

**Mojave Water Agency**  
**Water Supply Reliability and Groundwater Replenishment Program**

**PROJECT ENVIRONMENTAL IMPACT REPORT**  
**EXECUTIVE SUMMARY**

**A. INTRODUCTION**

**1. Background**

Formed by an act of the California Legislature in 1959, the Mojave Water Agency (MWA) manages groundwater in portions of the Mojave Basin and Morongo Basin, with a service area of over 4,900 miles. MWA holds a State Water Project contract and utilizes a variety of facilities to import and distribute water to replenish groundwater basins and to meet the obligations of the Mojave Basin Area and Warren Valley judgments related to groundwater supply. MWA's function is thus to utilize available supplies in a manner consistent with California Water Code Section 79562.5(b), which outlines four elements of integrated water management planning, specifically:

- Water supply,
- Groundwater management,
- Ecosystem restoration, and
- Water quality.

MWA operates under a Regional Water Management Plan, revised in 2004 (2004 Regional Water Management Plan, see MWA 2004a), adopted on February 24, 2005 following adoption of a Final Program Environmental Impact Report (2004 PEIR; State Clearinghouse Number 2003101119) (see MWA 2004b). This Project EIR tiers off the 2004 PEIR. MWA also operates under the Mojave Basin Area Judgment (Judgment), which sets limits (Free Production Allowances) on the amount of groundwater production that can occur in each subarea without incurring an obligation to purchase imported water. These limits are based on long-term (1931-1990) averages of water supply and the highest year of production between 1986 and 90.

The 2004 Regional Water Management Plan defines MWA's overall water management objectives for the period 2004-2020:

- A. Balance future water demands with available supplies, and
- B. Maximize the overall beneficial use of water throughout MWA.

For purposes of management, MWA has identified six major management basins within its service area.

- Mojave River Basin
  - Alto Area
  - Oeste Area
  - Este Area
  - Centro Area
  - Baja Area
- Morongo Basin/Johnson Valley

Groundwater overdraft in these six groundwater basins and combined expected growth and associated increasing demand for water were projected to result in a groundwater recharge requirement of 59,100 acre-feet per year (af/yr) by 2020: 41,000 af/year for the Mojave Regional Aquifer, 23,000 af/yr for the Mojave Floodplain Aquifer, and 2,800 af/yr for the Morongo Basin/Johnson Valley area. About 90% of this need will be in the rapidly urbanizing Victor Valley (Alto and Oeste basins). The 2004 Plan notes that there are two fundamental actions that may be taken to address the problem of groundwater overdraft and future growth/water demand:

- Supply enhancement projects, either involving groundwater recharge or an increase in groundwater efficiency
- Management actions, involving conservation, storage agreements, and water transfers.

Between 2005 and 2020, MWA has a window of opportunity to address these problems. MWA has a State Water Project contract for a maximum 75,800 acre-feet of water per year, but from 1978 through 2001, average annual SWP deliveries were only 6,253 acre-feet, and no deliveries were made in 11 of the 24 years of record. This under-use of MWA's SWP contract supplies reflects local agency reliance on less-costly groundwater supplies. If MWA's full SWP Table A supply had been delivered over the same period of time, it would have been possible to substantially reduce (and in some instances fully offset) groundwater overdraft. MWA's ability to take delivery of its SWP Table A supply is affected by (a) lack of facilities to recharge and store this water and (b) funding limitations. The purpose of the Proposed Water Supply Reliability and Groundwater Replenishment Program is to address these two issues.

## **2. Relationship of 2004 PEIR to Water Supply Reliability and Groundwater Replenishment Program**

The potential elements of the Proposed Project were evaluated at a programmatic level in the 2004 PEIR. The purpose of this Project EIR is to more precisely (a) define the scope and operation of various alternatives, including additional features that may be required for banking, exchange, and long-term MWA use and (b) identify and quantify the potential impacts of specific alternatives involving program elements identified in the 2004 PEIR.

## **B. Scope of Analysis**

### **1. General**

To accomplish its objectives and meet regional needs, MWA would (a) use existing facilities, (b) construct new facilities for groundwater recharge and extraction; and (c) modify operations to include water banking programs and water exchange programs. In this Project EIR, specific projects and operational modifications for a range of potentially feasible alternatives is evaluated. Facilities included in the various alternatives include (Figure ES-1):

- The existing Mojave River Pipeline and Morongo Basin Pipeline;
- Existing recharge basins at Hodge, Lenwood, Daggett, and Newberry Springs (Mojave River Pipeline) and the Warren Basin (Morongo Basin Pipeline);
- Additional groundwater recharge basins in the vicinity of the California Aqueduct, along the Morongo Basin Pipeline, in Oro Grande Wash, and in Antelope Wash;
- Additional wells in the vicinity of the Mojave River upstream of the Narrows, along the California Aqueduct, East Branch; along the Mojave River Pipeline, and at various locations in the vicinity of Hesperia and Victorville;
- Additional pipelines to convey water to and from recharge basins and wells;
- Temporary sand dikes in the mainstem Mojave River to enhance recharge in the reach between Mojave Forks Dam and the Narrows;
- Facilities and/or rights of way to provide for delivery of supplies from the State Water Project via the West Fork of the Mojave River and/or existing drainage washes leading from the California Aqueduct to the mainstem Mojave River; and
- Ancillary facilities associated with these potential project elements such as monitoring wells, power lines, and pumps and pump housings.

Changes to MWA operations include (a) implementation of a traditional water banking program and (b) implementation of a combined water banking and on-going water exchange program.

### **2. Scope of Project EIR**

The Project EIR addresses the Proposed Project at three levels. First, it describes the initial effort to screen alternatives based on technical feasibility, cost, and environmental effects. Second, it defines the site specific issues related to construction and operation of each of the various potential project sites deemed potentially feasible in the screening analysis. Third, it discusses the rationale for formulation of logical alternatives for the Proposed Project that combined various facilities and evaluates the potential impacts of these alternatives. Two basic operational scenarios are examined:

- A traditional water banking program with Metropolitan Water District of Southern California (Metropolitan) which would involve Metropolitan delivery of supplies to

MWA for recharge, with MWA returning 90% of the volume delivered during dry years. Like a bank saving account, traditional water banking requires deposits before there are withdrawals.

- Combined water banking and exchange programs, which add an on-going exchange element that allows MWA and Metropolitan to exchange available SWP supplies on a flexible basis. Under such a program, MWA may pre-deliver SWP supplies in excess of its need to Metropolitan, which will then return them to MWA when it has supplies in excess of need.

The FEIR evaluates positive and/or negative effects of Proposed Project Alternatives on:

- Aesthetics,
- Air quality,
- Biological resources,
- Cultural resources,
- Geology and soils,
- Hazards and hazardous materials,;
- Land use,
- Noise,
- Public services and utilities,
- Recreation,
- Traffic,
- Utilities and Service Systems,
- Water resources (water quality and hydrology),
- Housing and population (growth), and
- Energy use and conservation.

The FEIR specifically addresses issues raised informally by various agencies prior to the CEQA Notice of Preparation and during the formal CEQA public scoping process. During presentations to the MWA Technical Advisory Committee, comments were received from:

- Guy Patterson, Baldy Mesa Water District
- Tom Billhorn, California Department of Fish and Game
- Chuck Bell, Agricultural representative, Lucerne Valley
- Jeannette Hayhurst, City of Barstow

In addition, during formal scoping, MWA received written comments from:

- Hisam Baqai, Supervising Engineer Lahontan Regional Water Quality Control Board
- Carol Gaubatz, Program Analyst, Native American Heritage Commission (NAHC)
- Naresh P. Varma, Chief Environmental Management Division, County of San Bernardino Department of Public Works

The FEIR also responds to comment received from the public and from agencies during the draft EIR review period from October 28, 2005 through December 13, 2005 (Appendix A):

## INDIVIDUALS

- Mr. Chuck Bell, written comments received during the 47-day comment period;
- Mr. Jeff Bentow, Yermo Water Company, oral comments at the November 8, 2005 public meeting and the November 9, 2005 MWA Technical Advisory Committee;
- Mr. Lou Kershberg, oral comments at the November 8, 2005 public meeting;
- Mr. Guy Patterson, oral and written comments at the November 9, 2005 MWA Technical Advisory Committee
- Mr. and Mrs. Gary E. Thrasher, written comments received during the 47-day comment period;
- Mr. Mathew Woods, oral comments at the November 8, 2005 public meeting and written comments at the November 9, 2005 MWA Technical Advisory Committee
- Mr. Joseph Monroe, written comment received November 17, 2005.

## AGENCIES

- California Department of Fish and Game, Habitat Conservation Program, Region 6, Ms. Denyse Racine, Supervisor;
- California Regional Water Quality Control Board, Lahontan Region, South Basin Regulatory Unit, Mr. Greg Cash, Engineering Geologist
- California Department of Water Resources, State Water Project Analysis Office, Ms. Elizabeth Patterson, by email 24 October 2005.
- County of San Bernardino, Department of Public Works, Environmental Management Division, Mr. Naresh P. Varma, Chief

In addition, MWA discussed the proposed project with staff of its potential water banking partner (Metropolitan Water District of Southern California) who unofficially suggested some minor editorial changes to the document. Finally, MWA received correspondence from the Southern California Association of Governments declining to comment on the draft EIR and from the State Clearinghouse indicating that it had not independently received comments from state agencies.

## **C. Project Purpose and Need**

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

- Both funding and lack of off-river recharge facilities limit the potential to (a) import supplies from the SWP and (b) recharge them to replenish overdrafted groundwater. As a result, MWA has not historically imported its entire available Table A supply.
- Existing recharge in the MWA service area is focused on recharge of the Mojave River aquifer and the Warren Valley, which is constrained by (a) flood flows in the

Mojave River during the wet years when supplemental SWP supplies are most readily available and (b) by lack of adequate extraction facilities.

- Even when supplemental SWP supplies are available, MWA may not be able to import them and utilize them because of these constraints.
- Riparian enhancement goals in areas where declining groundwater levels have affected riparian forest along the river need to be addressed.

## **D. Formulation of Alternatives**

As described in detail in Chapter 3, MWA has evaluated alternatives for meeting Proposed Project needs systematically, beginning with the 2004 PEIR. A subset of high priority facilities from the 2004 PEIR was then evaluated in a feasibility study performed for MWA by Bookman-Edmonston in 2004 and early 2005. In this feasibility analysis, a wide range of alternatives for meeting water conveyance, groundwater recharge, groundwater extraction needs were examined within the context of a 75,000 to 450,000 acre-foot water banking program between MWA and Metropolitan. The feasibility analysis functioned as an alternative screening process, with various alternative sites and facilities examined in terms of the following factors:

- Engineering
- Hydrogeology
- Economics
- Water quality
- Environmental impacts
- Regulatory constraints
- Institutional considerations

The feasibility analysis evaluated specific projects in three categories:

- Existing and planned facilities for recharge and conveyance
  - a. Existing MWA facilities
  - b. Mojave Forks Dam
  - c. VVWD's "Green Tree" recharge facility
- Potential for use of proposed City of Hesperia flood detention basins for recharge At Cedar Avenue and Ranchero Road
- Potential new facilities for recharge and conveyance
  - a. Oro Grande Wash
  - b. Off-channel along the Mainstem Mojave River
  - c. Recharge Basins near Sheep Creek (Oeste) and the Mojave River Pipeline

- (Alto)
- d. Recharge basins north of the California Aqueduct in Antelope Wash
- e. Release of water to the Mainstem Mojave River via an Unnamed Wash in Summit Valley
- f. Injection wells
- g. New spreading basins in the Lucerne Valley

The screening analysis eliminated alternatives with "fatal flaws" such as significant potential conflicts in use (Mojave Forks Dam), poor recharge conditions (such as in the immediate vicinity of sheep creek), potential water quality impacts (injection wells and areas with high potential for poor indigenous water quality), potential for high energy use and associated costs, and potential for high cultural resource impacts (near Deep Creek at Mojave Forks Dam), and high environmental impacts (arroyo toad at Mojave Forks Dam and arroyo toad and riparian habitats near Deep Creek north of Mojave Forks Dam).

At the various facility sites, thousands of acres of potential recharge basins were evaluated. Following the feasibility evaluation, a total of about 800 acres of potential recharge, and sites for up to 50 new wells were selected for detailed evaluation in the Project EIR.

## **E. Project Description: Facilities**

Based on the feasibility study's initial screening of alternatives, MWA focused on a Proposed Project that would involve a range of facilities and operations, beginning with an alternative that would optimize use of existing facilities and minimize new facilities and associated land-use and biological resource impacts. This Minimum Facilities Alternative was thus an initial baseline alternative for evaluation. The focus of the Minimum Facilities Alternative was on optimizing use of the Mainstem Mojave River for recharge. A second alternative (Small Projects Alternative) involved adding several recharge basins to the Minimum Facilities Alternative to enhance operational flexibility and the ability to take deliveries of water more rapidly and under a wider range of conditions. The Small Projects Alternative included consideration of alternative sites for off-channel recharge basins along the Mojave River south of Rock Springs Road. A third alternative (Large Projects Alternative) was formulated to add three additional large recharge basins and additional wells to the Small Projects Alternative, giving MWA substantially greater ability to recharge the Regional Aquifer. These three alternatives represent a minimum and maximum scope for the Proposed Project. They are summarized on Table ES-1.

The Minimum Facilities Alternative would add substantial additional recharge capacity for the Mojave River Floodplain Aquifer, both as a function on-going use of low berms in the river channel to spread and slow flows and as a function of adding year-round release capacity via Unnamed Wash. The use of existing facilities and the added capability to recharge the river would mean MWA would have a total capacity to recharge over 90,000 acre-feet per year. This alternative would involve a cycle of recharge and annual extraction of water from

the reach between Mojave Forks Dam and Bear Valley Road, with local water producers using water from this recharge/extraction process in lieu of using other facilities.

The Small Projects Facility would add about 300 acres of permanent off-channel recharge capacity to MWA's system, resulting in an additional 150+ acre-feet per day of recharge capacity to the Floodplain and Regional Aquifers, increasing MWA's net recharge capacity to about 120,000 acre-feet per year. Some additional wells may be constructed at the various recharge sites.

The Large Projects Alternative would add 580 acres of recharge capacity in the Regional Aquifer and substantial capacity to make returns to Metropolitan via pumping of stored groundwater to the California Aqueduct. The Large Projects Alternative adds about 230+ acre feet of daily recharge capacity, increasing MWA's net recharge capacity to about 180,000 acre-feet per year. *Per* the draft EIR, MWA also reviewed the siting of recharge at Antelope Wash as a mitigation measure to reduce aesthetics and biological resources impacts at the potential upstream Antelope Wash recharge site. Based on this review, the Large Projects Alternative in the FEIR has been modified to provide for shifting of this recharge capacity to downstream areas with substantially lower potential for aesthetics and biological resources impacts. This mitigation action consolidates proposed project recharge in the Antelope Wash to the reach from about 300 yards downstream of the new Ranchero Road embankment to about 1200-1300 yards upstream of the embankment, a total of approximately 140 acres.

These three alternatives may be considered as a continuum. They represent three logical combinations of facilities, but MWA may choose to implement elements of the alternatives individually. For example, the Minimum Facilities Alternative could be scaled back in terms of number of wells and additional wells and recharge provided by the added facilities of the Small Projects Operation may be used to achieve similar objectives. In short, the facilities alternatives were intended to describe the full range of facilities and operations for consideration by the MWA Board of Directors.



**Table ES-1. Summary of Alternatives, MWA Water Supply Reliability and Groundwater Replenishment Program**

<b>FACILITY</b>	<b>LOCATION</b>	<b>TOTAL AREA OF PERMANENT NEW FACILITIES</b>	<b>DESCRIPTION, FEATURES, FUNCTION IN PROPOSED PROJECT</b>
<b>Minimum Facilities Alternative</b>			
Existing Recharge Facilities	Hodge, Lenwood, Daggett, Newberry Springs, Morongo Basin, Oro Grande Wash at Green Tree	None	Existing MWA facilities or facilities that may be used by MWA in cooperation with others. Served by the Mojave River Pipeline and Morongo Basin Pipeline, and via releases from the California Aqueduct (Green Tree Basins). MWA would pre-deliver water for recharge and local use of banked water when returns were made to Metropolitan.
Mojave River Recharge	Mainstem Mojave River channel from Mojave Forks Dam to the Narrows	None	Annual construction of low berms in the Mojave River to retard flows of water delivered to the river for recharge. Low sand berms constructed over 200-400 acres. No recharge during periods of natural flow. Water may be delivered to the river for recharge via releases from Silverwood Lake (September 15 through February 15) and/or from MWA's Rock Springs Outlet or Unnamed Wash (see below).
Mojave River Well Field	Wells placed within about 2000 feet of the river channel along both sides of the Mojave River, from Rock Springs Road north to Bear Valley Road.	0.10-0.2 acres	Up to 25 new wells would be constructed in open space and within residential areas. Exact siting to be determined. Wells connected with buried pipelines. On the west, a small pump station would be constructed to lift water to a pipeline running within public streets or other rights-of-way along the alignment of Mesa Street, under Interstate 15, to the California Aqueduct. Main pipeline would be connected to local water delivery and storage facilities. On the east, wells would be connected to nearby existing facilities for deliveries to residents of Apple Valley.
Delivery of SWP Supplies via Unnamed Wash	Unnamed Wash runs from an outlet in the California Aqueduct in Summit Valley to the Mojave River Mainstem about 1 mile north of Mojave Forks Dam.	8-10 acres	New or expanded turnout from the California Aqueduct would be constructed, with releases into an open channel or pipeline to the head of the wash, then flow down the wash, pass under a new bridge at Arrowhead Lake Road, and then flow within low levees to the river. In the wash, a maintenance road and several drop structures would be constructed.
<b>Small Projects Alternative (includes Minimum Facilities Alternative plus additional facilities)</b>			
Off-Channel Mojave River	<b>East Site:</b> Approximately 2 miles south of Rock Springs Road, east of	100 acres	Recharge basins constructed at either or both sites to enhance MWA ability to recharge the Floodplain Aquifer in times when there is water

Recharge Basins	Deep Creek Road. Pipeline along Deep Creek Road. <b>West Site:</b> Approximately 3 miles south of Rock Springs Road, east of Arrowhead Lake Road. Pipeline along Calpella Avenue and Arrowhead Lake Road		available but there is natural flow in the Mainstem Mojave River. Pipelines would be constructed in public rights-of-way. New wells may be added to deliver water via the supply pipeline or connected to local systems.
Oro Grande Wash Recharge Basins	Basins to be located immediately north and/or south of the California Aqueduct	80 acres	Recharge basins constructed to take water from a turnout in the California Aqueduct. Short pipeline to deliver water. New wells may be added to deliver water via the supply pipeline or connected to local systems.
Cedar Avenue Detention Basin	Basin to be located in planned City of Hesperia Flood Detention Basin at the east end of Cedar Avenue.	60 acres	Recharge basins and a delivery pipeline to be constructed at site of proposed flood detention basin. New wells may be added to deliver water via the supply pipeline or connected to local systems.
Antelope Wash at Ranchero Road	Basin to be located in planned City of Hesperia Flood Detention Basin south of Ranchero Road.	65 acres	Recharge basins and a delivery pipeline to be constructed at site of proposed flood detention basin. New wells may be added to deliver water via the supply pipeline or connected to local systems.
<b>Large Projects Alternative (includes Small Projects Alternative plus additional facilities)</b>			
Oeste Recharge Basins	Located at two sites immediately north of the California Aqueduct and south of Highway 18 (Palmdale Road). One site between Beekley Road and Sheep Creek Road. One site located east and west of Oasis Road.	330 acres	Recharge basins and a delivery pipeline to be constructed at site of proposed flood detention basin. Up to 15 new wells may be added to deliver water via the supply pipeline or connected to local systems. Would add 132 acre-feet per day in recharge capacity to the Regional Aquifer.
Alto Recharge Basins	Located at several sites immediately north of the California Aqueduct and south of Highway 18 (Palmdale Road). East of Caughlin Road.	150 acres	Recharge basins and a delivery pipeline to be constructed at site of proposed flood detention basin. Up to 10 new wells may be added to deliver water via the supply pipeline or connected to local systems. Would add 60 acre-feet per day in recharge capacity to the Regional Aquifer.
Antelope Wash	Located near the California Aqueduct in open space south of the Hesperia Airport	80-100	Per the draft EIR commitment to reconsider siting of upstream Antelope Wash recharge, Recharge basins at Ranchero Road to be expanded upstream and downstream of the new Ranchero Road embankment in-lieu of recharge at the upstream site described in the FEIR. Would add up to 40 acre-feet per day in recharge capacity to the Regional Aquifer.

## **F. Project Description: Operations**

MWA and Metropolitan may choose to implement a completely traditional banking program or a combination of banking and active water exchanges. Under a traditional banking program, Metropolitan would deliver SWP supplies to MWA, generally in wet years and in the months of February through August. In other years, generally dry-to-critically-dry years, Metropolitan would request return of some of the water it has banked. In general, Metropolitan would request no more than about 20-25% of total banked water in any given year. This water would first be returned using MWA's available SWP supplies, while local producers pump banked groundwater. If MWA's SWP supplies do not meet Metropolitan's requested return, then some banked groundwater would be pumped and returned via project facilities to Metropolitan. Metropolitan's returns would be fixed at about 90% of total deliveries, to account for evaporation losses during recharge. This "loss factor" exceeds the probable maximum evaporation during recharge by about 50%. Thus, in addition to cost-sharing for new facilities that enhance MWA's ability to recharge its own supplies, there is a probable 5% net supply benefit to MWA from traditional banking.

MWA and Metropolitan may also choose to implement an on-going exchange program, in which each agency may deliver SWP supplies to the other on an as-available-as-needed basis. For example, in any year when Metropolitan needs additional SWP supply and MWA has supply in excess of its demands, MWA may deliver this supply to Metropolitan, with Metropolitan returning the supply to MWA at some future date. This on-going exchange will generally allow each agency to utilize each other's available supplies to optimize use of available SWP supplies.

Metropolitan staff modeled the potential magnitude of banking programs using their Integrated Resources Plan models. The model analysis defined a maximum range of potential banking operations, under a variety of operational scenarios. A mid-point of this range was represented by the following conditions:

- MWA would have equal priority for deliveries among Metropolitan's various water banks;
- Metropolitan would have opportunities to deliver to MWA when other banks could not receive supplies for banking due to MWA's ability to take high volume deliveries and make returns via SWP exchange and direct pumping of groundwater;
- Average precipitation conditions would occur in the SWP watershed.

Under these operational scenarios, the magnitude of a traditional banking program would be up to:

- Minimum Facilities Alternative: 174,000 acre-feet
- Small Projects Alternative: 174,000 acre-feet
- Large Projects Alternative: 237,000 acre-feet

The addition of an on-going exchange program would add about 96,000 acre-feet of banking-exchange capacity over a 20-year period, and the resulting overall project would therefore be up to :

• Minimum Facilities Alternative:	174,000 af + 96,000 af	=	240,000 af
• Small Projects Alternative:	174,000 af + 96,000 af	=	240,000 af
• Large Projects Alternative:	237,000 af + 96,000 af	=	333,000 af

The Metropolitan modeling analysis suggests:

- Increasing recharge capacity does not increase the total magnitude of the proposed program, but allows for Metropolitan to deliver water for banking and for exchange during short periods. Thus MWA would have the advantage of receiving Metropolitan supplies during periods when Metropolitan historically delivers the highest quality water (February through July).
- About 60% to 70% of banked water can be returned to Metropolitan by exchange of SWP supplies. Some return of pumped groundwater from the Mojave River Floodplain and Regional Aquifers is likely to be needed.
- The potential for on-going exchanges is less a function of recharge capacity than it is of intra-year patterns of supply and demand. A typical intra-year exchange would involve MWA delivery of SWP supplies to Metropolitan in a transition year, such as from a dry year to a wet year. In the transition, MWA may have supply in excess of demand early in the year, before California Department of Water Resources (DWR) has officially declared a wet year. MWA could therefore deliver supplies to Metropolitan in December or January, which Metropolitan could then repay in late spring or summer.
- The primary advantage of increasing recharge capacity is that it increases MWA's ability to take delivery of its own SWP supplies more rapidly, giving MWA the opportunity to optimize water quality by scheduling its deliveries during periods when SWP supplies are of highest quality because they are under the influence of the melting Sierra snowpack.
- An incidental benefit of scheduling flexibility will be the ability to import supplies during periods when hydropower is most available, in wet years and during the spring when the melting Sierra snowpack raises reservoir levels and DWR produces peak hydropower.

## **G. Project Impacts**

Environmental effects (summarized on Table ES-2) are discussed in detail in Chapter 5, and the summary conclusions on Table ES-2 should be viewed in light of the detailed analysis in Chapter 5.

The environmental effects of the Proposed Project generally tend to increase with project size and recharge capacity. This is particularly true of impacts associated with air quality, aesthetics, biological resources, and land use. Impacts associated with traffic, noise, public services, and other effects that are greatest in urban areas do not increase much with project magnitude

because the facilities added to increase magnitude are isolated from most development. Increasing project size does not result in significant increases in impacts associated with hydrology, geology and soils, or growth. Impacts associated with water quality do not increase as the magnitude of the project increases, but decrease. This occurs because the larger projects have more recharge capacity and allow MWA and Metropolitan to deliver water at times when SWP supplies are of their best quality -- in wet years and during the months when the Sacramento-San Joaquin Delta is under the influence of the melting Sierra snowpack.

As the 2004 PEIR discusses, the project has no direct effect on growth. The enhanced facilities and banking/exchange opportunities they would provide would allow MWA to pre-deliver some of its own SWP supplies. Because MWA currently has supplies well in excess of demand, pre-delivery of supply does not directly accommodate higher than planned growth rates. As documented in local agency General Plan Environmental Impact Reports, there are substantial adverse effects of planned growth in the MWA service area, including impacts to groundwater resources. MWA's Proposed Project is a mitigation action to ameliorate some of these effects.

The Proposed Project incorporates a set of general impact avoidance and mitigation measures and a number of site-specific measures (Table ES-3). These mitigation measures will reduce potential impacts to a level of less than significant except for air quality, where daily and annual construction impacts associated with diesel emissions and with dust are in excess of MDAQMD and AVAQMD thresholds of significance. Long-term impacts to air quality are below significance thresholds and there may be long-term benefits to air quality associated with recharge basins, which are known to trap wind-blown sand and dust.

## **H. No Project Alternative**

The No Project Alternative was defined and documented in the 2004 Regional Water Management Plan and the 2004 PEIR. Over the 15-year period from 2006-2020, MWA will import and recharge about 750,000 acre-feet of SWP supply to meet projected replacement obligations. MWA would continue to operate its existing facilities and to plan and construct new recharge and conveyance facilities on an as-needed basis to accommodate increasing deliveries of SWP supplies for recharge to meet on-going (rising) needs to deliver replacement water to water producers in the MWA service area. MWA would probably lose the opportunity to develop a cooperative banking and exchange program with Metropolitan, which would seek additional banking partners or other sources of supplemental supply.

The No Project Alternative is therefore not the existing baseline condition. Regardless of whether the Proposed Project for banking and water exchange is approved and implemented, MWA will, as documented in the 2004 PEIR, import an increasing amount of water to meet its obligations. The recharge and conveyance of this water to subarea producers will require facilities, which are described in general in the 2004 PEIR and will be developed over a period of years. It is likely that MWA would develop these facilities in cooperation with local subarea producers and, by 2025, would develop recharge and extraction facilities of similar capacity to those for the Proposed Project. It is also likely that MWA would continue to use existing

recharge outside of the Alto and Oeste subareas. It is likely that MWA would develop additional recharge in the Oeste and Alto subareas. It is likely that use of various local flood detention basins for recharge would be pursued. It is likely that some additional off-channel Mojave River recharge would be pursued, as this recharge would have substantially higher recharge rates than other sites.

The No Project Alternative therefore reasonably assumes that many of the Proposed Project facilities would be pursued, consistent with the 2004 PEIR. Indeed, this Project EIR addresses the project-specific impacts of these facilities and is intended to provide the MWA Board of Directors and the public with site-specific information regarding the potential for impacts associated with these facilities. The No Project Alternative therefore contemplates development of at least a subset of the facilities described in this Project EIR at a slower rate. The difference in impact analysis for each of the facilities is therefore a function of (a) the total magnitude of impacts and (b) alternative siting, and (c) timing of construction and associated construction-related impacts. Facilities which would not be affected by future development and may be pursued without change by MWA under the No Project Alternative include:

- Instream Mojave River Recharge. No development of the Mainstem Mojave River channel is possible; MWA will probably use this recharge area to the extent that it may delivery water and maintain water levels below liquefaction thresholds.
- The Mojave River Well Field and Pipelines. These facilities require a small amount of land and right-of-way and may be integrated into the land uses proposed for the area along the Mainstem Mojave River between Rock Springs and Bear Valley Road. Without a banking program, the pipeline would not be extended to the California Aqueduct.
- Use of existing and planned flood detention basins. If local entities construct these facilities as planned, their use for groundwater recharge would be compatible with their intended flood management uses, and they may be assumed to be available for this purpose.
- Oro Grande recharge. Recharge within Oro Grande Wash would not be constrained by future development because development in this large wash would be prohibited by flood damage concerns.
- Antelope Wash recharge. Recharge within Antelope Wash would not be constrained by future development because development in this large wash would be prohibited by flood damage concerns.
- Unnamed Wash. MWA proposes to cooperate with the developer of Rancho Las Flores in siting and designing facilities for delivery of water via Unnamed Wash, and thus future development is unlikely to constrain its use for conveyance of water from the California Aqueduct to the Mainstem Mojave River. MWA's Proposed Project would also contain

flood flows in the wash to the 100-year floodplain, and thus would not affect development potential in downstream reaches of the wash which are outside of Rancho Las Flores.

Future development could affect the siting and impacts of off-channel recharge along the Mainstem Mojave River and recharge at the Oeste and Alto recharge sites. The magnitude of the facilities required under the No Project Alternative would probably be similar to that required for the Proposed Project, because by 2020 and beyond, MWA will need to import and recharge its full SWP contract supply of up 75,800 acre-feet in years when this amount is available to pre-deliver supplies for storage to meet demands in dry years.

The primary differences between the No Project Alternative and the Proposed Project are (a) timing of facility development and (b) resulting potential for loss of recharge sites along the Mainstem Mojave River and at Oeste and Alto. In addition, the No Project Alternative would extend construction periods, reducing daily emissions from construction, but extending their duration.

## **I. Selection of an Alternative for Implementation**

All significant impacts of all alternatives may be reduced to a level of less-than-significant through impact avoidance and mitigation measures, except air quality impacts. The selection of an alternative for implementation may thus be focused on a comparison of adverse construction-related air quality impacts to the quantifiable water quality benefits of the Proposed Project. Air quality impacts increase with project magnitude. Water quality benefits also increase with project magnitude. That is, increasing the area of recharge and amount of water banked and exchanged through banking and/or banking and exchange positively influences imported water quality.

Selection of the preferred alternative by MWA's Board of Directors will therefore depend on the priority placed on adverse temporary air quality impacts associated with construction compared to permanent water quality benefits (positive impacts) associated with increasing levels of recharge capacity. A high priority on air quality impacts would argue for selection of the Minimum facilities Alternative. A high priority on water quality benefits would argue for selection of the Large Projects Alternative.

Based on this evaluation in the draft EIR, the reduction of impacts associated with the Large Projects Alternative as a result of re-location of the upstream Antelope Wash recharge, and the absence of comment regarding this issue in public and agency comments, the Large Projects Alternative is designated as the environmentally superior alternative and the Proposed Project Alternative. *Per* the draft and final EIR discussion of air quality impacts and potential mitigations, MWA may phase adoption and implementation of various facilities included in the Large Projects Alternative.

**Table ES-2. Impacts of the three Facilities Alternatives.**

<b>CATEGORY OF IMPACT</b>	<b>MINIMUM FACILITIES ALTERNATIVE</b>	<b>SMALL PROJECTS ALTERNATIVE</b>	<b>LARGE PROJECTS ALTERNATIVE</b>
<b>Aesthetics</b>	Minor effects in Mainstem Mojave River and at Unnamed Wash. Well structures visible in urban areas	Minor effects in Mainstem Mojave River and at Unnamed Wash. Well structures visible in urban areas. Some levees and recharge basins will alter views from adjacent housing.	Minor effects in Mainstem Mojave River and at Unnamed Wash. Well structures visible in urban areas. Some levees and recharge basins will alter views from adjacent housing. The siting of upstream Antelope Wash recharge to a downstream location as a mitigation measure, reduces the potential aesthetic impact to a level of less-than-significant.
<b>Air Quality</b>	Significant if 2+ units of pipeline are constructed along with other facilities	Significant if 2+ units of any type of facility are constructed at the same time. Higher levels of impact than for other alternatives. Extended period of impact.	Significant if 2+ units of any type of facility are constructed at the same time
<b>Bio. Resources</b>	Loss of 7-9 acres of habitat, low potential for impacts to threatened and endangered species	Loss of about 250 acres of habitat, low potential for impacts to threatened and endangered species	Loss of about 750-800 acres of habitat, low potential for impacts to threatened and endangered species. Potential indirect effects on desert tortoise through predation.
<b>Cult. Resources</b>	Potential for buried resources	Potential for buried resources	Potential for buried resources
<b>Geology and Soils</b>	Very low potential liquefaction effects. Some erosion and sediment transport. Some construction-related erosion.	Very low potential liquefaction effects. Some erosion and sediment transport. Some construction-related erosion.	Very low potential liquefaction effects. Some erosion and sediment transport. Some construction-related erosion.
<b>Hazards/Hazardous Materials</b>	Potential lubricant and fuel leaks. Potential to encounter contaminated buried soils.	Potential lubricant and fuel leaks. Potential to encounter contaminated buried soils.	Potential lubricant and fuel leaks. Potential to encounter contaminated buried soils.
<b>Land use</b>	Compatible uses except for wells in residential.	Compatible uses except for wells in residential. Recharge is compatible with existing low-density housing and flood channel maintenance along Mainstem Mojave River.	Compatible uses except for wells in residential. Recharge is compatible with existing low-density housing and flood channel maintenance along Mainstem Mojave River. 480 acres of residential zoned land converted to recharge.



<b>Noise</b>	Construction noise along pipeline and well alignments	Construction noise along pipeline and well alignments. Construction noise at recharge basins.	Construction noise along pipeline and well alignments. Construction noise at recharge basins.
<b>Public Services and Utilities</b>	Emergency vehicles may need to detour around construction. Potential accidental damage to utilities during construction.	Emergency vehicles may need to detour around construction. Potential accidental damage to utilities during construction.	Emergency vehicles may need to detour around construction. Potential accidental damage to utilities during construction.
<b>Recreation</b>	Reservoir releases may affect type of recreation in West Fork. Potential construction effects on recreation along river.	Reservoir releases may affect type of recreation in West Fork. Potential construction effects on recreation along river.	Reservoir releases may affect type of recreation in West Fork. Potential construction effects on recreation along river.
<b>Traffic</b>	Impacts during construction in public rights of way. Some construction related traffic (crews)	Impacts during construction in public rights of way. Some construction related traffic (crews).	Impacts during construction in public rights of way. Some construction related traffic (crews).
<b>Water Resources: Water Quality</b>	Banking deliveries will have better water quality than average SWP. Net import of some mineral constituents; net export of others. In response to comments from Department of Water Resources, additional analysis of water quality data from wells in the vicinity of proposed recharge basins and well fields confirms this conclusion, and found that a mix of recharged SWP supplies and indigenous groundwater would generally meet current Department of Water Resources criteria for introduction of water to the California Aqueduct, although some blending from various wells might be needed in some cases.		
<b>Water Resources: Hydrology</b>	May reduce flood infiltration into mainstem groundwater (first storm only). No probable effects on major flows. Incised channel may be created in Unnamed Wash.	May reduce flood infiltration into mainstem groundwater (first storm only). No probable effects on major flows. Incised channel may be created in Unnamed Wash.	May reduce flood infiltration into mainstem groundwater (first storm only). No probable effects on major flows. Incised channel may be created in Unnamed Wash.
<b>Growth</b>	No direct effects. Project mitigates for effects of planned development.	No direct effects. Project mitigates for effects of planned development.	No direct effects. Project mitigates for effects of planned development.
<b>Energy Use and Conservation</b>	Use of about 290,000 gallons of diesel fuel for construction. Potential long term energy savings from lower energy use due to rising groundwater levels	Use of about 490,000 gallons of diesel fuel for construction. Potential long term energy savings from lower energy use due to rising groundwater levels	Use of about 920,000 gallons of diesel fuel for construction. Potential long term energy savings from lower energy use due to rising groundwater levels

**Table ES-3. Summary of Mitigation Proposed**

IMPACT	MITIGATION PROPOSED
<b>Generally applicable actions incorporated into the Proposed Project Description</b>	
Construction Impacts	<p>Chapter 4.5.1: Siting near existing facilities to reduce construction-related environmental impacts</p> <p>Chapter 4.5.3: When constructing in an urban setting MWA would comply with applicable city encroachment permit policies that specify work schedules and work practices intended to minimize construction impacts on traffic, local businesses, local residents, storm water runoff, and utilities and public services. Compliance with State General Stormwater Permit program for Construction Activities.</p>
Biological Impacts	<p>Chapter 4.5.1: Siting that avoids known arroyo toad habitats and concentrates construction in the urbanizing areas of Hesperia, Victorville, Apple Valley, and Adelanto</p> <p>Chapter 4.5.2: Scheduling release of water from Silverwood Lake only during periods when the arroyo toad is estivating and only at rates which the 2003-2004 demonstration project showed to be fully contained within the main channel of the river</p> <p>Chapter 4.5.7: To prevent adverse impacts associated with wildlife incidental use of the construction area, MWA would implement the following avoidance and minimization measures where special status-species have been identified in or adjacent to the site in pre-construction surveys:</p> <ul style="list-style-type: none"> <li>a. Construction and maintenance personnel would participate in a USFWS/CDFG-approved environmental awareness program.</li> <li>b. Prior to initiation of construction activities, a qualified biologist would survey the area to confirm that no special-status species are present. If special-status species are present, they would be allowed to move away from construction activities.</li> </ul>
Cultural Resource Impacts	Chapter 4.5.3: Siting that avoids known significant cultural resource sites along the Mojave River.
Aesthetic Impacts	Chapter 4.5.4: Where facilities would be visible, MWA would contain them in structures designed to be compatible with adjacent construction and in consultation with nearby residents.
Air Quality Impacts	Chapter 4.5.5: MWA would adopt best management practices per the Mojave Desert Air Quality Management District.
Noise Impacts	<p>Chapter 4.5.6: Siting of the Proposed Project minimizes noise impacts. For areas adjacent to residential development MWA would comply with the following construction protocols:</p> <ul style="list-style-type: none"> <li>a. Permanent above-ground facilities (wells and treatment plant) would be contained within structures that would ensure that adjacent ambient noise levels are below the levels established for facilities in commercial and manufacturing areas.</li> <li>b. Except when more stringent standards apply to construction in the roadway, construction work would be limited to the hours from 7 AM to 7 PM, with no construction of weekends.</li> <li>c. Construction noise would be monitored on site by the construction contractor and portable noise attenuation barriers would be erected between construction and housing if construction noise measured at the exterior of adjacent housing exceeded 65 dBL.</li> </ul>
Water Quality Impacts Related to Construction	<p>Chapter 4.5.8: MWA would implement best management practices to avoid construction runoff during construction activities, including:</p> <ul style="list-style-type: none"> <li>a. Daily pre-construction inspection of all construction equipment to ensure that oil and/or gas/diesel fuel are not leaking from equipment;</li> <li>b. Secondary containment for fueling and chemical storage areas shall be provided during construction and Proposed Project operation;</li> <li>c. Secondary containment for equipment wash water shall be provided to ensure that wash water is not allowed to run off the site;</li> <li>d. Silt traps and/or basins would be provided to prevent runoff from the construction site;</li> <li>e. Materials stockpiles would be covered to prevent runoff;</li> </ul>

	<p>f. Loose soils would be protected from potentially erosive runoff;</p> <p>g. If construction equipment is used within the river channel, it will be inspected routinely and any leaks found will be repaired. If necessary, the equipment would be fitted with secondary containment materials at potential oil/fuel leakage sites;</p> <p>h. MWA would comply with the terms and conditions of the State's General Stormwater Permit program for construction activities.</p> <p>i. MWA will prepare and implement a Storm Water Pollution Prevention Plan based on the guidance in CalTrans' <i>Storm Water Pollution Prevention Plan and Water Pollution Control Plan Preparation Manual</i>, March 2003.</p>
<b>Specific Mitigation Commitments: Aesthetics</b>	
Mojave River Well Field	Chapter 5.2.4.3: Wells would be enclosed in small structures designed to be consistent with structures in the immediate vicinity and/or MWA would plant screening vegetation.
Oro Grande Wash Recharge	Chapter 5.2.4.4: To mitigate these potential effects, where levee for recharge basins or canals would be constructed adjacent to existing development, MWA would plant native shrubs between the perimeter levee maintenance road and private property. Shrubs such as rabbit bush grow naturally at the site, would grow to a height of 3-5 feet without irrigation, and will provide a more natural view for property owners.
Oro Grande Wash Recharge	Chapter 5.2.4.4: To mitigate these potential effects, where levee for recharge basins or canals would be constructed adjacent to existing development, MWA would plant native shrubs between the perimeter levee maintenance road and private property. Shrubs such as rabbit bush grow naturally at the site, would grow to a height of 3-5 feet without irrigation, and will provide a more natural view for property owners.
Cedar Avenue Detention Basin Recharge	Chapter 5.2.4.5: To mitigate these potential effects, where levee for recharge basins or canals would be constructed adjacent to existing development, MWA would plant native shrubs between the perimeter levee maintenance road and private property. Shrubs such as rabbit bush grow naturally at the site, would grow to a height of 3-5 feet without irrigation, and will provide a more natural view for property owners.
Oeste Recharge and Wells	Chapter 5.2.4.8: MWA would enclose wells in structures designed to be consistent with structures in the immediate vicinity and/or would plant screening vegetation.
Alto Recharge and Wells	Chapter 5.2.4.9: Where levee for recharge basins would be constructed adjacent to existing development, MWA would plant low vegetation on the levee berm and/or native vegetation as a screen for the levee. Wells would be sited to minimize impacts to residential areas and enclosed in small structures designed to be consistent with structures in the immediate vicinity.
Antelope Wash Recharge	<p>Chapter 5.4.2.10: MWA would contour the outer berms of recharge facilities and would plant native shrubs between the perimeter levee maintenance road and private property. Shrubs such as rabbit bush grow naturally at the site, would grow to a height of 3-5 feet without irrigation, and will provide a more natural view for property owners.</p> <p>Per draft EIR Section 5.4.7.2, upstream Antelope Wash recharge was re-evaluated during the public comment period, as a mitigation measure to reduce biological resources impacts. The upstream site will be relocated to an expanded recharge area in Antelope Wash at Ranchero Road.</p>
<b>Specific Mitigation Commitments: Air Quality</b>	
All Facilities	<p>Chapter 5.3.8.2: MWA will implement all of the fugitive dust control measures required by Rule 403 (Fugitive Dust):</p> <ol style="list-style-type: none"> <li>Use periodic watering for short-term stabilization of Disturbed Surface Area (maintaining moist disturbed surfaces);</li> <li>Take action sufficient to prevent project-related trackout onto paved surfaces;</li> <li>Cover loaded haul vehicles while operating on Publicly Maintained paved surfaces;</li> <li>Stabilize graded site surfaces upon completion of grading;</li> <li>Cleanup project-related Trackout or spills on Publicly Maintained paved surfaces within 24-hours;</li> </ol>

	<p>f. Reduce non-essential Earth-Moving Activity under High Wind conditions</p> <p>g. Feasible mitigation such as use of highway diesel fuels and use of additional pollution equipment to trap exhaust particulates or NOx would be implemented as part of the project,</p> <p>h.. MWA would evaluate potential for phasing of construction to reduce emissions</p>
<b>Specific Mitigation Commitments: Biological Resources</b>	
Facilities habitat losses	<p>a. Pre construction surveys for special status species. If special status species are found, avoidance and minimization protocols will be initiated. Occupied habitat will be mitigated at a 1:1 ratio. For Unnamed Wash, habitat loss will be mitigated consistent with Las Flores Ranches pending HCP or 1:1. Avoidance of Joshua trees or mitigation for habitat loss. At Antelope Wash upstream site, MWA may consider other sites. <i>Per this commitment</i>, upstream Antelope Wash recharge was re-evaluated during the public comment period, as a mitigation measure to reduce biological resources impacts. The upstream site will be relocated to an expanded recharge area in Antelope Wash at Ranchero Road.</p> <p>b. <i>Per</i> response to comments from California Department of Fish and Game, for burrowing owls, MWA will implement avoidance and minimization protocols if owls are found at facility sites or, if avoidance is not feasible provide off-setting mitigation in consultation with CDFG.</p> <p>c. As provided in the EIR, MWA will survey for special-status species prior to construction. <i>Per</i> response to CDFG, if Mojave fringe-toed lizards are found during such surveys, MWA will notify CDFG and initiate consultation regarding appropriate avoidance and mitigation.</p>
<b>Specific Mitigation Commitments: Cultural Resources</b>	
All Facilities	<p>Chapter 5.5.5: MWA will avoid impacts if feasible on identified cultural resources including prehistoric and historic archeological sites, locations of importance to Native Americans, human remains, and historic buildings and structures. Methods of avoidance may include, but not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing.</p> <p>MWA will retain archeological monitors during construction for ground-disturbing activities that have the potential to impact significant archeological remains as determined by a qualified archeologist.</p> <p>Based on this policy and the results of literature search and field surveys, MWA would implement the monitoring provision above for all facilities located adjacent to the Mainstem Mojave River, including:</p> <ul style="list-style-type: none"> <li>• The Mojave River Well Field</li> <li>• The Well Field Delivery Pipelines</li> <li>• Off-Channel Mojave River Recharge (east or west site) and the supply pipeline to this site</li> </ul> <p>If the eastern site is selected for Off-Channel Mojave River Recharge, MWA would also design the recharge to avoid the recently identified historic farmhouse site and/or provide for a suitable archeological testing and recovery program consistent with State of California and Federal policy.</p> <p>Because previously unrecorded and/or unanticipated archaeological deposits, features, and Native American burials may be encountered during implementation of the Project, the Project Archaeologist would prepare a <i>Construction Phase Monitoring and Cultural Resources Treatment Plan</i> prior to Project construction. The purpose of this <i>Plan</i> would be to clearly outline and expedite the process by which the Mojave Water Agency will resolve any significant impacts upon newly discovered, historically significant cultural resources, including consultation with the State Historic Preservation Officer (SHPO), thereby eliminating untimely</p>

	and costly delays in construction. Specifically, the <i>Plan</i> would outline the process by which cultural resource discovery notifications are made and treatment plans are implemented, describe the cultural resource classes anticipated during Project construction, describe the treatment options for each cultural resource class, and detail procedures for implementing treatment. In addition, the <i>Plan</i> would summarize the Native American involvement in the Project (including a sample Native American Burial Agreement), outline the procedures for curation of materials recovered during site treatment (including a proposed Archaeological Curation Agreement with a facility that meets California curation standards), and address report requirements. This <i>Plan</i> would be submitted to the SHPO for review and comment prior to Project construction.
<b>Specific Mitigation Commitments: Geology and Soils</b>	
Mojave River Recharge, Hesperia, Lenwood, and Hodge	Chapter 5.6.4.2: MWA will monitor existing well levels and establish an additional system of shallow monitoring wells to track changes in groundwater levels as the plume of recharged water moves downstream to the extraction well field. These wells will allow real-time management of recharge rates to minimize the potential for groundwater levels under developed areas to rise to within 20 feet of the surface.
All recharge areas	Chapter 5.6.3.3: To mitigate for the potential for short-term declines in local wells as a result of the project, MWA will monitor groundwater levels at all project-related extraction sites and at adjacent sites. If MWA determines that water levels at these adjacent wells have declined as a result of MWA extractions, MWA will either (a) reduce extractions or (b) compensate the owner of the affected well for the increased energy costs associated with the decline in well level.
All facilities	Chapter 5.6.4.4: To ensure minimization of potential leaks at facilities due to seismic events and provide for rapid repair, MWA will maintain a small stockpile of rock at each recharge facility where levee damage might result in minor flooding of adjacent property to ensure that any levee damage can be rapidly patched to reduce potential for erosive flows.
Unnamed Wash	Chapter 5.6.4.6: Drop structures will be constructed as part of the Proposed Project to reduce excess erosion and sediment transport. Levees will be placed along the edge of the 100-year floodplain to contain releases.
Facilities in a Flood Zone	<i>Per</i> response to comments from San Bernardino County DPW Water Resources Division, MWA will coordinate with the County Flood Control District and local flood control officials during design to ensure that facilities within a flood zone do not conflict with Master Plans of Drainage and County/Local flood management. If necessary, permits will be requested from the Flood Control District and U.S. Army Corps of Engineers. MWA will inform County Flood Control of any substantial changes in the proposed project.
<b>Specific Mitigation Commitments: Hazards and Hazardous Materials</b>	
All excavations	Chapter 5.7.3.2: Prior to construction all sites will be evaluated to identify past uses that may have resulted in soil contamination. If the site assessment identifies a potential for contaminated soils, MWA would conduct further analysis to confirm this finding and would either (a) re-site or redesign the area to avoid impacts of (b) remediate the contamination to meet Regional Water Quality Control Board standards. During construction of pipelines in areas that cannot be assessed prior to construction, MWA would provide for monitoring of excavated soils and construction contracts will specify monitoring procedures and proper procedures for reporting and responding to potentially contaminated soils. Excavated materials containing hazardous waste will be handled, transported, and disposed of in accordance with applicable regulations.
All activities	Chapter 5.7.3.4: To reduce the potential for the project to affect emergency response plans or evacuation plans, MWA will implement traffic management that minimizes potential for traffic delays.
<b>Specific Mitigation Commitments: Land Use</b>	
Unnamed Wash	Chapter 5.8.1.2: MWA would continue to coordinate with Rancho Las Flores to ensure

	compatibility of the Unnamed Wash feature of the Minimum Facilities Alternative with the proposed development;
General	Chapter 5.8.1.2: MWA would coordinate with city and town officials to develop methods for ensuring long-term compatibility of recharge and associated facilities with planned existing development; and design of facilities to minimize adverse indirect effects on noise, and other factors that may affect perceived incompatibility of such facilities with residential and commercial development.
<b>Specific Mitigation Commitments: Noise</b>	
All facilities as applicable	<p>Chapter 5.9.4.2: MWA will restrict construction to daylight time periods consistent with local ordinances; construction along roads in developed areas will therefore be practically limited to the period from 8:30 am to 4:30 pm.</p> <p>MWA will require construction contractors to utilize available noise management technology (muffling) and to maintain noise suppression equipment on construction machinery to ensure that noise emissions are minimized at the source. Equipment not in use for more than 5 minutes will be turned off.</p> <p>If pile driving equipment is necessary, pile holes will be pre-drilled if feasible and vibratory pile driving equipment will be used whenever possible.</p> <p>MWA will require construction contractors to locate fixed construction equipment such as generators as far as possible from noise-sensitive receptors.</p> <p>During construction of wells, pipelines, and associated facilities such as pump stations and chloramination facilities in areas where construction is within 400 feet of a residence or business, construction noise will be periodically monitored on site and at the residence or business. If noise levels are found to exceed those mandated by local ordinance, MWA will, to the extent feasible and in consultation with the resident or business, install temporary noise barriers along the boundary of the construction site to further reduce noise impacts. Barriers may be installed along the boundary of the construction zone or on private property, depending on conditions and the permission of the landowner/resident.</p> <p>In addition, once construction areas for fixed location construction such as well drilling pads have been cleared and construction can commence, MWA will install temporary noise barriers around the construction site, to the extent feasible, to block noise transmission.</p> <p>At recharge basin sites where there is adjacent development, MWA will initially construct outer levees along the boundary with adjacent development. This will allow construction of inner levees and basins behind a mound of earth, which will reduce noise levels for adjacent residents and businesses.</p> <p>MWA will notify residents and noise-sensitive receptors in the affected areas several weeks in advance of operations that would generate noise in excess of local standards. Information distributed will describe the operations and duration of the project.</p> <p>All stationary equipment will be designed, constructed, and operated to comply with all local noise ordinances.</p>
<b>Specific Mitigation Commitments: Public Services</b>	
Minimum Facilities	Chapter 5.10.4.2: For the Well Field Delivery Pipeline system, MWA would implement traffic controls (as noted in the discussions of traffic and noise impacts). In addition, MWA would

Alternative	coordinate with providers of public services prior to initiating construction to ensure that police, fire, and emergency service providers were aware of the location of any construction activities in the public right of way. During construction in roads, this coordination would occur daily to precisely define the areas where traffic delays might occur.
<b>Specific Mitigation Commitments: Recreation</b>	
Minimum Facilities Alternative	Chapter 5.11.3.2: MWA will notify recreation providers along the West Fork of the Mojave River when deliveries from Silverwood Lake will be made and will ramp such deliveries up in 50-cfs increments to avoid sudden increases in downstream flow rates. A similar program will be developed for deliveries made via Unnamed Wash. MWA will coordinate siting of the potential Mojave River Well Field and associated facilities with local governments and the owners of private local facilities to minimize the effects and wells and pipelines on recreational activities along the river in this area (Bear Valley Road to Rock Springs).
<b>Specific Mitigation Commitments: Traffic</b>	
All facilities	Chapter 5.12.4.2: To minimize potential traffic effects associated with construction and operation of facilities, MWA will comply with all local encroachment permit requirements. In addition, MWA will: <ul style="list-style-type: none"> <li>a. Schedule hauling of construction equipment (and water, if feasible) to and from the various construction sites prior to or following rush hours;</li> <li>b. Use off-road rights-of-way (road shoulders and sidewalks) for construction to the extent feasible;</li> <li>c. Encourage construction crews to carpool to construction sites;</li> <li>d. Identify and clearly mark emergency access routes around sites where construction takes place within the public right-of-way;</li> <li>e. On a daily basis, inform local emergency services of the location of all sites involving construction in the public right-of-way; and</li> <li>f. Jack and bore under Interstate 15.</li> </ul>
<b>Specific Mitigation Commitments: Water Resources (Water Quality)</b>	
All Facilities	Chapter 5.13.8: To address potential for groundwater recharge to percolate through clay and fine-grained soils and result in leaching of minerals into indigenous groundwater, water quality in production and monitoring wells will be monitored to detect such potential influences. Wells will also be monitored for potential surface water influence, and recharge will be managed to reduce any effects identified. As noted in draft EIR Section 5.13.8 and in MWA's clarifying response to comments from the Lahontan Regional Water Quality Control Board and San Bernardino County DPW Water Resources Division: <ul style="list-style-type: none"> <li>a. MWA will analyze corings from proposed recharge and/or well field sites to ensure that these facilities are not sited in areas where significant clay and fined-grained soils could result in substantial leaching of minerals into indigenous groundwater. Water quality will also be monitored routinely to detect any influence associated with leaching of minerals during recharge.</li> <li>b. Water quality in monitoring wells and all production wells will be monitored routinely in accordance with applicable regulations.</li> <li>c. For the Mojave River Well Field element of the Proposed Project, MWA will follow DHS guidance for evaluating the potential for these wells to be under the influence of surface water.</li> <li>d. If groundwater levels are detected rising to levels where recharge may cause water to become under the influence of surface water, MWA will divert deliveries to other facilities, or increase ground water extraction at the site, as appropriate.</li> </ul>

<b>Specific Mitigation Commitments: Water Resources (Hydrology)</b>	
Mojave River Recharge	<p>Chapter 5.14.5: MWA will monitor groundwater levels in the Mojave River Well Field for evidence of high groundwater levels in the floodplain outside of the mainstem channel. If there is substantial evidence that recharge is raising these levels to within 20 feet of the surface at the beginning of the storm season, then MWA could adjust operations by diverting some banked supplies to other recharge facilities. As noted in the draft EIR and in responses to comments from San Bernardino County DPW Water Resources Division, to reduce potential for in-channel/in-wash recharge operations to affect flood flows, MWA has sited these facilities in areas where existing and planned embankments would exert substantial control over flood flows and the effects of small temporary berms should be minimal. MWA will also coordinate design and construction of in-channel/in-wash facilities with San Bernardino County Flood Control, and will obtain permits from the Flood Control District and the U.S. Army Corps of Engineers, as appropriate.</p> <p>In general, per response to comments from San Bernardino County DPW Water Resources Division regarding local Master Plans of Drainage, MWA will also work with local communities during design, construction, and implementation of the proposed project facilities to avoid effects to drainage plans.</p> <p>Regarding Unnamed Wash, per response to comments from San Bernardino County DPW Water Resources Division and as provided for in the Proposed Project description, MWA will incorporate rock energy dissipation structures into the design of the channel at Unnamed Wash to minimize erosion and channel incision.</p>
<b>SPECIFIC MITIGATION COMMITMENTS: USE OF ENERGY</b>	
Best management practices associated with mitigation of air quality impacts will also serve to reduce potential construction and operation use of energy.	