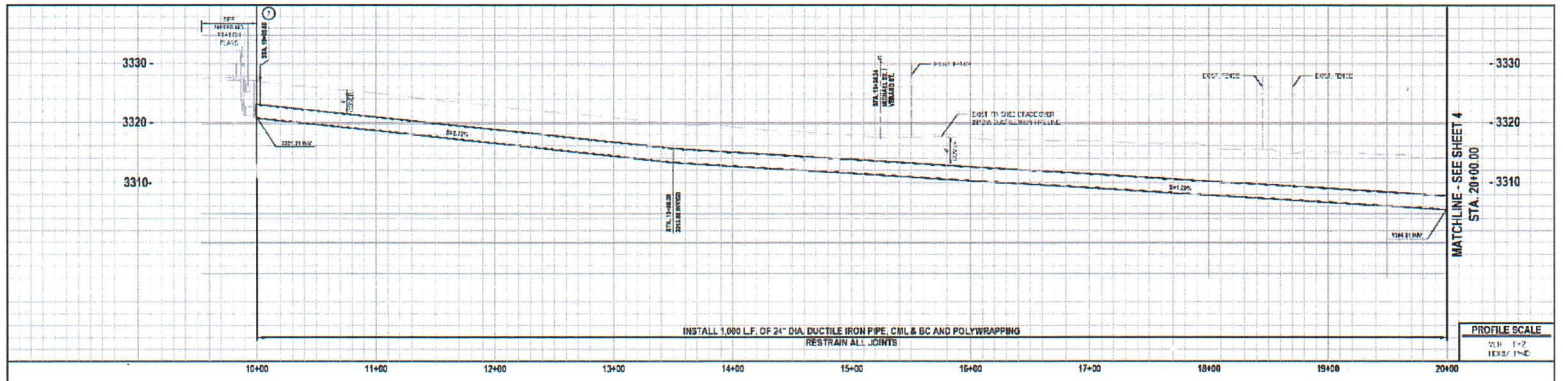
$ 5,234,640.00

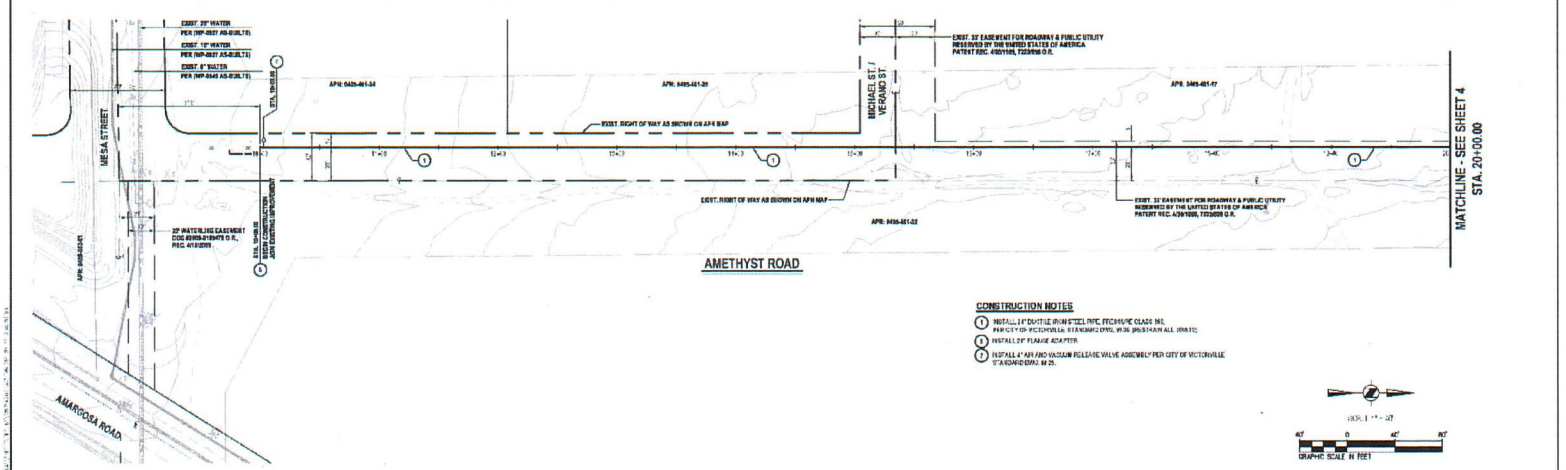
Appendix B Project Schedule



Appendix C Victorville Pipeline Drawing







THE CONTRACTOR IS REQUIRED BY GOVERNMENT CODE 4216 "CALIFORNIA DIG, CALL LAW" TO CALL DIG ALERT AT LEAST TWO (2) WORKING DAYS BEFORE TRENCHING. CONTRACTOR IS REQUIRED BY SAME CODE TO HAND-EXPOSE TO THE POINT OF NO CONFLICT 24" OR EITHER SIDE OF THE UNDERGROUND FACILITY ID TO VERIFY BOTH ITS EXACT LOCATION BEFORE USING POWER EQUIPMENT.

DIGALERT — CALL BEFORE YOU DIG — UNDERGROUND SERVICE ALERT

60% SUBMITTAL

CIVILTEC engineering inc
118 West Lime Avenue
Monrovia, CA 91016
Phone: 626.337.0388
Fax: 626.303.7957
Web: www.civiltec.com

BASIS OF BEARINGS:

BENCHMARK:

NOTE: CONTRACTOR TO PROTECT IN PLACE EXISTING SURVEY MONUMENTS.

CITY OF VICTORVILLE
ENGINEERING DEPARTMENT

CITY OF VICTORVILLE
TURNOUT #5 PIPELINE
AMETHYST PIPELINE PROJECT

NO.	REVISIONS	BY	DATE

PIPELINE PLAN AND PROFILE
STA. 10+00.00 TO 20+00.00

DESIGN BY	BPC	DRAWING NO.	WP-XXXX
DRAWN BY	DK/JT		O-3
CHECKED BY	BPC/MH-S	3 OF 7	
DATE	10/5/2017	PROJECT NO.	BM18-013

Appendix D City of Adelanto UWMP

2015
URBAN WATER MANAGEMENT PLAN

City of ADELANTO

June 22, 2016

Rich Kerr
Mayor

Jermaine Wright Sr.
Mayor Pro Tem

Charley B. Glasper
Council Member

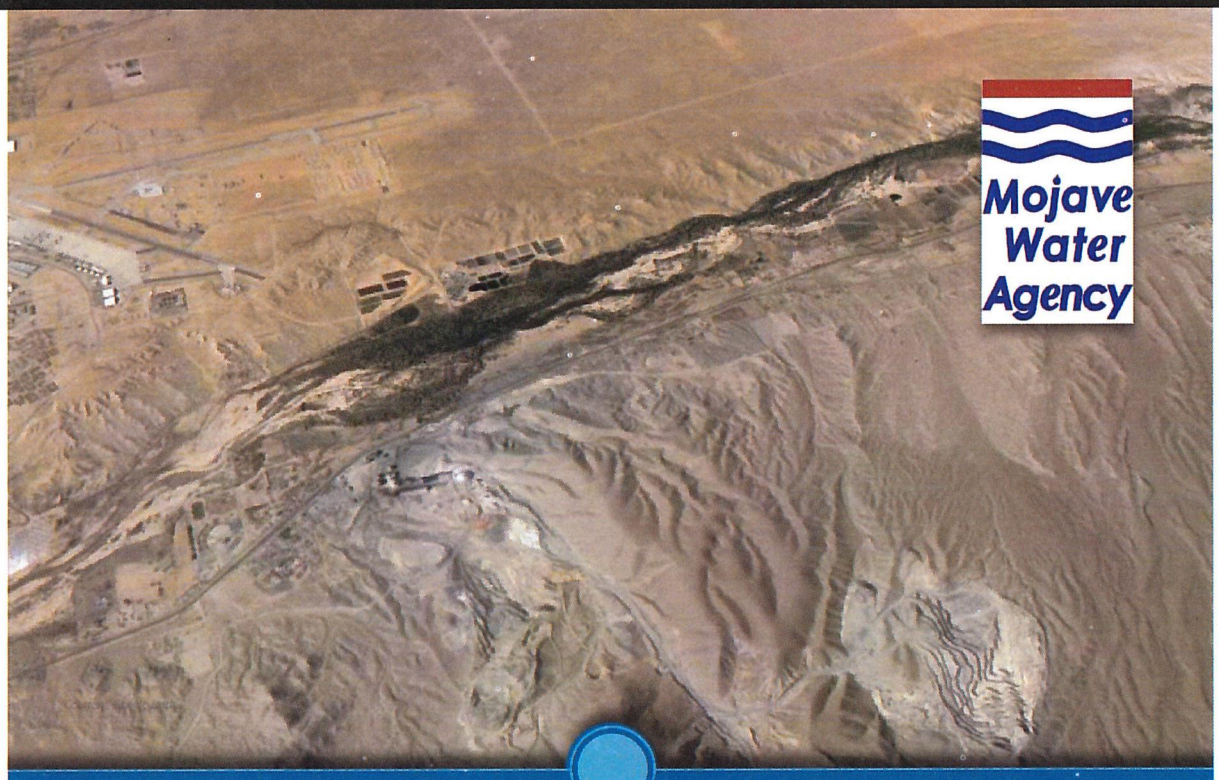
John "Bug" Woodard Jr.
Council Member

Ed Camargo
Council Member

Cindy Herrera
Interim City Manager

Adelanto City Hall ~ 11600 Air Expressway, Adelanto, CA 92301 ~ (760) 246-2300

Appendix E MWA UWMP



FINAL

2015 Urban Water Management Plan *for*
Mojave Water Agency

Prepared by

Kennedy/Jenks Consultants

June *2016*

Appendix F Mojave Region IRWMP

Mojave IRWM Plan
Integrated Regional Water Management Plan

Final

Mojave Region
Integrated Regional Water Management Plan

Kennedy/Jenks Consultants

June 2014

Appendix G Mojave Land Subsidence Fact Sheet

USGS
science for a changing world

Land Subsidence in the Southwestern Mojave Desert, California, 1992–2009

In cooperation with the Mojave Water Agency (MWA), the U.S. Geological Survey (USGS) has been monitoring land subsidence in the southwestern Mojave Desert of California using satellite Interferometric Synthetic Aperture Radar (InSAR) combined with ground-based techniques. Maps of land subsidence constructed from the InSAR data have proven to be an economical means to evaluate subsidence—with the goal of identifying small problems before they become large ones. The maps of subsidence over the considerably large (nearly 5,000 square miles [mi^2]) MWA management area (fig. 1) enabled researchers to detect small magnitude, localized areas of subsidence near five lakebeds.

Introduction and Background

Groundwater has been the primary source of domestic, agricultural, and municipal water supplies in the southwestern Mojave Desert, California, since the early 1900s. Increased demands on water supplies have caused groundwater-level declines of more than 100 feet (ft) in some areas of this desert (fig. 2 inset) between the 1950s and the 1990s (Stamos and others, 2001; Sneed and others, 2003). These water-level declines have caused the aquifer system to compact, resulting in land subsidence. Differential land subsidence (subsidence occurring at different rates across the landscape) can alter surface drainage routes and damage surface and subsurface infrastructure. For example, fissuring across State Route 247 at Lucerne Lake (fig. 2) has required repairs as has pipeline infrastructure near Troy Lake.

Land subsidence within the Mojave River and Morongo Groundwater Basins of the southwestern Mojave Desert has been evaluated using InSAR, ground-based measurements, geology, and analyses of water levels between 1992 and 2009 (years in which InSAR data were collected). The results of the analyses were published in three USGS reports—Sneed and others (2003), Stamos and others (2007), and Solt and Sneed (2014). Results from the latter two reports were integrated with results from other USGS/MWA cooperative groundwater studies into the broader scoped USGS Mojave Groundwater Resources Web site (http://ca.water.usgs.gov/mojave/). This fact sheet combines the detailed analyses from the three subsidence reports, distills them into a longer-term context, and provides an assessment of options for future monitoring.

InSAR Reveals Localized Subsidence near Dry Lakebeds

InSAR data and field observations reveal land subsidence during 1992–2009 in five localized areas near dry lake beds— El Mirage Lake, Harper Lake, Troy Lake, Coyote Lake, and Lucerne Lake (fig. 2). Average subsidence rates at Harper, Troy, and Coyote Lakes, were smallest at about 0.3–0.4 inch per year (in/yr), El Mirage Lake had a slightly higher rate at nearly 0.5 in/yr, and Lucerne Lake had the highest rate of about 0.6 in/yr. Only two of the areas—Troy Lake and Lucerne Lake—indicated increased subsidence rates starting in the late 1990s or early 2000s, which may reflect changes in agricultural land use and (or) a population increase that require more water use, whereas the other three areas subsided at fairly steady rates.

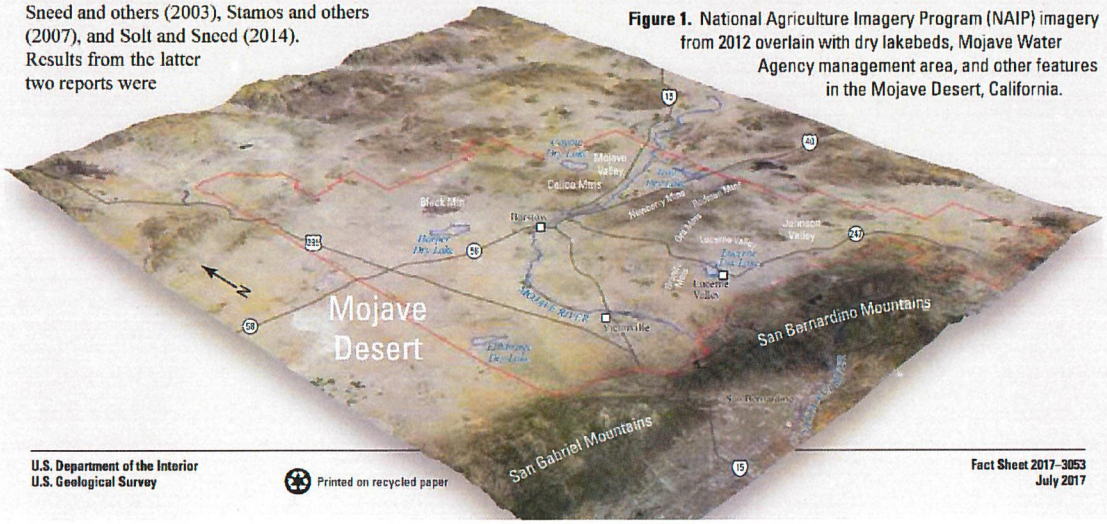


Figure 1. National Agriculture Imagery Program (NAIP) imagery from 2012 overlain with dry lakebeds, Mojave Water Agency management area, and other features in the Mojave Desert, California.

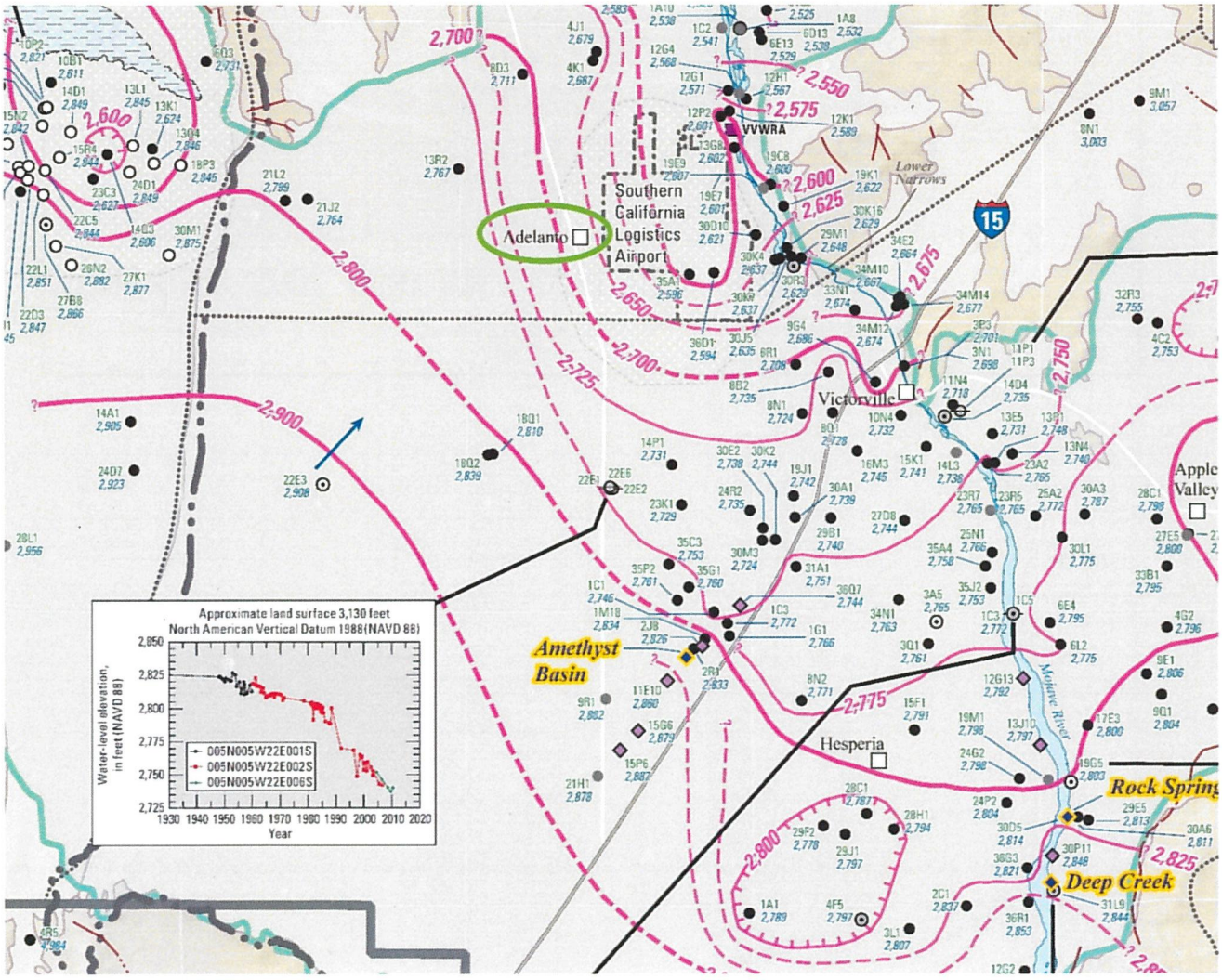
U.S. Department of the Interior
U.S. Geological Survey

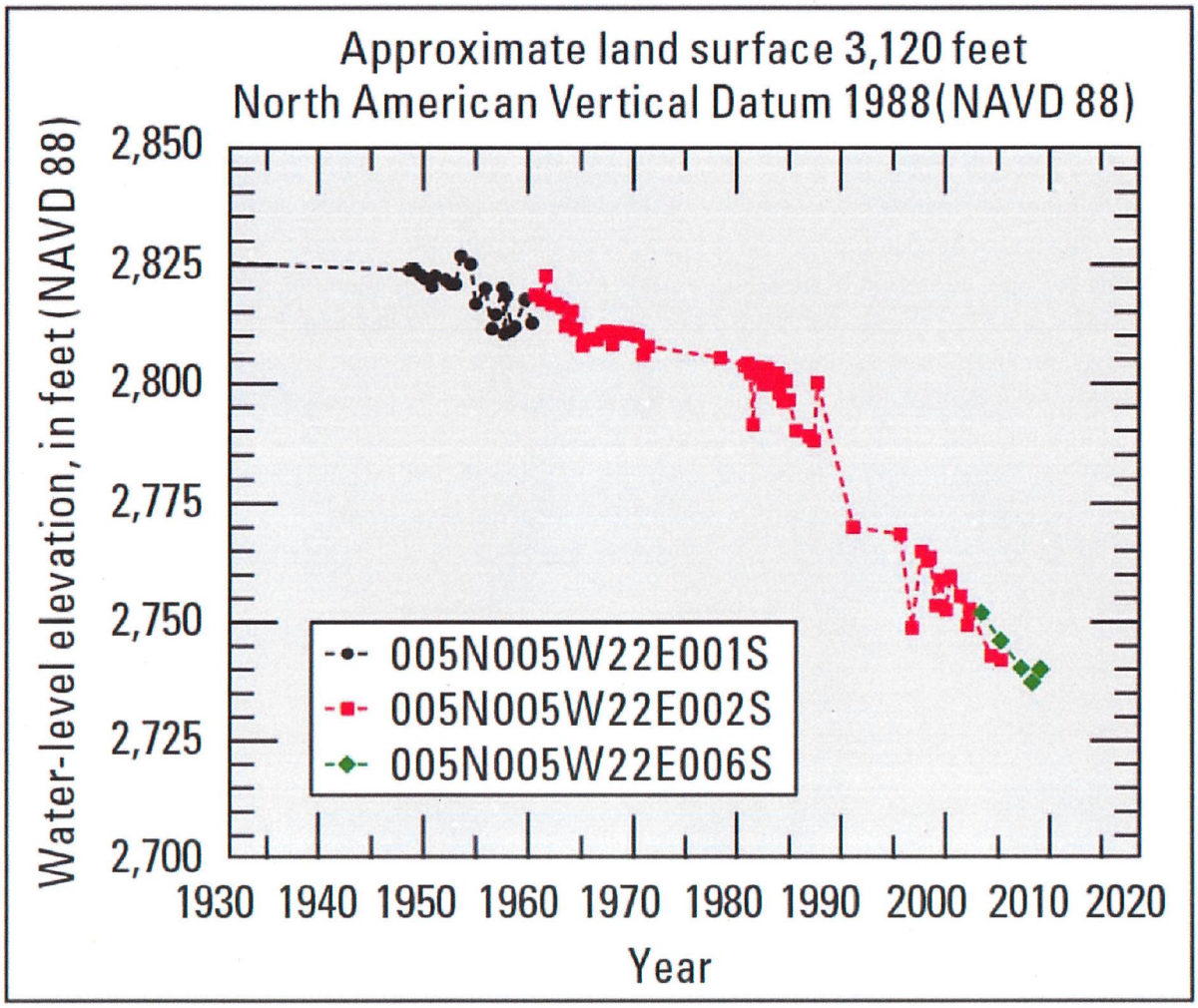
Printed on recycled paper

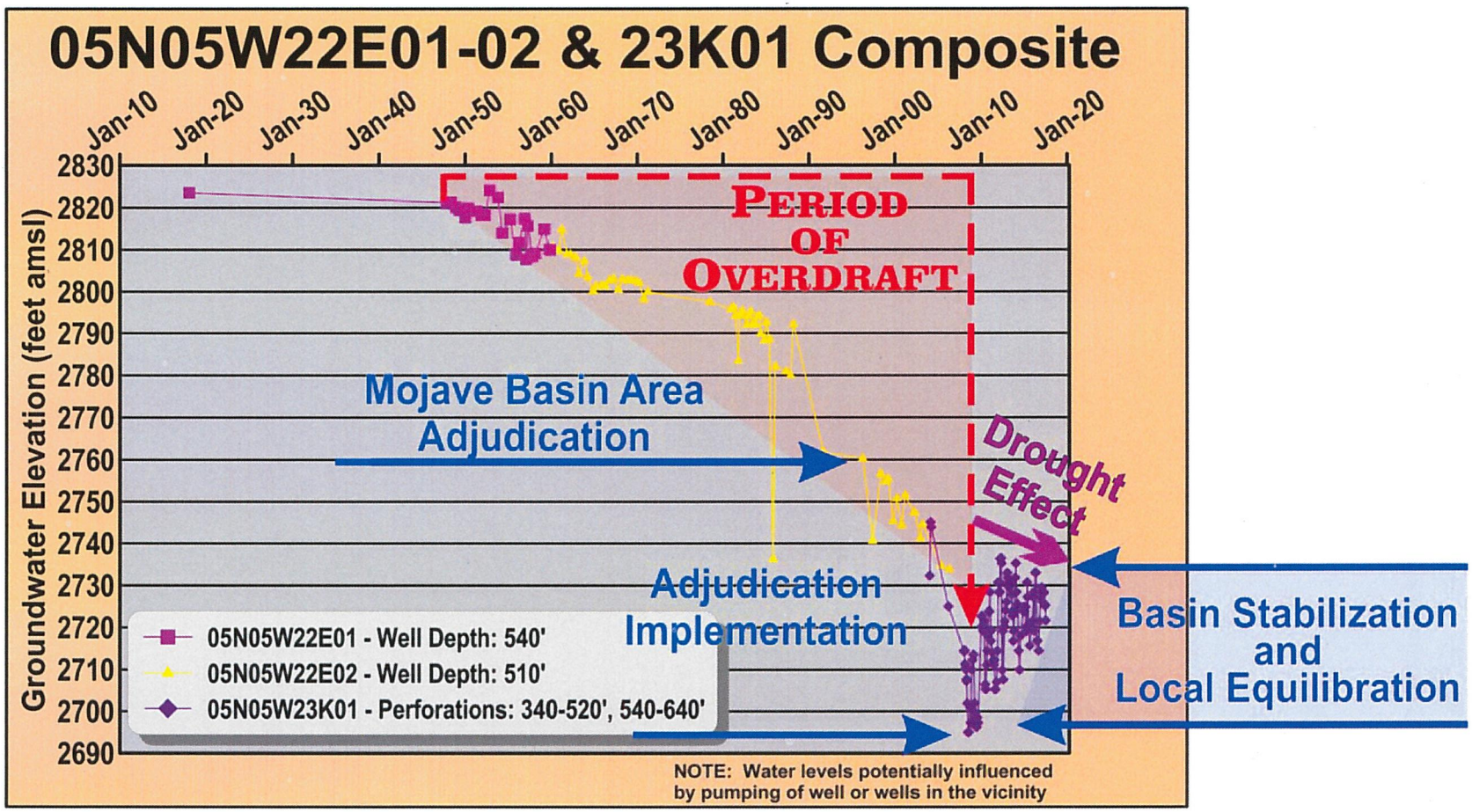
Fact Sheet 2017–3053
July 2017

Appendix H Water Level Elevations

Wells 005N005W22E001S, 005N005W22E002S, and 005N005W22E006S are within one mile in the southerly direction of the City of Adelanto. Based on UWMP projection, demand in the Adelanto area will increase by 2,068 AF in 2040 and this demand would be met by local municipal Adelanto wells, without some other alternative management solution like the proposed project. In the Adelanto area, water levels have fallen almost 100 feet since the 1950s. Although in recent years water levels have stabilized due to implementation of the Mojave Basin Area Adjudication, planned increased demand will rely on already strained Adelanto municipal production within the local Regional Aquifer. Without some other alternative management solution like the proposed project, production within the local Regional Aquifer. Without some other alternative management solution like the proposed project, production in the Regional Aquifer would be used to meet current and projected demand. The return of locally overproduced conditions in the Adelanto portion of the Regional Aquifer would result in overdraft/pumping depression issues which would affect local domestic wells.




Approximate land surface 3,120 feet
North American Vertical Datum 1988(NAVD 88)
Water-level elevation, in feet (NAVD 88)
2,850
2,825
2,800
2,775
2,750
2,725
2,700
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Year
005N005W22E001S
005N005W22E002S
005N005W22E006S


05N05W22E01-02 & 23K01 Composite
Jan-10
Jan-20
Jan-30
Jan-40
Jan-50
Jan-60
Jan-70
Jan-80
Jan-90
Jan-00
Jan-10
Jan-20
Groundwater Elevation (feet amsl)
2830
2820
2810
2800
2790
2780
2770
2760
2750
2740
2730
2720
2710
2700
2690
PERIOD OF OVERDRAFT
Mojave Basin Area Adjudication
Drought Effect
Adjudication Implementation
Basin Stabilization and Local Equilibration
05N05W22E01 - Well Depth: 540'
05N05W22E02 - Well Depth: 510'
05N05W23K01 - Perforations: 340-520', 540-640'
NOTE: Water levels potentially influenced by pumping of well or wells in the vicinity

Appendix I Vertech Proposal

Vertech

PROPOSAL

PRICING

PLC back panel, radios and other required hardware: $7,780.00

PLC/SCADA/Radio programming, configuration and system startup on site: $25,880.00

Electrical installation: $9,044.00

Travel expenses to sites & freight: $1,756.00

System design (panel drawings, network architecture updated drawings): $1,700.00

Total price: $46,160.00

PAYMENT AND AVAILABILITY

- Due to price changes beyond our control this proposal is valid for 30 days.
- This proposal is subject to the terms and conditions detailed on the following pages.
- Terms of payment: Net 30

Turnout #7 Control Panel and SCADA Integration
Quote #: Q180030

Vertech
16 Technology Drive, Suite 118
Irvine, CA 92618
Phone 949-596-7986

I Letters of Support

The Mojave Water Agency has well-established working relationships with member water districts, local municipalities, and the County of San Bernardino. In addition, members of the United States Congress who represent the area recognize the value of the Agency's water management in supporting drought resiliency throughout the MWA service area.

The Mojave Water Agency has received the following letters that indicate the broad support for the Agency's efforts to seek WaterSMART funding necessary for implementation of the *City of Adelanto Connection to R³ Pipeline*:

- ✓ The Office of Scott Wick, Senator of the 21rd District of the California Legislature;
- ✓ The Office of Colonel Paul Cook (Ret.), Congressman of California's 8th District of the Congress of the United States House of Representatives.

In addition, this section includes an excerpt of minutes from the Joint Regular Meeting of the Adelanto City Council of January 24, 2018 committing the City to engage with the Mojave Water Agency on this project.

Copies of these letters and the excerpt to the minutes immediately follow this page.

I hereby certify, the foregoing instrument to be a full, true and correct copy of the original on file.
Date: 2/8/18 Attest: Brenda Lamb
Office of the City Clerk
Deputy City Clerk

CITY OF ADELANTO
JOINT REGULAR MEETING OF THE
ADELANTO CITY COUNCIL,
ADELANTO PUBLIC FINANCING AUTHORITY, AND
ADELANTO PUBLIC UTILITY AUTHORITY, AND THE
SUCCESSOR AGENCY BOARD
OF
JANUARY 24, 2018

This is an excerpt of the minutes to be approved, and noted as below:

E. CALL TO ORDER – REGULAR MEETING

Council Members Present: Councilor Camargo
Councilor Glasper
Mayor Pro Tem Woodard
Mayor Kerr

The regular meeting of the Adelanto City Council meeting was held on Wednesday, January 24, 2018, in the Council Chambers of the Governmental Center located at 11600 Air Expressway, Adelanto, California. Mayor Kerr called the regular meeting to order at 7: 30 p.m.

N. NEW BUSINESS

3. COMMITMENT TO ENGAGE WITH MOJAVE WATER AGENCY FOR FUNDING APPLICATIONS AND AUTHORIZE STAFF TO INITIATE ENGINEERING DOCUMENTS FOR DESIGN AND CONSTRUCTION OF AN R³ TRANSMISSION PIPELINE. (Brian)

RECOMMENDATION: Staff recommends City Council authorize cooperation with Mojave Water Agency (MWA) for grant applications and engineering document production for purposes of constructing an R³ transmission pipeline.

Contracted Engineer Brian Wolfe presented the staff report to the City Council and asked them to authorize cooperation with the Mojave Water Agency (MWA) for grant applications and engineering document production for purposes of constructing an R³ transmission pipleline.

The Chair opened for public comment at 9:12 p.m.

There being no comments the chair closed at 9:13 p.m.

Contracted Community Services Director Charles Rangel stated that the city has been working on improving the infrastructure and this is a great opportunity.

A representative from the Mojave Water Agency explained the grant to the City Council.

The City Council thanked staff and the Mojave Water Agency for this great opportunity.

MOTION: Moved by Woodard, seconded by Glasper to engage and cooperate with Mojave Water Agency (MWA) for grant applications and engineering document production for purposes of constructing an R³ transmission pipeline.

P. ADJOURNMENT

There being no further business the Chair entertained a motion to adjourn the meeting at 9:49 p.m.

MOTION: Moved by Kerr, seconded by Wright.

Motion carried unanimously 5-0. (Camargo, Glasper, Woodard, Mayor Pro Tem Wright, Mayor Kerr voting yes).

Brenda Lopez

Brenda Lopez, Deputy City Clerk, CMC

PAUL COOK
8TH DISTRICT, CALIFORNIA

1222 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-5861

Congress of the United States
House of Representatives
Washington, DC 20515–0508

February 6, 2018

Bureau of Reclamation
Financial Assistance Support Section
Attn: Mr. Kevin Connolly
P.O. Box 25007, MS 84-27814
Denver, CO 80225

RE: WaterSMART Drought Response Program: Drought Resiliency Projects for Fiscal Year 2018

Dear Mr. Connolly:

I write to you today to express my support for the Mojave Water Agency and City of Adelanto's grant request to fund the extension of the Regional Recharge and Recovery Project (R-Cubed) Pipeline that would provide a direct connection for the City of Adelanto. This project is essential to augment this severely disadvantaged community's ability to provide water during drought conditions.

The City of Adelanto is located in a region that receives less than six inches of rain per year, and primarily receives water supplies through groundwater resources. The Mojave Water Agency, a State Water Contractor, designed the R-Cubed Project to take advantage of robust precipitation cycles by purchasing State Water Project water to replenish local groundwater supplies. The first phase of this project was completed in 2013, and was designed to allow additional communities to connect into the pipeline in the future.

Currently, the City of Adelanto augments its groundwater supply by purchasing water from the R-Cubed system through the nearby Victorville Water District distribution system. A direct connection to the R-Cubed system will reduce dependency on the Victorville system and improve system redundancy for the City of Adelanto.

I firmly believe that this project will help increase water efficiency and security for my constituents in the City of Adelanto, and I urge you to strongly consider this grant request. Should you have any questions related to this letter, please contact my Apple Valley District Office at (760) 247-1815.

Sincerely,

Col. Paul Cook (Ret.)
Representative, 8th Congressional District of California

ANTELOPE VALLEY DISTRICT OFFICE
848 W. LANCASTER BLVD., SUITE 101
LANCASTER, CA 93534
TEL (661) 729-6232
FAX (661) 729-1683

VICTOR VALLEY DISTRICT OFFICE
14343 CIVIC DRIVE, FIRST FLOOR
VICTORVILLE, CA 92392
TEL (760) 843-8414
FAX (760) 843-8348

SANTA CLARITA DISTRICT OFFICE
23920 VALENCIA BLVD., SUITE 250
SANTA CLARITA, CA 91355
TEL (661) 286-1471
FAX (661) 286-2543

California State Senate

SENATOR
SCOTT WILK
TWENTY-FIRST SENATE DISTRICT

COMMITTEES
EDUCATION
VICE CHAIR
AGRICULTURE
VICE CHAIR
BUSINESS, PROFESSIONS & ECONOMIC DEVELOPMENT
VETERANS AFFAIRS
BUDGET SUBCOMMITTEE #4

February 9, 2018

Mr. Kevin Connolly
Bureau of Reclamation
Financial Assistance Support Section
P.O. Box 25007, MS 84-27814
Denver, CO 80225

SUBJECT: WaterSMART Drought Response Program: Drought Resiliency Projects for 2018

Dear Mr. Connolly:

Please accept this letter of support for a $300,000 WaterSMART grant to fund an extension of the Regional Recharge and Recovery Project (R-Cubed) Pipeline that would provide a direct connection for the City of Adelanto. This project is essential to augment a severely disadvantaged community's ability to provide water during drought conditions.

The City of Adelanto is located in the Mojave Desert area of San Bernardino County in Southern California. The region receives less than six inches of rain per year and groundwater resources primarily provide water supplies. The Mojave Water Agency, a State Water Contractor, designed the R-Cubed Project to take advantage of robust precipitation cycles by purchasing State Water Project water to replenish local groundwater supplies. The first phase of this project was completed in 2013, and was designed to allow additional communities to connect into the pipeline in the future.

Currently, the City of Adelanto augments its groundwater supply by purchasing water from the R-Cubed system through the nearby Victorville Water District distribution system. A direct connection to the R-Cubed system with funds from the $300,000 WaterSMART grant will reduce dependency on the Victorville distribution system and improve system redundancy for the City of Adelanto.

For these reasons, I enthusiastically support this project for the City of Adelanto and its residents.

Sincerely,

Scott Wilk

Senator Scott Wilk
Senator, 21st District

CAPITOL OFFICE: STATE CAPITOL, ROOM 4090 • SACRAMENTO, CA 95814 • TEL (916) 651-4021 • FAX (916) 651-4921
SENATOR.WILK@SEN.CA.GOV

II Official Resolution

RESOLUTION NO. 1044-18

A RESOLUTION OF THE MOJAVE WATER AGENCY, IN SUPPORT OF FILING AN APPLICATION WITH THE US BUREAU OF RECLAMATION WATERSMART DROUGHT RESPONSE PROGRAM: DROUGHT RESILIENCY PROJECTS FOR FISCAL YEAR 2018

WHEREAS, the United States Bureau of Reclamation is currently soliciting proposals for grant funding assistance under their *WaterSMART Drought Response Program: Drought Resiliency Projects for Fiscal Year 2018*; and

WHEREAS, Agency staff has prepared a grant application under the United States Bureau of Reclamation's *WaterSMART* program.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Mojave Water Agency as follows:

1. The Agency's Board of Directors has reviewed and supports the submission of a grant application to the Bureau of Reclamation for the project;
2. The Agency's General Manager is directed to submit the grant application and is authorized to enter into an agreement with the Bureau of Reclamation on behalf of the Agency for grant funding under the Bureau of Reclamation's *WaterSMART Drought Response Program: Drought Resiliency Projects for Fiscal Year 2018* program;
3. The Agency is capable of providing the amount of funding and in-kind contributions as specified in the application; and
4. The Agency will work with the Bureau of Reclamation to meet established deadlines for entering into a cooperative agreement.

ADOPTED this 25th day of January 2018 by the following vote:

AYES: 6
NOES: 0
ABSENT: 1
ABSTAIN: 0

Kimberly Cox, President

ATTEST:

Thurston Smith, Secretary

III Existing Drought Contingency Plan

MWA and the City of Adelanto both have developed water shortage contingency plans within their Urban Water Management Plans. In both UWMPs, Section 8 contains the Water Shortage Contingency Planning documents. These plans are included below.

Section 8: Water Shortage Contingency Planning

8.1 Overview

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. This chapter of the Plan describes how the MWA plans to respond to such emergencies so that emergency needs are met promptly and equitably.

Cities and water agencies within MWA rely on large groundwater basins to meet potable water supply needs. Over the last decade, the Agency invested in water purchases from the State Water Project 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 State Water Project outages, adequate groundwater supplies will be available to meet demands through the use of conjunctively banked pre-stored imported water. Actions of the MWA to address water shortages are summarized below.

8.2 Coordinated Planning

The Mojave Water Agency was formed to manage water resources within the Agency's service area. In this capacity, MWA has been planning and implementing projects to increase water supply reliability and prevent future water shortages. MWA is a State Water Project (SWP) contractor and has a contract Table A amount of 85,800 AF, increasing to 89,800 in 2020. This water is diverted from the California Aqueduct and distributed to recharge sites throughout the area to replace groundwater withdrawn by retailers and others, as well as pre-store water for future use. Deliveries from the SWP are variable and MWA's full Table A amount is not available every year. During dry and multiple dry years, it is expected that SWP deliveries will be significantly reduced. However this imported water source is banked in the groundwater basin when available so it is available to retail producers by pumping from the groundwater basin in years the SWP water is limited or unavailable.

The Mojave Basin Judgment calls for charging groundwater producers for use above their production allowance and using these funds to import "Replacement Water" from the SWP so that over time extractions come into balance with available supplies. Similar principles are employed in the Warren Valley Basin Ames-Reche Management Area, and JBWD Service Area to achieve long-term balance of supply and demand. All imported SWP water is currently recharged into the groundwater basins. This allows the groundwater

basin to accept SWP imported water when available and banked/stored in the groundwater basin so that production from the groundwater basin in years when the SWP imported supply is less or not available can continue without interruption or decrease.

For the Morongo Basin/Johnson Valley Area ("Morongo Area"), there are three water supply agreements that deal with coordinated water supplies throughout the area, including (1) the Warren Valley Basin Agreement, (2) a Stipulated and Amended and Restated Judgment for the Ames-Reche Management Area and (3) an agreement for the users of the Morongo Basin Pipeline.

For the non-adjudicated regions in the Morongo Area such as Joshua Basin, Johnson Valley, and the Means Valley, each of these groundwater basins is being coordinated by MWA as well. Joshua Basin Water District (JBWD) is the retailer using the supply from the Joshua Tree/Copper Mountain Valley Region and completed construction on a groundwater recharge pond for imported SWP water in 2014 that will supply SWP water to the groundwater basins to address current overdraft conditions. The Johnson Valley area is not yet materially populated; however, the MWA is monitoring the basin so if development does occur, the MWA will have a data set to act from. This is also true for the Means Valley Region, which is small and sparsely populated with only limited domestic groundwater development.

8.2.1 MWA and the Retail Water Purveyors

All of the retail potable water agencies within MWA boundaries that are required to complete their own individual 2015 UWMPs have Water Shortage Contingency Plans included in their 2015 UWMPs which are not discussed in this section.

The Water Shortage Contingency Plans of these retail agencies utilize a variety of methods to reduce water demand including mandatory prohibitions on water wasting, voluntary water conservation measures, mandatory water conservation measures and prohibitions on certain uses of water during severe shortages, specific triggering mechanisms for determining the appropriate stage of alert, and water supply allotments for each stage of alert. As a wholesale agency, MWA does not have the authority to impose mandatory restrictions on retail customers due to water shortages. Therefore, this level of contingency planning is conducted by the retail water agencies. By agreement, MWA potable water deliveries (R^3) from pumped groundwater storage to these retail customers is interruptible and can be shut off at any time by MWA. The retail potable water supply agencies are required to have production facilities to supply their customers without water deliveries from the R^3 facilities. In other words, the R^3 facilities are redundant water facilities to the retail agencies facilities. 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. No imported SWP water is used directly for potable water deliveries.

8.3 Minimum Water Supply Available During Next Three Years

The minimum water supply available during the next three years would occur during a three-year multiple-dry year event between the years 2016 and 2018. MWA actively implements a conjunctive use program utilizing State Water Project water to recharge local groundwater basin aquifers. In addition to meeting Replacement Water obligations under

the Mojave Basin Area Judgment, when SWP supplies are high (in surplus of Replacement Water needs), MWA meets the demands of individual stakeholders that request additional imported water supply and also stores surplus imported SWP water in local groundwater aquifers. When SWP supplies are low during dry periods, groundwater stored in basins is used to meet demands that exceed the natural supply. As shown in Table 8-1, the total supplies are approximately 141,700 acre-feet per year (AFY) during the next three years. It is assumed that reduced SWP supplies will be met with pumping from groundwater basins where imported water has been stored, with the total water demand remaining the same as during normal years. When comparing these supplies to the demand projections provided in Chapters 2 and 6 of this Plan, MWA has adequate SWP supplies available to meet projected imported SWP demands should a multiple-dry year period occur during the next three years and SWP imported supply be reduced.

Table 8-1: Estimate of Minimum Supply for the Next Three Years

	Supply (AFY)		
Source	**2016**	**2017**	**2018**
Existing Supplies			
Wholesale (Imported)			
SWP Table A Supply[a]	28,314	28,314	28,314
Local Supply[b]			
Net Natural Supply	57,349	57,349	57,349
Return Flow	48,731	49,637	50,544
Wastewater Import	2,800	2,800	2,800
Recharge Banking Projects[c]	2,886	4,051	5,217
Total Existing Supplies	**140,080**	**142,152**	**144,223**
Total Estimated Demands[d]	***140,080***	***142,152***	***144,223***

Notes:
(a) SWP supplies are calculated by multiplying MWA's Table A amount of 85,800 AF by 33 percent of total deliveries projected to be available based on the worst-case historic four-year drought of 1931-1934 (State of California, The SWP Final Delivery Capability Report 2015, July 2015)
(b) See Section 3 - Water Resources, Table 3-1. Local supplies are assumed to be 100% available. Only SWP supplies are reduced. Linear interpolation is utilized to estimate supplies between 2015 and 2020.
(c) Banked groundwater is used to meet demand under drought conditions.
(d) See Section 2 – Water Use. Linear interpolation is utilized to estimate demands between 2015 and 2020.

8.4 Actions to Prepare For Catastrophic Interruption

8.4.1 General

The MWA service area is bounded on the west by a major portion of the San Andreas Fault. A major earthquake along the southern portion of the San Andreas Fault would affect the MWA service area. The California Division of Mines and Geology has stated two of the aqueduct systems that import water to southern California (including the California Aqueduct) could be ruptured by displacement on the San Andreas Fault, and supply may not be restored for a three to six-week period. The situation would be further complicated by physical damage to pumping equipment and local loss of electrical power.

DWR has a contingency aqueduct outage plan for restoring the California Aqueduct to service should a major break occur, which it estimates would take approximately four months to repair.

Experts agree it may be at least three days after the earthquake before outside help could get to the area. Extended supply shortages of both groundwater and imported water, due to power outages and/or equipment damage would have to be managed although local effects of these type of outages would not materially affect the region based on local native groundwater and banked imported water supplies.

All SWP imported supply for potable water goes to groundwater recharge facilities where the water is stored in the groundwater basin. In this kind of outage on the SWP, the water being taken from the SWP facilities would be turned off. Once water is again available from the SWP facilities then turnouts to the Aqueduct would be again opened and deliveries to recharge areas would begin again. Since the MWA facilities have flexibility for recharge, the flowrate and number of turnouts being used from the Aqueduct can vary to increase flows over shorter periods of time based on availability in the SWP facilities. If only power is interrupted, then once power is restored then deliveries to recharge areas would begin again and the flow rates would be increased if needed. An interruption of several weeks or longer in SWP supplies would not provide any immediate threat to potable water deliveries from groundwater production wells.

MWA completed the first phase of the Regional Recharge and Recovery Project, known as "R^3," in 2013. These Phase 1 facilities can deliver up to 15,000 Af/yr to retail potable water agencies. The R^3 project is a basin management tool and conjunctive use project that distributes the water via groundwater wells pumping from the aquifer from a conjunctively managed area of the basin to local retail water purveyors. This groundwater pumping production is done on behalf of each of the retail water agencies and in lieu of pumping from other groundwater production facilities of these retail agencies. All production on behalf of a retail water agency is under the oversight of the Watermaster. This is a groundwater management project that allows water to be pumped in a portion of the basin to be used in lieu of other groundwater production in other portions of the basin so that the various areas of the basin can be actively managed. The R^3 project includes groundwater recharge facilities, groundwater production wells, booster pumps, storage reservoirs, interconnections to the retail customer water system, water meters, and chlorination facilities which are vulnerable to power outages. These R^3 facilities are in addition to the facilities of each retail water agency. Each Agency must have sufficient supply facilities to serve their customers without R^3 facilities. This means the R^3 facilities are totally redundant capacity to the retail agencies. MWA by agreement can stop deliveries in the R^3 facilities to the retail agencies at any time. In an emergency, these facilities are not required but are certainly available if the R^3 facilities are undamaged and functioning.

Each of the retailers that is served by the R^3 project takes delivery through a flow regulating, metering, chlorinating interconnection facility to their system. The MWA has stressed and incorporated in various agreements with the retailers that R^3 cannot be their primary source of supply or available for peaking – they have to maintain a primary system of wells and associated storage separate from R^3. R^3 facilities provide redundant capacity to the retailer's facilities.

For the retailer water agencies, all of the water systems have some form of storage as both regulating reservoirs and emergency supply. MWA does not monitor the various pressure zones that the retailers operate and the storage that they actually have available to them. During an acute shortage, the public would be asked by the retail agencies to reduce consumption to minimum health and safety levels, potentially extending the supply

to seven days. MWA would work to get R^3 facilities operational and once operational could allow utilization by the retail agencies as needed to help bring back full service to their customers. Working in parallel with the retail agencies the redundant R^3 facility capacity would help provide the retail agencies sufficient time to restore a significant amount of their groundwater production. After the groundwater supply is restored, the pumping capacity of the retail purveyors is restored, full system demands could be met. Until full well production is totally restored, R^3 facilities, once operational, would be available to help the retail water agencies meet full system demands. Updates on the water situation would be made as often as necessary.

The area's water sources are generally of good quality, and no insurmountable problems resulting from industrial or agricultural contamination are foreseen. If contamination did result from a toxic spill or similar accident, the contamination would be isolated and should not significantly impact the total water supply. In addition, such an event would be addressed in the retailers' emergency response plan.

8.4.2 SWP Emergency Outage Scenarios

In addition to earthquakes, the SWP could experience other emergency outage scenarios. Past examples include slippage of aqueduct side panels into the California Aqueduct near Patterson in the mid-1990s, the Arroyo Pasajero flood event in 1995 (which also destroyed part of Interstate 5 near Los Baños), Flood damage to the East Branch of the Aqueduct in 2015, and various subsidence and leakage repairs needed along the Main Branch and East Branch of the Aqueduct since the 1980s. All these outages were short-term in nature (on the order of weeks to several months), and DWR's Operations and Maintenance Division worked diligently to devise methods to keep the Aqueduct in operation and continue SWP deliveries while repairs were made. Thus, the SWP contractors generally experienced no interruption in total annual deliveries.

One of the SWP's important design engineering features is the ability to isolate parts of the system. The Aqueduct is divided into "pools." Thus, if one reservoir or portion of the California Aqueduct is damaged in some way, other portions of the system can still remain in operation. The primary SWP facilities are shown on Figure 8-1.

Other events could result in significant outages and potential interruption of service. Examples of possible nature-caused events include a levee breach in the Delta near the Harvey O. Banks Pumping Plant, a flood or earthquake event that severely damages the Aqueduct along its San Joaquin Valley traverse, or an earthquake event along either the West or East Branches. Such events could impact some or all SWP contractors south of the Delta.

The response of DWR, MWA, and other SWP contractors to such events would be highly dependent on the type and location of any such event. In typical SWP operations, water flowing through the Delta is diverted at the SWP's main pumping facility, located in the southern Delta, and is pumped into the California Aqueduct. During the relatively heavier runoff period in the winter and early spring, Delta diversions generally exceed SWP contractor demands, and the excess is stored in San Luis Reservoir. SWP aqueduct terminal reservoirs, such as Pyramid and Castaic Lakes, are also replenished during these periods. During the summer and fall, when diversions from the Delta are generally more limited and less than contractor demands, releases from San Luis Reservoir are used to

make up the difference in deliveries to contractors. The SWP share of maximum storage capacity at San Luis Reservoir is 1,062,000 AF.

MWA receives its SWP deliveries through the East Branch of the California Aqueduct. The other contractors receiving deliveries from the East Branch are Metropolitan Water District, Antelope Valley-East Kern Water Agency, Palmdale Water District, Crestline-Lake Arrowhead Water Agency, Desert Water Agency, San Gabriel Valley Municipal Water District, San Bernardino Valley Municipal Water District, San Gorgonio Pass Water Agency, and Coachella Valley Water District. The East Branch has two terminal reservoirs, Silverwood Lake and Lake Perris, which were designed to provide emergency storage and regulatory storage (i.e., storage to help meet peak summer deliveries) for several of the East Branch contractors. However, MWA does not have contract rights to storage capacity in those reservoirs. Silverwood Lake is within the MWA service area and releases from the lake flow into the primary groundwater basins within the MWA service area.

In addition to SWP storage south of the Delta in San Luis and the terminal reservoirs, a number of contractors have stored water in groundwater banking programs in the San Joaquin Valley and more recently along the East Branch, and many also have surface and groundwater storage within their own service areas.

Three scenarios that could impact the delivery to MWA of its SWP supply or other supplies delivered to it through the California Aqueduct are described below. For each of these scenarios, it was assumed that an outage of six months could occur. MWA's ability to meet demands during the worst of these scenarios is presented following the scenario descriptions.

Figure 8-1: Primary SWP Facilities

Scenario 1: Levee Breach near the Sacramento-San Joaquin Delta

The California Department of Water Resources (DWR) has estimated that in the event of a major earthquake in or near the Delta, regular water supply deliveries from the SWP could be interrupted for up to three years, posing a substantial risk to the California business economy. Accordingly, a post-event strategy has been developed which would provide necessary water supply protections. The plan has been coordinated through DWR, the Army Corps of Engineers (Corps), Bureau of Reclamation, California Office of Emergency Services (Cal OES), the Metropolitan Water District of Southern California, and the State Water Contractors. Full implementation of the plan would enable resumption of at least partial deliveries from the SWP in less than six months.

DWR Delta Flood Emergency Management Plan ("Emergency Pathway"). DWR has developed the Delta Flood Emergency Management Plan to provide strategies for a response to Delta levee failures, which addresses a range of failures up to and including earthquake-induced multiple island failures during dry conditions when the volume of flooded islands and salt water intrusion are large. Under such severe conditions, the plan includes a strategy to establish an emergency freshwater pathway from the central Delta along Middle River and Victoria Canal to the export pumps in the south Delta. The plan includes the pre-positioning of emergency construction materials at existing and new stockpiles and warehouse sites in the Delta, and development of tactical modeling tools (DWR Emergency Response Tool) to predict levee repair logistics, water quality conditions, and timelines of levee repair and suitable water quality to restore exports. The Delta Flood Emergency Management Plan has been extensively coordinated with state, federal and local emergency response agencies. DWR, in conjunction with local agencies, the Corps and Cal OES, regularly conduct simulated and field exercises to test and revise the plan under real time conditions.

DWR and the Corps provide vital Delta region response to flood and earthquake emergencies, complementary to an overall Cal OES structure. Cal OES is preparing its Northern California Catastrophic Flood Response Plan that incorporates the DWR Delta Flood Emergency Management Plan. These agencies utilize a unified command structure and response and recovery framework. DWR and the Corps, through a Draft Delta Emergency Operations Integration Plan (April 2015), would integrate personnel and resources during emergency operations.

Levee Improvements and Prioritization. The DWR Delta Levees Subvention Program has prioritized, funded, and implemented levee improvements along the emergency freshwater pathway and other water supply corridors in the central and south Delta region. These efforts have been complementary to the DWR Delta Flood Emergency Management Plan, which along with use of pre-positioned emergency flood fight materials in the Delta, relies on pathway and other levees providing reasonable seismic performance to facilitate restoration of the freshwater pathway after a severe earthquake. Together, these two DWR programs have been successful in implementing a coordinated strategy of emergency preparedness for the benefit of SWP and CVP export systems.

Significant improvements to the central and south Delta levee systems along Old and Middle Rivers began in 2010 and are continuing to the present time at Holland Island, Bacon Island, Upper and Lower Jones Tracts, Palm Tract and Orwood Tract. This complements substantially improved levees at Mandeville and McDonald Islands and portions of Victoria and Union Islands. Together, levee improvements along the pathway

and Old River levees consisting of crest raising, crest widening, landside slope fill and toe berms, meet the needs of local reclamation districts and substantially improve seismic stability to reduce levee slumping and create a more robust flood-fighting platform. Many urban water supply agencies have participated or are currently participating in levee improvement projects along the Old and Middle River corridors.

Scenario 2: Complete Disruption of the California Aqueduct in the San Joaquin Valley

The 1995 flood event at Arroyo Pasajero demonstrated vulnerabilities of the California Aqueduct (the portion that traverses the San Joaquin Valley from San Luis Reservoir to Edmonston Pumping Plant). Should a similar flood event or an earthquake damage this portion of the aqueduct, deliveries from San Luis Reservoir could be interrupted for a period of time. DWR has informed the SWP contractors that a four-month outage could be expected in such an event. MWA's assumption is a six-month outage.

Arroyo Pasajero is located downstream of San Luis Reservoir and upstream of the primary groundwater banking programs in the San Joaquin Valley. Assuming an outage at a location near Arroyo Pasajero that resulted in the California Aqueduct being out of service for six months, supplies from San Luis Reservoir would not be available to those SWP contractors located downstream of that point. This would include MWA.

Scenario 3: Complete Disruption of the East Branch of the California Aqueduct

The East Branch of the California Aqueduct begins at a bifurcation of the Aqueduct south of Edmonston Pumping Plant, which pumps SWP water through and across the Tehachapi Mountains. From the point of bifurcation, the East Branch is an open canal. Water is conveyed through the canal to the Pearblossom Pumping Plant, where the first of five turnouts to the MWA service area is located at Sheep Creek, which is essentially a stub out in the Phelan area and not used at this time. The second is the Mojave River turnout, also known as the White Road Siphon, located north of Lake Silverwood. The third turnout is the Highway 395 turnout, which is used for the Oro Grande Wash Recharge Project. The fourth turnout is the Antelope Siphon which is located near the City of Hesperia and was constructed to supply the Morongo Basin Pipeline, which delivers SWP water from the Alto Subarea recharge facilities in the Morongo Subarea. The last turnout is also an unutilized stub out from the Aqueduct in what has been labeled the Unnamed Wash. All of these turnouts are along Reach 22b of the Aqueduct. In addition, occasionally, MWA takes water delivery from Cedar Springs Dam at Silverwood Lake, for groundwater recharge.

If a major earthquake (an event similar to or greater than the 1994 Northridge Earthquake) were to damage a portion of the East Branch, deliveries could be interrupted. The exact location of such damage along the East Branch would be key to determining emergency operations by DWR and the East Branch SWP contractors. For this scenario, it was assumed that the East Branch would suffer a single-location break and deliveries of SWP water from north of the Tehachapi Mountains or of contractor water stored in groundwater banking programs in the San Joaquin Valley would not be available. It was also assumed that Silverwood and Perris dams would not be damaged by the event and that water in Silverwood and Perris Lakes would be available to the East Branch SWP contractors.

In any of these three SWP emergency outage scenarios, DWR and the SWP contractors would 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 supply or other water to another contractor, with that water being returned after the outage was over.

Of these three SWP outage scenarios, the scenario of an East Branch outage along with no delivery of stored water from Silverwood Lake presents the worst-case scenario for MWA. In this scenario, MWA would continue to rely solely on local groundwater supplies (native and banked imported water). An assessment of the supplies available to meet demands in MWA's service area during a six-month East Branch outage is presented in Table 8-2 for 2015 through 2040.

During an outage, the local supplies available would consist of native and banked groundwater. It was assumed that local well production would be unimpaired by the outage and that the outage would occur during a year when average/normal supplies would be available. Note that adequate well and aquifer capacity exists to pump at levels higher than those assumed in this assessment, particularly during a temporary period such as an outage.

Table 8-2: Projected Supplies and Demand during Six-Month Disruption of Imported Supply System

Water Supply Source	2015	2020	2025	2030	2035	2040
Local Supplies[a]						
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
Recharge Banking Projects[c]	30,062	35,861	38,566	41,873	45,288	48,394
Total Existing Local Supplies	**138,009**	**148,366**	**153,186**	**159,079**	**165,164**	**170,700**
Total Estimated Demands	***138,009***	***148,366***	***153,186***	***159,079***	***165,164***	***170,700***

Notes:

(a) Assumes complete disruption in SWP supplies and in deliveries through the California Aqueduct for six months.

(b) See Section 3 – Water Resources, Table 3-1.

(c) Banked groundwater would be utilized to meet demand during an outage. See Section 3 – Water Resources for more details on MWA's groundwater banking projects.

8.4.3 Regional Power Outage Scenarios

For a major emergency such as an earthquake, Southern California Edison (Edison) has declared that in the event of an outage, power would be restored within a 24 hour period. For example, following the 1994 Northridge Earthquake, Edison was able to restore power within 19 hours. Edison experienced extensive damage to several key power stations, yet was still able to recover within a 24-hour timeframe.

8.5 Mandatory Prohibitions During Shortages

As explained earlier, MWA is not a direct purveyor of retail water supplies and does not have any emergency powers or the authority to implement water shortage plans within its boundaries. It relies instead on efforts of the individual cities and water agencies. However, MWA does have its Ordinance No. 9 that allows the Agency to sell and deliver SWP water to two power plants. MWA Ordinance 9 requires customers taking direct delivery of SWP water from MWA to maintain a backup supply in the event of outages or shortages in supply from the SWP. No retail water agencies use imported SWP directly. All water is first recharged and stored in the groundwater basin for later extraction through groundwater wells. MWA maintains a bank of stored imported water in the groundwater basin. MWA informs customers under Ordinance 9 that supplies are variable and interruptible, with no guarantee of a specified delivery quantity. Ordinance 9 is MWA's only authority to reduce water supplies to its customers during shortages. However, customers under Ordinance 9 represent only a small portion of the overall water use within the MWA service area, with a majority of water users receiving water supply from groundwater production. Highlights of the Ordinance (Appendix I) are discussed below:

- Each application shall contain such information as is necessary to assure the Board of MWA that the application is for service of a wholesale nature and that the MWA will not thereby become subject to the obligations of a retail water purveyor providing direct retail service to consumers. In the event the Applicant seeks a waiver of such requirement, the application shall so state and there shall be attached thereto a statement of the reasons for seeking a waiver any documentary evidence in support thereof.

- Each application shall contain information indicating that the Applicant is capable of sustaining its service requirements from independent sources during the period of any interruption or curtailment of service from Agency facilities. In no instance shall MWA be the sole source of water supply to any water retailer for any development within the retailer's service area.

- In any year in which there may occur a shortage in available supply of SWP, the MWA shall reduce the delivery of SWP proportionately to all parties to which the MWA supplies imported SWP water, including Improvement District M of Division 2 (entities that lie within the greater Morongo Basin/Johnson Valley Area ("Morongo Area") and take water from the Morongo Basin Pipeline). It is provided that the MWA may apportion available SWP on some other basis if such is required to meet minimum demands for domestic supply, fire protection, fire suppression or sanitation to a specific area of the Agency during the year. No vested rights are obtained by the Customer upon the sale and delivery of water apportioned by this Section nor is any such rights inferred by virtue of an MWA decision to provide water to a Customer in a specific year.

- In any year due to hydrogeologic conditions in the upper Mojave River groundwater basin, water production from the R^3 facilities can be restricted or stopped. However, the retail agencies taking water from R^3 will still have their own redundant facilities to continue to deliver water.

8.6 Consumptive Reduction Methods during Restrictions

As explained in the previous section, MWA does not have the power to implement mandatory prohibitions during water supply shortages, with the exception of customers receiving direct SWP supplies or water deliveries through R^3 under MWA Ordinance 9.

8.7 Penalties for Excessive Use

The penalties for excessive water use are stated in the text of the Judgment for the Mojave Groundwater Basin and the text of the Warren Valley Judgment for the Warren Groundwater Basin. The Court has continuing jurisdiction for the Mojave Basin Area Judgment and water producers in noncompliance can readily be taken to court.

8.8 Financial Impacts of Actions during Shortages

There will be no financial impacts to MWA during a water shortage because of the available water that is banked in the MWA service area and able to be sold to retailers.

8.9 Water Shortage Contingency Resolution

As explained in Section 8.5, the only ordinance or resolution that MWA has for assisting in water shortages is Ordinance 9, which only deals with a small portion of the water users within MWA service area.

8.10 Mechanism to Determine Reductions in Water Use

As explained in Section 8.5, MWA does not have the power to implement mandatory prohibitions during water supply shortages, with the exception of customers receiving direct SWP supplies or R^3 water deliveries under Ordinance 9.

8.0 WATER SHORTAGE CONTINGENCY PLANNING

California's extensive system of water supply infrastructure, its reservoirs, groundwater basins, and inter-regional conveyance facilities, mitigates the effect of short-term dry periods. Defining when a drought begins is a function of drought impacts to water users. Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Droughts occur slowly, over a multiyear period. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline. In addition to climate, other factors that can cause water supply shortages include earthquakes, chemical spills, and energy outages at treatment and pumping facilities. The City has included the probability of catastrophic outages in its reliability planning.

On June 24, 2015, the City adopted a revised Water Conservation Plan (same as Water Shortage Contingency Plan) to respond to the Governor's Proclamation declaring a drought State of Emergency to exist in California due to severe drought conditions.

The January 2014 Governor's Proclamation finds that dry conditions and lack of precipitation present urgent problems to drinking water supplies and cultivation of crops, which put farmers long term investments at risk. The conditions also threaten the survival of animals and plants that rely on California's rivers, including many species in danger of extinction. The January 2014 Proclamation also calls on all Californians to reduce their water usage by 20 percent. As the drought continued, on April 25, 2014 the Governor's signed a Proclamation declaring a drought State of Emergency to exist in California due to severe drought conditions and signed an Executive Order to redouble drought actions.

The City's revised Water Conservation Plan (Appendix L) is summarized as presented in this chapter.

8.1 Stages of Action

The City of Adelanto has proposed a four-stage plan of action for implementation in the event of a long-term drought or a significant loss of supply, including losses of up to 50 percent of the water supply. The four stages of action include:

Stage 1 – Stage 1 becomes effective when the City declares a water shortage exists. In this stage, the APUA will recommend a voluntary 10 percent reduction in water use based on an established baseline year determined by the City at the time Stage 1 is implemented. Simultaneously with this declaration, the City will begin a public outreach campaign to encourage the efficient use of water. This will include articles published in local newspapers, information posted on the City's website, literature distributed to customers and educational conservation programs held on school campuses.

Stage 2 – Stage 2 is entered when the Stage 1 reduction goal has not been met for two consecutive years of a drought. Public awareness efforts will continue and a survey will be conducted on Stage 1 efforts. The City will establish a water conservation advisory committee

comprised of officials from the Adelanto Public Utilities Authority and the City of Adelanto.

Stage 3 - Stage 3 goes into effect if the water shortage continues for four consecutive years. This stage recommends 20% Mandatory reductions in water use effective June 1, 2015. A plan and Ordinance to enforce penalties for excessive water use will be developed as part of Stage 3. The Ordinance will include prohibitions against specific wasteful practices such as gutter flooding, open-hose car washing, driveway wash downs and other similar practices as described in further detail below (under the heading "Water Conservation Plan"). During Stage 3, the City will also analyze the impacts of the Conservation Plan on revenue and expenditures and propose measures to overcome those impacts.

Stage 4 – Stage 4 will be declared if a water shortage continues for one year beyond Stage 3. In this stage, the City shall determine the extent of any required additional conservation measures needed to address water supply reductions of up to 50 percent.

Consumer compliance with all stages will be enforced through penalties, as outlined in Section 8.3.

Table 8-1 shows the use reduction stages as a guideline for recommending the appropriate conservation stage and water conservation target.

Table 8-1: Stages of Water Shortage Contingency Plan

Stage	Percent Supply Reduction[1] *(Numerical value as a percent)*	Water Supply Condition *(Narrative description)*
Stage 1	Up to 10%	Water shortgage declared
Stage 2	Up to 10%	Stage 1 reduction goal has not been met for two consecutive years of drought
Stage 3	10% to 20%	Water shortage continues for four consecutive years
Stage 4	20% to 50%	Water shortage continues for one year beyond Stage 3

[1] *Stage 4 in the Water Shortage Contingency Plan addresses a water shortage of 50%.*

8.2 Prohibitions on End Uses – Water Conservation Plan

Chapter 8.20 (Appendix L) of Adelanto's Municipal Code entitled "Water Conservation Plan"[61] sets forth the rules and regulations governing the use of water in the City, even during

61 http://library.amlegal.com/nxt/gateway.dll/California/adelanto_ca/cityofadelantocaliforniamunicipalcode?f=templates$fn=default.htm$3.0$vid=amlegal:adelanto_ca

non-drought times. The Code also requires adherence to the City's Landscape Water Conservation Ordinance contained within Section 17.60 of the Municipal Code (Adopted by Ordinance No. 441 – Appendix M).

This section of the City's Municipal Code specifically requires all water users to abide by specific water conservation measures at all time, including during non-drought times. Table 8-2 presents a summary of the restrictions and prohibitions, following by more detailed narrative of each prohibition.

Table 8-2: Restrictions and Prohibition

Stage	Restrictions and Prohibitions on End Users	Penalty, Charge, or Other Enforcement?
All Stages	Landscape - Restrict or prohibit runoff from landscape irrigation	Yes
All Stages	Landscape - Limit landscape irrigation to specific days	Yes
All Stages	Landscape - Limit landscape irrigation to specific times	Yes
All Stages	Other - Prohibit use of potable water for washing hard surfaces	Yes
All Stages	Other - Require automatic shut of hoses	Yes
All Stages	Water Features - Restrict water use for decorative water features, such as fountains	Yes
All Stages	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Yes
All Stages	CII - Restaurants may only serve water upon request	Yes
All Stages	CII - Construction water shall be used in an efficient manner	Yes
All Stages	All new construction shall have low-flush toilets and low-flow showerheads and faucets	Yes
All Stages	Water for cooling systems must be recycled where possible	Yes
All Stages	Pools - Allow filling of swimming pools only when an appropriate cover is in place.	Yes
All Stages	CII - Lodging establishments must post a notice to urge guests to conserve water	Yes
All Stages	Customers encouraged to install flow restrictors or pressure reducer, intall toilet tank displacement devices, and replace appliances with water savings models	Yes
All Stages	Use drought tolerant or native plant material	Yes
All Stages	Use low precipitation irrigation and timing devices	Yes
All Stages	At least 50% of new model homes shall include low water use, drought tolerant or native plants	Yes
All Stages	Provide exemptions where recycled water is used	Yes

1. The use of water for any purpose shall not result in flooding or unnecessary runoff in gutters, driveways, streets or adjacent lands.
2. Lawns, trees, shrubs, and other landscaping shall not be watered beyond what they need for growth and to sustain life and water shall not be permitted to pool or to run off property onto streets or adjacent land.

- Watering of lawns, grass, shrubbery, ground cover or other landscaping shall only be done on set watering days.
- Even address numbers water outdoor landscape on Tuesday and Thursday.
- Odd address numbers water outdoor landscape on Wednesday and Friday.
- No outdoor landscape watering on Mondays and weekends.

3. Sidewalks, walkways, driveways, parking areas, patios, porches or verandas or any other like area shall not be washed off with water from hoses or by any other means. The exception to this shall be the washing of flammable or other similar dangerous substances that require direct hose flushing using recognized safety control measures for the benefit of the public health and safety. Notification to the City of such wash down is required.
4. Water, sprinkling, aerial watering or irrigating of any landscaped or vegetated areas, including lawns, trees, shrubs, grass, ground cover, plants, vines, gardens, vegetables, flowers, or other landscaping shall not occur between the hours of 9:00 a.m. and 6:00 p.m. during the months of April through September; provided, however, that these restrictions shall not apply to hand-held hose or drip irrigation systems or to establishment of new lawns, landscaping, or gardens.
5. Non-commercial washing of privately owned vehicles, trailers, motor homes, buses, boats and mobile homes is prohibited except from a bucket, and except that a hose equipped with an automatic shut-off nozzle may be used for a quick rinse.
6. Water shall not be used to clean, fill, operate or maintain levels in decorative fountains unless such water is for replenishment of a recycling system.
7. Water lines, faucets, and other facilities shall be maintained so that they do not leak water. Existing leaks shall be repaired in a timely manner.
8. Restaurants, other food establishments, or other public places where food is served, shall not routinely provide glasses of drinking water to customers unless specifically requested by the customer.
9. Water for construction purposes including, but not limited to, debrushing of vacant land, compaction of fills and pads, trench backfill and other construction uses, shall be used in an efficient manner. The use of aerial type sprinklers is not recommended but, if used, shall not be operated between the hours of 9:00 a.m. and 6:00 p.m.
10. All new residential, commercial and industrial construction shall be equipped with low-flush toilets and low-flow showers and faucets.
11. Water used for cooling systems must be recycled to the extent possible.
12. Evaporation resistant covers are required for all new swimming pools and hot tubs and are encouraged to be installed for existing pools. The covers required by this Chapter shall, at the time of purchase, installation and all subsequent maintenance, meet or exceed current standards and specifications for swimming pool, spa and hot tub covers adopted by the American Society for Testing and Materials (ASTM).
13. Hotels/motels are required to post a notice in substantially the form provided by the

City urging guests to conserve water.

14. All current and future water customers are encouraged to install flow restrictors or pressure reducers and to install toilet tank displacement devices (dams, bottles or bags), and as appliances or fixtures wear out, replace them with water saving models.
15. Parks, schools, golf courses, cemeteries, school grounds and all public use lands shall not irrigate between the hours of 9:00 a.m. and 6:00 p.m. during the months of April through September inclusive and are encouraged to use water conservation irrigation equipment.
16. The use of drought tolerant or native plant material is encouraged for exterior landscaping in all new residential construction, and required for new commercial and industrial construction.
17. The use of low precipitation sprinkler heads, bubblers, drip irrigation and timing devices are required in the exterior landscaping in all new residential, commercial and industrial construction.
18. At least fifty percent (50%) of all new model homes shall include as a part of the exterior landscape development low water use, drought-tolerant or native plants.
19. Projects, including Commercial and Planned Unit Developments, which utilize recycled water from sewage treatment or agricultural operations, may receive an exemption from Subsections 15 through 18 of this Section by approval of the City Council.

8.3 Penalties, Charges, Other Enforcement of Prohibitions

Chapter 8.20.050 of the City's Municipal Code stipulates that anyone who violates any provision of the City's water conservation code (Chapter 8.20) shall be guilty of a misdemeanor and, upon conviction thereof, shall be punished in accordance with the provisions of Chapter 1.20 of the Code (Municipal Code Violations).

Enforcement Code Compliance officers shall be empowered to investigate instances of Water Waste and enforce all provisions. Officers will issue any notice of violation or administrative citation in accordance with the provision in the Chapter 8.20.050 of the City's Municipal code.

(a) Administrative Fines shall be assessed as follows:

(1) For a first violation of any prohibition of this Chapter 8.20 prior to the issuance of an administrative citation, shall be issued in accordance with the procedures for service and posting set forth in Section 8.20.050 of this Chapter.

(2) For violation (s) of any prohibitions during Shortage Stage 1, Administrative Fines may be assessed for each violation of the provisions of Section 8.20.050 in the amount of two hundred dollars ($200.00).

(3) For violation(s) of any prohibitions during Shortage Stage 2 Administrative Fines may be assessed for each violation of the provisions of Section 8.20.050 in the amount of three hundred dollars ($300.00).

(4) For violation(s) of any prohibitions during Shortage Stage 3, Administrative Fines may be assessed for each violation of the provisions of Section 8.20.050 in the amount of five hundred dollars ($500.00).

(5) For violation(s) of any prohibitions during Shortage Stage 4, Administrative Fines may be assessed for each violation of the Provisions of Section 8.20.050 in the amount of Seven hundred dollars ($700.00).

(b) The City Manager or his/her designee may waive any Administrative Fine or portion thereof assessed under this Section Pursuant to written procedures (to be developed by the City Manager) wherein mitigating circumstances or other conditions make the imposition of the Administrative Fine unreasonable.

(c) If the Responsible Person(s) fails to correct the violation(s), subsequent administrative citations and fines may be issued for the same violation(s).

(d) Payment of the Administrative Fine shall not excuse the failure to correct the violation nor shall it bar further enforcement action up to and including discontinuance of water service (following the notice specified in Section 8.20.050 (c) of this Chapter.

(e) Any fines imposed under this Section shall be collected in accordance with the Cities currently-effective Water Regulations and Service provisions as adopted by Ordinance. Such fines shall be deposited in the Cities APUA fund.

8.4 Consumption Reduction Methods

Table 8-3 summarizes the consumption reduction methods the City will enact in each shortage stage and the water savings percentage goal.

Table 8-3: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods

Stage	Consumption Reduction Methods by Water Supplier
Stage 1	Expand Public Information Campaign; up to 10% water savings
Stage 2	Expand Public Information Campaign; conduct survey on Stage 1 efforts; establish water conservation advisory committee among APUA and City; up to 10% water savings
Stage 3	Enforce penalties for excessive water use and prohibition infractions; analyze impacts of Water Conservation Plan on revenue and expenditures, and proposed measures to overcome impacts; 10% to 20% water savings
Stage 4	Additional conservation measures to address water supply reductions up to 50%; 20% to 50% water savings

8.5 Determining Water Shortage Reductions

During normal water supply conditions, production figures are recorded daily and are incorporated into the City's water production report. During water shortages, water usage will continue to be closely monitored on a daily or, if necessary, hourly basis depending on the severity of the drought. Production data from the City's wells can be retrieved on an hourly basis. This will allow City staff to determine the effects of a reduction on water production

within the system. Further, since all City water customers are metered, the City will monitor water demand based on billing records during water shortages.

During a shortage resulting from a disaster, production figures will be monitored on an ongoing basis. The City's SCADA system will provide prompt warning of any critical conditions. Once a shortage stage is implemented, actual reductions in water production and usage can be determined based on the SCADA system monitoring. Reports will be provided on a daily basis to the City's Director of Utilities.

8.6 Revenue and Expenditure Impacts

The Adelanto Water Authority Fund provides funding for the operation and maintenance of the City's water distribution system under an enterprise fund separate from the City's General Fund. In governmental accounting, enterprise funds are used to account for operations that are operated and financed in a manner similar to private business enterprises where the intent is that the costs (expenses including depreciation) of providing goods or services to the general public on a continuing basis are to be financed or recovered primarily through user charges; or where periodic determination of revenues earned, expenses incurred, and/or net income is deemed appropriate, for capital maintenance, public policy, management control accountability or other purposes.

The Water Authority Enterprise Fund also serves as an emergency source of funds in the event of an extreme water shortage. Should an extreme shortage be declared and a large reduction in water sales occur for an extended period of time, the City would re-examine its water rate structure and monitor projected expenditures. If needed, the City would consider increases in rates to overcome revenue lost.

8.7 Water Shortage Stage Resolution

The City's Water Shortage Contingency Plan identifies actions to be taken by water consumers within the City's service area during periods of adequate water supply and during moderate, high, and severe water shortages. The purpose of the Water Shortage Contingency Plan is to provide procedures with voluntary and mandatory provisions to minimize the effect of a water shortage and reduce overall water usage. A Water Shortage Stage Resolution that could be enacted by the Adelanto Public Utility Authority during times of a declared water shortage is included in Appendix N.

Prior to and during implementation of the Water Shortage Contingency Plan and Resolution, the City would likely meet water shortage demands by increasing groundwater pumping and implementing water use efficiency programs. Water for public health, safety and welfare, water for maintenance of water facilities, and "grey water" use are all exempt from mandatory reductions. Special case circumstances may be reviewed by the City Manager's Office.

8.8 Catastrophic Supply Interruption

A water shortage emergency could result from a drought or a catastrophic event such as an earthquake, transmission facility failure, regional power outage, flooding, supply contamination from chemical spills, or other adverse conditions.

The City recognizes, that in the event of an emergency such as an earthquake, the integrity of the water system can be breached causing disruptions in water supply. Because of the possibility of emergencies from both man-made and natural causes, water utility emergency planning is of utmost importance. The City's Emergency Operations Plan (EOP) complies with the Standardized Emergency Management System (SEMS) developed by the State of California, and the National Incident Management System (NIMS) developed by the Federal Emergency Management Agency. The EOP includes information on the Emergency Operations Organization, the roles and responsibilities of each section, and includes operational checklists to guide response actions.

In the event of an emergency, the City Manager will assume overall responsibility for coordinating the City's response. The City's Director of Public Utilities will coordinate all activities relating to water operations. The City of Adelanto has also entered into mutual aid agreements with other local cities and the County of San Bernardino, which may be implemented during an emergency, if necessary.

8.9 Minimum Supply Next Three Years

The Mojave Water Agency has projected a reliable supply of water during all multiple dry years through 2040. Consequently, MWA does not anticipate any problems in meeting the City's demands during multiple dry years occurring over the next three years. Information shown in Table 8-4 is extracted from Table 6-2.

Table 8-4: Minimum Supply Next Three Years

	2016	2017	2018
Available Water Supply	9,300	9,300	9,300